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EXPERIMENTAL STUDY OF A PATHOGENIC ACID-
FAST ACTINOMYCETE (NOCARDIA) *

D. J. DAVIS, M.D., AND ONFRE GARCIA, M.D.
CHICAGO

Bollinger (1877) and Nocard (1888) discovered the organisms Actinomyces and Streptothrix or Nocardia, respectively, in animals. Later, Wolff and Israel (1891) and Eppinger (1890) found similar organisms in human beings. Thereafter, from time to time, many publications have appeared giving data useful for the identification of organisms of this type. The literature is very extensive.

Sometime ago, an organism of this general character was isolated from a patient at St. Luke’s Hospital, Chicago. Baugher,1 at that time, recorded the history and gave a brief description of the organism. The strain was put aside for the purpose of making a more complete experimental study at a later time.

SOURCE OF THE ORGANISM

This organism was isolated from a woman, aged about 55, who complained of subcutaneous abscesses localized chiefly on the extremities, which she attributed to wounds made by the prick of rose thorns and cactus plants, with which she had worked. The abscesses were distributed on the left foot and little toe, the right external malleous and outer side of the right thigh, the left upper arm, the right forearm and two ulcerated areas above the left breast. The lesions all presented practically the same characteristics. Some underwent resolution without ulcerating. The abscesses were red and fluctuating and contained a thick mucoid pus. The other organs were apparently normal. The patient improved after one week’s stay in the hospital, and later her recovery was reported. Boric acid dressings locally and potassium iodid internally were prescribed while she was in the hospital.

The aspirated pus from the unopened abscesses in this case was examined carefully, and no sulphur granules or raylike masses were found grossly or microscopically. Filamentous branching organisms

*From the Department of Pathology and Bacteriology, University of Illinois, College of Medicine.
were present in smears in large numbers and were apparently pure. From the discharging abscesses also, branching forms, together with cocci, appeared. Cultures usually pure were readily obtained on several different mediums.

CULTURAL STUDIES

In general, a fairly good growth of the organism was observed, after a few days, in all culture mediums used. It is definitely an aerobic organism. In liquid mediums, there appears a striking and abundant surface growth. In solid mediums, the growth is profuse and adheres tenaciously to the surface. All give a strong earthy odor.

Plain, Dextrose and Glycerol Broth.—The transplantation of small colonies into these liquid mediums yields small conical whitish colonies, which float on the surface. About five to seven days later, the colonies unite, forming an irregular film, which extends to the wall of the test-tube. The fluid remains clear. The surface growth in the plain broth is thinner than in dextrose or glycerol broth. The latter is not only more abundant but also is a more intense pinkish orange. Particles may go to the bottom of the tube on jarring and there yield a slow growth consisting of very fine, delicate, whitish flakes.

Carbohydrate Broth (Lactose, Dextrose, Saccharose, Mannite, Salicin and Inulin).—The growth is fairly abundant in all. After four days, the mediums become more and more alkaline. The change of alkalinity starts from above and proceeds downward. No fermentation was observed in any of these sugars after one month.

Litmus Glycerol Broth.—In this medium, the growth is unusually profuse as compared with other fluid mediums. The litmus is reduced about the fourth day after the inoculation. The fluid either becomes clear and practically free of the litmus color, or it may be a slight reddish purple. The growth is intensely pinkish orange.

Litmus Milk.—The medium becomes more and more alkaline from about the fifth day; the reduction of the litmus and the digestion of the milk begin at the top. The peptonization is slow, and the milk becomes transparent and purplish blue after several weeks.

Gelatine.—Growth along the puncture line is slight and ceases after about a week, except on the surface. Liquefaction starts when the growth is quite abundant, but it is slow. The proteolytic power of the organism is evidently limited.

Corn-Starch Nutrient Broth (1 per cent.).—Apparently, the starch is utilized, but the diastatic process is slow. After one month, only two thirds of the total amount of the starch was digested.

Plain, Dextrose and Glycerol Agar.—In all, the organism grows well. The growth is notably adherent and has an irregular, warty and rugged surface. If the colonies are discrete, they have the topographic shape of a volcano, with a crater at the peak and irregular slopes.
With the aid of a magnifying glass, tiny droplets are seen on the surface of the velvety efflorescent growth. A groove is formed at the edge of the colonies, undoubtedly due to the penetration of the growth beneath the surface, thus becoming strongly adherent there.

Carrot and Potato Mediums.—The organism grows very well on both these vegetable mediums. The colonies on carrots are more intensely pinkish orange than those on potato. Discrete colonies reveal a morphology similar to that described on dextrose agar. Sometimes, the colonies are clustered with the edges turned up, forming a cuplike or honey-combed surface.

Petroff's and Löffler's Mediums.—Growth is profuse. The colonies are in heaps and are not so adherent as in ordinary agar. Liquefaction of the mediums is observed underneath and around the growth in some of the tubes.

Fresh Egg Mediums.—The surface of the shell was sterilized with alcohol and flame. The shell was then bored with a sterile, pointed scalpel and the hole covered with plaster (Johnson & Johnson). About two dozen eggs were used and incubated for different periods of time. Twenty days later, some of the eggs were opened, an abundant growth appeared (Fig. 1, B and G), and after one month's incubation, many of the eggs showed raylike forms (Fig. 1, G) and some had conidia-like bodies. The details of this growth will be given under morphology.

Sabouraud's Medium.—The growth on slants was profuse; the stab-culture showed little growth except on the surface.

Blood Agar and Tissue Cultures.—The growth on these mediums was not so profuse as on carbohydrates. No hemolysis was observed on blood agar. The tissue-culture mediums consisted of rabbit and guinea-pig liver and kidney immersed in a small quantity of broth. Growth was fairly abundant in all, and after several weeks on some of the tissues appeared a whitish surface, which, on microscopic examination, showed the formation at the tips of isolated spherical bodies (Fig. 1, D).

GROWTH TEMPERATURE

The organism grows equally well in an incubator (37.5 C.) and at room temperature. When transplantation is made from old cultures, development is slower than when frequent subcultures are made. Some cultures in sugar mediums were kept in an icebox at a temperature ranging from 4 to 8 C., for five months. During that time, the organism scarcely grew at all and, on the transfer of such growth to new mediums, the organism grew in only a few tubes.

RESISTANCE TO HEAT

In testing heat resistance, a culture 15 days old was selected. It was found that a temperature of 50 C. for thirty minutes never kills
and, even after a five-day exposure, growth may result on transfer. A temperature of 65 C. for ten minutes will usually kill, and for thirty minutes, uniformly so.

**OXYGEN RELATIONS**

In its oxygen relations, this organism is definitely aerobic; in this respect being in sharp contrast to strains of *Actinomyces hominis* and *bovis*.

**MORPHOLOGY**

Various morphologic structures seen in the different culture mediums are illustrated in Figure 1, A to G. Young colonies are invariably made up of tangled masses of branching filaments, the latter often with a slightly increased diameter of the main trunk. This does not always appear. Liquid cultures, such as plain or sugar broth, fresh eggs, milk, and tissue culture mediums, may give rise to quite definite structures more or less characteristic for this type of organism. Filaments 1 month old, or thereabouts, may show either large and swollen filaments or clublike enlargements, distributed here and there along the trunks (Fig. 1, B, C, D, E and G). They may be arranged in rosette form (Fig. 1, F) later becoming segmented, and freed as floating round or elongated bodies similar to spores. A definite conidia-like body may at times be found attached to the filament by means of a very fine pedicle (Fig. 1, C). This was observed both in fresh and in stained preparations. The filaments show no septums. The free round bodies are somewhat greenish with a transmitted light, but with no apparent double contour; as seen, for example, in *Blastomyces*.

**STAINING REACTIONS**

The organism is weakly nitric acid-alcohol-fast and gram-positive in direct smears from the pus (Baugher). The young growths fail to retain the carbol-fuchsin when treated with 3 per cent. acid-alcohol; but the older cultures become acid-fast. This was observed in all the culture mediums used in this study. It is also true that the degree of acid-fastness was in direct proportion to the age of the culture. Also in special mediums, such as glycerol, sugar, egg and Petroff's, the acid-fastness became more pronounced. The old filaments and the segmented forms retained acid-fastness even when 15 per cent. nitric acid-alcohol was used. These observations are in accord generally with data obtained by others in the study of organisms of this general type (*Nocardia*).

The resistance of this organism to antiformin was tested, since in cases simulating tuberculosis this method is often used. Tubercle bacilli were used as a control. Antiformin readily disintegrates all the organisms and all parts of the organism whether acid-fast or not, so
Fig. 1.—A, stages in the growth of the mycelium; the main trunk is somewhat larger than the branches. B, varieties of forms revealing swollen filaments; the spherical forms exhibit a double contour; from eggs. C, forms found in a broth culture 1 month old; spore bodies with delicate pedicles numerous. D, swollen filaments and conidia-like forms; from tissue-culture (kidney and liver). E, varieties of forms from a guinea-pig abscess; the material was scraped from the wall. F, ray-fungus obtained from an abscess in a rabbit's ear thirteen days after inoculation; the polymorphonuclear cells are relatively fewer than the mononuclear cells. G, several forms of the organism found in an egg one month after inoculation; these bodies occurred in the tangled masses of mycelia; a method of ray-fungus proliferation is here suggested.
that, in dealing with infections suspected of belonging to this group, this method should not be used. The nonresistance of this organism corresponds in this respect to the nocardial organism from a pulmonary case, described by one of us.  

**EXTRACTION OF THE FATTY SUBSTANCES**

Previous to the work of Bulloch and MacLeod, extraction of the lipid substances from tubercle bacilli was made by various observers, who claimed that the acid-fast property was due to these substances. Bulloch and MacLeod obtained, on cooling, a white acid-fast precipitate from a filtered extract of tubercle bacilli. The filtrate yielded also lipochromes. Further analysis of this material showed that the acid-and-alcohol-fastness of the tubercle bacilli was due to the presence of an alcohol. More recently, Benians made a study of the acid-fastness and gram-positiveness of the tubercle bacillus, and came to the conclusion that the uncrushed organism is gram-positive and acid-fast, but the crushed organism is no longer acid-fast, and becomes gram-negative.

That the acid-fastness of the tubercle bacillus can be modified to a certain extent, the work of Suyenaga has demonstrated. This he did by growing the bacilli on a synthetic medium, not containing substances or groups on which the acid-fastness depends, such as glycerin. He stated, however, that the acid-fastness of his strain was not thereby destroyed absolutely and that it could be recovered after repeated transplantation of the organisms in suitable mediums.

The acid-fastness of tubercle bacilli and also of the branching bacilli of the *Nocardia* type is more clearly manifested in the older growth. This has lead Soronson and other writers on the tubercle bacillus to believe that the acid-fastness of these organisms must undoubtedly be derived from metabolic products appearing in the culture mediums. This phenomenon is more evident in the case of organisms weakly alcohol or acid proof, such as *Nocardia*, as compared with tubercle bacilli.

**Technic.**—An acid-fast substance from the strain here under discussion was obtained and studied. Tubercle bacilli were used as a control. The method of extraction was as follows: From two flask cultures in 3 per cent. glycerol nutrient broth, 3 weeks old, the growth was transferred to an empty flask and washed with alcohol of different strengths, up to 95 per cent. (150 c.c. were used). The alcohol was obtained.

heated to 80 C. for three hours and filtered while hot. On cooling, a grayish white flaky precipitate was obtained, which was complete after standing from twenty to forty hours. The precipitate was acid-fast. The alcohol was decanted and the precipitate was treated with cold ether, in which it dissolved. After repeated treatment with ether and after evaporation, the precipitate became homogenous, having the appearance of a fatty substance with a decidedly reddish orange color. Extraction of the organism was completed with ether, the extracted bacteria becoming practically white. The latter when stained are gram-negative and practically non-acid-fast. The tubercle bacilli control was still strongly gram-positive and acid-fast.

In one experiment, the extracted culture was stained and presented a granular margin which was gram-positive. The spaces between the granules and the longitudinal central space took the carbol-fuchsin as counter stain. The organisms were probably only partially extracted. The phenomenon could not be attributed to the stains, since the same solutions were used in several repeated instances. The fatty substance extracted was acid-fast and clearly gram-positive.

ANIMAL EXPERIMENTS

This organism is pathogenic for rabbits, guinea-pigs, rats and mice. Irrespective of the kind of animal inoculated, the lesions were practically all alike after intraperitoneal and subcutaneous injections. Intravenous injections were carried out in the case of rabbits. Practically all animals became emaciated; if they lived, they later recovered their normal weight.

Method of Inoculation.—Three tubes of broth cultures (5 c.c. each) 2 weeks old, suspended in 10 c.c. of saline solution were prepared. The disintegration of the growth by means of a glass rod in sterile test tubes yielded results different from those obtained by grinding the growth in a mortar. It was observed that the former method seemed to favor the localization of the lesions containing ray-like organisms in the lung tissue, where the clustered organisms are impeded by the small capillaries; whereas, the latter method yielded no lesions containing ray forms, but only miliary nodules in the lungs as well as in other organs of the body. The amount injected was varied according to the size of the animals. The intravenous injection used was from 0.5 to 1 c.c., and the intraperitoneal injection from 1 to 2 c.c. Large doses were almost always fatal to guinea-pigs and mice. Apparently, rats and rabbits are somewhat more resistant.

All the experimental animals having shown lesions of practically the same character, a brief general description of their gross and microscopic appearance will be given here.
Intraperitoneal Injection.—From two to four weeks is about the shortest period in which lesions characteristic of this particular organism can be produced in an animal. The necropsies revealed different sizes of tubercle-like nodules scattered over the surface of the liver, the lower surface of the diaphragm, sometimes in the abdominal wall and on the surface of the intestine and bladder. The omentum contracts in folds, forming a large firm fibrous cluster of nodules. These nodules are whitish gray. The most striking features observed in the majority of the animals consist in the formation of adhesive tuberculous nodules on the surface of the liver and the lower face of the diaphragm, and in the intense inflammatory reaction of the omentum. Sometimes, there are firm strands of connective tissue, binding one part of the large or small intestine to the bladder or to a portion of an abdominal organ, such as the pancreas; and, in one instance, the spleen of a guinea-pig was somewhat enlarged, having an irregular surface covered with a yellowish gray coating. Little or no ascites fluid was found in the animals. Sections of the folded omentum showed many regions partly softened or caseous and surrounded by connective tissue. The lymphatic organs were affected, but to a limited extent only.

The microscopic change depends on the age of the nodules. The more recent lesions reveal an acute cellular reaction. Around the organism, there are many mononuclear and epithelioid cells, and next to these proliferative granular connective tissue. A few polymorphonuclears are seen. Later, the latter cells appear in larger numbers around the organisms, and the connective tissue reaction is more pronounced. Sections were made from the folded omentum, revealing far advanced lesions. Detritus of tissue and polymorphonuclear cells appeared surrounded by thick walls of connective tissue. Sections made from the different tissues showed a raylike fungus in many nodules (Fig. 2). In some, only a coil of mycelium was found. Cultures were obtained readily from the lesions.

Subcutaneous Injection.—Abscesses caused by subcutaneous injections vary somewhat with the animal used. Thus, in guinea-pigs, the abscess breaks down rather rapidly, whereas, in rabbits and rats, it tends to become more nearly chronic, and later may subside and heal. The pus is yellowish gray, and of a tenacious consistency. Evacuation of the abscess hastens the healing. Definite raylike bodies may be found in the abscesses in the rabbit’s ears, which under microscope appear as tiny sulphur granules, comparable to true Actinomyces (Fig. 1, F). Scrapings from an abscess wall in the guinea-pig revealed some conidia-like formations and spherical or fusiform swellings of some of the filaments (Fig. 1, E). Abscesses reveal these formations in about ten
days or less. Subcutaneous injections result usually in localized infections. No appreciable lymphadenitis was observed in the groins of the guinea-pigs.

**Intravenous Injection.**—Injections were made into five rabbits. One showed two grayish white nodules in the medullary portion of the kidney. This was an animal injected with the organisms triturated in a mortar. It was observed that, in the rabbits inoculated with organisms prepared by the glass-rod method mentioned in the foregoing, only the lungs were affected. Furthermore, the miliary tubercles in the lungs were more abundant when this method was used than when the mortar was used, and presented many of the characteristics of true tuberculosis. The tubercles were somewhat harder in consistency and were whitish gray. Fifteen days, at least, is required for their production. Patchy fibrinous pleuritis was encountered in two animals. The injection of the organism into the lung tissue causes rapid necrosis.

The presence of ray forms in the abscesses in rabbits' ears suggested their occurrence also in sections of the tubercles of the lung and intraperitoneal lesions. Mallory's special stain for *Actinomyces* was used for their detection here. In the sections, true ray forms were found having characteristics of true *Actinomyces bovis*. In hematoxylin and eosin sections, the clubs were pink and the centers contained a purplish blue mycelium. The tubercles exhibited the structure of true tuberculosis, revealing giant cells, epitheloid cells, small and large mononuclears and granulation tissue at the periphery (Fig. 2). Plasma cells were uncommon. In certain lesions, the tubercles were invaded soon by polymorphonuclear cells which were interspersed between the clubs and the other cells. Tubercles 8 days old may show organisms which take the acid-fast stain.

Judging from the microscopic appearance of various tubercles at different stages, their formation and characteristic structure may be explained in the following way: The cluster of the organisms is retained in the capillaries; Growth then occurs, and at the same time the endothelial cells react and enlarge and become separated from the subendothelial tissue. In the meantime, the mononuclear cells are attracted by the fungus and the regional connective tissue as well as the subendothelial tissue proliferates. The endothelial cells about the organisms may become fused, forming large giant cells, as shown in Figure 2.

Comparing the various manifestations of this acid-fast actinomycetic infection with those of tuberculosis, we find that it differs only slightly. The intraperitoneal injection of the bacillus of tuberculosis produces in the guinea-pig a relatively acute serous peritonitis, with involvement of the lymphatic system, which afterward becomes general. The spleen is usually enlarged, and the animal generally dies in a relatively early
stage of the infection. With our particular organism, there is a greater tendency to form more chronic fibrotic tubercles, the animal apparently resisting the infection more strongly than is the case in tuberculosis. Generally, there is not a serous peritonitis and the spleen is not usually affected, owing probably to a lesser tendency to generalize. Involvement of the lymphatic system is a very limited and slow process. The gross lung lesions are quite the same in both infections. The microscopic pictures are also very similar. The tubercles of the acid-fast *Actinomycete*

![Fig. 2.—Section of experimental nodule of rabbit's lung showing acid-fast raylike fungus in giant cell with adjacent epithelioid reaction; ×600.](image)

in the guinea-pig grow about one half as fast as those of true tuberculosis. Lesions resulting from subcutaneous injections tend to localize and, unlike tuberculosis, usually no lymphadenitis occurs.

**COMMENT**

As we have stated, the fresh alcohol-soluble fatty substance was able to retain carbolfuchsin and gentian violet. For this purpose, the ordinary technic for Gram's stain and for acid-fast stain was followed. Some preparations were even exposed to the decolorizing reagent and to
Fig. 3.—A, acid-fast stain of the organism from tissue culture several weeks old. B, same from litmus milk. C, same from broth culture. In all, sporelike bodies are seen which are not acid-fast. Swollen filaments are on the whole less resistant to decolorization. All are gram-positive.
other stains for periods of time longer than is usually necessary. It was observed that this fatty substance was more intensively colored when the stain was fixed by a low flame. Once the carbolfuchsin or the gentian violet is in the fatty substance, other stains would not replace it. Similar results were observed in staining the extracted waxy substance of tubercle bacilli, obtained through the courtesy of Dr. E. R. Long. In either case, the stain could be removed from the stained fatty substance by exposure to a warm decolorizing reagent.

Taking into consideration the work of Benians, who stated that the crushed tubercle bacilli exhibited neither the gram-positive nor the acid-fast property to any appreciable extent, and also our observations as to the power of the fatty substance to retain the stain, it appears that this phenomenon is physical in character rather than chemical. In the first place, our extracted acid-fast actinomycete became gram-negative and non-acid-fast. In the second place, in the case of broken down bacilli, the liberation of the fatty substance at the moment of heating the film is greatly facilitated. Thirdly, as soon as the melting point of the waxy substance is reached, the stain is liberated when decolorizing reagents are used.

In the diagnosis of cases of either actinomycosis or streptotrichosis and nocardiosis, certain points should be kept in mind. Instances of the absence of typical sulphur granules in human actinomycosis are known and have been referred to by several authors. One of us (Davis), in a case of actinomycosis of the pelvic organs, after long search in many sections and smears, found but a single ray granule, though the pus contained many branching filaments but no sulphur bodies. On the other hand, observers have noted that, while the streptomycetes generally are found in the tissues as irregularly arranged branching filaments, at times they form definite bodies having a raylike structure. In this connection, too, should be mentioned the observations of Babes and Levaditi who, on intrameningeal injection of typical tubercle bacilli in rabbits, found a true ray fungus arrangement with characteristic clubs, quite like those of Actinomyces bovis. Foulerton repeated the foregoing experiments, with similar results. 

Abbot and Gildersleeve obtained the same forms in rabbits from fifteen to thirty days after intravenous injections with Moeller's grass bacillus and Moeller's

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timothy hay bacillus. O. Lubarsch 10 also made various experiments with different strains of acid-fast organisms and obtained characteristic ray-fungus forms with some of the strains. W. C. MacCallum 11 also obtained the same formation on injecting his strain into rabbits; and, later, Nakayama 12 made an exhaustive study of the pathologic changes, at different stages, in lesions formed by these various organisms.

Since the formation of the rays is found not only in the typical Actinomyces bovis, but also appears in most, if not all, representatives of the acid-fast groups, the application of the term Actinomyces to the entire group, as advocated by the committee on classification of the Society of American Bacteriologists, seems rational.

Conspicuous in cultures of our organism were not only swollen bulblike enlargements of the filaments, but also distinct sporelike bodies, attached here and there along the sides and at the extremities of the mycelium by delicate pediciles. Such structures are common in this group of organisms, having been noted by Foultion, 8 Norris and Larkin 13 and others, including ourselves. 2 So far as we are able to determine, it does not appear that these structures, that is, the conidia-like pediculated bodies (Fig. 1, C), have been seen in true Actinomyces bovis or hominis or in the simpler Trichomyces. We attempted with known strains of the latter organisms, by growing them in broth, milk, tissue and egg mediums for varying periods of time, to reproduce these bodies, which were so conspicuous in cultures of our organism in such mediums. Though irregular swellings and bulbous enlargements appeared, the definite lateral spores did not develop. We call attention to this point because of the possible differential value that it may have in the classification of this group. Such sporelike structures are common in higher forms; for example, sporothrix, but they apparently do not occur in the bacteria or in the lower types of fungi. It appears that it is in these nocardial forms that these structures first evolve.

We are not able definitely to identify this organism with any other strain of actinomycete that has been described heretofore. It corresponds closely to Eppinger's type so far as acid-fastness and pathogenicity are concerned, but it differs from it in the characteristic earthy odor of the growth and in other cultural properties. Its definite aerobic property, as well as its many morphologic peculiarities, removes it from the ordinary strains of Actinomyces bovis and hominis. Without doubt, it may be placed in Foultion's group "A" or "I"; but further than this we cannot go. Surveying this group as a whole, we are forced to

the conclusion that here is a type of organism highly plastic which, on account of its lack of aggressiveness, rarely is transferred directly from individual to individual. Under such conditions, so different from those prevailing in most bacterial infections, we may understand, perhaps, why one meets with strains so variable in their properties, making the classification of them peculiarly difficult and confusing.

SUMMARY

The actinomycete here described was isolated from a human case. It is acid-fast and pathogenic for animals. It belongs in the general group of Nocardia.

The extracted organism is practically gram-negative and non-acid-fast. The extracted fatty substance is acid-fast and gram-positive.

The organism is pathogenic to rabbits, rats, guinea-pigs and mice. Intravenous injection into rabbits produces typical tubercles in the lungs and other organs, containing characteristic raylike bodies.

The organism may show striking conidia-like forms in liquid mediums which may be of value in identification.

The antiformin method must be avoided in a suspected case of acid-fast actinomycete (Nocardia).
CONTRIBUTORY FACTORS IN POSTARSPHENAMIN DERMATITIS

WITH SPECIAL REFERENCE TO THE INFLUENCE OF FOCAL AND INTERCURRENT INFECTION *

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Since the organization of the Section on Dermatology and Syphilology of the Mayo Clinic, 44,000 injections of arsphenamin have been given, and approximately thirty-eight cutaneous reactions of various types have been observed. Of this number, thirty-three were studied carefully enough, even in the earlier days of the departmental organization, to permit their use as material for the basis of certain impressions on the etiologic background and therapeutic control of these reactions.

It is not our intention merely to repeat the details of description and classification which have been so completely covered in numerous and excellent contributions to the subject by various American and foreign writers. Our concern has been mainly prevention and treatment and the study of the etiologic background in order to rationalize our therapeutic procedures. Our principal observations concern the relation of focal and intercurrent infection to the production and the course of cutaneous reactions to arsphenamin. They have led us to believe that arsphenamin is only one of several factors in many cases of post-arsphenamin cutaneous reaction and dermatitis. There seems to be an induced state of hypersensitiveness, a substrate of allergic imbalance underlying the clinical manifestations resulting, in part at least, from chronic or acute protein intoxication of bacterial origin; in other words, from focal and intercurrent infections. The evidence is as yet merely clinical and circumstantial, yet rather suggestive and of some practical bearing on prevention and treatment.

Under hospital conditions which permit of close observation, the impression has grown on us that the so-called postarsphenamin dermatitis is a picture that lacks specificity. All the clinical cutaneous accidents, including the severer dermatitic reactions, can be produced

* From the Section on Dermatology and Syphilology, Mayo Clinic.
by other agents than arsphenamin. The milder forms imitate a wide range of drug exanthems, toxic erythemas due to infections, the recognized exanthems, and so forth. Arsenicals in general are by no means essential to the production of typical and severe dermatitis of the exfoliative type. One of the worst cases ever seen by one of us (Stokes) was the sequel of a single injection of mercuric salicylate, and the mere painting of iodin on the skin has been responsible for other severe and extensive cases. The amount and kind of arsenical implicated varies throughout the known gamut of these compounds from sodium cacodylate to silver arsphenamin, while the picture is common to all. It seems reasonable to us, then, that exfoliative dermatitis is not solely an expression of the action of a fixed toxic agent in all cases, but involves factors expressive of the state of the recipient. We think that we have seen evidence that the susceptibility of some

TABLE 1.—SEVERITY OF DERMATITIS IN RELATION TO NUMBER OF INJECTIONS AND TOTAL DOSAGE

<table>
<thead>
<tr>
<th>Severe dermatitis</th>
<th>Moderate dermatitis</th>
<th>Mild dermatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>Injections</td>
<td>Dosage</td>
</tr>
<tr>
<td>9</td>
<td>5 to 11</td>
<td>2 to 5.6</td>
</tr>
</tbody>
</table>

TABLE 2.—INJECTIONS RECEIVED BEFORE REACTION OCCURRED

<table>
<thead>
<tr>
<th>Injections</th>
<th>Cases</th>
<th>Dosage, gm</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

persons is variable, and that if certain elements in their predisposing background are altered their explosive response can be accelerated, retarded, or entirely prevented. We regard the administration of arsphenamin, then, as at times merely a pull on the trigger, which discharges a load of hypersusceptibility in a variety of cutaneous explosive inflammatory phenomena ranging from urticaria through erythema multiforme to scarlatiniform erythema and exfoliative dermatitis. At other times, we suspect that the arsphenamin is the predisposing agent and that other factors are precipitating agents.

In support of these contentions, the following considerations from our experience are offered:

The dosage of arsphenamin, if the drug or its arsenic base as such is to be held responsible for the reactions, should be high in cases of dermatitis and low in those without reaction. In our experience, the contrary seems to be true. The arsphenamin dosage in cases of reac-
tion is low in the aggregate and astonishingly low in comparison with the large total doses, such as from 8 to 10 gm., which we often give in one eight weeks' course of intensive treatment. Table 1 shows that there is little evidence of correspondence between the dosage and the grade of severity of the dermatitis. From 2 to 2.7 gm. is an ordinary total for a single course of six injections in our scheme of treatment, and this single course equivalent, or less, was sufficient to bring on reaction in 70 per cent. of the patients in our series. Six of thirty-three (18 per cent.) had cutaneous reactions after the first injection of arsphenamin.

The massing of the tendency to reaction early in the course of arsphenamin treatment and with the smaller dosages is well illustrated by Table 2, in which it can be seen that the large proportion of the reactions occurs before the sixth injection, the largest single number with the first injection, and that the dosage in grams which tipped the balance is also concentrated toward the low end of the scale.

It seems difficult to imagine that a reaction attributable to an excess of arsenic as such should have a very much higher incidence in cases in which small amounts of the drug were administered than in those in which large amounts were given (Fig. 1). There seems to be an unescapable element of idiosynary, hypersensitivity or general allergic instability underlying the behavior of the patients reacting to the drug.

It has been suggested by Wechselmann,1 and later by Eicke2 and by Schamberg,3 for example, that it is not the intake of arsenic but the prevention of its elimination that is responsible for the cutaneous explosions. The principal rôle in the production of this retention is played by the simultaneous administration of mercury, which by injuring the kidney is supposed to prevent the elimination of the arsenic. The following up of this hypothesis in our series, particularly in comparison with the observations of Moore and Keidel,4 led us to different conclusions. Moore and Keidel, who have given arsphenamin without the simultaneous use of mercury, had an incidence of twenty-one cutaneous accidents in their series of 47,000 injections; eleven of them were severe, with three deaths. We, administering mercury simul-


strokes simultaneously in most of our cases and using large dosages of soluble and insoluble salts and inunctions, developed, in 43,000 injections, thirty-eight cutaneous reactions, of which only ten were severe and two fatal. In other words, using large doses of arsphenamin and short intervals, especially of late, and with the systematic intensive simultaneous use of mercury, we have no higher incidence of serious cutaneous reactions than have observers who do not use mercury simultaneously. Our

![Chart](image_url)

Each of these six patients has had an "arsenical" reaction to arsphenamin. (acute exfoliative dermatitis)

Note the small individual and total dosage.

Fig. 1.—Chart hastily constructed for a necropsy demonstration from clinical records, taken at random, of six patients who had had exfoliative reaction, including two severe and one fatal; and six patients who had had really intensive treatment. All the intensively treated patients were receiving coincidently with arsphenamin, from four to six weekly injections of mercury succinimid, usually 0.25 grains (0.01 gm.) each. Most of them received coincidently sodium iodid intravenously, from 2 to 20 grains (0.13 to 1.3 gm.) daily. None of the intensively treated patients reacted. Two of the six who reacted had received practically no mercury.

slightly higher incidence for total reactions is probably the result of the fact that we treat all patients in hospital; while Moore and Keidel treat their patients in an outpatient clinic, where minor reactions may at times escape attention. It is difficult to believe, then, on this evidence that the simultaneous administration of mercury and arsphenamin, with arsenic retention, is responsible for the development of "arsenical" cutaneous accidents.
In further opposition to the conception advanced by Schamberg and others as to the rôle of mercury in arsphenamin accidents, we find that seven of our thirty-three patients had had absolutely no mercury, and eight others had had only insignificant amounts, such as one or two succinimid injections or two or three inunctions, or a week of small doses of mercury by mouth. In all, then, nearly half of our patients who developed cutaneous accidents had had either no mercury at all, or so little that it had had no pathologic, effect, and could hardly have been instrumental in producing an arsenic retention of a sufficient grade to cause a cutaneous explosion. On a service systematically using the combined administration of the two drugs, two very severe cases occurred in which less than half a dozen inunctions had been given just before the reaction.

Sept. 1, 1921, the Section on Dermatology and Syphilology increased its dosage of mercuric succinimid from one sixth to one quarter of a grain daily, and the length of the succinimid course from twenty injections to thirty. If this increase in intensity of mercurial treatment

<table>
<thead>
<tr>
<th>TABLE 3.—AMOUNTS OF MERCUry RECEIVED AND GRADES OF REACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients who had never had mercury .................................................. 5</td>
</tr>
<tr>
<td>Mild reactions ................................................................................. 3</td>
</tr>
<tr>
<td>Moderate reactions ......................................................................... 2</td>
</tr>
<tr>
<td>Patients who had had only trivial amounts of mercury (by mouth, six inunctions, six injections mercuric succinimid, and so forth) ........................................ 6</td>
</tr>
<tr>
<td>Mild reactions ................................................................................. 2</td>
</tr>
<tr>
<td>Moderate reactions ......................................................................... 4</td>
</tr>
<tr>
<td>Patients who had had moderate amounts of mercury (from ten to twenty succinimid injections) ................................................................. 5</td>
</tr>
<tr>
<td>Mild reactions ................................................................................. 2</td>
</tr>
<tr>
<td>Moderate reactions ......................................................................... 3</td>
</tr>
</tbody>
</table>

causes a retention of arsenic in our patients, there should be an outbreak of exfoliative reactions on the service following the adoption of the new dosage system. There was, moreover, a marked increase in the number of patients placed on mercuric succinimid, because of our experience with the external irritative effect of inunctions in patients predisposed to dermatitis. While sixteen cases of cutaneous reaction developed within this period, it is significant that many of the patients had had little or no mercury. Even the fact that five who received moderate amounts of mercury had severe reactions is discounted by the fact that four other patients who had severe cutaneous reactions had had only trivial amounts of mercury, as shown in Table 3.

We could find no evidence that the kidneys of patients who had cutaneous reactions had sustained injury before, or that there was much evidence of injury during the attack. Six patients in the series had slightly abnormal urine before the attack; four of these had severe cutaneous reactions. Three of the four reacting patients had had only trivial amounts of mercury, and one had had twenty inunctions. Cer-
tainly, mercury in combination with arsphenamin could hardly have precipitated a dermatitis by causing an arsenic retention from renal injury when given in such trivial doses in the most severe cases. It is, of course, conceivable, as Eicke suggests, that injury to the kidney is not detectable in cases of combined treatment by the ordinary tests. The point we wish to make is that, in our worst cases of dermatitis, the patients not only did not show marked renal irritation before the attack or during it, but did not have any real combined treatment.

To the evidence that syphilis itself cannot be a necessary factor in the production of cutaneous reactions to arsphenamin, we can add two cases, both of severe cutaneous reactions in which syphilis was known to be absent; one of lamblia infection and the other of tuberculous glands. Moore and Keidel also cite two cases. There was no evidence from the grouping of the cases under various types of syphilis that the disease per se had any influence on incidence. The proportions ran very much as they do in the general work of the section, each type having approximately its fair proportion for the numbers dealt with.

Our data are not well suited to a demonstration of the relative importance of neo-arsphenamin and arsphenamin in the production of cutaneous reaction. It may be noted, however, that on a service in which neo-arsphenamin is used only once in nine times as compared with arsphenamin, neo-arsphenamin was being given once in six times when reaction occurred. As we are inclined to turn to neo-arsphenamin when a patient shows signs of reactivity, we believe this comparison to be untrustworthy and that, in our experience, there is at best little difference on this point between the two drugs.

Our observations suggest then, thus far, that the cutaneous reactions to arsphenamin which have occurred in our experience are not a result of the administration of arsenic and of arsenical intoxication per se. They occur early and on small total dosages under circumstances which point, not to a failure of elimination, or to overwhelming poisoning by large doses or heavy accumulation, but as a rule to idiosyncrasy and allergic instability.

In not a few cases we have seen, careful analysis shows that what would ordinarily to the uncritical eye have passed for a reaction to arsphenamin is in reality only a reaction to the cutaneous irritation of the mercurial inunction. This group of cases in which, on proper anal-

5. This is the Herxheimer theory of Pinkus, which the author evidently intended to apply largely to early exanthems.

6. On this point, Moore and Keidel cite evidence, the former from his experience with the American Expeditionary Forces, that neo-arsphenamin causes fewer cutaneous reactions than arsphenamin. This observation if substantiated may explain the lower incidence of cutaneous reaction in clinics in which neo-arsphenamin is used.
ysis, arsphenamin is found not to be the exciting cause of the dermatitis, and in which the use of the drug can be continued in full doses without ill effect, will be made the subject of a special report. The "rub dermatitis" is a definite entity in our experience, which can be controlled by certain measures, and does not, in the majority of cases, interfere at all with the continuation of the arsphenamin treatment.

Our observations further seem to indicate that the simultaneous administration of arsphenamin and mercury, even in enormous individual and total doses over long periods, does not increase the incidence of cutaneous complications in comparison with the administration of arsphenamin and mercury alternately.

We are unable finally, from our studies, to ascribe to syphilis itself or to the type of drug used, any specific or even incidental rôle in the production of cutaneous reaction to arsphenamin. The possibility that defective lots of the drug used may have a share in the complex of causes will be mentioned later.

We are forced to fall back, then, at least for a part of our explanation of the occurrence of cutaneous reaction to arsphenamin, on an allergic instability, which predisposes certain patients to reactions of this particular type. These patients, in the course of their treatment with arsphenamin, develop or possess at the outset a special intolerance of the drug, which in many cases will, under its continued use, bring them into serious complications. An important factor in the development of this state of intolerance must be our next consideration.

At this point, it may be well to insert a parenthetic but vigorous disavowal of any attempt to develop a single factor explanation to cover all cases of cutaneous reaction to the arsphenamins. Even our partial exclusion of the arsenical factor, per se, must be modified to admit that there are apparently cases, such as that of Latham, in which the arsenical intoxication is overwhelmingly important as the cause of reaction. Certain of our cases suggest that there is considerable variation in the relative influence exerted by several factors, such as the total dosage of arsenic, the element of intercurrent or focal infection and the element of local irritation.

**Observations on the Element of Focal or Intercurrent Infection**

Five years ago, one of us (Stokes) was impressed for the first time with the possible instrumentality of focal infection in the maintenance of a generalized dermatitis by the outcome of a case in which the patient had not secured relief. The condition of the patient, after running the gamut of all we had to offer in the way of treatment, cleared up immediately following the extraction, by another physician, of two infected teeth with granulomas at the apexes. In our next
patient, who had a generalized psoriasis, a search for foci of infection was made, and good results followed the extirpation of infected teeth. The third case thoroughly to arouse our suspicions was one included in this series, in which the immediate termination of a postarsphenamin dermatitis of ten weeks’ duration followed the removal of septic tonsils. These fortuitous and, in some respects, now rather commonplace observations encouraged us to continue a search for the possible influence of intercurrent and chronic infections on the production of postarsphenamin dermatitis. While certain individual cases to be cited illustrate the point better than the aggregate, it appears from our observations of the last five years that, of the thirty-three patients with cutaneous reaction, nine had severe cutaneous reactions of the general type of exfoliative dermatitis, necessitating hospital treatment of from twenty-five to 180 days. Of these nine severe cases, seven (80 per cent.) of the patients had had serious grades of septic infection from foci or acute intercurrent infections before the appearance of the dermatitis. The emphasis on the time relation is important because many authors have noted the complications, such as pustulation in the skin and the appearance of respiratory infections, which appear to come on after the development of the dermatitis and constitute the seemingly terminal accidents in certain of the cases.7

In contrast to these results, we find that of the twelve patients with mild cutaneous manifestations, such as urticaria, morbilliform erythema multiforme and mild dermatitis (hospitalization less than ten days), only two (17 per cent.) carried any considerable load of infection. Even these two patients presented much less evidence of chronic infection than the severely reactive cases. The freedom of the toxic erythemas as distinguished from the exfoliative dermatitides from septic foci and from acute and chronic infections preceding the onset of cutaneous manifestations was so striking that, without knowing the identity of the individual patients in our protocols, we were able to indicate with considerable accuracy those who had had severe and those who had had mild cutaneous reactions, from the record of focal and general infection.

In our series of thirty-three patients, there were six who had no demonstrable foci of infection. Their freedom from serious trouble was pronounced. Five of the six developed only the most trivial reactions, and one a mild dermatitis of the exfoliative type of nine days’ duration. This patient had a preceding acute infection that may have increased the severity of his attack.

7. It is interesting to note that folliculitis and furunculosis of the arms and paronychia became so common in the nurses managing our severe cases in the continuous and colloid baths that it was necessary to secure shoulder length rubber gloves for them. Moore and Keidel, and others.
The remaining twenty-seven patients all had demonstrable foci of infection of varying grades. Of these, one had all demonstrable foci of infection removed a short time before the actual onset of the dermatitis, which ran a severe course. This seeming paradox is explainable possibly on the theory that the foci were removed so short a time before the onset of the dermatitis that not enough time had elapsed markedly to affect the allergic condition of the patient.

Partial removal of the foci of infection demonstrable in seven patients before the onset did not apparently reduce the severity of the dermatitis. In this group, three cases were severe, one was moderate and three were trivial. It is hardly to be expected that a quantitative reduction in the severity of the cutaneous reaction would follow the removal of so uncertain a quantity as an infected tooth, for example, when other foci remained to maintain the condition.

It seems reasonable to assume that if a septic focus has anything to do with the production of an exfoliative cutaneous reaction, reaction will be likely to follow disturbance or removal of the focus during the course of a dermatitis. This is precisely what occurred in most of our patients in whom such measures were attempted. In seven patients in our series, foci of infection were interfered with during the course of their dermatitis. Five sustained flare-ups of varying severity and two were unaffected. With these seven patients may be combined the two others mentioned in whom foci were stirred up by incomplete removal just before the onset of dermatitis. The following cases are examples of the results.

REPORT OF CASES

Case 1.—A woman, aged 37, following the fifth arsphenamin injection of the second course (eleventh injection serially, total dosage 4.5 gm.) developed a typical severe exfoliative dermatitis which resisted the usual therapeutic measures to an unusual degree and was persistently moist, edematous and inclined to pustulation. Examination of the nose and throat just before the onset of the dermatitis had shown septic tonsils with fluid pus, and pus in the middle meatus on both sides, with signs of sinus infection. Not appreciating the importance of such a condition at the time, we continued the administration of arsphenamin and permitted the postponement of the treatment of the nose and throat infections. When the exfoliative dermatitis developed, the findings of infection were forgotten, but they were resurrected from the records after the explosion (as week after week passed with a steady trend for the worse), in an effort to find some explanation for the patient's resistance to all therapy. Without any conception of the possible outcome, but rather on general principles, the removal of the tonsils, which were still markedly septic, was ordered. This was done on the sixty-eighth day of the dermatitis.

The transformation was remarkable. The hospital record up to the day of the operation had read "No improvement" and "Getting worse." Forty-eight hours after the operation the note reads "Skin looks much better." On the fourth day, a personal note (Stokes) reads "Very striking improvement." The twelfth day after the operation the patient was practically well. Again a
personal note reads "Never saw such a transformation." There had been a definite and well marked exacerbation of the dermatitis during the twenty-four hours following the operation, with great increase in the edema and pusulation.

This case then exhibited the flare-up and cure that seemed to suggest direct connection between the focus and the dermatitis.

This was the first case in our series in which any attention was given to the focus of infection, and we were without presuppositions as to the possibility of securing the effect we did. Our subsequent experience showed us that a favorable outcome is not a necessary result of the effort to remove foci of infection during the course of a dermatitis.

Case 2.—A woman, aged 46, who had had a mass in the liver suspected of being gummatous, ran a mildly reactive course under treatment. Following her fifth arsphenamin injection, she was given inunctions, and following the sixth injection she developed a patchy dermatitis, typical of the beginning exfoliative reaction. Under treatment, this dermatitis was improving rapidly, when an ill fate led us to attempt to hasten matters by removing enlarged and septic tonsils. Following the induction of local anesthesia, the tonsillar capsule on the left was incised. The patient attempted to vomit, became frightened and absolutely refused to go further with the operation, so that it was necessary to return her to her room. Had the tonsils been completely removed, the outcome might have been different. A membranous tonsillitis developed. The dermatitis began to extend, accompanied by marked edema of the face and extremities, with a rapidity that in twelve hours produced a complete generalization of what had been an almost involuted process. The skin was of the dusky livid color which, we have learned, is of unfavorable prognostic significance. The membranous tonsillitis then began to subside, and coincidently the skin began to improve. A chill and a sudden rise in temperature heralded the next exacerbation of the dermatitis, and we were again so unwise as to meddle with the patient's foci of infection, this time five infected teeth, which were extracted. The dermatitis was now at its height and was entirely unaffected by the procedure. The patient, however, showed signs of profound prostration and died on the third day after the extractions and the twenty-eighth day of the dermatitis. In this brief period, she had almost recovered, her dermatitis became generalized following incomplete operation on a focus of infection, which had amounted to the traumatic induction of a membranous tonsillitis, she had almost recovered from the tonsillitis and was at least holding her own with respect to the skin, when further meddling with another focus was followed in three days by death. Necropsy was refused.

We had evidently not fully digested the lesson afforded by Case 2 when we were confronted with another angle of the condition in Case 3. We had become convinced that the removal of foci of infection, if complete and early enough, might have therapeutic and prophylactic value. We accordingly attempted in the next case to eradicate all accessible foci, wholesale, as a prophylactic measure against dermatitis.

Case 3.—A man, aged 59, had already shown a distinctly irritable skin. Septic tonsillar tags were removed, and thereafter several infected teeth were extracted. Signs of impending dermatitis became more marked (severe itching and irritability), and a moderate exfoliative reaction developed, with gradual onset. The patient was afebrile and in good condition. Hoping to clear up
the last of the focal infection and abort the attack, we removed five teeth on the ninth day of the dermatitis. The result was immediate and disastrous. The patient's fever rose at once to 102 F., and on the next day, following a prolonged chill, to 103.8 F. The dermatitis, which had been rather mild and was progressing favorably, underwent a violent transformation into one of the most serious exfoliative reactions we have ever witnessed. Six months later, the patient was dismissed from the hospital recovered—the longest case in our records, as a result of our attempt to abort an attack by removal of foci.

It is a matter of note that respiratory symptoms in this patient's case did not develop until the chill which followed the extractions, and that they were marked throughout the febrile part of the course, subsiding with the temperature. They were, therefore, probably primary and infectious in origin, not merely a phase of the dermatitis. The cutaneous condition began to improve with the decline in temperature.

The fourth case in our series of mistakes illustrates not only the powerful influence exerted by a focus of infection on the course of a patient already showing signs of arsphenamin idiosyncrasy, but the very great risk of creating new foci of a yet more serious type which is involved in a too vigorous attack on focal infections, and which will still further predispose the patient to reaction. Such an extension of a focus, as in this case, may establish a chain of conditions leading to a death which is at most only partially due to arsenicals.

**Case 4.**—A man, aged 36, had had a large amount of treatment as compared with most of our patients with exfoliative reaction (ten injections elsewhere and fourteen injections, 5.6 gm. of arsphenamin, in the Mayo Clinic). He had throughout this treatment, both before and after coming to the Mayo Clinic, presented a typical example of the so-called "fixed arsenical exanthem,"* during the earlier injections in his course, the lesion was urticarial in character and disappeared between injections, leaving a pigmented spot. Later, the plaque was present continuously and became more eczematous in character. Six injections of arsphenamin were given during this phase of the reaction, without untoward event. Four months after the second course, the patient returned for a third, and with the first injection of this course he had a sharp rise in temperature, following a chill. An erythema appeared on the arms, but presently subsided. It should be noted at this point that a cutaneous test with arsphenamin was negative, but that the test was a scarification test which, according to Stuart and Maynard,† is unreliable.


As the patient had had a sharp meningeal relapse in a severe neurosyphilis, it was deemed necessary to push the treatment vigorously. In order to prepare him for it, all foci were ordered removed. An infected impacted third upper molar was the first focus attacked. The removal of this tooth proved the beginning of a series of septic accidents which, in combination with the treatment, carried the patient steadily down hill to a fatal issue. There was tremendous reaction to the extraction, but the skin remained clear while the arsphenamin was continued at the rate of two injections of 0.5 and 0.6 gm. a week. The operation had exposed part of the mucosa of the antrum, and an extension of the infectious process resulted in a severe infection of the antrum. Notwithstanding this serious increase in the extent of the septic infection, the six injections of arsphenamin were well tolerated and the antrum infection began to subside. The spinal fluid taken at the end of this series showed a most remarkable response. Had we been wise enough to discontinue all

![Image](image_url)

Fig. 2 (Case 4).—"Fixed" arsenical exanthem on the flexor surface of the forearm. This was the only lesion present. Originally urticarial, it recurred at first with each injection and finally became a lichenified eczematous hyperpigmented plaque.

treatment at this time, further trouble might have been avoided. But, with the sixth injection, a slight rise in temperature and a diarrhea developed. The presence of a large amount of pus in the urine was taken as an indication for a cystoscopic examination, following which there was a sharp reaction. A seventh arsphenamin injection was given. This was followed by a sharp febrile reaction and the first appearance of a true dermatitis. This slowly extended, but never at any time reached the proportion of a really severe exfoliative reaction, although, because the patient died, we have classified him with our severe cases. During this period of the patient's gradual decline, the infections of the jaw, antrum and ethmoids and the diarrhea persisted. The dermatitis, while moderately extensive over face and back, was on the whole mild. The antrum was drained, and for several days the patient showed distinct improvement. Herpes appeared on the lip. Still another extension of the infections
process now occurred. The patient "caught cold," the throat became sore, and there was considerable coughing, and pain in the chest. A special examination by the thoracologist revealed acute coryza with mild acute bronchitis, but there were as yet no pneumonic signs. The diarrhea was persistent, and pharyngitis and stomatitis appeared. The dermatitis began to extend again with the onset of this new infection, but never at any time became general, involving chiefly the malar prominences and the back. Proctoscopic examination disclosed only a diffuse proctitis. Prostration steadily increased, and on the fifth day of the "cold" the patient had a sudden cardiac failure and died.

The terminal picture was that of bronchopneumonia with beginning empyema. The colon and rectum showed an extensive ulceration which had evidently developed in the five days since the proctoscopic examination. Careful search for evidence of "arsenic death" was made, but results were disappointing. The degree of fatty change in the liver particularly was much less than was expected, and certainly no more than would be in keeping with a death from chronic septic infection rather than pure arsenical intoxication. Large amounts of arsenic were found in the liver by the microchemical method of Justus,10 but this was to be expected as the liver is the principal storage depot for the drug. There was little or no arsenic found in the skin by this method, which would be surprising indeed if cutaneous reaction is a direct irritative effect of arsenic as such. Much arsenic was found in the wall of the intestinal tract immediately below the mucosa, a point which will be discussed presently in connection with the findings and histories of other patients with diarrhea.

Here, then, we have an excellent example of the puzzling interplay between infection and arphenamin intoxication. It is difficult indeed to say just what the rôle of either may have been. The patient had long shown evidence of a certain type of iodiosyncrasy to arphenamin, in the form of the "fixed" cutaneous reaction, yet he seemed highly resistant to a true exfoliative dermatitis. He sustained sixteen injections of arphenamin with good therapeutic results and only a trifling reaction, until a steadily increasing load of intercurrent infection over-balanced him and the true exfoliative reaction appeared. Yet this cutaneous reaction never reached its full development; for, before it could generalize, the infection overwhelmed him, and he died of streptococcal infection rather than of arsenical poisoning. Infection preceded cutaneous reaction throughout the latter part of the course. The necropsy finding of empyema in this case stands unfortunately as the chief witness to the streptococcal character of the preceding and the terminal infections, for the body had been embalmed before the family was finally persuaded to permit necropsy. It was fairly apparent at postmortem that the patient had died as a sequel to infection rather than of arsenical poisoning. From the study of the sequence of events in such a case as this, it seems not at all improbable that the terminal

10. This will be discussed with the intestinal findings in another case.
and intercurrent infections described in the literature in exfoliative dermatitis are not necessarily superimposed on the dermatitis, as most writers suggest. They are parts of the systemic background, developed from focal to general proportions in the course of a complication which owes its characteristics to the combined action of an infection, or of an allergic state secondary to infection, and the toxic action of arsphenamin and arsenic as such.

**Summary of Effect of Interference with Focus of Infection.**—It appears then from our series of observations that the focus of infection, so conspicuous in the severe cases in our series and obviously of so much less import in the mild cases, bears more than a general statistical relation to the problem. The complete removal of an important septic focus in a case of intractable dermatitis may result in rapid and almost miraculous cure, as in Case 1. Such results are not usual, however, early in the course of the dermatitis. In subsequent cases in our experience, it became evident that interference with a focus of infection, even to the extent of complete extirpation, would not necessarily abort the dermatitis, was likely to result in rapid extension and generalization of a mild and comparatively restricted lesion and might lead to a fatal termination. Our theory that a focus of infection is instrumental in the production of postarsphenamin reaction conforms, then, to certain of the criteria recognized as constituting a clinical demonstration of the etiologic relation of a focus to its pathologic sequelae. The focus, if disturbed, may cause an exacerbation of the process, and removal may in some instances cure it. On the other hand, its part in the process is indirect. It prepares the soil but does not produce the pictures as such. Accordingly, mere removal of the focus may be slow to produce effects, since the induced allergy only gradually subsides. We concede that our group of case demonstrations is small, but as it is marked by a high mortality rate, further proof of these two relations in man will be involuntary on our part. One patient in our experience, who exhibited a marked flare-up following the extraction of four teeth on the sixth day of a dermatitis, fortunately escaped serious consequences. Another, on the fourteenth day of the dermatitis (second attack), had three teeth removed, with a marked exacerbation of her dermatitis but without rise in temperature. She also, fortunately, escaped further untoward effects.

As a practical maxim, then, we advise against removing or stirring up any focus of infection during the attack of dermatitis, unless an unusually prolonged siege and chronic changes accompanied by an easily accessible, very septic focus, completely removable at a single operation, can be demonstrated. It is especially serious to undertake removal of teeth when an extension into inaccessible tissues, or to other teeth as
yet only slightly involved, may aggravate the septic process instead of removing it, and have the most serious effect on the dermatitis.

Removal of a focus of infection can be accomplished after dermatitis has completely subsided, without ill effect. We therefore suggest, tentatively, that, if it is not possible to dispose of foci of infection routinely some time before treatment is begun in order to control cutaneous hypersensitiveness to arsphenamin, it should be postponed until a rest interval. If it is done after any form of cutaneous reaction has appeared, great care must be exercised to select cases that do not exhibit the eczematoid, patchy, true dermatitis, which is the warning or beginning of grave exfoliative reaction. In five cases, we removed foci of infection from two weeks to nineteen months after complete recovery from the attack, without untoward effect.

**Acute Infectious Prodrome of Dermatitis.**—The foregoing observations on the relation of a focus of infection to the cutaneous arsphenamin reactions may now be supplemented by certain further observations on the possible relation of reaction to the occurrence of prodromal acute infection, on the character of the fever, the diarrhea, the association of dermatitis with jaundice, attempts at cultural isolation of an organism and a certain degree of epidemicity or, better, of recurrence of cutaneous reactions in association with other phenomena of a suspected but not as yet demonstrably infectious origin.

Of thirty-three observed cases, data on the presence or absence of a previous infection were obtained in twenty-nine. Of these, ten give evidence of an acute infection preceding the onset of the dermatitis. The following is a résumé of these cases.

**Case 5.**—A woman, aged 40, four days after the second arsphenamin injection (no mercury given), had developed pharyngitis, tonsillitis, palpable cervical glands, hacking cough, audible ronchi, running nose, and a temperature of 101 F. A papular dermatitis appeared on the arms. The attack was aborted by our usual technic, but later the patient had a relapse and a mild dermatitis of ten days' duration. The tonsils showed evidence of chronic infection.

**Case 6.**—A woman, aged 36, had pharyngitis and slight fever (99.5 F.) before the first injection, but dermatitis did not appear until after the fifth injection.

The patient in Case 1 developed sore throat and earache the day of the first injection. There was no fever. Dermatitis appeared twenty-eight days later, following the fifth injection. Examination of the nose and throat just before the eruption appeared revealed reddened tonsils from which pus could be expressed in moderate amount, and pus from both sides of the nose suggestive of antrum infection.

12. The details of this case with discussion were published by Stokes, J. H.: Control of Exfoliative Dermatitis Following Arsphenamin Administration, Med. Clin. N. America 5:498 (Sept.) 1921.
The patient in Case 4 developed infections of the jaw and antrum following extraction of an impacted third molar. The reaction was severe. The infection of the antrum continued and at necropsy it was shown to have extended into the ethmoids. Bilateral bronchopneumonia, with beginning empyema, was the terminal picture. The dermatitis had appeared after the eighth arsphenamin injection and twenty days after the onset of infection of the antrum.

Case 7.—A man, aged 44, had had tonsillitis of three days' duration eleven days before the dermatitis appeared. The tonsils, which were extremely septic, were removed without reaction four days after the acute attack of tonsillitis and four days before the dermatitis appeared.

Case 8.—The patient, the day following the second injection of arsphenamin, had pain over the left eighth to twelfth ribs, with râles at the left base. There was no cough, no sore throat and no evidence of embolism. The next day the dermatitis appeared.

Case 9.—A woman, aged 41, had an unexplained fever of 101.5 F., for two days before signs of the dermatitis appeared. Two weeks later, during the exfoliative attack, severe tonsillitis with exudate and a temperature of 102 F. developed.

Case 10.—A woman, aged 30, developed acute sinusitis and otitis media following extraction of an impacted molar. This lasted until two weeks before the first arsphenamin injection. At the end of a Pollitzer course of three injections, a cold in the head developed, without fever. Dermatitis appeared three weeks later, after three more injections at weekly intervals.

Case 11.—A woman, aged 32, developed diarrhea six days after one injection of 0.3 gm. of arsphenamin. Ten days later, she developed a sore throat and, on the eleventh day, a marked toxic erythema, eczematous about the ears, which involuted in four days under treatment.

The effort to associate an infectious process with a dermatitis simply on the basis of a chronologic sequence is, of course, open to the usual post hoc propter hoc objections, and at times leads to what seem to be far-fetched interpretations. We do not wish to be understood as rating the occurrence of an acute infection or of acute exacerbations in a chronic process as directly causative of the dermatitis. We feel rather that they assist in preparing the allergic substrate on which the various agents responsible for the relatively nonspecific manifestations of the cutaneous reactions operate to produce an anaphylactic explosion. In certain cases, particularly such as Cases 1, 4, 5, 6, 7, 9 and 10, the infection basis comes to clinical recognition at its onset, and then subsides into a chronic phase, with relapses sometimes before and sometimes during the course of the dermatitis. This indicates that complete recovery did not occur, but that flare-ups in a state of more or less chronic sepsis followed the acute attack and maintained the sensitized background for the cutaneous reactions. In Case 8, an infections or
embolic accident immediately preceding the dermatitis may or may not have been a factor in precipitating the reaction, and may also have been the culmination of an infection harbored for some time. Case 11 brings up the question of diarrhea as a prodrome and a possible manifestation of an infectious element in the conventional picture of certain cases of cutaneous reaction to arsphenamin.

It should be noted that, of the nine patients with acute, apparently infectious incidents preceding their exfoliative reactions, seven had demonstrable foci which might have made them chronic carriers of infection, and three of these had very severe attacks of dermatitis.

Fig. 3.—Severe stomatitis in a case of relatively mild dermatitis. This stomatitis recurred twice after successive injections of arsphenamin before any dermatitis appeared.

PATHOLOGIC CONDITIONS ACCOMPANYING EXFOLIATIVE REACTIONS

Diarrhea and Exfoliative Reactions.—In fifteen of thirty-three cases, data on attacks of diarrhea preceding the onset of exfoliative reactions were obtained. Of these thirty-three patients, six had had attacks of diarrhea before treatment for syphilis was begun; only two, however, had diarrhea during the exfoliative dermatitis. There seems, then, to be no striking relation in the aggregate of so small a group between diarrhea before and during dermatitis. But it is rather
interesting and significant that in none of our earlier cases in 1917, 1918, 1919 and 1920 was there diarrhea, even though the dermatitis was severe. Diarrhea developed in each of five cases, mild and severe, which form the “1922 epidemic” in our series. All these cases appeared in the fall and winter of the present year, and in two of the five there were histories of repeated attacks of diarrhea before treatment was begun. The observations on the individual cases are more suggestive.

The patient in Case 4 came to the clinic originally for diarrhea. He had a fistula in ano with an anal ulcer, and had had ulcers in the rectum, thought possibly to be syphilitic. Seventeen days before his death, and before the onset of dermatitis, he developed diarrhea. Yet as late as five days before death, ulcers could not be found in the rectum or sigmoid, and proctoscopy showed only a mild colitis. The tremendous ulcerative involvement present at necropsy developed apparently with fulminating rapidity in the five days that marked the onset of the terminal streptococcal accident and its fatal termination. At necropsy, an old high stricture showed that the process was old, possibly associated with nonsyphilitic ulcerative colitis.

This case of colonic ulceration possibly associated with a terminal streptococcal infection should now be compared with another case observed in the same group of the past winter in which the patient developed, early in the course of her dermatitis, from which she fortunately recovered, an ulceration of the colon even more extensive than that of the patient who died. This colonic ulceration was recognized by proctoscopy on the twenty-fifth day of the dermatitis following bleeding two days before. The diarrhea, however, had appeared coincidently with a chill and rise of temperature on the eleventh day of the dermatitis, and was accompanied by a definite cutaneous flare-up. The ulceration of the colon in this patient was remarkable, not at all a simple toxic diarrhea. The ulcers were punched out, and one of them perforated the rectovaginal septum, forming a fistula within fifteen days after the appearance of blood in the stools. Cultures of the stools yielded only indifferent organisms; but Dr. Buic by proctoscopic examination obtained swabs direct from the bases of the ulcers, on the eighteenth day of the diarrhea, which on culture yielded numerous chains of streptococci and some staphylococci. Dextrose broth cultures yielded only colon bacilli. Blood cultures taken at this time were negative.

The demonstration of streptococci in more than merely accidental numbers in the colonic ulcerative lesions in this case may then be paralleled with the fulminating appearance of colonic ulceration, which seemed coincident with a terminal streptococcal infection in the case terminating fatally (Case 4). Ulcerative colitis did not develop in the other patients of this group who had diarrhea. Widal tests done on
several of this group of diarrheic patients were negative, and stools were negative for the bacillus of Flexner, Shiga's bacillus and Bacillus typhosus.

Our observations on the diarrhea in certain cases of exfoliative dermatitis, while inconclusive then, certainly suggest that while the predisposing cause may be arsenic at times, the exciting cause may be the streptococcus, whose activities seem to appear and reappear throughout the courses of cutaneous reactions to arsphenamin which we have observed.

It is interesting to note that we at first ascribed the diarrhea, which was so novel in our cases during the last few months, to the use of improperly prepared Fischer's solution, which we suspected might be hyperalkaline. Careful investigation showed no ground for the suspicion. The formula and preparation were evidently the same as that which we had been using for four years in the treatment of all the preceding cases of cutaneous reaction not associated with diarrhea.

Stomatitis.—This condition, as an accompaniment of exfoliative reactions to arsphenamin and other arsenicals, receives mention frequently in the literature. In our series, such association was comparatively infrequent; only six cases exhibited it. In three, the stomatitis was mild, and in three, severe. One of the severest cases of stomatitis (Fig. 3) was accompanied by a relatively mild cutaneous reaction. The other two severe cases accompanied severe dermatitis, and both patients had ulcers in the colon. The process in the mouth and throat reached an ulcerative stage in both, but cultures were not made. The remaining cases were comparatively mild and were evidenced by redness and dryness of the mucosa. It is, of course, impossible to establish any relation between a possible focus of infection and the stomatitis on any such basis; but it is worth noting that in all the cases of stomatitis there were well marked focal infections in the mouth and throat.

Fever.—Ten of the thirty-three patients had fever just before the appearance of the dermatitis. In five, the cutaneous reaction was mild, in four, moderate and in one, severe. Half of these patients with fever at onset had other definite evidence of what appeared to be an acute infectious process; one had acute antrum infection, three, bronchitis and one, rhinitis and pharyngitis. Of the five remaining patients without acute infections, four had definite foci of infection. It appears, then, that a large proportion of patients with fever before the onset of the dermatitis had infections, active or latent.

Fever occurred in the course of the dermatitis, but not at onset, in twelve patients. In five, the condition was severe, four having physical signs suggestive of intercurrent infection. Four had foci of infection and the fifth had had septic foci removed just before the outbreak. Five had moderate dermatitis, two of whom had had foci
of infection stirred up by intervention; and one had signs apparently of intercurrent acute infection. Of the two patients whose conditions were mild, one had foci of infection (septic tonsils) removed eight days before the onset of dermatitis and the other had signs of acute intercurrent infection.

It appears, then, that two thirds of our patients with cutaneous reaction had fever, half just before and half during the dermatitis, and that half of those who had fever had signs of associated intercurrent infection, and one third had foci of infection. All told, seventeen of twenty-two patients with fever had foci. This certainly makes a liberal proportion whose fever is interpretable as a manifestation of infection instead of chemical intoxication. That the fever preceded the dermatitis in half of the cases seems to speak against a disturbance of the cutaneous part of the heat-regulating mechanism, suggested by one observer.

Eleven patients, or only one third, did not have fever before or during their dermatitis. Of these, three had severe dermatitis, four, moderate and four, mild. It is apparent from both these groups that the severity of the dermatitis is not a factor in the development of fever, or the reverse. Of those who had no fever, six had foci of infection and two others had acute infections, including acute tonsillitis just before the attack, acute infection of the antrum, and otitis media, and sore throat with earache. This last mentioned symptom, however, was not accompanied by enough signs to support the diagnosis of an acute infection.

It is again apparent that even in afebrile cases the possibility of an underlying low grade infection as a factor cannot be wholly lost sight of. The study of individual cases rather than aggregates brings
Fig. 5 (Case 3).—Effect of removal of a focus of infection in causing a flare-up of a dermatitis, followed by subsidence of temperature to normal, and gradual recovery. In this case there seems to have been an association of the chronic focal infection, the fever and the dermatitis; a fortunate outcome of a rather risky procedure. A, entered hospital with marked dermatitis of neck and chest, with some oozing; B, extraction of infected teeth, followed by chill and sharp rise in temperature; C, marked “flare-up” of dermatitis, which generalized at once; D, conditions very much worse; oozing and desquamation pronounced; E, much improved; temperature subsiding; F, more improved; G, “feels fine;” temperature normal, and remained so; steady improvement in cutaneous condition; dismissed from the hospital on the forty-seventh day.

Fig. 6.—Effect of interference with foci of infection on the course of postarsphenamin dermatitis. A, fever accompanying extension of dermatitis after sixth arsphenamin injection; B, fever subsiding, dermatitis improving; B-C, dermatitis clearing up; C, skin almost clear; tonsillectomy attempted, patient refusing to permit completion of operation after tonsillar capsule was incised; febrile reaction; D, membranous tonsillitis developed, fever higher, eruption previously almost gone, extending rapidly; E, eruption completely generalized, dusky livid hue, edematous, face swollen; E-F, tonsillitis improving, eruption somewhat less edematous and livid; F, sharp chill, few râles at base of lungs, otherwise clear; skin exfoliating; G, five teeth extracted, moderate reaction; no change in skin; H, patient failing, scaling more pronounced; steady decline until death five days later.
out some of the possible relations between an acute infectious process and the dermatitis syndrome. This is accomplished by means of charts (Figs. 4, 5, 6, 7 and 8).

It is, of course, impossible to give too great weight to evidence of this sort tending to show that the fever is a manifestation of infection rather than of drug intoxication as such. Fever is an expected accompaniment of either, and of the anaphylactic reaction state as well. We merely wish to show that, in many cases, it fits into a syndrome, and it is quite as logical to interpret it as an infection, often prodromal, as to interpret it as a mere accidental complication or symptom of intoxication as such.

Pulmonary symptoms and catarrhal inflammation of the gastrointestinal tract have been recognized in the literature as part of the clinical picture of arsenical intoxications. The inclination is, of course,

![Graph](image_url)

Fig. 7.—Until the winter of 1921-1922, we had never seen diarrhea with postarsphenamin dermatitis. During this winter, other patients of the Clinic, including especially those observed postoperatively, had a peculiar dysentery. Part of the outbreak was traced to the Flexner bacillus, but there was no trace of such an organism in this case. In another case of severe dermatitis occurring at about the same time, streptococci were obtained from the swabs of the rectal ulcers, but none was found in the blood or stool. A, afebrile onset, mild dermatitis of the arms and legs; B, onset of diarrhea, associated with sharp chills, abdominal cramps and rise in temperature; C, skin much worse, dermatitis rapidly generalizing; D, diarrhea beginning to subside; E, chill, another sharp rise in temperature, beginning to cough severely; moist râles, signs of pneumonitis, pericarditis; F, diffuse bronchitis, signs of pericarditis; skin better; G, diarrhea beginning again and skin much worse; H, ups and downs suggesting septic condition, with gradual recovery in ninety-one days. to ascribe to the drug the production of manifestations in the mucous membrane as well as the cutaneous eruption. We desire to point out, however, that in conditions such as erythema multiforme, erythema scarlatinoides and the epidemic type of dermatitis exfoliativa (Savill’s disease), all of which are known to be associated with infection, particularly streptococcal and staphylococcal, the clinical accounts given by various authors accord quite well with those of the various clinical
types of arsphenamin reactions, and the constitutional symptoms have much in common with them. There is, therefore, nothing intrinsically impossible about an infectious background for many of the clinical signs, besides the fever, which appear in the course of an exfoliative reaction to arsphenamin. Given the same signs in the absence of a history of arsphenamin treatment and dermatitis, we would unquestioningly accept them as evidence of intercurrent infection. It must be conceded, however, that consultants in a case such as Case 6 could not agree with regard to the interpretation of the systemic signs through the course of a long illness. Signs of diffuse pneumonitis, of pericarditis and of endocarditis were reported by certain observers and reversed by others of equal competence, so that in the end we were left with the temperature chart of a septic infection, with chills at the onset, and a general disagreement as to whether a septic infection had or had not been a factor in the symptoms.

Fig. 8.—Chronic infection from interference with a focus, combined with arsphenamin accidents and fatal septic termination. A, slight septic temperature following exposure and infection of antrum in removing infected impacted molar twelve days before; no dermatitis; B, antrum involved; C, sixth injection of arsphenamin, 0.5 gm.; temperature subsiding, condition improved; D, cystoscopic examination with slight systemic reaction; urine had contained pus; E, seventh arsphenamin injection, 0.6 gm., chill and sharp reaction; F, first appearance of dermatitis, back and iliac crests; G, skin clearing up rapidly; no more arsphenamin given; H, focus in upper jaw beginning to drain again, fistula, probably antral; diarrhea began; had had rectal ulcers and diarrhea before coming to Clinic; I, antrum evidently worse, skin also definitely worse, extending dermatitis; J, antrum drained; diarrhea persisting; dermatitis stationary, not general; K, fresh infection; patient has “cold,” sore throat, pain in chest, râles, diarrhea, severe; sharp rise in temperature; L, dermatitis spreading again, face involved; M, diffuse proctitis, no ulceration; N, failing rapidly; superficial ulceration of larynx, nose and nasopharynx; eruption paling; O, circulatory collapse; signs of bronchopneumonia; postmortem, beginning right empyema, extensive colonic ulceration, diffuse nephritis; changes in general not marked for arsenic.

Jaundice and Exfoliative Dermatitis.—This point began to interest us after the studies which led to our publication “Epidemic Jaundice as a Factor in the Treatment of Syphilis.” Unfortunately, our histories are incomplete on this point. But of thirteen patients of whom we
have data, six had had jaundice of what we regard as a possibly infectious type, either before or after their dermatitis. Only one had signs of jaundice during the attack of dermatitis. We think it worth considering that a common infection possibly underlies these two processes, under certain circumstances leading to jaundice from toxic or infectious cholangitis and, under other circumstances, to toxic erythemas and other cutaneous manifestations. It has been of interest to us to encounter, while this paper was in preparation, a patient combining both jaundice and toxic erythema, in whom arsenphenamin or arsenic could not have been a factor. This case developed during a week in which two similar cases of erythema appeared on our service after single injections of arsenphenamin, and while several cases of jaundice of the usual supposedly infectious type were under treatment or developing on our service. This combination case began with a chill and fever lasting twenty-four hours, and subsiding only to be followed by another chill, and fever of 103 F. Without warning, vomiting began, ending abruptly in forty-eight hours, the temperature showing a diurnal rise and fall during this and subsequent days. There was no sore throat. The cessation of vomiting was the signal for the very rapid development of marked jaundice, and forty-eight hours later a morbilliform toxic erythema appeared, which lasted three days. Morbilliform erythemas of exactly the same type had marked the reactions of two patients on the service at the same time, following their first arsenphenamin injections.

EFFECTS TO ISOLATE AN ORGANISM

Necropsy in our first case terminating fatally was refused; in the second, the body had been embalmed before permission could be secured, so that we obtained nothing culturally from the two most eligible cases in our series. Two blood cultures, in a very recent case, were negative; in another case, a first culture yielded a few colonies of staphylococci and a second gave the same result. In one of the two cases of colonic ulceration, the ulcers in the rectum yielded streptococci, as has been mentioned. Cultures from the skin or from foci of infection were not attempted. The problem will require an intensive study with special technical methods. Cultures from the stool in two cases were negative with respect to typhoid and dysentery organisms. A culture from urine in one case was negative. We have, therefore, no conclusions to offer, based on bacteriologic studies. We do not believe, however, that failure to demonstrate a septicemia invalidates our theory, as a focus may sensitize without creating general infection, and even general infection without demonstration of organisms in the circulating blood is well recognized.
If our suggestion to the effect that allergic susceptibility to dermatitis may be produced by the action of an acute or chronic infection, and particularly the latter, has any basis in fact, it is reasonable to suppose that a number of carriers of infection who develop cutaneous reactions to arsphenamin should give histories of cutaneous irritability and of reaction to other sources of irritation which will serve as a guide to the

### TABLE 4.—History of Previous Dermatitis

<table>
<thead>
<tr>
<th>Case</th>
<th>Exfoliative Reaction</th>
<th>Duration of Dermatitis, Days</th>
<th>Feet</th>
<th>Previous Cutaneous Lesions</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Moderate</td>
<td>27</td>
<td>Four teeth, periapical infection grade 3</td>
<td>Dermatitis of thighs when first seen</td>
</tr>
<tr>
<td>3</td>
<td>Severe</td>
<td>15</td>
<td>Pyorrhea grade 3; periapical infection, six teeth, grade 3</td>
<td>Violent and extensive iodin dermatitis from local application to buttocks; no illosynergism to iodids</td>
</tr>
<tr>
<td>13</td>
<td>Moderate</td>
<td>16</td>
<td>Five teeth with periapical infection</td>
<td>Severe dermatitis preceding summer, following the ingestion of iodids (?)</td>
</tr>
<tr>
<td>14</td>
<td>Mild</td>
<td>16</td>
<td>None</td>
<td>Extensive resistant eczema seven or eight months before, which was &quot;hard to cure&quot;</td>
</tr>
<tr>
<td>1</td>
<td>Severe</td>
<td>74</td>
<td>Tonsil septic; fluid pus; pus both sides of nose; chronic pelvic inflammation</td>
<td>Folliculitis of legs when first seen; popular dermatitis of hands resembling erythema multiforme at end of first course</td>
</tr>
<tr>
<td>15</td>
<td>Moderate</td>
<td>15</td>
<td>Slight acute infection in tonsils, septic tags</td>
<td>&quot;Very sensitive skin&quot;; slight dermatitis on arms and shoulders on entry</td>
</tr>
<tr>
<td>16</td>
<td>Severe</td>
<td>22</td>
<td>Infected impacted molar; infected antrum; fistula and recurrent ulcer; infected glands</td>
<td>Fixed pigmented reaction to each injection of arsphenamin</td>
</tr>
<tr>
<td>7</td>
<td>Mild</td>
<td>Several attacks 3 to 4</td>
<td>Pyorrhea grade 2, four teeth periapical infection; tonsils large and septic</td>
<td>Seborrhoeic dermatitis of face, neck and chest</td>
</tr>
<tr>
<td>10</td>
<td>Moderate</td>
<td>22</td>
<td>Infected impacted molar</td>
<td>Oozing eczema of the scalp and neck six months before dermatitis</td>
</tr>
<tr>
<td>17</td>
<td>Mild</td>
<td>28</td>
<td>Six teeth with periapical infection; septic tonsils</td>
<td>Acne rosacea; seborrhea of face and scalp</td>
</tr>
<tr>
<td>18</td>
<td>Moderate</td>
<td>12</td>
<td>Three teeth with periapical infection</td>
<td>Papulosquamous seborrhoeic dermatitis of the chest and right cutaneous region</td>
</tr>
<tr>
<td>19</td>
<td>Mild</td>
<td>6</td>
<td>None</td>
<td>Itching of hands and scalp for fifteen years; dermatitis, no detail given</td>
</tr>
</tbody>
</table>

existence of a hypersusceptibility and a useful clinical warning as to the need for special care in treatment.

A properly taken history of cutaneous lesions and accidents was obtained in only twenty-four of our thirty-three cases. Of this number, thirteen had had some form of dermatitis prior to their coming to the Clinic (Table 4).

While it may seem to be stretching a point to rate marked seborrhoea as a warning of impending cutaneous hypersensitiveness, as in Case 2, we have found this point in particular substantiated more than once,
and have even, we believe, somewhat reduced the cutaneous irritability of patients toward arsphenamin by measures directed to the seborrhea as such, including especially the reduction of carbohydrates in the diet.

We have noted also that an arsphenamin dermatitis, once subsided, is not necessarily the end of the patient’s difficulties with respect to dermatitis. The general cutaneous sensitiveness that underlies the explosion seems to persist, and not to be necessarily specific for arsphenamin. One patient, for example, had occasional flare-ups of dermatitis around the ankles and exfoliation of the feet thirteen months after the arsphenamin dermatitis had completely disappeared. The major explosion had apparently been only an incident in a prolonged cutaneous hypersensitiveness. The patient in Case 1 has been under observation for four years since her exfoliative reaction and during that time has had occasional sporadic outbursts of localized dermatitis, on one occasion apparently attributable to flour dust, and at others without apparent cause. The patient in Case 7 still has occasional patches of dermatitis in the axillae and groins and over the thorax, which he had before his dermatitis, and whose extension to alarming exfoliative proportions constituted the reaction which compelled us to abandon arsphenamin. Apparently, the allergic condition of the victim of exfoliative dermatitis is not as specific for arsenic or arsphenamin as a cutaneous test would suggest. For example, our experience confirms the impression of Sicard and Roger 13 on the warning which hyperirritability to iodin may convey as to the danger of an exfoliative explosion. Case 3 may be cited on this point. In another case in which a generalized dermatitis had followed what seemed to have been an iodid dermatitis, the patient responded to one small injection of arsphenamin with a moderate generalized dermatitis.

On the other hand, the patient in Case 4 did not seem especially susceptible to arsenic as such, although he exhibited a constant pigmen
tary reaction to arsphenamin which, to judge from its analogies in antipyrin and phenolphthalein urticaria, is a reaction of a high degree of specificity for the individual. He tolerated a high dosage over a long period without exfoliative response, and even up to the time of his death, with liver and intestinal mucosa full of arsenic, had only a partial dermatitis and very little arsenic in the skin. It would appear, then, that the specificity of dermatitis with respect to arsphenamin needs further study and may prove to be more a general and less a specific hypersensitiveness.

Two more points remain to be considered before an attempt is made to formulate a conception of the mechanism of exfoliative reac-

tion to arsphenamin from our observations of the last five years. These concern, first, the epidemiologic background of these reactions, so to speak, and second, the toxicity of special lots of the drugs administered in the treatment of patients who developed dermatitis.

THE EPIDEMIOLOGIC BACKGROUND OF EXFOLIATIVE REACTIONS

On this point, again, we are able to throw out only suggestions. Yet the growing importance of epidemic jaundice in many parts of the country at the present time, for example, the relation of which to the treatment of syphilis we emphasized two years ago as a source of error in the current estimation of the frequency of purely arsenical accidents to the liver, has, we believe, justified this form of clinical speculation. Unfortunately, the number of our cases here is too small to permit any real study of this question. Twenty-one of our thirty-three cases, or two-thirds, occurred in the Minnesota winter months of November to April inclusive, the highest proportion in March, 1922. In the year by year incidence, two peaks appear, one in 1919 (ten cases) and one in 1922 (eleven cases in the first three and one-half months). In the first three and one-half months of 1922, there have occurred more cases than in any entire year preceding. In 1919, there occurred a similar peak in our incidence of jaundice; the figures for 1920 to 1922 are not as yet available.

During the postinfluenzal years, there has been a marked change in the reaction of patients to a variety of forms of treatment, and to various diseases. This matter has been repeatedly commented on informally by the staff of the Mayo Clinic. A wave of unexplained jaundice has passed through Rochester, involving first, of course, those rendered susceptible by a chemical agent such as arsphenamin, but later appearing among surgical patients, after operations having no relation to the biliary tract, and finally invading the staff itself, with sometimes fatal results in previously healthy persons. Jaundice was at its height in the summer of 1921, the peak since 1919. After a period of relative quiescence, it is reappearing in milder form coinci-

16. It should be recalled that Ffrench thought exposure to cold the exciting cause.
17. Some fatal postoperative cases in which colonic ulceration without any basis in the surgical pathology was found also occurred at this time, in association with an obscure dysentery, and jaundice without any abnormality of the biliary tract.
dently with the worst outbreak of cutaneous reactivity that has ever been seen on our service. At the same time, outside the department, there has appeared a case of combined jaundice and toxic erythema, conforming, in general, to the characteristics of both conditions as they have been seen on this service. In certain cases and under certain circumstances, the streptococcus seems to have an association with the morbid process, but the connection is far from established. Clinically, the relation is plainer, however, The prodromes, the course of many cases and the coincidence of manifestations which are seemingly those of familiar streptococcal infections, are quite suggestive of the common instrumentality of some organism of the streptococcal type, which, as an intercurrent infection, a predisposer or an exciting cause, is altering the allergic substrate of patients and producing almost epidemic pathologic responses to irritants, stimulants and drugs in common use which ordinarily are well tolerated. In a service employing a reasonably constant and carefully controlled technic in using drugs like arsphenamin and mercury, such fluctuations in the reactivity of patients stand out in waves; when these just precede or synchronize with waves of reactivity seen in a large body of patients such as that afforded by the Mayo Clinic, they lend much weight to the conception of an infectious exciting or predisposing factor in the reactions so easily ascribed to the particular drugs in question.

RELATION OF CUTANEOUS REACTIONS TO CERTAIN LOTS OF ARS PHENAMIN USED

It remains for us to consider the question of the instrumentality of certain possibly defective or deteriorated lots of arsphenamin in the production of exfoliative reactions. We have long ago learned that the technical testing of toxicity by animal inoculation before the issuing of a given batch of arsphenamin is no final and incontestable assurance of the fact that the same preparation will not produce reactions when it is later used in man.18 We have used consistently, with three brief well-controlled exceptions, the arsphenamin and neo-arsphenamin of the Dermatological Research Institute. We have records of the control numbers on twenty of the thirty-three cases in our series. Two suspicious batches stand out from our series, both of arsphenamin, not neo-arsphenamin. The most conspicuous and suspicious batch was administered to three patients who received injections from this lot alone, and two who received it for their last injection. These patients


Roth calls attention to the fact that such deteriorations are rare with arsphenamin, but much more common with neo-arsphenamin.
developed mild or moderate reactions. On the other hand, it must be borne in mind that a large number of patients received the same lot with undoubtedly equal frequency, without significant reaction. In fact, in the general reaction records of the section, this batch has had as good a record as any, so far as general reactions go. The second lot which aroused our suspicion was the only one received by two of our patients and formed the last injection of one other patient. Here, again, the same general principle applies. Something more than mere toxicity per se is needed to explain the fact that the same lot could be used on so many other patients without difficulty. Moreover, with the average daily list of the department approximating forty injections, it seems hardly probable, though not absolutely disproved, that any special error in mixing or any defect in technic or asepsis 19 before administration could have been responsible for these reactions. Individual details drawn from the series are as follows:

One patient who had neo-arsphenamin from three lots developed a moderate dermatitis. Neo-arsphenamin of the same lots in reduced doses was later given to another patient after a dermatitis (moderately severe) without producing any reaction; and still another patient was given neo-arsphenamin from one of these three lots after her dermatitis, without ill effect. One patient who developed dermatitis received arsphenamin from four different lots, all of which had been given at some time to patients who developed dermatitis, including the lot which we have most suspected, and developed only the mildest of toxic erythemas instead of the most serious as one would expect. We realize that none of these points are conclusive, and further investigations are being carried out with the cooperation of the Dermatological Research Institute and the Public Health Service, on the most suspicious lot, which has now been given to ten patients, who have had reactions. 20

Theoretic Discussion of the Mechanism of Postarsphenamin Cutaneous Reactions

American and continental literature so abounds in theories of the pathogenesis and mechanism of postarsphenamin cutaneous reactions that one hesitates to add to the number. Two particularly good discussions of the theoretic aspects are available, that of Schiff, 21 and of Moore and Keidel. 4 From a combination of these two summaries, no less than five groups of theories can be collected:

19. Milian states that he has set aside ampules from an "erythematogenic" lot of neo-arsphenamin and, by using them at a later date, avoided reactions.

20. Since going to press, this lot has been subjected to careful tests, through the courtesy of Drs. Schamberg, Kolmer and Raiziss, and Dr. McCoy, and found not to be in any way deteriorated. It has a very low toxicity.

1. **Bacterial Theories.**—(a) "Wasserfehler" and contamination of solutions with living or dead organisms (Müller,\(^22\) Wechselmann). This was one of the early views. (b) Herxheimer reaction in a syphilitic process (Pinkus \(^23\)). The destruction of organisms produces a general intoxication with cutaneous hyperemia; also an early view. (c) the infection theory of Milian.\(^24\) In its original form, it distinguished between early exanthematic and late or true exfoliative reactions. The latter were due to arsenic, the former apparently to various banal infections suggesting rubella, rubeola and scarlatina as complications. Of late, Milian has apparently restated this view,\(^25\) in a form which regards arsphenamin as having a provocative effect on latent infection, similar to the provocative action of mercury on the Vincent symbiosis in the mouth. He has observed manifestations of infection in these subjects prior to reaction. Moore and Keidel in their review accept this as possibly explanatory of the milder exanthematic reactions, but not so much of the later or exfoliative reactions.

2. **Arsenical Intoxication Theories.**—(a) Pistorius,\(^26\) as long ago as 1883, showed that arsenic produces arterial dilatation by paralyzing the vasoconstrictor fibers. Hoke and Rihl\(^27\) have maintained that an arsphenamin paralysis of splanchnic nerve terminations produces the vasodilation which explains the fall in blood pressure in toxic doses. Ricker and Knape\(^28\) reached similar conclusions from a study of the capillaries in the living animal after arsphenamin injection. All these views are phases of the well-known vasculotoxicity of arsenic, which even the infection theory of Milian and the anaphylactic view of Moore

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25. Milian, G.: L'érythème scarlatiniforme de l'arsénonbenzol est fonction d'infection, Ann. d. mal. vén. 15:535-540, 1920; Biotropisme palustre par le novarsénonbenzol, Ann. d. mal. vén. 17:1-8, 1922. (The last paragraph is a particularly clear statement with which we find much to agree.)


and Keidel employ as the modus operandi of arsphenamin and arsenic in the excitation of postarsphenamin dermatitis. Milian 29 directs attention to the resemblance of the dermatitic syndrome to the serous apoplexy of hemorrhagic encephalitis. (b) The effect of arsphenamin on the suprarenal glands, as shown by Brown and Pearce. 30 Kolmer and Lucke, 31 and Hirano 32 seems to us to deserve consideration as a possible means of adapting the theory of Harris 33 on the etiology of eczema to the explanation of postarsphenamin dermatitis. (c) Arsenic retention due to renal injury. Wechselmann 34 and his pupil Eicke 2 have been vigorous proponents of the view that the simultaneous use of mercury and arsphenamin injures the kidney and causes an arsenic retention. In this country, Schanberg 3 has the same view.

3. Hepatotoxic Theories.—This element in the complex is a meeting ground of several theories. (a) Hoffmann 35 (1911) maintained that arsphenamin intoxication was the sequel of a perverted metabolism of the drug by a damaged liver. (b) Glombitza 36 considered syphilitic injury to the liver the basis of a perverted arsphenamin metabolism. (c) Widal 37 and his school have pointed out the effect of damage to the “proteopexic” function of the liver by arsphenamin. This impaired proteopexic function they regard as the basis of a variety of anaphylactic phenomena. (d) Stokes, Ruedemann, and Lemon 38 called attention to the occurrence of presumably infectious damage to the liver in the course of arsphenamin treatment.

35. Hoffmann, quoted by Schiff. Footnote 21.
4. Anaphylactic Theories.—These theories to be applicable at all to the observed clinical phenomena must be based on the newer colloidal conception of anaphylaxis (Bordet, Doerr, Kopaczewski and Mutermilch, Widal, and others) and not merely on specific antigen-antibody concepts. The occurrence of arsenic exanthems after first injections of the drug is certainly not excessively rare in our experience, and can be met only by the view that in certain individuals or under certain conditions of administration, the injection of the drug induces the “colloidoclastic” crisis of the French authors (Ravaut and Weissenbach, Widal, Abrami and Brissaud and Iwaschenzow). In their generally accepted form, it is difficult to apply these views to the explanation of the late cutaneous accidents direct. Hanzlik and Karsner have pointed out the undesirability of regarding the phenomena observed as “anaphylactic” in the strict sense, and we have accordingly abandoned the term and prefer to speak rather of hypersensitiveness or allergic instability.

5. Theories of Sensitivity or Allergic Instability.—Moore and Keidel have ingeniously utilized a recent study by Auer of the

mechanism of local reaction in various tissues following sensitization by a foreign protein, to explain the mechanism of arsphenamin dermatitis. They consider that either the arsphenamin itself so changes the serum of the patient as to induce a sensitization, or bacterial proteins from foci of infection, as suggested by one of us, act as the sensitizing agents. On the sensitized substrate, the vasculotoxic effect of arsphenamin reacts, repeating the xylene irritation and exudation of Auer's experiment, with a resultant response from the sensitized cutaneous cells in various grades of inflammatory reaction, ranging from mild erythema to severe exfoliative dermatitis. Moore and Keidel feel that arsenic, locally deposited in the bone-marrow following the vascular injury, may be responsible for the blood picture they find so characteristic; and they believe that the same process of local deposition of the drug in the skin excites cutaneous reaction to the pitch of dermatitis in exfoliative cases.

We venture now to offer our own conception of the factors involved in the development of cutaneous reactions to arsphenamin. A certain amount of fundamental unity seems to us to underlie them all, and to make unnecessary the differentiations based on the various types of exanthems so often found in the literature. The only type for which as yet we cannot find a place is the so-called "fixed" exanthem. We propose an allergy or hypersensitiveness, not necessarily absolutely specific for arsphenamin, as the basic fact. This allergy is perhaps at times the product, as Moore and Keidel suggest, of changes in serum or tissues induced by the injected colloidal solution of the drug. More often, we believe, the allergic instability is the result either of continued absorption of a bacterial protein from a focus of infection or of sudden liberation of such proteins following a flare-up in the focus due to arsphenamin (Milian); a phenomenon we have seen in febrile patients, with tuberculous glands for example. Sudden sensitization by acute intercurrent infection we also believe possible. It will be apparent, then, that in our basic concept we bridge the gap between infectionists (Milian) and allergists (Moore and Keidel), agreeing, in part, with both.

On the basic fact of hypersensitiveness, we may now superpose the possible effect of an impaired liver function, from arsenic as such, from chronic or acute infection or from repeated subthreshold allergic shocks (fever, and so forth, as clinical signs) following the earlier injections of the drug in a patient with an initial intolerance. This impairment of hepatic (proteopexic?) function may perhaps make the body unable


50. It is here that repeated severe gastro-intestinal and febrile reactions gain their import as warnings of a serious intolerance.
to deal with the protein intoxication from a focus of infection, quite as much as with the arsenical metabolites of arsphenamin. In cases associated with jaundice, this connection is especially obvious.

We further suggest the possibility that, in accordance with the observation cited, arsphenamin as such, even when properly metabolized, may cause disturbance by reducing the efficiency of the suprarenals. Then, to apply the Harris theory of dermatitis, a deficiency of epinephrin destroys the vasomotor balance in the peripheral circulation, and permits a vasodilation. This vasodilation, a frequent clinical symptom, accompanied by intense itching, which Harris suggested particularly as a sign of a deficiency of epinephrin, may then result in the sequelae suggested by the observations of Auer. Vasodilation, by permitting an increased supply of bacterial protein antigen to the sensitive cells, creates a tissue explosion with exfoliative dermatitis in the skin and inflammatory changes in other tissues.

In such a contingency as the last mentioned, arsenic in excess is not necessary. All that is needed is an arsphenamin effect on the suprarenal, which may occur early. It, therefore, meets the requirements for the observed facts of reaction after first injection, and the tendency to react after few injections before the threshold of arsenic accumulation has reached a high level. It also does away with the need for a conception of arsenic retention due to mercury, which, as we have seen, does not accord with our observed facts and comparisons.

Our theory also serves to explain the reactions of patients to whom, as in Milian's 29 case and in one of true dermatitis which we have observed, it was possible to continue the administration of the same drug for a number of injections after the onset of the cutaneous reaction. In Milian's case, the flare-ups that followed each of the earlier doses disappeared with the later and larger ones, a situation quite inexplicable if arsenic as such and its accumulation and retention are the sole, or even the principal, factor in dermatitic reactions. It is still more suggestive of the incidental role of arsenic in many cases that Ffrench, 51 for example, can safely recommend the practice of resuming the administration of the same brand and type of arsphenamin as soon as the patient is able to be up and around the ward again, his exfoliation just completed.

We are prepared, however, on this point, to concede the plausibility, in certain cases, of Moore and Keidel's view of the direct action of arsenic as a vasculotoxic agent and as an irritant deposited in skin and bone-marrow, when present in excess in the blood stream or improperly

metabolized or accumulated. This explanation is most satisfactory in cases in which the whole picture seems arsenical, as in Latham's 52 patient (at necropsy). On the other hand, as in Case 4, the complexities of the interplay between infection and arsenic intoxication seem to suggest that the possibilities of both theories are often applicable.

We might also call attention to the value of Auer's experiment in explaining the fulminating onset of an exfoliative dermatitis following the application of external irritants, such as inunctions or tincture of iodium (Case 3 and another not reported here). They merely serve the purpose of the xylene applied to the ear of the sensitized rabbit to start the peripheral irritation and vasodilation that causes a violent response of hyperactive cells or brings "larger amounts of antigen per unit of time" to the sensitized cells to excite them to further reaction.

**Summary**

1. It has been our experience that cutaneous reactions to arsphenamin in general are not a function of the amount of the drug administered; and that they show a distinct tendency to occur early in the course of its administration, rather than late.

2. Comparative and direct clinical analysis indicates that post-arsphenamin cutaneous reactions have no clinically demonstrable connection with the administration of mercury (except as an external irritant in inunctions); neither do they seem dependent on any renal abnormality or injury detectable by the ordinary laboratory tests. In other words, we find no clinical evidence that arsenic retention due to renal injury by mercury is a cause of arsphenamin dermatitis.

3. In a great proportion of our cases, we find evidence that chronic focal and acute prodromal or intercurrent infections form a part of the complex on which arsphenamin cutaneous reactions develop. The severity of the cutaneous reactions we have observed has stood in a rough direct relation to the extent of the infection factor.

4. We have observed serious and even fatal results associated with rapid extension and generalization of a previously mild dermatitis follow the stirring up of a focus of infection.

5. We have witnessed the immediate involution of a severe and extending dermatitis on the total extirpation of a septic focus. This favorable outcome, however, is distinctly exceptional.

6. We submit a variety of circumstantial evidence based on studies of the prodromes, the systemic symptoms, epidemiologic considerations and fragmentary bacteriologic findings, which seem to render still more

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plausible the conception of infection as an important part of the causative background of the exanthematic and exfoliative syndromes complicating the administration of arsphenamin.

7. We propose a theory of the mechanism of postarsphenamin dermatitis based on an allergic instability or idiosyncrasy produced either by colloidal changes secondary to arsphenamin injection, especially if accompanied by repeated reaction, or by chronic or sudden absorption of a bacterial sensitizing protein from a focal or acute infection, as the fundamental premise. On this allergy, the vasodilator toxic action of arsenic, the possible vasodilator effect of an acute shortage of epinephrin from arsphenamin injury to the suprarenal, or the vasodilator and irritative local effect of mercurial inunctions or iodin, or of other local applications, and perhaps all of them at once, react. The increased amounts of bacterial protein antigen or of arsenic as such, brought to these sites of vasodilation and irritation, still further excite the sensitized cells of the skin and other tissues to an acute inflammatory reaction. Injury to the liver from arsenic, from chronic or acute infection or from repeated allergic shock due to a series of injections in a patient already somewhat hypersensitive, may assist in the development of allergy, pervert the metabolism of arsenic, leaving it free in the blood or tissues, or interfere with the natural defense against the protein toxins of chronic focal or acute infections.

8. Our view, we believe, reconciles and combines several conflicting or partial theories and a variety of seemingly incongruous clinical facts.
INFANTILE ECZEMA AND EXAMINATION OF THE STOOLS*

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Infantile eczema occurs largely in the winter months, and it has become my custom in the treatment of the disease to instruct the mother or nurse as follows:

1. The baby is not to be taken out doors but is to be kept in a room with a southerly or westerly exposure. The heat is to be turned on, the window to be open day and night and a screen to be so arranged that neither wind nor sun shall strike the baby.

2. When the baby is to be fed or bathed, or its clothes are to be changed, it is to be taken to an adjoining warm room and returned as soon as possible afterward. Wet or soiled diapers must be changed at once.

3. Care must be taken that the baby is not too warmly dressed. Overheating congests the skin and consequently increases the itching, one of the great hindrances to a rapid cure. Rubber diapers must not be worn.

4. If the baby shows any desire to scratch, the sleeves of the nightdress must be firmly attached with a strong safety pin to the diapers. The widely advertised aluminum mits can do much damage and the stiff elbow joint cuffs do not prevent the use of the straight arm as a scratcher.

5. No soap or water should touch the eczematized skin, but the unaffected portions of the body may and should be bathed daily with tepid starch water, and, if necessary, a superfatted cold cream soap may be used.

6. No change in the diet is to be made at the first visit.

7. Night and morning, the following paste should be applied to the diseased skin, care being taken that the paste is black and never olive green: crude coal tar and zinc oxid, two parts each; corn starch and petrolatum, sixteen parts each. The paste should be buttered on with a wooden throat stick and never bandaged. Before each application, all remnants of the previous inunction should be removed with sterilized gauze wet with olive oil and the fresh ointment applied immediately afterward.

In preparing the paste, the crude coal tar should be rubbed up gently and persistently with the zinc oxid. This combination with a

metal prevents the extraction of the crude oil from the tar. If this oil is separated from the mother substance, we have the mischievous, irritating olive-green mass which may produce a dusky erythema, pustules and possible toxic absorption resulting in headache, malaise, nausea or vomiting and pyrexia. After the crude coal tar and the zinc oxide have been well incorporated, the product should be passed through a fine sieve and rubbed up with the well-mixed corn starch powder and petrolatum. In case the scalp is involved, we omit the corn starch from the prescription. Do not hesitate to use this black ointment on the most excoriated and aggravated skin. If the eczema is a dry one, use 20 grains (1.3 gm.) of crude coal tar instead of the customary 30.

The mother should be told that the resultant black stains can be removed from the clothes by thorough impregnation with lard, followed by washing with a pure hard soap and hot water.

These instructions are to be followed to the letter for one week, and the child is then to be examined again.

Granted that we have had the conscientious cooperation of the nurse or the mother, we expect a very definite amelioration of symptoms. If the result has been excellent, we ask for a continuation of the treatment; if the betterment has been slight, we pursue the same methods again; but if the second week proves no more fruitful than the first, we send a small amount of the last stool to a receptive pediatrician; and I believe it expedient that one man should make all of these examinations.

The qualifying adjective receptive needs elucidation. It is very evident, in Boston at least, that children's physicians are becoming skeptical about the value of stool examinations in relation to infant feeding, and this feeling is perceptibly increasing as the months go by. It is partly for this very reason that I am prompted to publish this paper, for I believe in the efficacy of this procedure in obstinate cases of infantile eczema, and I do not want to see this unquestionable benefit taken away from the victims of this harassing disease.

The following case reports represent an investigation covering a period of more than four years. Their decidedly small numbers do not indicate the comparative rareness of the disease in my practice; far from it. They betoken rather the efficiency of the treatment outlined, emphasizing, in fact, its relatively few failures; but they leave my evidence possibly unconvincing to the skeptical.

REPORT OF CASES

Case 1.—A boy, aged 7 months, whose cheeks and forehead were somewhat red and moist, and whose stool was large and pasty, with, microscopically, a small excess of fat, was given a change in diet and was practically well eleven days later.
Case 2.—A boy, aged 21 months, developed the disease at 6 weeks of age, and the condition persisted despite the care of the physicians. Ointments, vaccines and violet light had been tried. The whole face, except the orifices, was covered with a thick mass of bloody crusts. The arms and backs of the hands presented a similar, but patchy, outbreak. At the end of six days' use of the crude coal tar, only the erythema remained; but two months later there was a relapse, and a stool examination was ordered and revealed a "remarkable" condition. The stool was sour smelling, brown and sticky, and contained a good deal of stringy cellulose material. Addition of iodin turned the whole mass black. The microscope confirmed the extraordinary excess of starch.

The mother was requested to cut down very materially the starches and cellulose and to cook thoroughly all starch given to the child. Within a few days, all eczema vanished, and there has been no recurrence of the disease since that time, January, 1918.

Case 3.—A girl, aged 13½ months, developed the disease at the age of 6 weeks. She was wholly breast-fed up to the age of 9 months. On the first visit to me, there was a quarter-size, moist, raw area over the right temple, and over the corresponding left area there were groups of somewhat moist papules. The scalp was a mass of crusts. Four weeks later, the mother reported that the crude coal tar had healed the old lesions but new ones were constantly breaking out.

The feces were large, formed and light colored. Macroscopically, many pieces of orange were visible; microscopically, there was a considerable excess of fat and a moderate increase in the starch.

A lower fat intake and a thorough cooking of the somewhat reduced amount of starch kept the disease down, but did not cure it; in fact there was a decided recurrence two years later when skin tests, construed by the early, less critical standard, revealed sensitization to twenty-three every-day articles of diet.

Case 4.—A boy, aged 6 months, who was breast-fed until 6 weeks old, developed eczema immediately after weaning, and it had continued. The cheeks were red and infiltrated and rather moist. A few isolated and coalescent papular lesions were scattered over the arms, abdomen and legs.

The feces were large, pasty and almost white—a typical "soap stool," resulting probably from a rather concentrated cow's milk mixture containing a good deal of fat and casein.

Two weeks later, the face was still congested and exhibited numerous flat, moist papules. In another fortnight, the child had gained 9 ounces (255 gm.); the face had lost its moisture and a large part of its redness, and the mother was impressed with the improvement. With his hands unrestrained, the child showed no desire to scratch.

Two months later, with the advent of the autumn, the disease seemed to show some signs of life and the child was transferred to a pediatrician for proper feeding.

Case 5.—A boy, aged 6 months, who was entirely nursed for the first eleven weeks, developed eczema one week after birth. The eruption was dry at first and then became moist. When first seen by me, the disease was more urticarial than eczematoid.

The stool was loose and watery. There were no curds, and there was no excess of fat or of starch, but there was marked evidence of the fermentation of sugar in the intestine. Lactic acid milk or buttermilk was advised but refused by the attending physician.
Three weeks later, lesions had disappeared from the body and were fading on the legs, but the face remained red and papules persisted.

Case 6.—A boy, aged 2 months, whose brother had been a victim of eczema and also treated by me, was entirely breast-fed, and at the age of 5 weeks developed eczema. The eruption was limited to the face, which was almost solidly covered with acuminate, rather yellow, crusting, scaling papules. Boeck's wash was prescribed, and in a few weeks the eruption was largely gone; but it was soon followed by an outbreak of moisture behind the ears. This attack yielded quickly to crude coal tar, but within two weeks another attack developed. A stool examination was made and revealed pasty, dry, gray-white feces. There was no neutral fat, but there was a very large excess of total fat in the form of soaps.

Two weeks later, despite the lowered intake of fat, the eruption was still present but had altered its character completely, appearing dry and scaly on the forehead, finely papular on the cheeks and curiously exfoliative on the chest and shoulders. Was the child's diet too free from fat?

Case 7.—A boy, aged 3 months, a breast-fed baby, developed the disease at the age of 1 month. There had been no treatment, and when first seen the cheeks were covered with pink-red, rather indefinite papules. A wash of phenol, zinc and lime water was prescribed. The child was seen six weeks later and the papules had settled down into macules. Crude coal tar was prescribed. The mother did not trouble herself much about the eruption and more or less neglected it. Three months later, in November, the child was seen again, this time with mild crusting on the cheeks and small excoriations on the forehead and elsewhere.

A stool examination revealed a loose, green movement, full of mucus and strongly acid in reaction, indicating carbohydrate fermentation. Microscopically, there was found a large excess of starch, partly in the form of large, undigested granules, partly in the form of partially digested masses.

Zwieback was eliminated from the infant's diet, and at a final visit, two weeks later, not a papule was to be seen and only a faint redness and infiltration persisted.

Case 8.—A boy, aged 2½ years, had developed the eruption three weeks previously. He had been receiving applications of crude coal tar of an unknown strength from another physician for two weeks. Both cheeks were fiery red and infiltrated—an indication of a too prolonged use of the coal tar or of a percentage too high.

The stool was formed, pasty and free from mucus. Microscopically, there was no excess of starch, but there was a moderate but very definite increase in the soaps. The child's fat intake was reduced and the eczema disappeared. It remained absent for three months, when a dry, scaling eczema was observed on the chin, which was constantly soaked with saliva.

Case 9.—A boy, aged 5 months, who was breast-fed except for one bottle a day, developed the disease two months previously. Several ointments and olive oil had been prescribed by a physician. The picture was the common one of redness, moisture and crusting of the whole face and parts of the scalp. The condition was seemingly cured after one week of crude coal tar treatment, when suddenly after an application of oil of sweet almonds, a papular eruption appeared on the cheeks and forehead.

The stool was found to be loose, green, very strongly acid in smell and in reaction to litmus—a stool of sugar fermentation. The feedings were cut down to once in four hours instead of once in three, and the child was allowed
only ten to twelve minutes at the breast at each nursing. Each feeding was supplemented by an ounce (30 c.c.) of fat-free lactic acid milk. No further visits were received from the child.

Case 10.—A boy, aged 5½ months, was bottle fed, having been nursed for only two and a half weeks. Zinc ointment and obtundia had been used, as well as Cuticura and a powder “which made the eyes water.” Both checks and scattered areas in the scalp were red, moist, infiltrated and slightly crusting. After two weeks of crude coal tar applications, the child showed no desire to scratch and the skin appeared practically well. There was a relapse one month later, and the stool proved to be normal but high in protein, suggesting that the baby was getting very little fat, not much sugar and a good deal of protein.

Without my sanction, the mother continued crude coal tar throughout the hot summer, and when seen again in September, three and one-half months after the last visit, the baby showed minute, subacute, maculo-papules on the cheeks and several incipient comedones on the chin, all of which could be explained by the unnecessary and injudicious use of crude coal tar in hot weather.

Case 11.—A girl, aged 13 months, who had been nursed for twelve months, developed eczema at the age of 3 months and had been treated by home physicians from the beginning of the outbreak. The eczema had grown worse since the substitution of the bottle. When first seen, there were papulo-pustules on the forehead and a paronychia of one finger. On the outer and posterior upper thighs and on the nates were large areas of minute coalescent lichenoid papules.

Three weeks later, the stool was soft, light yellow and rather foul. The microscope revealed a large excess of fat.

The child was not seen for two months. The mother reported that the skimming of the milk and the omission of butter from the dietary had cured the constipation at once. All that was visible of the previous, rather extensive outbreak was an occasional macule.

Case 12.—A girl, aged 10 weeks, was wholly nursed for five weeks and then bottles were added. A “cradle-cap” appeared at the age of 2 months. One week before her first visit to me, the child had begun to scratch and five days later the eruption appeared. This consisted of fine papules throughout the scalp, over the forehead and about the vulva. Crude coal tar paste was prescribed.

One month later, the mother reported that the skin had been wholly well several times but that the outbreak recurred, always in a fine papular form with some moisture. The stool was yellowish-green, loose, and very acid. There was no excess of starch, but fat was present in excessive amounts, and the stool was typical of sugar fermentation. The diet was appropriately altered, and I did not see the child again.

Case 13.—A girl, aged 11 months, who was wholly nursed for seven months, five weeks after birth developed a cutaneous outbreak, for which she was treated in two hospitals. When first seen by me, there were groups of fine papules and redness, moisture and crusting over the face and back of neck and to a certain extent over the whole trunk. Two weeks later, the eczema was one-half to two-thirds well, but the child still scratched.

Two months later, the child was brought in again. Two weeks previously weaning had taken place, and concomitantly the skin disease had broken out again. The baby looked pale, and the scalp was buried under yellow white
scales. Stool examination revealed fat both macroscopically and microscopically. Rectification of the feeding was followed by two months of freedom from eruption and then occurred another outbreak, this time with a normal stool.

**Case 14.—**A girl, aged 12 months, who was entirely breast fed for seven months and wholly weaned at eight months, developed eczema about one month after weaning. At her first visit, there were redness, slight infiltration and semimoisture on the cheeks and in the occipital region of the scalp. After ten days' use of crude coal tar all moisture and most of the redness were gone, despite the fact that the child did her best to wipe away every application. The stool was loose and contained a large excess of starch; the mother was directed to reduce the carbohydrate intake and I did not see the child again.

**Case 15.—**A boy, aged 2 years, who was not weaned until 17 months old, developed eczema almost immediately after weaning. When first seen, the cheeks, backs of the hands and extensor surfaces of the arms showed dry red, somewhat abraded, indefinite areas. Treatment was wholly unsuccessful, and ten days later the previous conditions were only magnified. The stool was pasty and considerable carrot was visible to the naked eye. Microscopically, there was a moderate excess of starch.

Proper feeding produced a total cessation of the disease, which lasted for three weeks; but when rice, bread and macaroni were given the child, a recurrence of the eczema quickly took place.

**Case 16.—**A boy, aged 2 years, had had the disease for several months and it had not yielded to the action of "any number" of ointments. The eruption consisted of a few areas of infiltration and dryness on the upper arms and the buttocks. Zinc jelly was tried but would not stick, and eleven days later the original areas were redder than at the first visit.

Undigested neutral fats and a small amount of fatty acids were discovered in the stool. The diet was appropriately altered and crude coal tar was prescribed. I did not see the child again.

**Case 17.—**A boy, aged 6 months, who was wholly breast fed, developed eczema at the age of 6 weeks, and when first seen by me the condition was marked by redness, slight infiltration and dryness of the face and scalp. About two weeks later, the infiltration and dryness had diminished, but the child still tried to scratch. In another two weeks the eruption had practically disappeared; but, within seven days, a relapse occurred and, when seen for the third time, there were multiple excoriated papules with intervening infiltration.

The stool was greenish, loose and very acid in reaction. The microscope showed a considerable excess of fat. Sugar fermentation with secondary fat indigestion was thus revealed.

Despite explicit dietary directions, the mother had continued to give the child orange juice every morning; and, eleven days later, it was noted that the face had cleared but that the lower legs were covered with masses of grouped, excoriated papules, bound together by infiltration. The mother was again instructed as to the feeding.

After a lapse of eight months, the patient returned with a recurrence of two weeks' duration. The child was very fat and on the right cheek and on both lower legs were areas of redness and marked moisture and oozing. This time the stool was mushy, sour and acid; macroscopically, there were pieces of undigested potato; microscopically, there was a moderate excess of starch with many iodophilic bacteria—a typical stool of starch fermentation.
The starch intake was again reduced in amount and 1 pint (0.56 liter) a day of lactic acid milk or buttermilk was ordered. I did not see the baby again.

Case 18.—A boy, aged 10 months, developed the disease three weeks after birth, and it had continued despite the care of an excellent pediatrician. When first seen by me, the whole face and scalp and the trunk to a certain extent, were patchily red and raw. The mother and father were quite exhausted from the care of this long drawn out disease. After the use of crude coal tar for five weeks the child still wanted to scratch, the face was dusky red and the buttocks showed numerous, pea-size, superficial exulcerations.

The stool was pasty, rather foul, smooth, of neutral reaction, but with no evidence of sugar fermentation and no excess of starch or of fat. It was indicative of a high protein diet. Proper precautions were prescribed, and I did not see the child again.

Case 19.—A boy, aged 3½ months, a breast-fed baby, developed the eruption of eczema in the first few weeks of life. Zinc ointment, anhydrous wool fat, cotton seed and carron oil had been used before coming to me. The principal outbreak was about the genitals and buttocks, but the cheeks were red and rather dry and there was a somewhat generalized, fine, maculopapular eruption. Two weeks later, the mother said “the bad look cleared up almost at once.” The redness was still evident, but decidedly diminished. The scalp was covered with fine dry scales.

Six weeks afterward, the nursing mother menstruated, and within a few days redness appeared in the folds of the baby’s skin. The baby was weaned and put on a low fat, high protein mixture.

After a lapse of four months, two large papules appeared in the groin and there was a streaky, elevated redness just above the diaper line on the back. The stool, examined by Dr. W. W. Howell, showed no free fat and only a moderate amount of soap. The stool was brown and shiny, a condition suggesting the presence of starch, which was verified by the iodin test.

There was another slight recurrence of the eczema in the ensuing autumn, in the form of dry, blotchy redness about the lower face and the buttocks, while up and down the back were many small pink flat papules. The stool was examined again, this time by Dr. L. W. Hill. It was large, foul and not homogeneous, but full of gelatinous masses. The microscope revealed a great excess of undigested starch. All starch was strictly prohibited, save that in the milk, and there has been no recurrence of the disease during the last four winter months.

Case 20.—A boy, aged 2 years, developed eczema at the age of 21 months. The eruption consisted of redness and roughness of the chin and of minute papulopustules of the cheeks. The child sucked his thumb and wet the sheet in consequence. A mild protective wash was ordered but failed to cure, for, a month later, the chin was even dryer and rougher than at the first visit. The stool contained a large excess of fat, and proper directions as to the diet were given.

A month later, the mother wrote that the reduction in cream, butter and eggs was followed by “an immediate disappearance of the eczema,” but with the gradual resumption of these fatty foods the roughness was creeping back again.

Case 21.—A boy, aged 13 months, who had been nursed for six months and in whom the eruption had appeared at the age of 4 months, had been treated by several pediatricians. Since weaning, goat’s milk had been the staple article of diet. The forehead, wrists and bends of the knees were red, infiltrated and wet. The cheeks showed a few small papules. The child scratched incessantly and vigorously during his whole visit.
<table>
<thead>
<tr>
<th>Case and Sex*</th>
<th>Age</th>
<th>Breast Fed</th>
<th>Age at Which Disease Appeared</th>
<th>Situation</th>
<th>Type of Lesion</th>
<th>Stool Examination</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7 mo.</td>
<td></td>
<td></td>
<td>Checks, forehead</td>
<td>Redness, moisture</td>
<td>Fat +</td>
<td>Prompt recovery</td>
</tr>
<tr>
<td>2</td>
<td>21 mo.</td>
<td></td>
<td>6 wk.</td>
<td>Face, arms, hands</td>
<td>Bloody crusts</td>
<td>Starch + + cellulose +</td>
<td>Prompt recovery</td>
</tr>
<tr>
<td>3</td>
<td>13½ mo.</td>
<td>9 mo.</td>
<td>6 wk.</td>
<td>Temples, scalp</td>
<td>Moisture, moist papules</td>
<td>Fat ++ starrh +</td>
<td>Amelioration</td>
</tr>
<tr>
<td>4</td>
<td>6 mo.</td>
<td></td>
<td>6 wk.</td>
<td>Checks, arms, abdomen, legs, face</td>
<td>Redness, moisture, papules</td>
<td>Fat +</td>
<td>Amelioration</td>
</tr>
<tr>
<td>5</td>
<td>6 mo.</td>
<td></td>
<td>1 wk.</td>
<td>Body, legs, face</td>
<td>Moisture, papules</td>
<td>Sugar +</td>
<td>Treatment by feeding refused</td>
</tr>
<tr>
<td>6</td>
<td>2 mo.</td>
<td>2 mo.</td>
<td>5 wk.</td>
<td>Face</td>
<td>Papules, moisture</td>
<td>Fat +++</td>
<td>Changed from wet to dry</td>
</tr>
<tr>
<td>7</td>
<td>2 mo.</td>
<td>1 mo.</td>
<td></td>
<td>Checks</td>
<td>Papules, moisture</td>
<td>Starch + +</td>
<td>Prompt recovery</td>
</tr>
<tr>
<td>8</td>
<td>2½ yr.</td>
<td>2 yr.</td>
<td>2 mo.</td>
<td>Checks</td>
<td>Redness</td>
<td>Fat +</td>
<td>Amelioration</td>
</tr>
<tr>
<td>9</td>
<td>5 mo.</td>
<td>3 mo.</td>
<td></td>
<td>Face, scalp</td>
<td>Redness, moisture, papules</td>
<td>Sugar +</td>
<td>Recovery ?</td>
</tr>
<tr>
<td>10</td>
<td>13½ mo.</td>
<td>5½ wk.</td>
<td></td>
<td>Checks, scalp</td>
<td>Redness, moisture</td>
<td>Protein +</td>
<td>No improvement</td>
</tr>
<tr>
<td>11</td>
<td>13 mo.</td>
<td>12 mo.</td>
<td>3 mo.</td>
<td>Forehead, thighs, buttocks</td>
<td>Papulopustules, papules</td>
<td>Fat ++</td>
<td>Recovery</td>
</tr>
<tr>
<td>12</td>
<td>10 wk.</td>
<td>5 wk.</td>
<td>2 mo.</td>
<td>Scalp, forehead, vulva</td>
<td>Papules, moisture</td>
<td>Fat + sugar ++</td>
<td>Recovery ?</td>
</tr>
<tr>
<td>13</td>
<td>11 mo.</td>
<td>7 mo.</td>
<td>5 wk.</td>
<td>Scalp, face, neck, body</td>
<td>Redness, moisture, papules</td>
<td>Fat +</td>
<td>Recovery and relapse</td>
</tr>
<tr>
<td>14</td>
<td>12 mo.</td>
<td>7 mo.</td>
<td>9 mo.</td>
<td>Checks, scalp</td>
<td>Redness, moisture</td>
<td>Starch ++</td>
<td>Recovery ?</td>
</tr>
<tr>
<td>15</td>
<td>2 yr.</td>
<td>17 mo.</td>
<td>7 mo.</td>
<td>Checks, hands, arms</td>
<td>Redness, dryness</td>
<td>Starch +</td>
<td>Recovery</td>
</tr>
<tr>
<td>16</td>
<td>2 yr.</td>
<td>1½ yr.</td>
<td></td>
<td>Arms, buttocks</td>
<td>Infiltration, dryness</td>
<td>Fat +</td>
<td>Recovery ?</td>
</tr>
<tr>
<td>17</td>
<td>6 mo.</td>
<td></td>
<td>6 wk.</td>
<td>1st attack: Face, scalp, legs</td>
<td>Infiltration, dryness</td>
<td>Fat ++</td>
<td>Recovery ?</td>
</tr>
<tr>
<td>18</td>
<td>10 mo.</td>
<td></td>
<td>3 wk.</td>
<td>2nd attack: Cheeks, legs, trunk</td>
<td>Redness, moisture</td>
<td>Starch +</td>
<td>Recovery ?</td>
</tr>
<tr>
<td>19</td>
<td>3½ mo.</td>
<td>3⅓ mo.</td>
<td>2½ wk.</td>
<td>1st attack: Checks, genital, buttocks, groins</td>
<td>Dryness, fine maculopapules</td>
<td>Fat +</td>
<td>Recovery</td>
</tr>
<tr>
<td>20</td>
<td>2 yr.</td>
<td></td>
<td>21 mo.</td>
<td>2nd attack: Face, buttocks</td>
<td>Redness, dryness, papules</td>
<td>Fat ++</td>
<td>Recovery</td>
</tr>
<tr>
<td>21</td>
<td>13 mo.</td>
<td>6 mo.</td>
<td>4 mo.</td>
<td>Forehead, cheeks, wrists, knees, cheeks</td>
<td>Redness, infiltration, moisture, papules</td>
<td>Starch ++</td>
<td>Recovery ?</td>
</tr>
<tr>
<td>22</td>
<td>3 mo.</td>
<td>2½ wk.</td>
<td></td>
<td>Checks</td>
<td></td>
<td>Fat +</td>
<td>Amelioration</td>
</tr>
</tbody>
</table>

* In this column, c indicates male, f female.

† In my practice it is not the custom for patients to return when they are well or approximately so. The great majority of my local patients seem to report so long as results are unfavorable and cease to return when a cure is imminent.
After the use of crude coal tar for seven weeks, the skin appeared very much improved. The diseased areas were much smaller and distinctly less infiltrated, but the child was still scratching. The stool was small, well formed and light yellow. Microscopically, there was a large excess of starch. Proper feeding was instituted, and I did not see the child again.

**Case 22.—**A boy, aged 3 months, who was breast fed for a few weeks only, gave a history of eczema and asthma in various members of the family. When first seen, the baby's cheeks were red and somewhat crackled, following the application of a drying wash recommended by a pediatrician. Four days' use of crude coal tar very nearly cured the skin, and the baby was not seen again for six months because of absence from town. The eczema, however, had persisted in a mild, uneven manner throughout the summer. On returning to town, an exacerbation occurred and the face became decidedly moist. A stool examination by Dr. W. R. Sisson disclosed a very definite excess of fat.

### TABLE 2.—Summary of Cases *

<table>
<thead>
<tr>
<th>Sex</th>
<th>Males, 17; females, 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age When Disease First Developed:</td>
<td></td>
</tr>
<tr>
<td>1 week</td>
<td>1</td>
</tr>
<tr>
<td>2-3 weeks</td>
<td>2</td>
</tr>
<tr>
<td>4 weeks</td>
<td>1</td>
</tr>
<tr>
<td>5 weeks</td>
<td>2</td>
</tr>
<tr>
<td>6 weeks</td>
<td>4</td>
</tr>
<tr>
<td>2 months</td>
<td>1</td>
</tr>
<tr>
<td>3 months</td>
<td>3</td>
</tr>
<tr>
<td>4 months</td>
<td>1</td>
</tr>
<tr>
<td>5 months</td>
<td>1</td>
</tr>
<tr>
<td>6 months or more</td>
<td>5</td>
</tr>
<tr>
<td>Situation of Lesions:</td>
<td></td>
</tr>
<tr>
<td>Face</td>
<td>22 (all)</td>
</tr>
<tr>
<td>Scalp</td>
<td>8</td>
</tr>
<tr>
<td>Legs</td>
<td>5</td>
</tr>
<tr>
<td>Arms</td>
<td>4</td>
</tr>
<tr>
<td>Trunk</td>
<td>4</td>
</tr>
<tr>
<td>Buttocks</td>
<td>3</td>
</tr>
<tr>
<td>Hands</td>
<td>3</td>
</tr>
<tr>
<td>Type of Lesion:</td>
<td></td>
</tr>
<tr>
<td>Moisture</td>
<td>16</td>
</tr>
<tr>
<td>Erythema</td>
<td>14</td>
</tr>
<tr>
<td>Papules</td>
<td>14</td>
</tr>
<tr>
<td>Dryness</td>
<td>6</td>
</tr>
<tr>
<td>Stools:</td>
<td></td>
</tr>
<tr>
<td>Abnormal fat</td>
<td>18</td>
</tr>
<tr>
<td>Abnormal starch</td>
<td>9</td>
</tr>
<tr>
<td>Abnormal sugar</td>
<td>4</td>
</tr>
<tr>
<td>Abnormal protein</td>
<td>2</td>
</tr>
<tr>
<td>Results following Correction of Diet:</td>
<td></td>
</tr>
<tr>
<td>Recovery</td>
<td>7</td>
</tr>
<tr>
<td>Assumed recovery</td>
<td>8</td>
</tr>
<tr>
<td>Improvement</td>
<td>4</td>
</tr>
<tr>
<td>No success</td>
<td>1</td>
</tr>
</tbody>
</table>

* In the fifteen recorded cases in which the babies were breast-fed, ten were nursed less than six months.

The fat intake was reduced in amount and the eczema improved, but did not entirely abate. After a two and one-half months' period of comparative quiescence, there was a sudden flare up when the baby's Holstein cow "dried up" and by mistake Guernsey milk was substituted.

I believe it a wise procedure to have one man make the stool examinations, for in this way the work is standardized. I believe it wise to ask the cooperation of a pediatrician who has faith in the value of stool examinations. For these reasons, I have sent the stools, whenever possible, to Dr. Lewis Webb Hill.
CONCLUSIONS

1. Proper use of crude coal tar paste, properly prepared, with the most conscientious regard to proper general precautions will cure and cure promptly the great majority of cases of infantile eczema treated in private practice.

2. The number of failures to cure promptly under the foregoing conditions during the last four years and more have been relatively small—so small that the ensuing deductions may be unfortunately and of necessity comparatively valueless.

SUMMARY (OBSTINATE CASES)

1. Boy babies predominated, more than three to one.

2. All babies were breast fed, two thirds for six months or less. In several instances eczema appeared soon after the cessation of nursing.

3. These babies were not born with eczema, not even with "cradle caps." The disease seems to appear at all ages, but there were relatively few cases before the age of 1 month, and in nearly a quarter of them it did not appear until six months had elapsed.

4. The face was the favorite seat of the disease in 100 per cent. of the cases. The scalp follows, a poor second. It is surprising to note the comparative infrequency with which the diaper region is attacked.

5. The eruption is essentially a moist one, simple erythema or papulation also occurring in the greater proportion of the cases. There are dry types, but they total a small third.

6. Abnormal stools seemingly accompany every obstinate example of infantile eczema. Excessive fat occurs in 60 per cent.; excessive starch in 40 per cent.; excessive sugar in 20 per cent., and excessive protein in 10 per cent.

7. Rectification of the diet was attended with distinct success in the great majority of the cases.

My object in making this study was to prove not only that the examination of the stools in the recalcitrant cases of infantile eczema is a justifiable method of procedure but also that such an examination would prove of value in treating these cases which had refused to disappear under the proper use of crude coal tar. Although my records of these cases are numerically surprisingly few, I believe they justify my firm belief that abandonment of these examinations, now increasingly advocated by the pediatricians, is a misfortune and should be combated by dermatologists.

When, as seemingly proved by these records and by these stool examinations, every case of obstinate infantile eczema is accompanied by an abnormal stool; and when, apparently, rectification of the child's
diet, based on these findings, and conscientiously followed and pursued by the mother or nurse, result in a cure or an apparent cure or at least a distinct improvement in practically every case, then, I say, it seems incumbent on dermatologists to adopt these methods of procedure and to strive to prevent pediatricians from decrying them.

DISCUSSION

Dr. Richard L. Sutton, Kansas City: I feel that I have learned more about this disorder in infants from Dr. White than from all other sources put together. I am glad that in his present paper he has emphasized the importance of careful stool examinations by some one who is not only skilful, but who is also sufficiently interested to see that the work is carefully and conscientiously carried out.

One point more: I should like to recommend a cleansing solution which we have found extremely valuable for use in these cases. I refer to Dr. Pusey’s tragacanth emulsion. The formula that I employ consists of powdered tragacanth, 1 dram; glycerin, phenol, and oil of bergamot, each, 5 minimis; olive oil, 4 ounces, and water, sufficient to make 1 pint.

Dr. Harry P. Towle, Boston: In Dr. White’s figures, 60 per cent. of the cases have fat, 40 per cent. starch and 20 per cent. sugar. That is particularly interesting. We do find an occasional sugar intolerance, sugar anaphylaxis, but my figures are rather lower than his.

One point about applications: In certain types of cases, we can handle the eruption with impunity; in others, the skin is so hypersensitive that, it has struck me, there should be as little manipulation as possible. In such cases, it is my custom to apply the crude coal tar without rubbing and then to powder with starch, making a sort of mortar. This is left in place for seventy-two hours, when it is soaked off with oil. This seems to be more helpful than the more frequent removal. I cannot too highly recommend this treatment to practitioners, provided they can get a properly prepared product. It varies markedly in the hands of different druggists and requires care in preparation.

Dr. Harold N. Cole, Cleveland: I should like to recommend in addition to the crude coal tar preparation the value of very weak doses of roentgen ray. It has a wonderful effect on some of these children, especially in stopping the pruritus.

Dr. Walter J. Highman, New York: I think one of the most hopeless things in infantile eczema, particularly in breast-fed infants, is the attempt we make to incriminate a diet that is physiologically and biologically so normal that it is difficult to conceive of its ever becoming a pathologic agent. The reports on breast-fed infants having this type of skin reaction vary so greatly with every school that there is no possible unanimity of view. I have noticed that infantile eczema seems to be worse in cold months, and it has occurred to me that very possibly the entire condition will prove to be a reaction to wool which children wear in the cold season. That at least is something extraneous and something we may be able to apply in handling the disease. It seems difficult to believe that breast-fed infants may develop skin disease as a result of their diet when they are otherwise normal, and on the only food meant for them.

Dr. J. Frank Schamburg, Philadelphia: I do not know the experience of others, but in my own experience the treatment of infantile eczema is in a general way disappointing. When I come into consultation with pediatricians,
I find that I shift the burden to them and they shift it back to me, and in the end we find that a very high percentage of these cases persist, commonly throughout the first year of the child's life. I have the distinct impression that the greatest period of incidence of eczema during child life occurs when the child is on a purely milk diet, and that the eczema tends to subside when the child is put on other food than milk. The question as to whether the eczema is caused by an excess of protein or fat or some sensitizing agent in the milk of the mother, or whether the cause is intestinal, will doubtless vary in different cases. It has struck me that the best way to study this fundamentally would be to devote a ward in a hospital to the treatment of infantile eczema, using in one group a low protein diet, in the second a desaccharated milk and in a third a fat-free milk diet, and noting the effect on the eczema. In other cases intestinal poisons due to faulty intestinal digestion might be operative. The findings of Dr. White might be correlated with such an assumption.

Some years ago, I had one of my assistants secure the milk of mothers of children coming in with eczema, who were maternally fed. At that time, I had the opinion that an excess of fat in the milk was responsible in such cases for the eczema, but after examining a dozen or more cases found the fat content was not above normal. I think many of the eczemas are not due so much to fat content in the bowel as to the formation of toxins. I have been interested for some time in the subject of intestinal toxemia, and find that from 5 to 10 per cent., nearer the latter figure, of my private patients who come in with skin affections have other symptoms of intestinal toxemia. They present symptoms which are often removed with change of diet, which likewise very often brings about a disappearance of the eruption. Unfortunately, pathologic chemistry has not advanced to a point where we know much about intestinal toxemia. I am convinced that certain substances that will prove to be as definite as alkaloids are formed in the bowel and produce mental and physical depression, inability to concentrate, etc., and, in many instances, skin disease such as general pruritus, certain types of erythematous eczema and the like. At present, we are carrying out a research on this subject and have a physiologic chemist who is devoting all his time to this work and a bacteriologist who does nothing but examine the feces in these cases, to determine the bacterial flora; he determines the number of different colonies of bacteria and their toxicity. That the bacterial flora may be changed by diet is now well substantiated. We are attempting to demonstrate the toxicity of intestinal bacteria by experimental injections into animals. This work is still young, but I hope we may, at the next meeting, be able to present a paper on the relation of intestinal toxemia to diseases of the skin.

Dr. Howard Fox, New York: Like Dr. Schamberg, I often feel discouraged at the results of treatment in infantile eczema. There are certainly many cases that are not radically cured by either the dermatologists or pediatricians. In one patient of fifteen months, I obtained very satisfactory results by roentgen-ray treatment, while in others I have been greatly pleased with the use of crude coal tar ointment as suggested by Dr. White.

Dr. Samuel E. Sweetzer, Minneapolis: In Minneapolis, the pediatricians are so satisfied with the crude coal tar ointment that they no longer need the work of the dermatologist in the average case.

Dr. Shannon has been doing some work with the iodids in checking up the diet of the mothers. He has a series of quite a number of cases in which he has taken the mothers' food and by withdrawing certain articles of diet from the mother has corrected the condition of the baby.
Dr. Harry E. Alderson, San Francisco: I recently had a patient with infantile eczema which was apparently due to home brew. The mother consumed quantities of home-made beer and there was little doubt about the relationship between this and the eczema of the infant, because the withdrawal of the beer was followed by prompt subsidence of the lesions, which before had been very persistent.

Dr. Charles J. White, Boston: I am rather surprised at Dr. Highman's remarks. I had supposed that it was more or less an accepted fact that what the mother ate influenced the child. I learned this fact very early in my own experience. My oldest child was born in Vienna, and there it was the custom to give the mother as much beer as she could take, and throughout those weeks in Vienna I walked the floor for hours, patting my boy's back trying to rid him of gas produced by the beer.

Eczema I look on merely as an eruption on a sensitized skin. We all know that every one, whether infant or adult, has more eczema in winter than in summer.

I congratulate Dr. Schamberg on his living in Philadelphia. In Boston, where they try things on dermatologists first, and where, some years ago, they took the treatment of syphilis away from us, they are trying to take away eczema; and if he can hold the cases he should do so and not pass them on to the pediatrician. I agree with Dr. Schamberg that other diseases or other manifestations of disease are to a certain extent due to intestinal intoxication.

I should like to ask Dr. Towle whether he used this preparation pure or in a 5 per cent. paste.

Dr. Harvey P. Towle, Boston: I have used it in both ways in some cases. When they are at their height, with marked edema, I find the pure crude coal tar is more efficacious than the paste. That is an alarming statement to those who have not seen it so used, but properly prepared it is not irritating. If there is a great deal of serum, I use a powder to keep the skin dry.
TREATMENT OF ARSPHENAMIN DERMATITIS AND CERTAIN OTHER METALLIC POISONINGS*

WILLIAM L. McBRIDE, M.D.
AND
CHARLES C. DENNIE, M.D.

KANSAS CITY, MO.

For years, our books on toxicology have ignored the fact that the nonmetal sulphur is a precipitant for a whole group of metals, such as arsenic, mercury, lead, bismuth, zinc and copper.

Many derivatives of these metals are used in the treatment of disease, or taken by mistake or with suicidal intent. Formerly, a direct precipitant was not used as a neutralizing agent, but now the procedure in handling these cases has become quite simple.

Obviously, pure sulphur cannot be used, but its derivatives can: calcium sulphid, calcium sulphite and sodium thiosulphate. The last is the preparation of choice because, (1) on account of its great solubility, it can be given in concentrated solution; (2) it is absolutely nontoxic up to 2 gm., given intravenously, and (3) its chemical action is rapid. The other two preparations are to be discarded, because of their comparative nonsolubility or their toxicity.

Sodium thiosulphate converts all of these toxic metals into the nontoxic insoluble sulphids; therefore, it should be the chemical of choice in the treatment of arsenical poisoning, acute or chronic; mercurial poisoning, acute or chronic; stomatitis of mercurial origin; acute lead poisoning; bismuth poisoning, etc. We will confine this paper, however, to the discussion of treatment in the first two mentioned, by use of sodium thiosulphate given intravenously and by mouth.

Two facts must be kept in mind: the chemical must be pure and it must be sterile. (A. A. Metz Laboratories, New York, kindly furnished us the chemical in air-tight sterile ampules, in the same size doses as the arsphenamin preparations). The technic of administration is the same as that of neo-arsphenamin (concentrated method).

Given a typical case of arsphenamin dermatitis, the administration is as follows: 0.3 gm. of sodium thiosulphate is given intravenously; the following day, 0.45 gm.; the third day, 0.6; the fourth day, 0.9; the sixth day, 1.2, and the eighth day, 1.8. This is usually sufficient for the severe case of arsenical dermatitis. Following the first dose, the redness, edema and serous exudate become lessened. The dry,

desquamating stage is reached on the fourth to the tenth day. The entire course of the condition is shortened from three to six months to as many weeks.

This method of treatment shows even more remarkable results in the cases of mercurial poisoning. Given a case of acute mercuric chlorid poisoning, with severe abdominal pain, bloody stools, albuminous urine and even unconsciousness, the same methods are followed, in a general way, as in arsenical poisoning. After the first dose, the pain is markedly relieved; after the fourth dose, the patient is practically well. Along with this treatment, 15 gm. of sodium thiosulphate in 480 c.c. of water are given by mouth, followed by 1 gm. in solution, three times daily.

We believe that the use of the method herein described is a great step forward in the treatment of metallic poisoning.

The use of sodium thiosulphate in the treatment of arsenical dermatitis was first described by P. Ravaut.1

Let us first take up the factors which predispose a patient to arsphenamin poisoning. The prime factor is the failure to eliminate the arsenical products. It is our belief that the organ responsible for this failure is the liver and not the kidney. In support of this argument is the fact that when these cases have come to necropsy, it is not the kidney, but the liver which is most affected. All stages of liver degeneration are found, ranging from cloudy swelling to massive degeneration. True, the kidneys show some change, but in no such degree as shown in the liver. Therefore, the deduction can be drawn that the liver has failed to do its proper work in breaking up and eliminating the arsphenamin. We are conducting animal experiments at present, in an attempt to prove this point. On the other hand, it is a well-known fact that the kidney and lower bowel are the most susceptible tissues in the body to mercurial poisoning, as proved by the presence of blood in the stools and urine, and the rapid destruction of the kidney tissue following the ingestion of toxic doses of the mercurial salts.

PATHOLOGIC FINDINGS IN ARSPhENAMIN DERMATITIS

Urine.—The urinary findings are not a deciding factor in this condition. The specific gravity is usually somewhat high, from a trace to a moderate amount of albumin, and not constant; an occasional cast and red blood cells.

Blood.—Examination reveals: leukocytosis. 12,000 to 18,000 with a high percentage of eosinophils (from 5 to 25 per cent.); blood urea, low; blood sugar, unchanged.

Serologic Reaction.—The Wassermann reaction is usually negative when the patient has recovered from the dermatitis.

Arsenic Content.—The presence of arsenic in the blood, urine and feces has been carefully worked out by others.

In contrast, the urinary findings in mercurial poisoning are: suppression of urine; small amount; smoky color; moderate to large amounts of albumin; numerous coarse, fine, granular and epithelial casts, also red blood cells. Therefore, we believe that certain conditions which involve the eliminating organs, especially the liver, act as a contributing factor in the production of arsphenamin dermatitis.

1. Acute infections, occurring during or shortly after intensive treatment. In five of our most severe cases, such an infection took place. One had an acute follicular tonsillitis; one a severe furunculosis; one an extensive abscess between the muscles of the thigh; one broncho-pneumonia, and another the flaring up of a chronic pyosalpinx.

2. The intravenous use of arsenic and mercury during the same course of treatment, one having more effect on the liver and the other more effect on the kidney. 3

3. Pathologic conditions existing in the patient prior to the administration of arsphenamin, such as cirrhosis of the liver, gumma of the liver, icterus, chronic perihepatitis and hepatitis, malignancy and pernicious anemia.

4. A previous arsphenamin dermatitis. A recurrence makes its appearance at once, even if the drug is given after a period of one year or more. A case illustrating this point:

Miss A., aged 18 years, who had secondary syphilis, was given four doses of arsphenamin, 0.6 gm. each, one week apart during the year 1920. She developed a rubelliform rash, with edema of the eyelids, which slowly progressed to extreme edema of face, arms and legs; in fact a severe case of arsphenamin dermatitis, from which it required six months to recover. She received no treatment for nine months. She was then given 0.45 gm. neo-arsphenamin, with the recurrence of all symptoms, and even in a more severe form.

5. Large doses of arsphenamin repeated at too frequent intervals and over too long a period.

6. Toxic substances in the arsphenamin: (a) those not removed by the manufacturer; (b) oxidized products due to faulty container; (c) unfiltered solution.

7. Faulty technic, such as toxic substances in the vehicle.

Prodromal symptoms in arsphenamin dermatitis, in the order of their appearance: (a) itching and burning of the palms and soles (nearly every patient will note these symptoms and voluntarily speak of them), the dermatitis usually following after the next injection; (b) the appearance of a rubelliform eruption, with edema of the eyelids and severe diarrhea, this occurs within twenty-four hours after the injection; (c) loss of weight and extreme nervousness; (d) albumin and casts in the urine; (e) low urea content of the blood.

REPORT OF CASES

Of these cases of severe arsphenamin dermatitis, four were due to neo-arsphenamin, one to solution of potassium arsenite (Fowler's solution) and one to sodium cacodylate. In all of these cases there were practically the same signs and symptoms, and in all there was complete recovery.

CASE 1.—Miss M., aged 49, whose condition was diagnosed as tertiary syphilis, and whose Wassermann reaction was four plus (alcoholic extract), presented necrosis of the bones of the nose and gumma of the breast, which had undergone malignant degeneration. She was a large, fleshy woman. She was given four doses of neo-arsphenamin, 0.9 gm. each, five days apart. Three days after the last dose, there developed a severe macular rash and edema of the lower eyelids, which rapidly progressed until, four days later, the entire body was red, and the face, neck, arms and legs were greatly swollen. There was a serous exudate of such severity that several thicknesses of gauze were quickly saturated. Three tenths of a gram of sodium thiosulphate was given intravenously and the following day, 0.45 gm., with rapid disappearance of signs and symptoms. She was able to resume her work in ten days. Four days later there was a recurrence of all symptoms in even a more severe form. She was given 0.45, 0.6, 0.9 and 1.8 gm. on successive days, with complete recovery in six weeks. She is now in excellent condition.

CASE 2.—Mr. W., aged 59, presenting a case of pernicious anemia and tertiary syphilis, with Wassermann reaction four plus, was given solution of potassium arsenite (Fowler's solution), eight drops at a dose, until a total of 30 gm. was given. This was followed by two weekly doses of silver arsphenamin, 0.2 gm. each. One week later, the same symptoms appeared as in the foregoing case. He was given 0.3, 0.45, 0.6, 0.9 gm. of sodium thiosulphate on successive days. All symptoms disappeared; patient left the hospital in two weeks, completely recovered, and has remained so, except for pernicious anemia.

CASE 3.—Mrs. B., aged 38, was given sodium cacodylate, intravenously, twice a week for a period of more than two months. She developed edema of the eyelids, arms and legs, with marked thickening of the palms and soles.
She was given four injections, 0.45 gm. each of sodium thiosulphate in two weeks, with rapid disappearance of all signs and symptoms.

These three cases are given as fair illustrations of the rapid and beneficial action of this form of treatment.

In the paragraph on contraindications of the use of arsphenamin, we mentioned a previous reaction. We will here report four cases, three an exception to the rule, and one presenting a recurrent dermatitis.

**Case 4.**—Mrs. C. gave a diagnosis of late secondary syphilis, with severe headaches. The cerebrospinal fluid revealed marked meningeal involvement. She was given 0.3 gm. of neo-arsphenamin, intravenously, but the headaches were not relieved. Three days later, she was given 0.45 gm. of neo-arsphenamin. That evening she became nauseated and had chills and a temperature of 104 F. The temperature persisted for ten days, ranging from 102 to 104 F. The right upper apex showed signs of lobar pneumonia. Coincident with the temperature, the patient developed a rubelliform eruption, which gradually fused into the scarlatiniform type, with edema of the eyelids, arms and legs. She was immediately put on sodium thiosulphate by mouth, 1 gm., three times a day. At the end of ten days, there was desquamation, and the patient had no further trouble. Injections of mercuric chloride in a fatty base were given at four-day intervals for two months, when the headaches again returned with their original intensity. Sodium thiosulphate, 5 grains (0.3 gm.), three times a day, had been given all this time. Because of the gravity of the case, it was decided to give arsphenamin again. Eight injections of neo-arsphenamin, from 0.2 to 0.45 gm. at five-day intervals, were given, with no untoward results or signs of a dermatitis. The patient became markedly paretic, one year later.

Dr. Ralph Hissem of Wichita, Kan., reported two cases to us, both patients developing severe dermatitis after one course of arsphenamin. He followed out the sodium thiosulphate treatment, and was able to continue the course with arsphenamin without the reappearance of dermatitis.

**Case 5.**—Mrs. D., aged 45, with a diagnosis of tertiary syphilis (brain meningeal type), who was given six injections of arsphenamin, 0.6 gm. each, one week apart, developed an intensive dermatitis, with loss of hair and toe and finger nails, which lasted for six months. This occurred in 1916. On an average of twice a year, up to 1920, she had a rather severe exfoliating dermatitis, occurring about the site of injection. She was then placed on sodium thiosulphate, 15 grain (1 gm.) doses, three times a day, and has not had a recurrence.

While the beneficial action of sodium thiosulphate is most remarkable in arsenical dermatitis, it is even more so in the treatment of acute mercurial poisoning and mercurial stomatitis.

Ampules of this preparation should be kept in all emergency hospitals for such cases of acute poisoning. Workers have reported mercurial cases successfully treated with calcium sulphid, given intravenously and by mouth, but we prefer the thiosulphate for reasons already stated.

ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY

Case 6.—Mrs. G., aged 29, who was eight months pregnant, took four 7\(\frac{1}{2}\) grain tablets of mercuric chlorid with suicidal intent. Within one hour, she was suffering from abdominal pain, with constant desire to stool, and stools bloody. She was seen four hours after taking the poison. The urine showed albumin, numerous casts and red blood cells. She was given 15 gm. of sodium thiosulphate by mouth and 0.45 gm. intravenously. The pain and desire to stool became very much less. Eight hours later, she was given 0.9 gm., and the next morning, 0.45 gm. The urine was clear in one week, and the patient made a complete recovery, without even aborting. This case we consider most remarkable. (The patient was treated by Dr. C. H. Hunt of Kansas City, Mo.)

Case 7.—Mr. H., who was receiving injections of mercuric salicylate, presented himself at the clinic with swollen, spongy and bleeding gums and intense pain. He was unable to sleep. This was a typical case of mercurial stomatitis. He was given 0.45 gm. of sodium thiosulphate intravenously at two p.m., and that night was able to sleep. Two more injections were given on alternate days; and, at the end of a week, the patient had completely recovered, although there was considerable retraction of the gums. We have had five other cases which have responded to this treatment.

CONCLUSIONS

1. Sodium thiosulphate given intravenously and by mouth rapidly shortens the course of arsenical dermatitis.

2. It is a successful neutralizing agent for acute and chronic mercurial poisoning.

3. To secure the best results, it must be given intravenously.

4. In its pure form, it is nontoxic up to 2 gram doses.

5. Certain conditions which impair the liver or kidneys are predisposing factors in the production of arsphenamin dermatitis.

6. Certain warnings are often given which, if carefully observed and heeded, will prevent its appearance.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. STOKES AND CATHCART, GASKILL, AND MCBRIDE AND DENNIE

Dr. Jay Frank Schamberg, Philadelphia: I am sure we are all indebted to Drs. Stokes and Dennie for bringing up the important question of the treatment of arsphenamin dermatitis. This complication is more frequent at the present time than heretofore, doubtless because of the extended use of the arsenical drugs in this and other countries. We were more or less accustomed in the early days to hear of eutephalitis as the most feared complication of arsphenamin administration. We are now hearing less of this and more of dermatitis and hepatic accidents, some terminating fatally.

In the work carried out by my associates, Drs. Kohmer and Luecke, the fact was clearly established that the arsphenamins produce dominant structural changes in the liver; whereas, the changes after mercury administration were chiefly in the kidney. Relatively small doses of mercury appear to be capable of inducing distinct structural changes in the kidney. They are such, however, as commonly occur after certain infectious diseases, and restitution ultimately takes place, unless the damage is too great.
I have expressed the opinion that the conjoint use of vigorous doses of mercury during arsphenamin treatment was a factor in the production of arsphenamin dermatitis. For the last five years, we have given almost straight arsphenamin or neo-arsphenamin treatment in our clinic, and we have had a remarkable record with regard to arsphenamin dermatitis. After 25,000 treatments, we have had no more cases of dermatitis than could be numbered on the fingers of one hand, and we have never had a severe case. We have had about the same number of cases of mild jaundice. I was struck by the difference in the incidence of these complications in our clinic and in clinics in which mixed mercurial and arsenical treatment is employed.

Most interesting and pertinent is the report of fifty-eight cases of delayed arsenical poisoning observed in an English war hospital by Strathy, Smith and Hannah. Symptoms developed on an average of forty-five days after treatment. Eight of the cases were fatal. Thirty-nine patients were admitted for jaundice and eight for dermatitis. In two cases, dermatitis was followed by peripheral neuritis. The average total amount of arsphenamin given the patients was relatively small. All of the patients received intramuscular injections of mercurial (gray) oil at the same time as the arsenical. A few of the patients showed slight symptoms of mercurial poisoning, and the authors regarded the mercury as a predisposing factor. They added that if the kidneys were damaged by mercury, the elimination of arsenic would be delayed.

If arsenic is retained in the liver or other tissues for an excessively long period, it might undergo oxidation and might ultimately be split off from the benzene ring. Unfortunately, nothing definite is known concerning the final date of arsenic retention in the system after the administration of arsphenamin. The liver is the great depository of metallic substances that are injected into the blood stream, and in an incredibly short time after the injection of arsphenamin, the drug disappears largely from the circulating blood and is deposited in the liver and other organs. It is quite comprehensible that if one interferes with the renal excretion of arsenic, a larger amount will remain in the liver and for a longer period of time. This may lead to injury of the hepatic cells, ending in necrosis, as has been experimentally demonstrated by my colleagues; and ultimately fatty degeneration might take place.

The cause of dermatitis after arsphenamin administration is still obscure. I believe we all will, ultimately, be compelled to modify our present opinions. Our present views are based on laboratory work and clinical data, but they are not sufficiently positive to permit any one of us to commit himself to a definite dogma.

In regard to Dr. Dennie’s excellent paper I would say that my colleagues and I have had the impression that sulphur tends to lessen the toxicity of the arsphenamin molecule. Although sulphur has no place in the structural formula of arsphenamin, traces of it will always be found on analysis. It is a little difficult to understand how structural damage which has already been done by an injected drug can be repaired by the introduction into the blood of a substance like sulphur, even though the latter exerted a reducing effect. With regard to mercury, this drug acts quickly on the cells of the kidneys and produces destructive changes. Unless treatment was applied with great promptness, it is difficult to conceive how the damage could be prevented or repaired. We will have to await more extended clinical trial before a judgment can be given concerning its actual value.

Dr. E. Wood Ruggles, Rochester, Minn.: I have had some unpleasant experiences with arsphenamin, after two or three years with practically no
reactions at all except that, in perhaps half of the cases in which patients come in with a secondary infection, with no previous treatment, there is a moderately severe reaction; after the first injection, not subsequently.

April 10, 1922, I administered arsphenamin to three people, using 0.4 gm. of Serial No. 6128, in the afternoon, and in the evening 1 gm. of Serial No. 4685. The first dose was administered to a woman; of the 1 gm., 0.5 was given to her husband, and 0.5 to another patient. These were the fourth injections in all cases, the last arsphenamin having been administered more than two months before. None of these patient had had any appreciable reaction.

The woman, twenty minutes later, became so dizzy that when changing cars she had to lean against a building. A little later, while on the car, she became very sick, and she vomited as soon as she reached home. Vomiting continued to be severe all night, and off and on the next day. As soon as the patient reached home, she developed a terrible, throbbing headache, which lasted for three days, and she could not raise her head. A one-fourth grain (0.016 gm.) morphin tablet, administered the first evening, did not relieve her at all. She began to have a severe chill one-half hour after reaching home, and for an hour or two her teeth chattered so that she could not talk, and her feet were cold. Two and three quarter days after the injection, she developed a severe herpes facialis, mostly on the chin, one patch being about 2 by 13 inches (5 by 4.3 cm.); and there was a small area on one finger. These became purulent later and her chin swelled greatly, 1 inch (2.5 cm.), her husband said, from the level of the mouth down. She gradually felt better after three days, but was very weak and remained in bed six days. I saw her for the first time, April 20, as other relatives were in the house, and she was afraid of their learning about the trouble. My name had been used so that she could not even have me come in as a consultant.

The husband, who received 0.5 gm. in the evening, had severe nausea within an hour, lasting all the next day, but vomited only twice. He had a severe chill three hours after treatment, lasting one hour and shaking the bed by its severity. A throbbing headache began two hours after treatment, lasting one hour. The patient was unable to work for two days.

The third patient had severe chills and nausea and vomiting that night, but felt well the next evening, so I gave him another injection. He had the same experience after this, but as he felt well the next evening I gave him a third injection. This did not affect him at all.

I have gone over every possible source with my nurse and the only difference from the regular routine was that I used new rubber tubing. In giving the third dose to the man, after which there was no reaction, I went back to the old rubber tubing. I have communicated with the firm from whom I bought the tubing, and they said it was a pure gum rubber tubing, bought from the same manufacturer for twenty years. Dr. Stokes reported in April, 1920, that they had between twenty and thirty cases of similar reaction after the use of new rubber tubing, but that soaking and rinsing the new tubing in normal sodium hydroxid solution for six hours removed the poisonous material.

Dr. Udo J. Wilf, Ann Arbor, Mich.: I should like to express my appreciation of these papers. I have had a rather large experience with arsphenamin dermatitis and have repeatedly consulted with Dr. Schamberg regarding its possible cause. I have also discussed with Dr. Stokes the question of focal infection. In my particular type of material, the feature of focal infection is extremely hard to estimate, because almost all of our patients have some
type of focal infection. They come from a poor class of people, and all of them have infected teeth, if no other forms of infection. I have had an unusual opportunity to follow to postmortem two cases of arsphenamin dermatitis. In both instances, the patients were suffering with severe hepatitis, in one approaching acute yellow atrophy; and in one case our pathologist recovered almost 2 grains (0.13 gm.) of arsenic from the liver, making it very plain and sure that the ultimate damage could be ascribed to the damage to the liver. In my group of cases, neo-arsphenamin has been more frequently the cause of dermatitis than arsphenamin. In that respect, I think my experience is a little different from that of the others, including Dr. Stokes.

I have also been impressed with another factor: We go along for eighteen months or two years without any trouble, and then, within a month or six weeks, two or more cases will appear; and I have not been able to free myself of the idea that something in the drug at that particular time may have been the factor.

Regarding Dr. Dennie's paper, I was able to use the hyposulphite injections and was quite struck with the promptness with which the patients recovered. But I agree with Dr. Schamberg that, if the trouble has persisted for some time, it is difficult to see how they could be helped, and particularly do I fail to see how it could protect them against future damage. I have felt that once a patient develops an arsphenamin dermatitis, it is always dangerous to give subsequent treatment.

Dr. Harold N. Cole, Cleveland: We have recently had the unfortunate experience in our state of obtaining quite severe reactions from a batch of neo-arsphenamin from the Metz Laboratories, which was furnished to our hospital by the state department of health. There were three cases of severe collapse which followed the administration of the drug, also one case with severe gastric symptoms and one case of dermatitis exfoliativa. We understand that some of the same batch was furnished to two other clinics in the state, at the same time, with very severe reactions resulting. I question very much whether this can be laid to focal infections. Dr. Roth has recently done some interesting work in regard to the age of preparations of neo-arsphenamin and in regard to the temperature at which they are kept stored. He has found in his work done at the U. S. Public Health laboratory at Washington that neo-arsphenamin deteriorates quite decidedly after a period of six months, so that preparations which were formerly nontoxic may even become quite toxic. Because of this, we believe that it would be a good plan if the date of manufacture could be stamped on each tube of neo-arsphenamin that is placed on the market. Age apparently had no effect on the old arsphenamin, at least in Dr. Roth's experience. He also found that neo-arsphenamin kept at room temperature or at high temperature likewise deteriorates rapidly, and has suggested that it be kept on ice. In our estimation, every possible measure must be used to prevent the reactions and severe after-effects which are seen from time to time in the use of arsenical preparations.

Dr. Marcus Haase, Memphis, Tenn.: I wonder if you would care for the negative side of this question? Our service gives a minimum of 100 doses of arsphenamin a week; 80 per cent. of the patient are negroes. Since Sept. 1, 1919, we have given over 4,000 doses annually, and we have had no arsphenamin dermatitis. I say Sept. 1, 1919, because previous to that time, the patients were hospitalized, as Dr. Stokes' patients are at present. Our patients are treated in the clinic. The arsphenamin is given and they are permitted to go home in a short while, but they remain under the supervision.
of a social service worker. If the patients do not return within a week, the social service department is asked for a report as to the reason of nonattendance.

The usual dose in our service is 0.35 gm. This may seem a small dose, but many of the patients are quite young. The negroes in the South, as you know, are infected quite early. We have never deviated from our original technic of using water distilled on the day on which the treatment is given, and no solution is administered after an hour and a half after mixing.

Dr. Fred Wise, New York: I should like to confine my discussion to Dr. Gaskill's paper. The impression it gives is that procain may not be the factor in the production of some of these cases of dermatitis. That is an impression contrary to the one I have obtained in the last five years of practice. I think there is little question that procain and analogous proprietary preparations provoke dermatitis in susceptible people. It seems to me that the cases fall into two classes: one in which discontinuance of the drug results in almost immediate cure, and the other in which stopping the use of the drug has little beneficial effect.

Dr. Harry G. Irvine, Minneapolis: I should like to join Dr. Haase in presenting some evidence on the negative side of the arsphenamin dermatitis. We have always felt that some of the trouble was due to too little preliminary study and too large doses given at too frequent intervals. This has been disputed, but the fact remains that in our clinic, with a large number of injections, running from seventy-five to 100 doses a week, so far as I know only two cases of neo-arsphenamin or arsphenamin dermatitis have developed in that service. I think in both instances these were recurrent. The treatment was given when the patient had a history of dermatitis, and the history was not gone into carefully. We have been using the drug, practically always neo-arsphenamin, for ten years, and these are the only cases of arsphenamin dermatitis. We have had none of jaundice.

Dr. Walter J. Highman, New York: I think the great rarity of arsphenamin dermatitis is a positive indication that, in considering the subject, we are dealing with one that is peculiar much less to the drug than to the person who has the symptoms involved in the syndrome. I think that the trouble lies usually not in the drug or its administration, but in the susceptibility of the patient, and that, if the disease were due to the first two groups of causes there would be more cases than have been reported here among men giving arsphenamin or kindred preparations. Therefore, I think we must travel some of the subtle avenues that Dr. Stokes has traveled in his paper. What the definite thing is, is beyond our interpretation today, but that the thing is related to hypersusceptibility or susceptibility is probable. It is only a matter of dialectics whether the interpretation is anaphylaxis, allergy, idiosyncrasy or any of the time-honored terms used in relation to the phenomenon; but the fact remains that we must look in this more or less vague field for the cause of the phenomenon. I think the fact brought out by Dr. Stokes as to the smallness of the dose required in susceptible people to produce the phenomenon, and the fact that the reactions come very early indicate that they particularly affect only certain persons. I think, further, that in those cases in which the phenomenon has occurred Dr. Stokes probably gave the same solution to many other patients who did not respond pathologically. Therefore, I think it is along this line that the final interpretation will be made.

The same holds true in the group of cases that Dr. Gaskill reported. I have no doubt that procain causes dermatitis, and I have no doubt that many eruptions a dentist gets on his hands or body are today wrongly considered
as being due to procain, but I think there is no question that there is a definite affection so caused, and that this may be demonstrated by a cutaneous test. By the way, the reaction is not a wheal but a patch of dermatitis that develops within a few hours after the test is made.

Dr. William Allen Pusey, Chicago: I was interested in hearing Dr. Wise's view, and I think his is the only view we can accept. I am sure we have nonspecific sensitization and also that we must recognize specific sensitization. Certain factors stand out definitely in this form of dermatitis. First, it is not an arsphenamin dermatitis. It is a dermatitis produced by arsenic; you can get just the same forms of dermatitis from other forms of arsenic. I have seen just as severe a case of exfoliative dermatitis in a man who was given sodium cacodylate for psoriasis.

Now, it is also, I believe, beyond doubt that this accident occurs in people who have some sort of hypersensitization. That is shown by the fact that the dermatitis occurs early in the course of arsphenamin administration more frequently than after the long continued use of it. That does not demonstrate that the drug may not be at fault, because in giving the dose we use a very large dose of arsenic, and if that is in a toxic form the preparation may be incriminated.

I wish to express my appreciation of the idea brought up by Dr. Dennie, and I do not believe anything should stand in the way of our accepting this on theoretical grounds. It is an interesting observation that these patients are discharged well ten days after an arsphenamin dermatitis, and I think we are greatly indebted to him for calling it to our attention.

Dr. Philip Kilroy, Springfield, Mass.: As to the possibility of a preexisting nephritis or hepatitis being responsible for the dermatitis, because lesions of the kidneys or liver have been found at necropsy, I wish to call attention to the fact that any metallic poison capable of producing a severe dermatitis must necessarily set up inflammatory conditions in the internal organs; that arsenic should limit its possibilities for ill to the skin would be improbable, and, in fact, a hepatitis is one of its admitted consequences. Consideration of the papers will, I think, convince us that the inflammations which follow the administration of arsphenamin preparations occur in people who have every known pathologic entity, as well as in the rara avis who is absolutely healthy; they have been recorded in those who have good teeth and bad teeth and false teeth, and in all of them we have to do with an inflammation of the skin due to arsenic poisoning, and in which personal predisposition is the main factor and a faulty preparation a bare possibility.

Dr. Carl Vorglin, Washington, D. C.: I have been extremely interested in these papers because we have studied during the last three years at the U. S. Hygiene Laboratory the pharmacology of arsphenamin and its derivatives, and we have come to conclusions which seem to have a bearing on this question of arsphenamin dermatitis. First of all, we found that arsphenamin has certain peculiarities with regard to its pharmacologic action, on account of the fact that its fate in the body is subject to variations in different persons. If you inject a set of normal healthy rats of the same weight, the same sex and fed on the same diet, with the same lot of arsphenamin, you will find that some animals will die and some will survive, and this fact forced us to adopt for the official toxicity test the use of at least five rats. We furthermore found that arsphenamin, as such, is not directly toxic for the parasites in the tissues of the higher animals. These facts led us to the
conception that arsphenamin must first be metabolized in the body to an active modification ("arsenoxid") before it can exert its toxic and therapeutic action.

Now, naturally, if this is the case, we should expect to find all kinds of variations in pharmacologic action in different persons. We found, for example, that the rate of excretion of the arsenic of arsphenamin and allied arsenicals varies considerably in different persons. It appears to me, therefore, that the production of dermatitis in certain patients also depends on these variations in the fate of the drug in the body. Evidently, some members of your society look to the patient for an explanation of this toxic manifestation, rather than blame the quality of the drug used. To my mind, it would be remarkable, with the official toxicity control in effect, that just certain batches of the drug should produce dermatitis and not others.

Dr. Jay Frank Schamberg, Philadelphia: It is important in the interests of truth and of the safety of our patients that we do not prematurely commit ourselves to any definite view with regard to the cause of jaundice, dermatitis and similar complications. Within a few weeks, our research institute received from Dr. Stokes several tubes of arsphenamin from a lot which Dr. Stokes said had been producing dermatitis. He asked us whether we would not critically examine this lot with a view to throwing light on the origin of the trouble. The drug was retested in animals and passed the toxicity tests at the same high figure that it had previously done. It was then tested chemically to determine any evidence of oxidation. By all the tests at our command, there was no evidence of the increased formation of arsinoxid or any other oxidized product. Despite these negative results, I would not presume to state that the cause of the dermatitis was perhaps not resident in the drug.

Arsphenamin is so complex a compound that it is possible that some intramolecular change may have taken place which defies discovery in the present state of our knowledge. My feeling would be that any lot of arsphenamin from any laboratory in the world that gives an unusual incidence of reactions should be the subject of suspicion until other factors relating to the technic or to the patient had been discovered to be the cause of the same.

We are working for the truth, and the solution of problems of this kind should be settled on scientific grounds. With any suspicious lot giving rise to reactions, the laboratory issuing the drug should be notified of the lot number and a request made for a thorough reexamination of the product. It beclouds the issue invariably to excuse the drug and accuse the technic.

Dr. John H. Stokes, Rochester, Minn.: My experience has convinced me that the etiologic background of cutaneous reactions associated with arsphenamin therapy is exceedingly complex. While it would be comforting to be able to pin every such reaction on the drug, I believe that it is usually only one of a number of interacting factors. Exfoliative dermatitis is merely a symptom, as you well know. That it may follow the administration of mercury intramuscularly and of local irritants such as tincture of iodin has been exemplified in my own experience. It is the patient who does the reacting, rather than the drug. In one, a focal infection may predispose. In another, some peculiar intramolecular change may occur in the drug after injection. Again there may be individual idiosyncrasies in the hepatic metabolizing of the preparation. There must undoubtedly exist differences in the way in which different persons meet a chemical situation which confronts them, precisely as in the formation of anaphylatoxin, etc. The drug as such should not therefore be rashly incriminated. I recall Milian's statement that he had
investigated a so-called "erythematogenic series" of neo-arsphenamin and had kept a number of the ampules for use at a later time. In his second test of the series, no reactions developed.

In the case of Dr. Irvine's experience, I might suggest that the practically exclusive use of neo-arsphenamin may explain the fact that his clinic sees practically no reactions. Our doses are large. Six-tenths gram of arsphenamin or 1 gm. of neo-arsphenamin is not at all uncommon. In fact, I have been impressed with the relative immunity from serious complications possessed by patients under extremely intensive treatment. Six-tenths gram of arsphenamin may be given twice a week with daily injections of mercuric succinimid and large doses of sodium iodid intravenously, without any sign of reaction.

I might suggest that acute yellow atrophy of the liver cannot be regarded as a demonstration that a patient has died of arsenic poisoning. It is worth while to recall the observation of Symmers on acute yellow atrophy occurring in epidemic form in New York. I have alluded in greater detail to this question in a publication on catarrhal jaundice as a complication in the treatment of syphilis. Only recently, a patient whom we had seen two years before and who had had some arsphenamin at that time returned home without any further treatment, and, within a few days after his return, developed a jaundice which terminated, within a very brief time, in death from acute yellow atrophy of the liver, although he had received no arsphenamin and no treatment for syphilis for two years.

I agree with Dr. Wile that exfoliative reactions occur in groups or waves. These individual waves often show marked clinical differences. For example, I had never seen diarrhea associated with exfoliative dermatitis until the winter of 1921-1922, when I had six cases in succession, whose features are discussed in this paper. While clinical analysis of these questions has its weak points, it does seem to me to have a chastening effect. It leads us to realize that the mechanism behind many seemingly simple protests on the part of the body may be very complex.

Dr. Charles C. Dennie, Kansas City, Mo.: I wish to say that Dr. Pusey's criticism is very good. The title should not have been arsphenamin dermatitis, but arsenic dermatitis. One case occurred after the use of sodium cacodylate and one after a mixture of solution of potassium arsenite (Fowler's solution) and arsphenamin. I have also seen it in a child who received nothing but solution of potassium arsenite. Most of these cases we have seen early, when the sodium thiosulphate has the most influence. It is natural to suppose that, if the patient with mercuric chlorid poisoning is not seen until late, this method or any other would do no good; but, if these patients are seen within from two to six hours after taking the mercuric chlorid, the result is gratifying. In the cases reported by Strathy, in which the reactions occurred forty-five days after the injection, it was not the arsenic alone that produced this condition. We do not claim that the dermatitis is due to the arsenic alone, but to arsenic plus other factors. One preparation of arsphenamin is as likely to be followed by arsenic reactions as is the other; but when we stop to think of the doses given by experienced men, we reach the conclusion that arsphenamin injections can be given with more safety than any other intravenous medication.

Regarding Dr. Wile's remark concerning the recurrence of arsenic dermatitis, we will say that in the three cases of arsphenamin dermatitis in which sodium thiosulphate was given, there was no recurrence; why, we do not know.
It may be that the arsphenamin did not act; perhaps it was neutralized by the sulphur as soon as it entered the bloodstream. Dr. Cole made the statement that these reactions occur with the first arsenical treatment. I agree with Dr. Stokes that these cases have occurred early rather than late in the treatment of the disease. In the cases of delayed arsenical poisoning in which we know that certain organs are injured, the liver and especially the kidney, and in which arsenic has been found in the organs long afterward, it is likely that if the arsenic were eliminated the patient would have a better chance for his life.
A BRIEF FOR THE MORE ACCURATE CLASSIFICATION
OF INDUSTRIAL SKIN DISEASE

C. GUY LANE, M.D.
BOSTON

At the St. Louis meeting, I suggested the term "dermatitis industrialis" as the name to be applied to the group of cases presenting lesions on the skin caused by or associated with various industrial conditions. In the discussion, it was suggested that this term be changed to "dermatosis industrialis," in order to include the conditions which are not usually included in the dermatitis group, such as acne, epithelioma, folliculitis, keloid, etc. The term "dermatosis industrialis" is the better name, I believe, and should be more generally adopted in the diagnosis of this group of skin conditions. At the present time, the cases are scattered about under such various headings as dermatitis, dermatitis venenata, occupational dermatitis, acne, folliculitis, keloid, eczema, trade eczema, bakers' eczema, butchers' eczema, etc.

Not only is it advisable to group these under such a term, but it also seems reasonable to adopt a scheme similar to the one used in the classification of heart diseases; in other words, to group these cases under the heading "dermatosis industrialis," and then add to this diagnosis the qualifying words signifying the type of eruption and the causative element, if known; for example, dermatosis industrialis (folliculitis, oil); or dermatosis industrialis (venenata, formaldehyd); or dermatosis industrialis (eczema, flour), etc. If the cause is not known, the occupation can be inserted in its place, thus: dermatosis industrialis (eczema, dyeworker). The advantages of grouping these cases in some such manner in our classifications of disease are worth bringing to the more general attention of the profession.

In the first place, the prevalence of cases presenting an eruption on the skin associated with various occupations is a strong argument for grouping these conditions into one class and under one name. A recent review of over 2,000 cases of dermatitis, dermatitis venenata and eczema has shown that 11 per cent. of the dermatitis and dermatitis venenata cases, and 3 per cent. of all cases admitted to the skin clinic were occupational in origin. These statistics do not include (1) many cases in which there is some doubt; (2) numerous cases in which there is no statement on the patient's record in regard to the origin of the disease, and (3) many cases of eczema of the hands in housewives. It seems reasonable to estimate that 5 per cent. of dermatologic

*From the Dermatological Department, Massachusetts General Hospital.
cases seen in a large city clinic are probably industrial cases. The figures given by other writers indicate an even larger percentage.

The difficulty in arriving at any true concept of its prevalence can be appreciated only by one who has searched case record after case record under the various usual diagnoses. The patients are seen in the clinic, examined, the condition diagnosed and treatment given; but for any study of a group of workers in a certain trade, or workers with an eruption from a certain substance used in various trades, there is no way of obtaining material except through the examination of a large number of records.

The importance of preventive measures in dealing with these conditions further necessitates the placing of these various skin conditions in a definite group. The workmen's compensation acts are focusing attention on these conditions, and the interests of both employer and employee demand a more accurate classification; for it is only in some such way that these cases may be brought together and carefully studied. Prevention is the important factor, and the need of attaining such a result furnishes a practical argument for the adoption and general use of some such term as "dermatosis industrialis."

These skin conditions are a distinct group by themselves. They are a group with a common etiologic factor: work done by the individual, or substances with which the workman comes in contact. It is true that the various individual causes are very numerous, both chemical and mechanical, and the condition is undoubtedly due to individual susceptibility on the part of the patient. It is logical, however, for classification and for study, to regard these cases as a separate disease. It also seems reasonable that the classification of this group of cases under one head will stimulate interest in occupational skin conditions and ultimately contribute much toward the prevention of these various conditions.

This group of cases can be compared to the group to which the name "dermatitis medicamentosa" is now given, the group in which the skin condition is due to a common etiologic factor: the absorption of some drug. The conditions in these two groups are similar. There are numerous factors in each group which may cause dermatologic manifestations, and these manifestations may present varying types of lesions. There are many different drugs which may cause an eruption on the body and there are various types of eruptions produced by drugs. The eruption may vary from erythema due to one drug, to folliculitis due to another, to purpura due to another, etc., or there may be at times a multiform eruption. The eruption associated with various industries varies in the same way: perhaps a real dermatitis venenata in one case, eczema in another, folliculitis in another, etc. The multipli-
city of trades and substances known to cause skin irritation is no bar to including these conditions in one group.

It is also a decided advantage to remove these conditions from the eczema group. The term "trade eczema" is one of long usage and has become a rather commonly accepted term in the persistent type of case; but it would be far better to separate this class of cases entirely from the diagnosis "eczema," grouping them under one heading which would ally them more intimately with their etiologic factor and at the same time include the other types of industrial dermatologic lesions. Numerous subtractions have been made from the group of eczemas in the past, and the use of this term presents the opportunity to split off another group from this already too large rubbish heap "eczema."

The term "dermatosis industrialis," while perhaps not a true Latin term, is at least latinized, and naturally will fit better into the various classifications of diseases in which the terms are all Latin or at least have Latin endings. The argument has been used that "dermatitis occupational" does not fit well in a classification between two distinctly Latin terms; whereas "dermatosis industrialis" will correspond with other terms such as "dermatitis herpetiformis" and "dermatitis medicamentosa" in the usual classification. In fact, such an argument has already been used when the attempt was made to have "dermatitis occupational" inserted in a hospital classification of disease.

It could perhaps be argued that certain cases of acne or folliculitis, or ulcers, etc., from industrial conditions, would be classed under the term "dermatosis industrialis," and would not appear in the statistics with these particular diseases. At the present time, in the average classification, these industrial cases are lost entirely for the study of industrial conditions and, therefore, shed no light on the prevention of these conditions. I believe that classification under one heading would serve a far more useful and practical purpose than classification under the particular manifestations of disease. However, in any good system of cross cataloging, an entry could very well be made on the proper card: acne, folliculitis, etc., as well as under the term proposed.

The same objection might be raised to "dermatitis medicamentosa"—that the bromid acne and the folliculitis from potassium iodid, etc., are lost for statistical purposes. Common usage has sanctioned the classification of these conditions under "dermatitis medicamentosa," and there is every reason to believe that this would in time be true of the present suggested term.

Let me reiterate the argument which I presented first: the very prevalence of this condition, the frequency with which these cases are coming to our attention in clinics and in private practice (5 per cent.,
or probably more, of all our cases of skin disease), furnishes a potent argument for a generally acceptable plan for a more accurate classification of this increasingly important group of skin conditions.

SUMMARY

The adoption of the term “dermatosis industrialis” in the diagnosis of pathologic skin conditions from industrial causes is urged, to be employed in conjunction with two qualifying terms, one signifying the type of eruption and the other the causative element, if known, or the occupation if the exact cause is not known.
DERMATITIS VENENATA
A STUDY OF THE TROPICAL PLANTS PRODUCING DERMATITIS*

V. PARDO-CASTELLO, M.D.
HAVANA, CUBA

Among the luxurious and rich tropical flora there are several plants, the latex, secretions or appendages of which are injurious to the human skin. These plants grow wild in the thick forests of the Antilles and in the country around the towns and cities. The well-known Rhus toxicodendron does not exist in the tropics, but there are other plants, such as the comocladias, that produce dermatitis very similar to if not identical with that produced by the ivy, and many others that produce skin reactions that vary from erythema and pruritus to acute vesicular dermatitis with severe general disturbance. These plants are little known to the medical profession, although their irritating and poisonous properties have been observed for many years. We have endeavored to make a preliminary study, from the botanical, physiologic and chemical point of view—not a complete and exhaustive study of these interesting plants and the clinical phenomena which they produce. Our aim is to make them known and awaken the interest of the chemist, principally, as undoubtedly the substance which is responsible for the skin manifestations has not been isolated.

The tropical plants that produce dermatitis are listed in the accompanying table.

ANACARDIACEAE

The most important of the anacardiaceae are the comocladias, and among them Comocladia dentata is typical. All the varieties are known under the common name guao and all have the same properties. In Cuba, Comocladia dentata is widely distributed. In Porto Rico, it is called carasco and, in the British Antilles, tooth-leaved maiden plum. Comocladia dentata is from 3 to 6 feet (0.9 to 1.8 meters) high; in the wild forests, it may reach 12 feet (3.6 meters). It has a slender brown trunk, with many branches. The leaves are oblong and pointed, alternately situated, dark green, and hairy on the inferior surface. These hairs are straight or curved and conic-shaped, containing four cells and covered with a thick membrane. The leaves of many other varieties of the comocladia are hairless. The edges of the leaves are provided with from eight to twenty thornlike prominences, corresponding to the endings of the bifurcations of the central nerve. The flowers are small

and dark purple, growing in clusters. The latex, which is found in moderate quantities in all parts of the plant, and very abundantly in the green boughs and leaves, is a heavy yellowish-white fluid, which turns black under the action of light. This latex is highly irritating

**Tropical Plants Producing Dermatitis**

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<tr>
<th>Genus</th>
<th>Species</th>
<th>Common Name</th>
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<td>Metopium brownei, Urban, or M. toxiferum, Linné ......</td>
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<td>Leguminosae</td>
<td>Mucuna pruriens, DeCandolle, or Dolichos pruriens, Linné, or Stizolobium pruriens, Medicus ......</td>
<td>Pica-pica, cowhage, cowitch</td>
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<td>Euphorbiaceae</td>
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<td>Malva Santo Domingo</td>
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<td>Malvaceae</td>
<td>Malachra urens, Poiteau ......</td>
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<td>Araceae</td>
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<td>Tabernanomona citrifolia, Linné ......</td>
<td>Tabernanomona citrifolia, Linné ......</td>
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and is the cause of the skin lesions which we shall describe. *Metopium toxiferum* is found near the coast, which accounts for its common name, shore guao. This variety is supposedly more dangerous, and the country folk are particularly careful to avoid it.
Clinical Lesions.—It is a common belief that the shadow of the comocladias produces swelling and inflammation of the skin. As is the case with other poisonous plants, this has been attributed to some volatile substance escaping from the plant. The fact is that sensitive persons are rapidly affected on coming near the plant and others are affected on coming in contact with its leaves or bark. Many people, regardless of race or age, are immune to the injurious substance in these plants. I have handled the leaves and the bark without ill effect, but a drop of the sap deposited on the skin of the wrist produced a lesion similar to a second degree burn, which lasted for many days. Sensitive persons are affected when merely passing near or on approaching a grove of comocladias. Colored people are as sensitive as white. The eruption is polymorphous, appearing preferably on the face and arms. In males, the scrotum is also a site of predilection. The first phenomena are those of intense pruritus and edema; the eyelids appear puffed to an extent that makes their opening impossible; the lips are swollen, and through the open mouth the saliva dribbles; the ears appear twice their size, and the hands, and especially the scrotum, are tremendously edematous. The patient presents at first sight a weird and indescribable picture. The redness soon appears in blotches with the formation of wheals, papules, vesicles and bullae. The vesicles and blisters may appear directly on the apparently sound skin, owing to the lifting of the epidermis in toto by the sudden and pressing edema, or may form on top of a wheal or papule. They are filled with clear serous fluid, and sometimes become purulent through secondary infection. At this period, the patient presents an appearance similar to that of a patient suffering from a severe case of poison ivy. The vesicles discharge for a week or ten days, the edema and inflammation gradually subside, and the case ends with abundant lamellar desquamation. In severe cases, there is considerable pigmentation, which may last for a long time.

The subjective phenomena are those of intense pruritus and burning sensations. Pain may be felt in cases in which the bullae are very large and their breaking leaves the epidermis unprotected. In these cases, the lesions are very similar to second degree burns. The disease leaves no trace but pigmentation, except in case of secondary infection, when ulceration and subsequent scarring may occur. The general disturbance is slight or nil in mild cases; in severe cases the temperature may be as high as 40 C. (104 F.), and the itching, sleeplessness and nervous condition of the patient combine to make his condition very wretched. There may be a transient albuminuria. One attack confers no immunity. The peasants believe that eating the fruit of these plants makes them immune to further dermatitis, and a colored boy assured me that he was a constant victim of dermatitis until he ate the seeds of the ripe fruit. This boy helped our party to gather leaves and bark from the
tree without ill effects. In this connection, it is well to remember the successful experiments of Strickler and Schamborg on the desensitization of susceptible persons by intramuscular injection and internal administration of poison ivy.

Chemical Investigations.—The latex of Comochidia dentata contains an enormous amount of tannin. The active principle seems to be an essential oil, which may be recovered in small quantities by distilling the alcohol from the macerated bark and leaves. This essential oil is light brown and has a peculiar pungent odor. When applied to the skin, it produces marked irritation.

LEGUMINOSAE

Mucuna Pruriens.—This climbing vine, commonly known in Cuba as pica-pica and in the English speaking communities as cowitch or cowhage, is quite abundant in all parts of the Antilles. There are two varieties, M. altissima and M. urens. Its leaves are in branches of three, oval and hairless. The fruit is a pod from 3 to 6 inches (7.5 to 15 cm.) long and about 1 inch (2.5 cm.) wide, containing six or eight seeds, smooth and dark. It is covered with innumerable reddish hairs, which give it a velvety appearance. These hairs come off very easily and, transported by the wind, may affect the passerby, producing severe skin reactions. The hairs of the mucuna are conical in shape, pointed and straight, although they are sometimes slightly curved at the end. They are covered by a yellowish membrane, which is provided with small hooks turned toward the base of the hair. Microscopically the hairs appear divided into small cells containing droplets of an oily substance.

Chemical Investigations: The covering membrane shows the typical reactions of cellulose. With litmus paper, with phenolphthalein in solution and with aqueous solution of litmus, the hairs showed no reaction. On the other hand, there was marked acid reaction when they were soaked in alcohol and ether, which shows that the active substance is soluble in these liquids and insoluble in water. The reagents of Bouchardat, Sonneschein, Mandelin, Fröhde, Elias, Tanret and Dragendorff gave negative results, showing the absence of alkaloids. The oily substance that is found in the hairs is slightly yellow. It stains red when treated with sudan III, red brown with tincture of alkana and black with osmic acid. The oil is not attacked by hydrochloric acid. It is insoluble in xylene and purified petroleum benzine and soluble in alcohol, sulphuric ether, benzin, acetone, carbon sulphid and chloroform. It is not attacked by caustic potash, 10 per cent.

The oil of mucuna is a fatty acid oil, being probably a mixture of several fatty acids. When dry, it forms a resinous substance, orange in color.
Clinical Lesions: On coming in contact with the skin, the hairs of *Mucuna pruriens* immediately produce intolerable itching. If the patient refrains from scratching, there develops, at the end of five or ten minutes, an erythema and small punctate papules of edematous character. If the skin is moist with perspiration, the itching is more severe. In the majority of cases, these pure lesions are combined with scratch marks and the swelling and inflammation produced by the traumatism caused by the nails. The condition is usually localized, the uncovered parts being naturally most affected, but occasionally more extensive cases are seen, especially in country workers during the clearing of the fields for sugar cane plantations. In these cases, the unfortunate laborer may get in the thick of the vine, and be virtually covered with its hairs. With the hand lens, the small pointed hairs may be seen sticking into the epidermis, and around each one there appears a wheal of variable size. The mode of action of these hairs has been thought to be only mechanical, but the presence of the irritating oil in their cells proves that, although mechanical irritation may play a part in the symptoms observed, the chemical action of the oil is really responsible for the condition.

The peasants rub on dry ashes to allay the itching, and any alkaline application, in fact, will relieve the condition. The eruption lasts for several hours, then disappears, leaving no trace.

**Euphorbiaceae**

Practically every euphorbiaceae contains a caustic substance which produces an acute dermatitis when the sap is applied to the skin. We shall pay no attention to those that need to be applied on purpose to produce their effects, such as *Euphorbia lacca*, *Croton ligusticum* and *Jatropha curcas*. Those that accidentally or by the slightest contact produce skin reactions may be divided into two groups: those that act through the irritation produced by their appendages, generally prickles or hairs, and those the latex of which contain a highly irritating substance. Among the first group, we shall study *Platygyne pruriens*, *Tragia volubilis* and *Jatropha urens*; among the second, *Hippomane mancinella* and *Hura crepitans*.

*Platygyne Pruriens* and *Tragia Volubilis.*—The first is known under the vulgar name of pringamoza and the second as pringamoza morada. In Jamaica, both are called twining tragia. Both species are wild vines, growing profusely in the forests. The leaves are opposite, oblong in shape, of dentated edge and studded with innumerable cone-shaped silvery hairs. The fruits are small, dehiscent capsules, with four or six seeds arranged in pairs and placed in axillary bunches. The flowers are purple in *Tragia volubilis* and lighter in *Platygyne pruriens*.  

- PARDO-CASTELLO—DERMATITIS VENENATA
The fruits are also covered with very stiff hairs. These hairs are the irritating parts of the plant. Under the microscope, they appear straight or slightly curved. Those from the skin of the fruit are brown and highly refractile; those from the leaves are lighter, being nearly white, and transparent. They are provided with a thin membrane and contain a long, oblong or triangular cavity filled with two or more droplets of an oily substance. The point of the hairs seems to be very resistant, forming in the longer and larger hairs a sort of solid spicule. The surface is smooth, but, occasionally, small globular thickenings are seen.

Chemical Investigations: The chemical study was conducted along the same lines as in the case of the Mucuna pruriens. The oily sub-

![Image](Fig. 1.—A, hair of Platygyne pruriens; B, hair of Mucuna pruriens.)

stance in the hairs gave a marked acid reaction when dissolved in alcohol or ether. The tests for alkaloids were all negative.

Clinical Symptoms: The prickles, on the slightest contact, produce severe itching, erythema and urticaria. Foresters and hunters suffer severely, as the worst case of urticaria toxica cannot be compared with a common case of this dermatitis. The exposed parts are mostly affected; but the prickles are so numerous and cling to the skin with such tenacity that generalized eruptions are not infrequent. Moisture from perspiration increases the itching. Alkaline applications and hot baths afford relief. The eruption lasts a few hours and leaves no trace.
*Jatropha Urens.*—The vulgar names of this plant are chaya and stinging physic nut. The jatropha is a small tree, from 4 to 6 feet (1.2 to 1.8 meters) tall, very common in the Antilles, Guianas and Venezuela. There is a cultivated inermes variety, which is harmless. The plant branches out profusely 1 or 2 feet from the ground; its leaves are wide, three lobulated and alternate. The flowers are yellow or red, in axillary or terminal clusters. The fruit is a capsule. The leaves and their pecioli are covered with white stiff hairs, very sharp and resistant, which contain an irritating substance. These hairs are obliquely implanted and measure as much as 1 mm. in length. Under the microscope, they appear light colored and are surrounded by a double membrane which encloses an oval or triangular cavity divided into variously shaped cells by numerous intervening thin partitions. These cells contain a granular substance and also droplets of a highly refringent oily substance. The end of the prickle is not pointed as in the pringamozas and the mucuna, but is round and club-shaped.

Clinical Symptoms: The leaves of this plant, when rubbed on my forearm, immediately produced intense burning and smarting. With the hand lens, it could be observed that the sharp hairs had penetrated the epidermis and were firmly imbedded. At the points at which the hairs had pierced the skin, there were small purpuric spots, around which there developed in a short time raised, firm wheals of variable
size, the largest being about one half inch in diameter. The burning sensation—there was really no itching—continued for several hours, the lesions finally disappearing; but the purpuric spots lasted for several days, with a sense of discomfort when the parts were lightly rubbed. I had occasion to observe three members of one family suffering from the same condition. A visit to their garden revealed the existence of two specimens of Jatropha urens, of the irritating properties of which they were ignorant.

Chemical Investigations: The oil contained in the hairs of this plant is the irritating material that produces the clinical lesions described. It seems to be an oil with the characteristics of that of the pringamozas. Chemical investigations are quite difficult to carry out, as it is nearly impossible to collect enough material for study.

Hippomane Mancinella.—The vulgar names of this plant are Manzanillo and common manchineel. This is a handsome tree of dense foliage; the leaves are alternate and accumulate, with two small glands at the base. The fruit is a drupa similar to a small apple, with six seeds.

This plant has been known for years in Cuba as the most poisonous plant of the Antilles. It is a common belief that its shadow produces swelling and fever, and that the seeds when eaten by fish render the latter highly poisonous. The Indians used the sap of this plant to poison their arrows. Some animals, such as cows, horses and certain fowl, eat the leaves without any ill effects, apparently.

Clinical Symptoms: The latex obtained by incisions in the bark of the tree is a milky-white thick fluid which solidifies after a time. A drop of it placed in a wound on the foot of a rabbit or a guinea-pig kills the animal in a few minutes. Some cases of poisoning, accidental or criminal, have been reported, with the following symptoms: burning sensation of the alimentary canal, diarrhea, vomiting, cramps, profuse perspiration, dyspnea, coma and death. On the skin, the reaction produced varies with different persons, from simple erythema and pruritus to vesicular and bullous eruption with serious general symptoms. Some investigators have denied the caustic action of the sap of this plant on the skin, but I have seen and personally experienced the irritating properties of it. Personal susceptibility is to be considered, some persons being practically immune and others highly sensitive.

Chemical Investigations: The latex of Hippomane mancinella is a white creamy fluid, which solidifies after a time and becomes brown. When fresh, it is very caustic, and a drop on the skin raises a large, inflammatory vesicle in a short time. It gives a marked acid reaction with litmus and phenolphthalein. It is slightly soluble in hot water and soluble in alcohol in all proportions. Treated with the reagents of Bouchardat, Mandelin, Fröhde, Elias, Tauret and Dragen-
dorff, there is no indication of the presence of alkaloids. The aqueous solution, acidified with hydrochloric acid and heated, reduces the copper of the Fehling solution. The aqueous solution decolorizes a 1 per cent. alkaline solution of safranin.

These last two mentioned reactions point to the existence of a glucosidal substance. This glucosid was isolated in the following manner after the method recommended by Dr. Fernandez Benitez: 1 Ten grams of the dried latex were dissolved in 120 c.c. of water and 20 c.c. of pure alcohol and boiled for two hours, the liquid lost by evaporation being replaced. After cooling, a concentrated solution of lead subacetate was added, which produced a heavy white precipitate. This precipitate was separated by filtration. The remaining liquid was treated with hydrogen sulphid to remove the lead, and then evaporated to a fifth of its former volume, the evaporation being allowed to finish at room temperature. The residue obtained was an amorphous yellowish-white powder, slightly soluble in cold water and readily soluble in hot water. The solutions of this powder acidified with hydrochloric acid, reduced the copper of the Fehling soluton and gave the characteristic dark blue when heated with Cotton’s reagent at 75 C. This glucosidal substance isolated from the sap of Hippomane macinella seems to be the active poisonous substance in this plant.

*Hura Crepitans.*—This tall and handsome tree is commonly known as salvadera. It is seldom seen near the cities, where it is little known. The leaves of this tree are wide and oval and hairless. They are provided with two small glands at the base. The fruit is a dehiscent capsule. The sap produces a marked erythema and intense itching; this erythema sometimes resembles erysipelas. The caustic properties of the latex of this plant are due to a crystalloid substance isolated by the French botanist M. Bossingault, who named it hurin. Hurin is soluble in ether and alcohol and insoluble in water. It melts at a temperature of 100 C. and is decomposed at higher temperatures.

*Other Euphorbiaceae.*—The Euphorbia lactea is used on many farms for hedges. It contains a great amount of white latex, which may produce a severe conjunctivitis. On the skin, it acts as a rubefacient, and in some people it may produce an erythematous and vesicular dermatitis when rubbed in. *Jatropha curcas,* vulgarly known as piñon de botija, may produce skin reactions, but they are never severe or serious and seldom require medical attention. The fruit of this tree contains a substance which is highly poisonous. I saw two small children who had partaken of these fruits die in three hours, with all the symptoms of acute poisoning by strychnin or curare.

Fleurya Umbellata.—The vulgar name of this plant is ortiguilla. This is a small herb, scarcely a foot high, of fibrous cortex, covered with white pointed hairs. The leaves are simple, alternate, dentated and also covered with numerous hairs. The flowers are small and white, and in axillary clusters.

The hairs are silvery white, and from 1 to 2 mm. in length. Microscopically, they appear conical in shape and divided into four or five compartments containing a granular substance.

The skin disturbance caused by the hairs of this plant is a maculopapular dermatitis, very pruriginous and usually limited to the exposed parts. As the plant grows wild in the fields, forming patches among other grasses, it is not uncommon to see those who go barefooted suffer a severe dermatitis that reaches up to the middle of the leg.

SUMMARY AND CONCLUSIONS

1. There are more than forty species of plants in the Antilles that produce skin reactions, varying from erythema and pruritus to severe bullous dermatitis, with serious general disturbance.

2. These dermatitides are produced by the latex of the plants or by their appendages, generally the hairs. The latex of Comocladia dentata contains a very irritant oil. A substance of glucosidal nature has been isolated from Hippomane mancinella. The hairs of the other plants studied act not only mechanically but also chemically, owing to the existence of an irritating acid oil.

3. The ingestion of certain parts of the plant—the fruit in the case of Comocladia dentata—seems to produce immunity.

4. The hairs of the different plants studied have differential characteristics which may prove of importance for the diagnosis of the offending plant, especially in cases in which the cutaneous reaction is so similar that, unless the hairs found on the skin are examined, the diagnosis is impossible.
LACQUER DERMATITIS

WILLIAM ALLEN PUSEY, M.D.

CHICAGO

July 13, 1920, M. K. B., a man, aged 32, came to me, with a dermatitis of his forearms and hands. It was a rather acute papulovesicular dermatitis which suggested external irritants as its origin. He had spent a day in the woods the week before, and the dermatitis had come on soon afterward. I concluded it was a dermatitis due to contact with irritating plants, probably poison ivy. I treated him with wet dressings of aluminum acetate solution, and he soon recovered.

The same patient came to me again, July 6, of this year. He had a papulovesicular dermatitis of his forearms and hands, acute, but not intense, consisting for the most part of discrete inflammatory lesions. This time there was no history of contact with vegetation that might have caused the trouble. There seemed to be no doubt, however, that it was an external irritant dermatitis, and I turned him over to my assistant, Dr. L. F. Weber, and asked him to find the irritant. He came back with a report that it was a Japanese lacquer dermatitis. The man was a dealer in cheap novelties, such as peddlers sell on the streets at holiday times. On the Fourth of July, his business is the selling of small canes which are used for carrying flags and pennants. This attack had come on just after he had been handling these canes for the Fourth of July, and Dr. Weber had worked out the apparent causal relation between handling the canes and the attack of dermatitis.

He brought one of the canes to the office. Dr. Weber made an alcoholic solution of the cane’s varnish and made cutaneous tests. The tests made with the alcoholic extract of the lacquer showed a large inflammatory wheal the size of a ten-cent piece, which appeared in about four minutes, and had not begun to subside in three quarters of an hour. There was no reaction in the control tests made with the same alcohol without lacquer. There was no itching in the two control tests, while in the lacquer test the itching was intense.

The same cutaneous test with the alcoholic solution of the lacquer was made as a control in six other persons. In no case was any reaction produced.

Lacquer is made from the Japanese lacquer tree (Rhus vernicifera), and according to Toyama it has been recognized in Japan and China as the cause of dermatitis for more than a thousand years. It is, of course, known among us as a cause of dermatitis, but my impression
is that it is recognized as such with great rarity. I have never had a recognized case before in my experience, and there are few references to it in dermatologic literature.

Buraczynski¹ has reported a case in a gardener in Vienna which came on quickly after transplanting some plants of *Rhus vernicifera*

Rost² has reported cases.

Toyama,³ in a paper on *rhus dermatitis*, describes the condition as it occurs in Japan.

I have found no report of the affection in American and British literature. The explanation is probably that the condition is overlooked. I failed to find it in my case, and I believe its discovery by Dr. Weber in a subsequent attack in my case was a clever piece of work.

The irritant substance seems to be remarkably stable. Dermatitis is produced not only by contact with the fresh plant, but also by contact with old varnish. Toyama says that he and his associates proved by experiment that lacquer taken from an antique jar which had been buried in a Japanese ruin for about a thousand years contained the irritant. He concludes, therefore, that it is manifestly not a volatile poison.

The two attacks that I have seen do not differ symptomatically from mild attacks of dermatitis due to *Rhus toxicodendron* or *Primula obconica*. These attacks yielded rapidly to wet dressings of aluminum acetate solution, as do poison ivy and primrose dermatitis.

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THE RESISTANCE OF HAIR TO CERTAIN SUPPOSED GROWTH STIMULANTS*

MILDRED TROTTER
ST. LOUIS

There is a popular belief, apparently shared by not a few physicians, that the amount of hair growth is readily influenced by external factors. For example, it is commonly supposed that cutting the hair makes it grow better, that cold cream is likely to cause an excess development of hair, and that sunburn and tan are also very favorable to hair growth. It is difficult to find in the literature records of definitely controlled data either in support or in refutation of such views. This study was undertaken for the purpose of testing the validity of some of these current ideas.

Suitable material for such tests must necessarily be living persons, and I am greatly indebted to several friends who willingly acted as subjects and thus made the study possible.

NORMAL RATE OF GROWTH

It was necessary at the start to have some information as to the normal character and rate of growth of hair in the different regions to be studied. Ten subjects, eight women and two men, afforded data for these preliminary observations. Four regions were considered: the axilla, a spot on the head just back of the vertex, the outer side of the forearm, and a region on the leg just below the knee. These selected areas were shaved very closely, and then at weekly intervals several hairs were pulled out by means of eyebrow tweezers, placed in small envelopes, and later measured. The differences between the successive measurements, after the first seven-day period, showed the weekly rate of growth. The measurements included the root, the length of the shaft under the skin, and the length which the shaft had grown since the close shaving. The first week's measurements could not be used because the part of the hair shaft which is embedded in the skin cannot be readily determined after the hair is pulled out. Assuming that the length of the root and that part of the shaft under the skin is approximately constant, the difference between the first and second measurement gives the length which the hair had grown during the first period of seven days. For each measurement the average of

*From the Department of Anatomy, Washington University School of Medicine.

*This investigation was made in connection with work supported by a fund given to the Washington University School of Medicine for use in the study of hair.
from three to six hairs was taken. There was a slight individual variation in the rate of growth but no indication that it was correlated with age, sex or the color of the hair. This question, however, needs more careful investigation. The accompanying table summarizes the results for the different regions, showing the average measurements in millimeters for all persons.

The regions are listed in the order of decreasing diameter of the hair which covers them; that is, the hair in the axilla has the greatest diameter, the hair on the head has the next greatest diameter, and so on. The average weekly rate of growth, shown in the last line, decreases in the same order and seems to indicate a correlation with the diameter of the hair.

The danger of error in these observations lay not so much in the measuring as in the selecting of typical hairs at the weekly intervals. There was a possibility of getting the successor of a hair that had fallen out before the experiment was started, or one that had reached its ultimate length. This was guarded against as much as possible by using the average measurements of several hairs, rather than depending on one as a typical representative of the whole region.

In one case several hairs on the arm and leg were measured in situ and then marked so that identification for subsequent measurements would be certain. On the arm the area around the hair was stained with fine dots of gentian violet. This method is not very satisfactory, in that the stain washes off easily and must therefore be renewed daily. On the leg the hair was marked by injecting a small amount of gentian violet under the skin and close to the hair with a hypodermic needle. The needle was slanted away from the hair so that the injection could in no way affect the root. Measurements of the identified hairs were almost similar to those made in the other manner and, since the former method was less inconvenient to the subject, it was used.

Of these individually identified hairs, some reached their ultimate length during the experiment. Several of them attained it as much as

<table>
<thead>
<tr>
<th>Region</th>
<th>Axilla</th>
<th>Head</th>
<th>Leg</th>
<th>Arm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week</td>
<td>Length</td>
<td>Growth</td>
<td>Length</td>
<td>Growth</td>
</tr>
<tr>
<td>First</td>
<td>6.6</td>
<td>...</td>
<td>6.0</td>
<td>...</td>
</tr>
<tr>
<td>Second</td>
<td>9.6</td>
<td>3.0</td>
<td>9.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Third</td>
<td>12.0</td>
<td>2.8</td>
<td>11.8</td>
<td>2.8</td>
</tr>
<tr>
<td>Fourth</td>
<td>15.6</td>
<td>3.0</td>
<td>14.4</td>
<td>2.6</td>
</tr>
<tr>
<td>Fifth</td>
<td>18.2</td>
<td>2.6</td>
<td>16.9</td>
<td>2.5</td>
</tr>
<tr>
<td>Sixth</td>
<td>23.0</td>
<td>2.8</td>
<td>20.4</td>
<td>3.5</td>
</tr>
<tr>
<td>Seventh</td>
<td>25.6</td>
<td>2.0</td>
<td>23.3</td>
<td>2.9</td>
</tr>
<tr>
<td>Eighth</td>
<td>27.5</td>
<td>3.9</td>
<td>26.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Ninth</td>
<td>30.0</td>
<td>2.7</td>
<td>37.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Tenth</td>
<td>...</td>
<td>30.0</td>
<td>...</td>
<td>1.9</td>
</tr>
<tr>
<td>Eleventh</td>
<td>...</td>
<td>37.0</td>
<td>...</td>
<td>21.2</td>
</tr>
<tr>
<td>Weekly average</td>
<td>...</td>
<td>2.92</td>
<td>...</td>
<td>2.73</td>
</tr>
</tbody>
</table>
eleven weeks before the experiment was concluded, and at the end of the experiment they were still intact. This makes it appear that a hair on the arm or leg does not fall out and is not replaced by a new one for something more than eleven weeks.

**EFFECT OF PETROLATUM**

Petrolatum ranks very high in the popular estimation as a stimulant of hair growth. It is, therefore, frequently used on the eyebrows, but is seldom, when used by women, allowed to touch the face. Bilaterally symmetrical regions were selected for the purpose of testing the effect of this substance on normal hair. The two sides were carefully compared to insure that they were similar, treatment was begun on one side, and the other side was used as a control. Four women, between the ages of 22 and 26, took part in this experiment. Three of the subjects applied petrolatum to the front of the right thigh twice a week for a period of eight months. The other subject applied it to the right eyebrow approximately twice a week for four months. In each case, a generous supply of petrolatum was rubbed on thoroughly, but not vigorously enough to cause reddening or hyperemia of the skin. The aim was to give the petrolatum ample opportunity to show its own effect without introducing any complication due to massage. At the end of the period the two symmetrical regions in each subject were compared very carefully by three observers and absolutely no difference was detected. Two of the observers were necessarily unbiased, for although they knew the nature of the experiment, they did not know which side had been treated. After another period of four months, during which time no petrolatum had been applied, the previously treated regions were still identical in appearance with the corresponding regions on the left side. This experience indicates that the regular and prolonged use of petrolatum does not cause the short downy hairs to become either longer or coarser, and that it does not stimulate growth of the eyebrows.

**EFFECT OF SUNBURN**

In many cases, what seems to be an excess amount of hair on the arms is attributed to the effect of sunburn. One frequently sees men who have calvities to a greater or less degree going bareheaded in the summer, with the hope that the effect of the sun will start a new growth of hair. With this in mind, it seemed worth while to compare hairs which were on an exposed region before and after the summer season.

The forearm was the area most convenient for the purpose. Twelve women between the ages of 18 and 25 were available as subjects for this experiment. In the spring, during the first part of May, and just before it was warm enough to go outside with the arms uncovered, samples of hair were taken in the manner previously described. An area on the back and more exposed portion of the right forearm half
way between the elbow and wrist was chosen to supply the samples. At
the end of five months, the time each subject had spent in a warm
climate with the forearms exposed, similar samples were taken from
the corresponding area on the left arm. All the samples were then
examined, first in their normal state and then after mounting on slides
in balsam, and no differences either in length, diameter or pigmentation
were apparent.

A somewhat similar test was afforded by three women who spent
a great part of the summer in bathing. In all three, there was a very
marked contrast in color between the tanned lower half of the thigh
which had not been protected by the bathing suit and the upper portion
which had. The lower part had been sunburned repeatedly, with
resultant deepened pigmentation of the skin, while the upper part was
not affected. The difference in the color of the skin was the only
apparent difference, however, and the longer or more numerous hairs
which one might have expected to find on the sunburned area were
not there.

In another case at the beginning of the summer both arms were
shaved and then during the following months one was protected by a
sleeve while the other was exposed. After three months, the hair on
the exposed arm was very definitely longer than on the other arm, but
after another three months no difference in the hairy covering could
be detected. This seems to indicate that certain stimuli, such as actinic
rays, may accelerate hair development during its growing period, per-
haps causing it to reach its final length at an earlier date, but that they
have no effect whatever on the ultimate amount of hair produced.

EFFECT OF SHAVING

Shaving, perhaps more than any other treatment, is believed to
result in marked increase of hair growth particularly in reference to
thickness or stiffness. Until definite information was at hand, it did
not seem desirable to ask any of the subjects to shave the face. Other
regions including some on which the hair growth in the two sexes is
very different were used, with the assumption that results from the face
would in all probability be of a similar nature.

Three women shaved the right leg from the knee to the ankle twice
a week for eight months. After four months more, which is ample
time for hairs ranging from 15 to 25 mm. in length to grow out, no
difference between the right leg and the left one, which had not been
shaved, could be detected, with the exception that some of the shaved
hairs still had blunt ends.

An area which perhaps might be expected to respond to shaving as
readily as any is the hypogastric region. Hair of this region might be
considered in the nature of a secondary sexual characteristic, for in
TROTTER—HAIR GROWTH

women it is of the fine, downy type, while in men it is usually well developed and similar to the pubic hair. Three women and one man shaved this area twice a week for eight months, and after allowing sufficient time for the hair to regenerate, there was in the case of the women no similarity to pubic hair and in the case of both sexes no change from the type of hair which preceded the experiment. One man and one woman shaved an area on the breast surrounding the areola and also the center of the chest, but after regeneration no change in the hair growth could be detected.

Several hairs on the leg of one of the subjects were marked by injecting gentian violet and then shaved under various conditions. Those which were growing at the average rate were shaved close to the skin, with the result that they continued to grow at the same rate. Others which had stopped growing were shaved, and in no case did regeneration begin again. In one instance, twelve weeks after the hair had been shaved off, a hair appeared, growing at the average rate, but on examination it was found to have a pointed end and consequently to be a new hair taking the place of the other one whose root must have fallen out. A few tests made by cutting hairs on the ear also indicate that, with them, too, regeneration of the individual shaft occurs, if at all, only when it is cut during the growth period.

COMMENT

It is not unusual to find women with hypertrichosis who believe that it is the result of shaving or that the degree has been increased by shaving. The fact remains that in all such cases it was the presence of the excess hair which caused its removal in the first place. One might justifiably assume that if shaving increases the size or amount of hair on a woman’s face it would have the same effect in men, but there seems to be no evidence that such is the case. On that part of a man’s face which is shaved, hairs of the downy type as small as those on a normal woman’s face are present, and in the rare instances of men who never have shaved, the hairs of the beard may be as coarse as those in men who have shaved for many years.

Likewise, the assumption that sunburn has at best any more than a very transient effect on hair growth fails to receive any support from these observations.

In the case of petrolatum, the evidence seems clear that by itself it is incapable of affecting the growth of normal hair. Whether or not it may have any value clinically is not within the scope of this paper.

It should be borne in mind that the observations reported here are not very extensive and that they are based entirely on presumably normal persons. It is believed, however, that they do indicate that
certain widespread ideas as to hair growth do not rest on a firm basis, and that there is need for more careful work before we can know what are the real factors regulating the growth of hair.

SUMMARY

Observations on the rate of growth of hair in normal individuals are recorded.

The rate of growth of hair is different in different regions and shows a positive correlation with the cross section area.

No effect on the growth of hair from application of petrolatum, from exposure to sunburn or from shaving could be found.
REPORT OF THE COMMITTEE ON STATISTICS OF THE AMERICAN DERMATOLOGICAL ASSOCIATION FOR THE YEAR 1921

SIGMUND POLLITZER, M.D.
NEW YORK

In lieu of the customary quinquennial report covering the entire range of dermatoses, your committee, with the consent of the council, limited its inquiry this year to a few diseases whose incidence seemed of special interest. It was recognized that for most dermatoses the ratios of their occurrence have been fairly well established by the thirty-five annual reports already made. In addition to the few diseases whose incidence was recorded, an attempt was made to gather statistics on the occurrence of occupational diseases—a classification heretofore not made in our reports—and to collect some special data on syphilis: the frequency of cerebrospinal and cardiac affections, the number of arsphenamin injections administered and the "reactions" following this treatment.

Twenty-three reports, representing the work of twenty-eight of our members, were received. The total number of cases reported for the year was 48,611. This number is smaller by 17 per cent. than the number reported in the last quinquennial report, in spite of the fact that our membership and the population of the country has increased. Table 1 shows the number of cases of the various diseases reported for the year, their ratio and a comparison with the ratios in the last report and in the combined reports for the 1898-1911 period.

A few words of comment on these figures may be permitted. The ratios of blastomycosis and sporotrichosis are almost identical with those in the 1916 report. The Middle West continues to supply our
cases of these diseases; the twenty-one cases of blastomycosis and six cases of sporotrichosis are reported from Chicago, St. Louis, Ann Arbor and Cleveland, with a few from New York. Epithelioma is represented by 905 cases, constituting 18.5 per thousand, as compared with 21.8 in 1916, and an average of 13.9 for the 1898-1911 period. This ratio, while not up to that of 1916, is still higher than the earlier average, in line with the increased incidence of cancerous diseases in general.

The epidermophytoses and trichophytoses show a large increase, 2,875 being reported, 57.5 per thousand, as against half that number in 1916 (28.8), and an average of 31.9 for the earlier period. The conclusion might be drawn that this group of diseases is on the increase; but it must be borne in mind that recent additions to our knowledge have wrought a change in our recognition of these infections, many forms of which were classified formerly as dyshidrosis or eczemas of various kinds. The apparent increase in the number of cases of leprosy is due to the inclusion in our report of the cases seen by one of our new members, resident in Cuba. The ratio of lichen planus (6.8 per thousand) shows a striking coincidence with that reported in 1916 (6.9), and this figure, roughly, about one case in 200, may be definitely accepted as representing the incidence of this disease in dermatologic practice in America.

Pemphigus, all forms, shows an increase over the previous reports; but the number of cases (forty-nine) is too small to justify any conclusions. Pityriasis rosea also shows a marked increase; 488 cases were reported, 10.3 per thousand, as against 8.2 in 1916 and 4.8 for the 1898-1911 period. This dermatosis has come to be generally recognized by dermatologists only within the last twenty years, and the conclusion that the disease is on the increase is probably not warranted. Psoriasis shows a slightly smaller ratio than our previous averages, but the difference is not significant. It may be accepted that psoriasis occurs in dermatologic practice in this country in the ratio of five or six cases in 200, a figure considerably smaller than that shown in various European statistics.

Scabies, with 65.8 cases per thousand, shows an incidence somewhat above the average for this disease, but considerably below the peak of ninety-seven per thousand in 1903. From the high point of that year the scabies curve dropped uniformly to its mean of about fifty per thousand in 1911 (annual reports ceased with that year), and in the first quinquennial report (1916) had fallen still farther, to the low figure of thirty-two per thousand. It seems to be a general impression that the number of scabies cases was greater in 1920 than the number included in the present report. If this is true, it seems probable that
a high point of possibly sixty or seventy per thousand was attained in 1920, and that the incidence of this disease is at present again declining.\footnote{1}

With regard to occupational dermatoses, concerning which it was hoped that some important data might be submitted, your committee regrets that no summary of any value is possible. Several members reported no cases at all; one member wrote that he did not make that diagnosis. One large clinic in New York reported 424 cases out of a total of about 8,000 cases (fifty-three per thousand). Another clinic in the same city reported eighteen cases out of about 5,000 (less than four per thousand). It is obvious that no adequate records were made of these cases in the majority in incidences. The matter is of importance, however, in relation to the subject of industrial hygiene and may be worth more attention than most of our clinics have given it.

Except for the total number of cases and the number of arsenical injections, the syphilis reports have proved rather disappointing. Some of the members did not realize that the groups, early and late cases, obviously included all cases of syphilis, but, after recording these totals, reported their number of asymptomatic, cardiac, cerebro-spinal and congenital syphilis, and added these numbers to the figures for early and late cases, giving a syphilis total that left the committee somewhat confused as to their meaning.

Correcting these errors as far as possible, we have a grand total of 9,408 cases of syphilis, a proportion of 173 per thousand, as compared with 132 in 1916, and ninety-four for the fourteen-year period, 1898-1911. The conclusion from the larger proportion of syphilitic patients during the last year that there has been an increase of from 30 to 90 per cent. in the incidence of syphilis throughout the country, is, in the committee's opinion, wholly unwarranted. The general impression, indeed, seems to be that the number of fresh infections has been declining for several years. Our increased proportion of cases of syphilis may be more justly ascribed to the circumstance that patients having asymptomatic cases that were neglected in former years are today the subjects of treatment, and that the necessity for continued treatment in the absence of obvious symptoms has been impressed on the patient by the physician and the social service agencies nowadays employed by most clinics. This result of modern teaching is distinctly a subject for congratulation.

Very few of the members made any report on the reactions following injections of the arsenicals, and these few are scarcely worth compiling. It may be noted, however, that there were six cases of exfoliative dermatitis out of 2,744 syphilitic patients reported by six

members, a ratio of a little more than two cases per thousand. These totals are too small to justify any conclusion. One death after arsphenamin (exfoliative dermatitis) was reported. Most of the members reporting give the number of arsphenamin injections: 9,408 syphilitic patients received 58,117 injections of arsphenamin during the year, a ratio of 6.2 injections per case. The practice in different clinics varies considerably. The highest number of injections reported was twelve per case a year; the smallest number two per case a year. In the larger clinics, the number of injections were fairly uniform, averaging from six to eight per case a year.

The committee is convinced that the inadequacy of the reports received is largely due to the circumstance that the members were not notified early enough as to the nature of the information sought. The subject is of great importance, however, and a report covering the large totals that might be obtained if all our members were sufficiently interested to make careful records and reports, could well yield results of great value. The committee asks authority to renew its inquiry next year and to this end to submit a circular stating explicitly the kind of information sought in regard to syphilis and the occupational dermatoses, at the end of the current year, limiting the inquiry to these two subjects, so that the members will be prepared to gather statistics during the coming calendar year, to be submitted early in the year 1924.
REPORT OF A CASE OF DISSEMINATED GUMMATOUS SPOROTRICHOSIS, WITH LUNG METASTASIS. L. M. WARFIELD, Am. J. M. Sc. 164:72 (July) 1922.

In this case, there were the usual ulceration and gummatous formations on the feet, legs, arms and face, the lesions yielding a sporothrix culture. Roentgen ray revealed involvement of the right lung; and attention is called to the possibility of generalization of sporotrichosis and lung involvement.


Two cases are reported in which the only complaint was pain in the back. In one case, a roentgenogram revealed a thickening of the periosteum and bony deposits at the tenth, eleventh and twelfth dorsal vertebrae. The other case was negative. Both patients had a negative history but a strongly positive Wassermann reaction, and in both the backache was cured by antisyphilitic treatment. Syphilitic spondylitis should always be considered a possibility in all indefinite cases of backache.


This is the first of a series of articles dealing with a number of questions relating to the amount of arsenic in the blood after intravenous injection; the amount in the urine; variation in the amount; the difference after using the various preparations intramuscularly; length of time arsenic is demonstrable, and similar questions regarding arsenic and the cerebrospinal fluid. It deals with the apparatus used, reagents and tests for arsenic. Later articles will give the relation between clinical and analytic data.


The Wassermann reaction, it is stated, is always positive at some stage of syphilis but rarely positive in syphilis-free cases. Other diseases, such as malaria and tuberculosis give only weakly positive reactions when positive at all, and uncomplicated hyperthyroidism gives no positives. The author believes the cholesterolized antigen invaluable in following cases in which patients are under treatment, but which are too sensitive for diagnosis without a definite history or symptoms.


From these studies, the authors conclude that positive colloidal gold reactions are due to the presence of precipitating substances which, with protecting
substances, are present in pathologic spinal fluid. Albumin and globulin can be both precipitating and protective, but, when syphilitic and normal serums are ultrafiltered, their curves are more or less similar, the difference being more marked with the syphilitic than with the unfiltered serum. The protective action is partially neutralized by salt solution and by ultrafiltration, while both precipitating and protecting powers are modified by the state of the protein.

JAMIESON, Detroit.


During investigations on the frequency of trichomycosis axillaris in patients admitted to the tropical section of the Orpington Hospital, the authors found that more than 80 per cent. admitted during the summer were affected with this disorder. In the hospital cases, only the yellow variety was found; while, among private patients, in addition to the yellow variety, two cases of the red and one of the black variety were seen. Most of the patients seemed to have contracted the affection in tropical or subtropical countries, but it was found also in individuals who had never been out of England or France.

Castellani has described three types of trichomycosis—the yellow variety, due to a fungus which he called Nocardia tenuis; the black variety, due to the same fungus plus a black pigment producing coccus which he called Micrococcus nigrescens; and the red variety, due to the same fungus plus a red pigment producing coccus, Micrococcus castellani. The microscopic and cultural characteristics of these various organisms are then given in detail.

It appears that, when the nocardial fungus first attacks the hair, it grows and pushes its way under a cuticular scale. It then works its way into the cortex, in so doing, raising its superficial fibers, which, together with the cuticular scale, form a covering or protection for the fungus, which probably finds its nutriment in the cortex. The fungus does not penetrate very deep into the cortex, but grows outward, forming the characteristic nodules. This method of growth explains why the hair is affected so little, though at times it loses its luster.

Clinically, the affected hairs of the axilla and pubes present nodular formations, yellow, black or red, depending on the type of infection. In the tropics, the nodules are of a rather soft consistency and are easily removed; while, in temperate zones, the nodules are such smaller, and difficult to remove.

The infection generally appears to be from man to man. In acute cases, the skin of the axillae may be erythematous, and hyperhidrosis is a common complication. As long as the patient resides in a tropical country, there is no tendency to spontaneous cure; but the condition may subside or disappear completely if he goes to a cold climate. An efficacious method of treatment consists of dabbing the axillae twice daily with 1 dram (3.7 c.c.) of liquor formaldehydi to 6 ounces (178 c.c.) of alcohol, while at night a 2 to 5 per cent. sulphur ointment is rubbed in. Tincture of iodin is useful in obstinate cases, after a few days of the foregoing treatment.


Fraser describes a condition seen only in the scalps of syphilitic South African natives, by whom it is called wit kop, dikwakwadi or white head. It
appears to be most prevalent in British Bechuana land, where the native population is extensively syphilized, although the great bulk of the syphilis is of the hereditary type. Among these people, "wit kop" is so frequent and consistent that it has come to be considered a specific manifestation of heredo-
syphilis in the degenerate Bechuana.

The condition begins with the appearance of a number of isolated lesions on an apparently healthy scalp. These macules have the usual characteristics of syphilitic macules, and are slightly raised and almost colorless. They appear irregularly, and have no relation to hair follicles. They develop into papular types, notable because of their noninflammatory character. Coalescence begins in the papular stage, and is well advanced with the pustular stage. The pustule soon shows a marked tendency to crust formation, the crust being dry and friable, and made up of layers. By coalescence of these dead white to yellowish white crusts, the scalp becomes covered with a thick dry dirty white crust, and is totally devoid of hair except around the nape of the neck and in front of the ears.

The condition resembles favus, but, according to the author, is readily differentiated. Although a fungus has been described as being found in a few cases, the author is convinced that it cannot be regarded as the etiologic factor, while its direct connection or association with spirochetal affection cannot be disregarded.

In untreated patients, there is a slow chronic unresolving course, with a marked tendency to relapse; but consistent combined antisypilfitic treatment causes a rapid disappearance of "wit kop."

THE ASSOCIATION OF EYE LESIONS WITH ROSACEA. R. CRANSTON


Struck by the frequent association of rosacea with keratoconjunctivitis which, he states, is a condition well known to the ophthalmologist, but apparently not so familiar to the dermatologist, Low discusses the eye changes present in these cases. Blepharitis, conjunctivitis and keratitis, separately or combined, are seen. The blepharitis manifests itself as a slight scaling, which Low believes is due to seborrhea.

The conjunctivitis may be of two types, the first a noncharacteristic form, with slight redness of the mucous membrane. The palperal conjunctivae are chiefly affected here, and the picture is due to the presence of numerous dilated capillaries. The second type is less common but more severe, appearing as a number of small raised papular lesions, pin-head sized, greyish, and surrounded by a ring of minute dilated capillaries. The lesions usually occur on the bulbar conjunctivae. The lesions resemble closely those of phlyctenular conjunctivitis. These two types of conjunctival lesions usually occur together, and in most cases a scaly blepharitis is also present. The keratitis occurs in rosacea in three forms; a mild form, with ulceration of the cornea with surrounding infiltration; a severe form, with ulceration and subepithelial infiltration, and the severest form of all, with a progressive inflammation of the cornea resembling rodent ulcer. Low thinks that the skin and eye lesions are etiologically identical. The incidence of eye lesions does not depend on the severity of the rosacea, as most cases with eye lesions seem to show the milder type of rosacea. A 1 per cent. ichthylol-zinc ointment or a
1 per cent. sulphur-salicylic acid ointment gives the best results in the treatment of the lid lesions; while the treatment of the rosacea is also said to have a beneficial effect on the lesions.

Senear, Chicago.


In patients with vasomotor disturbances of the extremities, the capillary blood pressure in the fingers is low and the capillary flow is retarded during the period of ischemia or cyanosis. With the return of a normal color to the hands, the capillary pressure, as well as the flow, rises and approaches the normal. In most of these patients, the capillaries of the fingers are longer and wider than in healthy persons, and often exhibit many convolutions and a bizarre architecture.


The authors report twelve cases of this apparently rare affection. The lesion in all their cases was in the lumbar spine. As a rule, the condition comes on quickly and without pain. The differential diagnosis is discussed at some length. A corrective jacket, in addition to specific treatment, is advised.


As a result of their own experience and that recorded in the literature, the authors conclude that rough teeth, by causing mechanical irritation, inaugurate the vast majority of cases, syphilis and tobacco being accidental rather than causative factors. They advocate the actual cautery as the best therapeutic measure.


The patient had an indurated scaly lesion of the penis, in which fungi were demonstrated. A dark-field examination was negative. Later, secondary syphilitic manifestations appeared. Eichenlaub believes the ringworm fungus was a secondary invader.

Michael, Houston, Texas.


The advantage of larger doses, absence of local reactions and increased frequency of administration are claimed for this preparation in comparison with other mercurials. Experimental work demonstrated that only a small portion of the mercury administered passed through the kidneys and necropsy revealed that no damage had been done to the kidneys or to any other organs by the mercurosal.

Contact with alcohol, ether and heat does not increase the toxicity of the preparation.

Jamieson, Detroit.
THE PRESENT STATUS OF RADIIUN THERAPY. E. S. LAIN, South. M. J. 15:495 (June) 1922.

The author testifies to the value of radium in the diseases in which it is indicated by common consent. He believes that radium will eventually become the treatment of choice in cancer of the lips and mouth.

MICHAEL, HOUSTON, TEXAS.

THE FIRST CONGRESS OF FRENCH SPEAKING DERMATOLOGISTS AND SYPHILOLOGISTS. Presse méd. 30:559 (July 1) 1922.

The Epidermomycooses. Presented by Petges of Bordeaux.

Intertrigoid Epidermomycosis: Besides the streptococcic intertrigo of Sabouraud, there are some intertrigos of mycotic origin, first observed in the inguinal folds and described by Whitfield, in 1908. We owe the discovery of Epidermophyton (1910) in these lesions to Sabouraud. Clinically, one cannot clearly differentiate true intertrigo, streptococcic intertrigo and mycotic intertrigo.

The intertrigo due to the yeasts resembles closely Epidermophyton intertrigo. The yeasts found are Saccharomyces, Endomycosis albicans and the cryptococcus.

The intertrigo due to Epidermophyton inguinale is poorly outlined; it has numerous satellite lesions beyond the periphery; it is humid and glistening, more or less infiltrated, with sometimes a white creamy surface, indicating a certain degree of maceration. It frequently has minute vesicles on the borders or arranged in groups. The Epidermophyton type is midway in appearance between the dry streptococcic type of Sabouraud and the impetiginous or purulent stage.

Diabetics: Those suffering from diabetes are prone to develop Epidermophyton intertrigo, owing to the dampness and heat in the affected regions, which are impregnated with sugar.

Eczematoid Epidermomycosis: At times the Epidermophyton eruption may be recognized clinically, but there are numerous cases of true eczema that cannot be differentiated from Epidermophyton intertrigo without the aid of the laboratory. The intertrigo due to yeast must also be ruled out, but only by the laboratory.

Sporotrichum perhaps plays a rôle. Dubreuilh and Petges reported a case of mycotic eczema extending from the neck to the feet; it resembled true eczema so much that its etiology was obscure for several months. It was finally discovered to be due to Sporotrichum beuermanni. There was nothing suggestive of deep sporotricosis.

Dr. Petges has noted several cases which strongly resembled seborrhoeic eczema. The eyebrows, forehead and lids were involved, and on culture a "Trichophyton gypseum-asteoides" was found.

Dyshidrosiform epidermomycosis: Recent work by many investigators has proved conclusively that the malady of T. Fox and Hutchinson may frequently be mycotic or due to yeasts. However, there is undoubtedly a true dyshidrosis, due, perhaps, to some artificial cause. The parasite of the mycotic dyshidrosis is found on the top of the vesicle and not in the fluid.

Various Types of Epidermomycosis: Du Bois believes certain related types of pityriasis rosea are due to a parasite. This recalls Hebra and Vidal's theory and work. They thought that it was due to Microsporon roseum, and that it was infectious.

Keratotic Types: The old hyperkeratotic eczema of Dubreuilh is now believed to be caused by a cryptococcus (Cryptococcus myceticus). There are

ABSTRACTS FROM CURRENT LITERATURE
also some epidermomyceses of psoriasiform, parakeratotic and syphiloid types. The author observed a child covered with psoriasiform parakeratotic plaques due to *Achorion schönleinii*.

Erythematous and Infantile Dermatitis Types of Epidermomycosis: Some cases of erythematous, erythematousquamous and infantile dermatitis are of mycotic origin. Yeasts are also believed to be responsible for a number of cases of the foregoing types. Dr. Petges classified the parasites and yeasts most commonly found.

The therapy of epidermomycosis is important. Iodin, chrysarobin and Whitefield's ointment may cure it, but if *Epidermophyton* is planted on a true eczema, the condition may become worse. One must also remember that some of these cases are due to the staphylococcus, streptococcus or mixed organisms, and here a real question of therapy enters.

**Discussion.**—A Vesicopustular Form of Mycotic Intertrigo of Dubreuilh: Favre (of Lyon) described an epidermophyton intertrigo of the folds which was vesicobullous in character. It was quite pruritic, and its location made one think of dermatitis herpetiformis. On examination of the scales and cultures, the parasite was found to resemble yeast. The condition was cured quickly by iodin.

Epidermomycosis Due to "Trichophyton Rubrum": Montlaur and Dumet reported a case of circinate, polycyclic inguino-crural lesions with a series of concentric circles. The parasite was *Trichophyton rubrum or purpureum* of Castellani-Bang (1910).

Lesions of the Glabrous Skin Produced by *Microsporon Audouini*: Pautrier and Reitmann (of Strasbourg) have observed in schoolchildren, 160 cases of disease of the scalp and thirteen cases of disease of the body caused by *microsporon*: the plaques were single and multiple. Cases of this kind are rare, because it is well known that tinea capitis is commonly due to *Trichophyton* and occasionally to some *Microsporon* of animal origin, such as *Microsporon lanosum*.

A Case of Epidermomycosis Due to "Mucor Ramosus": Spillman and Lasseur (of Nancy) report an observation on a patient presenting some erythematousquamous lesions on the neck and forearms, arranged in placards, recalling herpes circinatus. The lesions soon lost their superficial characteristics; the epidermis became thickened and covered with pustules, soon followed by deep ulcerations, covered with yellowish pus, resembling dermatitis vegetans. Cultures were taken from the pus. They contained *Mucor Ramosus*, closely akin to *Mucor corymbifer*.

A Dyshidroïdiform Epidermomycosis Due to a "Cryptococcus": Burnier and Langeron had observed in a woman of 70 years a squamous lesion between the toes and on the plantar surface of right foot, which had been present for six months. Examination of the scales revealed spores, and a pure culture contained yeast forms. They called the parasite *Cryptococcus jeannelae*.

Researches on the Mycotic Origin of True Dyshidrosis and Some Dyshidrosis Eruptions: Leclaire pointed out that according to some works of Darier and Mie, Liascheff the origin of dyshidrosis is either mycotic or artificial. They examined thirty-two cases of lesions on the hands and feet characterized by dyshidrotic vesicles. These types of dyshidrosis were found: (1) True, typical dyshidrosis or the malady of T. Fox was most frequent (eighteen cases out of thirty-two). Research and culture for parasites were always negative. (2) Dyshidrosiform eruption from various causes: some had an internal cause—visceral lesions or intoxication (seven cases); the others an
externa cause—artificial (two cases) or mycotic (five cases). Epidermomycoses resembling dyshidrosis, especially frequent on the feet, but which may exist on the hands. In these cases it is necessary to find the parasite.

Etiology of Dyshidrosis: Milian is of the opinion that dyshidrosis is a syndrome of syphilis. It responds readily to antisyphilitic treatment.

Ravogli cannot admit the syphilitic etiology of dyshidrosis because the vesicular syphilit is a rare condition. When it occurs in a syphilitic person, it is a coincidence.

Brocq considers dyshidrosis a well-defined morbid entity which usually appears in springtime. He does not consider true dyshidrosis of mycotic origin, and believes that it should be differentiated from the dyshidrosiform dermatosis, which can be proved to be due to external pathogenic agents. Thibierge supports Brocq's opinion.

Darier and Mil. Iliascheff found mycelial parasites in 80 per cent. of the cases in which the clinical aspect was that of dyshidrosis.

Gougerot has observed ninety-seven cases of dyshidrosiform epidermomyces in eight years; twelve times, he found yeasts in the lesions; twenty-seven times, some fungi other than yeasts; in the other cases, he was unable to find anything.

Ravogli (of Cincinnati) believes that true dyshidrosis has nothing to do with mycotic conditions; he considers it of angioneurotic origin.

Bloch (of Zurich) believes that one should differentiate between dyshidrosis of the hands and feet; the hands rarely show fungi, while the feet frequently do. With cultures of fungi, the author has been able to reproduce some elementary lesions of dyshidrosis on himself.

Peyri (of Barcelona) considers dyshidrosis as an individual cutaneous reaction. In some patients, any general cause may produce the dyshidrosis as an individual cutaneous reaction. It is thus that he has observed this affection after the administration of arsphenamin. Occasionally fungi are present, which the author considers only as an accessory element, because he has never been able to reproduce the lesions experimentally.

Horta (of Rio de Janeiro) points out that in Brazil one frequently finds, side by side, true dyshidrosis, dyshidrotic dermatosis or dermatoses caused by some yeast or trichophyton, especially by Trichophyton rubrum or purpurum of Castellani; in other cases, one finds nothing.

Sabouraud says that he is certain that some conditions called dyshidrosis are mycotic, and vice versa. The mycotic lesions of the fingers present one fourth to one half a circle, sufficiently recognizable to distinguish true dyshidrosis.

True Intertrigo: Dubreuilh (of Bordeaux) believes that true intertrigo is due to friction; he has observed it appear on the internal thighs after a day of marching and disappear after a night's rest. It was hot, red, swollen and painful.

Queyrat does not admit that intertrigo is a dermatologic entity; he considers the characteristics of an intertriginous lesion as one situated between two surfaces which rub against each other; he prefers to differentiate between an intertriginous erythema, an eczema and an erythematous psoriasis.

Ravogli says that it is difficult to differentiate a simple intertrigo due to friction from one due to the epidermophyton.

Mycotic Etiology of Pityriasis Rosea: Du Bois (of Geneva) has encountered in some erythematosus dermatoses of the type of pityriasis rosea of Gibert,
a fungus, *Microsporon dispar*; but the clinical diagnosis is difficult to establish between the different forms of generalized pityriasis. It is difficult to find the parasite, and the culture cannot be made from it.

Sabouraud thinks that the spores found by Du Bois were not those of true pityriasis rosea but of some eruption simulating it.

Hyperkeratotic Forms of Epidermophytosis: W. Dubreuilh draws attention to the trichophytosis on the palm of the hands which makes the palms a little dry and wrinkled. The lesions are unilateral or bilateral and bear no relation to the profession of the patient.

Epidemics of Epidermophytosis: Halle has observed an epidemic of marginal eczema of Hebra in the sanatorium for tuberculosis of Bligny. The epidemic lasted a year. One is unable to combat it; it ends by extinction; the mode of contact remains obscure.

Sabouraud has reported some endemo-epidemics of epidermophytosis in young children of the upper classes. Seventy-five cases were noted in two years. Efforts to control these epidemics in young children were made for three years before the condition could be stopped.

Du Bois points out that pityriasis versicolor is frequent in pregnant women but disappears spontaneously with the end of pregnancy.

Br. Bloch notes the frequency of oidiomycoses in the diabetic. He proves this point experimentally in the dog.

Flandin calls attention to the role of sensibilization. Dyshidrosis attacks certain subjects and appears in them periodically. The lesions may survive after the disappearance of the parasite. For desensibilization, sodium hyposulphite, autoserotherapy, etc., are indicated and give good results.

**Diverse Communications**

Statistics of Contagious Syphilis Observed in Parisian Prostitutes from 1910 to 1921.—Bizard and Bralez have noted that the percentage of women with contagious syphilis has a tendency to increase rather than diminish. This is not due to laxity on the part of the antivenereal clinics; he suggests, however, that a closer surveillance of the prostitute should be observed.

Carle (of Lyon) believes the number of prostitutes having contagious lesions is diminishing, as shown by his statistics.

Preventive Treatment of Syphilis During the Incubation of the Chancr.—E. Bodin (of Rennes) has treated five healthy women who have been exposed to infection either from a chancre or secondary genital lesions. These women received a single series of from four to six intravenous injections of neo-arssphenamin. None of the five was infected, as shown clinically and serologically. Many others have reported similar results, and it has proved of assistance to those exposed.

Carle (of Lyon) says that he knows of eight of eleven patients who were exposed by syphilitic women, and who never contracted syphilis. They used no prophylactic measures. Carle warns against these premature reports filtering through into the daily press.

Pigmentations, Depigmentations and Cutaneous Atrophies Among Syphilitic Patients.—Payenneville (of Rouen) reports six observations: three cases of pigmentation of healthy skin in the secondary period, with the phenomena of suprarenal insufficiency; and three cases of vitiligo in two of which the lesions appeared in a syphilitic during the evolution of the eruption, and in
one of which it occurred before the secondary eruption appeared. These observations point to an involvement of the suprarenal, which coincides with Br. Bloch’s theory as to the cutaneous pigment.

**Intravaginal Chancre. Prolongation of Duration of Incubation Following Injection of Neo-Arsphenamin Given Thirteen Days After Suspicious Intercourse.**—Paul Meynet (of Nice) reported a case of a woman who had intercourse, Feb. 6, 1922, with a subject having a suspicious lesion on the penis. On Feb. 19, 1922, tests made on the woman were negative; she received, at this time, one injection of neo-arsphenamin; on May 12, 1922, ninety-three days later, she returned with an ulceration on the left vaginal wall in which spirochetes were found; the Wassermann test was negative. The man was examined and found to have had chancre on the right side of the penis. It is interesting to note the location of the chancre and the long period of time before development. Had more neo-arsphenamin been given, the condition would have probably been aborted.

**The Leper and Mode of Transmission.**—J. Peyri (of Barcelona) lays much stress on the mode of transmission in lepers at the leper houses. The author has placed some fragments of leproma on inanimate objects and established the existence of Hansen’s bacilli some time later. The author believes that there exists in all cases a cutaneous or mucous condition which opens the channel for contagion, even in the nervous form.

He gives the name “lepromous chancre” to all localized leprous lesions of long duration; when one notes a generalized eruption it is usually hereditary in origin, or there is an intestinal chancre.

**Partial Scleroderma Treated Successfully by Associated Opotherapy.**—Hugel (of Strasbourg) presented a case of scleroderma of the foot and calf of the leg which disappeared entirely under the administration of thyroid, ovarian, hypophysal and suprarenal preparations. He noted scleroderma with the same frequency as goiter in Alsace.

**Autohemotherapy in Dermatology.**—Nicolas and Gatte (of Lyon) have had remarkable success with thermotherapy in cases of prurigo, papulovesicular eczema, Duhring’s disease and especially furunculosis; on the other hand, in lichen and ordinary eczema Spillmann (of Nancy) and Laureut (of Saint-Etienne) have had the same success with this method in pruritis and prurigo.

**McCafferty, New York.**


From his experimental work, the author concludes that it is possible to inoculate the virus of herpes on the skin of another person; that it is possible to autoinoculate the virus of herpes on the arm of the patient himself, and that the virus of keratitis herpetica of the rabbit, when inoculated in the human skin, reproduces typical lesions of herpes.


The author reports thirty cases of a bullous dermatitis, twenty-six of them occurring in children under 13 years of age, living in one community. He reports eleven other cases disseminated in the surrounding villages. The dis-
case ran a course of from two to four weeks, new outbreaks of bullae appearing every three or four days. In children, there was pronounced general disturbance and a thermic reaction reaching 38 C. (100.4 F.). No fatalities occurred.


The patient had a furuncle situated in the tragus. About fifty days afterward, a syphilitic chancre developed on the scar. Syphilitic chancre of the ear is rare, representing about 2 per cent. of all extragenital chancres.


Report is made of a case of a small tumor of one year's duration, situated on the right eyebrow of a man 38 years old. Xanthoma tuberosum was given as a probable diagnosis, on account of its yellowish color. Teratoma and fibroma were also considered. Pathologic examination proved it to be a typical cylindroma.


The city and district of Bologna have been infected with grain-mite, producing dermatitis, for many years. Majocchi reports about 300 cases of the condition in the year 1921. The eruption is the typical erythematopapular or papulovesicular dermatitis produced by pediculis ventricosus. Epidemics are common in jails and asylums.


A girl, 17 years old, presented numerous patches of erythematopapular, desquamating erythroderma. A peculiar feature was the presence of numerous dilated capillaries on the affected areas. The blood pressure was 220. Thyroid extract therapy reduced the pressure to 180, and the cutaneous condition improved at once. The condition seems to be due to an endocrinous disturbance causing increase of the blood pressure.


Many dermatoses present atypical epithelial changes that may be considered precancerous, and indeed many cases of epithelioma develop on old scars of lupus vulgaris, lupus erythematosus, radiodermatitis, psoriasis, varicose ulcers and syphilitic scars. The author thinks that eczema precedes the development of Paget's disease and of Bowen's precancerous dermatosis. The first case reported by Bowen, in 1919, was one of epithelioma developed from an arseneal keratosis implanted on a chronic eczema. Two cases of Bowen's disease are reported, in both of which the lesions were situated on chronic eczematous patches. The differentiation between Paget's and Bowen's conditions is fully considered.

V. Pardo-Castello, Havana.
ABSTRACTS FROM CURRENT LITERATURE

CARBON DIOXID SNOW THERAPY. Pavel Beutl, Ceska Dermat. 4:1, 1922.

Pusey's carbon dioxide snow treatment has been tried out with good results at the skin clinic in Brünn. The lesions of the face were especially benefited by this method. Freezing alone has been used in cases of simple vascular and pigmented nevi, lupus erythematosus, keloids and cases of epithelioma. Several cases in which patients were treated by combined methods are reported. An extensive verrucous linear nevus was previously treated by Unna's digestive fluid to remove the horny masses; in a hemifacial cavernous hemangioma, the external maxillary artery was ligated and freezing was then combined with electrocautery; in nine cases of epithelioma, the patients were exposed to roentgen rays a day after freezing (two recurrences). In lupus vulgaris (ninety-two cases), the tubercles were at first disintegrated by means of Fin- sen light or by electrocautery, and then freezing was employed to bring on a more rapid resorption of newly formed pathologic tissue and a better scar. In lupus vulgaris of the face, the author favors the combination of freezing with the sodium chlorid method as used by Jadassohn.

BISMUTH—THE NEW ANTISYPHILITIC REMEDY. Victor Sedlak, Ceska Dermat. 4:10, 1922.

At the clinic in Bratislav, "Trepol," tartrobinmuthiate of potassium and sodium in oil suspension has been given a trial. Seventy-six patients having syphilis in various stages were treated. A course consisted of from ten to twelve intragluteal injections: first, two of 2 c.c. each, two days apart; then three 3 c.c. doses, three days apart; finally doses five or six days apart, as the infiltrate disappears more slowly. The drug seems well tolerated. Gingivitis often develops, but it was never so severe as to interrupt the course of treatment. The lesions promptly disappeared. In some cases—presenting mucous lesions and late manifestations—the healing was more rapid than ever noticed under arsphenamin or mercury. In its direct spirochetical effect, the bis- muth is superior to mercury but inferior to arsphenamin.

A COMPLETE OBSTRUCTION OF BRONCHUS CAUSED BY A GUM-MATOUS PROCESS. F. Svoboda, Ceska Dermat. 4:15, 1922.

Report is made of a case of a complete obstruction of the left bronchus 1 cm. below the bifurcation of the trachea. No air was entering the left lung, and the patient suffered from extreme dyspnea. He also showed an under- mined ulcer with lardaceous base on the right shoulder. Administration of potassium iodid resulted in a complete cure.

Spinka, St. Louis.
Society Transactions

PITTSBURGH DERMATOLOGICAL SOCIETY

Sept. 28, 1922

W. H. GUy, M.D., President, in the Chair

PEMPHIGUS. Presented by Dr. Burke.

A boy, aged 12, was first seen two weeks before, when he presented two areas of bullae, one on the anterior side of the neck and the other in the right axilla. Each area contained ten or twelve pea-sized, tense bullae containing clear serum. These areas had persisted for three years, the bullae rupturing in a day or two and new ones forming. The areas were mildly erythematosus, and there was no pustular involvement and no bad odor. He would occasionally have a bulla on the body or legs, but on these locations they always healed in four or five days. The lesions healed with potassium arsenite solution (Fowler's solution) internally and Burrow's solution externally. No new lesions had appeared in ten days. The urine showed a trace of sugar.

DISCUSSION

Dr. Crawford asked whether Dr. Burke considered this a chronic pemphigus of a serious type, as he felt this was a type occasionally encountered in children and was probably a toxic disturbance similar to a bullous erythema multiforme. He agreed, however, with the diagnosis.

CARCINOMA IN SYPHILITIC. Presented by Dr. Hollander.

A woman, white, widow, aged 68 years, married forty-two years, having seven miscarriages and six living children, presented lesions beginning with a pustule on the bridge of the nose fourteen years ago, which would appear and disappear. Six months later ulceration began, which was crust covered. After a course of roentgen-ray treatments the lesions disappeared. A few months later the crust formation reappeared and again responded to roentgen rays. One year later it reappeared. Of eight blood Wassermann tests, three were positive. A short course of antispecific treatment did not influence the lesion. At present the ulceration has destroyed the larger portion of the nose and is surrounded by a hard, pearly border. A brownish crust which covers the lesion separates easily, leaving a bleeding surface.

PAPULAR DISEASE OF AXILLAE AND PUBIS (Fox-Fordyce Type). Presented by Dr. Wertheimer.

A young woman, aged 20, five years ago noticed a pruritus in both axillae, followed by a papular eruption, first in the left axilla two years before, and in the right axilla one year later. One year ago, the nipples became pruritic. This condition was followed by a papular eruption. For the last six months, the pubic region had been pruritic, but free from lesions. There had been
no response to any form of treatment. Both axillae showed pinhead to large pea-sized papules (newest lesions about follicular openings and reddish) seated on a somewhat infiltrated, thickened skin. The older lesions were closely set and some coalesced forming plaquelike areas of a brownish hue. The surrounding skin showed a faint brownish yellow pigmentation. About the nipples were a few pinhead-sized excoriated papules with slightly increased pigmentation.

PEMPHIGUS CHRONICUS. Presented by Dr. Crawford.

A physician, aged 62, who had always enjoyed good health and who had good habits, two and one-half years ago had various sized bullae in the pharynx, the coverings of which became separated and would be coughed up and expectorated, leaving raw surfaces which at times caused a partial aphonia and dysphagia. This condition continued for more than a year with intermittent recovery and relapse. Three months after the onset of bullae in the pharynx, there occurred over the auricular helixes and later about the nasal orifices and at the angles of the mouth bullae which were at first small and tense and which rapidly developed in size from 0.5 to 1 cm. or larger, when they became flaccid and the contents seropurulent, later drying up and disappearing, leaving a flat, reddish area, which finally disappeared. Similar lesions had occurred over the back of the neck and over the dorsal surfaces of both hands, at times on the forearms and ankles, and recently over the femoral triangle of the right thigh, the latter being accompanied by a right inguinal adenitis. The lesions sprang up over night and developed into large flat bullae in a few hours, often coalescing. The patient usually noticed a local tingling just preceding their appearance. Occasionally they had developed beneath the nail. Several were hemorrhagic, the serous contents having a reddish tinge. The hands had been involved continuously for two years, pinhead sized bullae developing over the dorsa bilaterally. After reaching about 3 to 5 mm. in diameter in a short time, they subsided by first flattening and then forming a thin crust which disappeared after a few days, leaving a temporary reddish stain. There had never been any lesions on the conjunctivae or on the trunk. There was no tendency to grouping, no accompanying pigmention, and the lesions were free from all subjective sensations. The only drugs ingested were sodium phosphate and cascara sagrada; thus the possibility of a pemphigoid drug eruption was eliminated. All physical and laboratory findings were normal.

EPIDERMOLYSIS BULLOSA. Presented by Dr. Willard.

A girl, aged 11, had since birth developed blebs of various sizes on any part of the body exposed to heat, friction or pressure. These became hemorrhagic with severe traumatism. During cold weather the affection was almost entirely absent. A brother and sister aged 8 and 5, respectively, were similarly affected. Her mother, aged 29, was likewise affected but was becoming less susceptible. One uncle and his six children were affected. Another uncle and his nine children were not affected. Both aunts were affected, and of the ten children of one of them, nine were affected. The patient's grandfather on her mother's side was affected and of his four brothers and sisters, two were affected. The great grandmother had the first known case in this family. Descended from her were thirteen unaffected and twenty-seven affected persons.
NEUROSYPHILIS WITH AN ASSOCIATED PURPURA. Presented by Dr. Schwartz.

Mrs. G, aged 52, a large well-nourished woman, presented many symmetrical purpuric lesions on the lower extremities. These began as small petechiae and spread eccentrically, becoming as large as 3 inches in diameter. The first lesion was noted four years before, at which time she was under treatment for secondary syphilis. The original purpuric spots persisted, new ones developing gradually. Examination of the cerebrospinal fluid revealed a positive Wassermann reaction, a trace of globulin, and twenty-six small lymphocytes.

DISCUSSION

Dr. Crawford said he felt that the purpura was not dependent on the neurosyphilis, but that it was due to a food or drug toxemia, and that on account of the presence of brownish pigmentation and punctate petechiae Schamberg's disease should be considered.

Dr. Wertheimer said he believed another disease was beginning, as he noted the dilated blood vessels. He could see no relation of the purpura to the neurosyphilis.

Dr. Guy agreed with Dr. Crawford that it was an unassociated purpura.

LICHEN PLANUS SCLEROSIS ET ATROPHICUS. Presented by Dr. Schwartz.

Miss G., a robust adult woman, presented numerous atrophic lesions over the neck, chest and back. The individual lesion consisted of a small shiny whitish plaque and presented a marked increase in the normal cleavage lines of the skin. The condition was of four years' duration. It had first appeared on the neck, and gradually extended to the chest and back. The condition responded readily to the combined use of mercury and the roentgen ray.

PITTSBURGH DERMATOLOGICAL SOCIETY

Nov. 2, 1922

W. H. Guy, M.D., President, in the Chair

SCLEROACTYLIA. Presented by Dr. Beinhauer.

A woman, aged 34, married ten years, had had influenza in 1918, which was followed by paleness, stiffness and numbness of the left hand. Four months later she had noticed a tightness of the skin of both hands and forearms to the elbows, and she complained of rheumatoid pains. One year later she noticed brownish spots about the face and neck which were accompanied by tenseness, pallor and loss of expression. Her feet were likewise affected. During the last six weeks she had had an eczematoid eruption on both cheeks. Neurologic examination for syringomyelia and areas of anesthesia was negative. The blood pressure was: systolic, 102, diastolic, 72. The Wassermann blood test was negative. A radiogram of the chest was normal, and of the head showed a somewhat smaller than normal sella turcica.
ULCERATIVE TERTIARY SYPHILODERM. Presented by Dr. Guy and Dr. Jacob.

A salesman, aged 32, had an ulcerative dermatosis involving the left side of his nose for five months. A shallow ulcer involved the junction of the mucous membrane of the nose and the skin surface of the left ala nasi. Two healed excavated scars were present on the skin surface of the side of the nose, and there was a superficial ulcer about 1 cm. long by 0.5 cm. wide just above these. A history of syphilis was denied and the Wassermann test had been negative three months previously. An irregular adenopathy was present, but other clinical signs were absent.

DISCUSSION

Dr. Crawford said that he regarded the condition as a tuberculosis verrucosa cutis in that there was little infiltration, the surface of the ulcerated areas was dry and granular, and the edges were irregular in outline. He felt that sporotrichosis should be considered and an attempt made to find and cultivate the fungus.

Dr. Guy said that all cultures were negative, and that the condition had resisted all forms of treatment.

Note: A subsequent blood Wassermann test was negative, and the lesion healed under antisyphilitic treatment.

DERMOID. Presented by Dr. Crawford.

A man, aged 28 years, barber, presented a rounded, pea-sized, deeply situated mass on the left side of the nose about 1.5 cm. below the base. It was elevated about 5 mm. and was about 8 mm. in width. To the touch, it had a resilient hardness and was freely movable with the skin. The surface was red and traversed with dilated capillaries. The epiderm was apparently normal. Nothing could be expressed when the lesion was punctured. The patient said that the condition began three years previously as a minute "lump" which disappeared after six weeks, and that after a lapse of eight months it recurred for another six weeks. After a lapse of two years it recurred the third time, and it had remained stationary in size for six months and produced no discomfort except for its appearance. (Patient refused to submit to biopsy.)

GUMMA OF THE EYELID. Presented by Dr. Beinhauer for Dr. Wertheimer.

A man, colored, aged 39, married, presented a lesion on the conjunctival surface of the left upper eyelid which began four months before as a small papule. During the last six weeks it had enlarged and ulcerated. The lesion was painless. The patient denied venereal infection, was married and had two children living and well; his wife had had one miscarriage at eight months. The conjunctival surface of the left upper eyelid presented an indurated mass the size of a pea with a centrally situated, sharply defined ulceration, the base of which was covered with a dirty gray purulent material. The surrounding tissue showed no secondary reaction. There was a unilateral submaxillary adenitis on the same side. The Wassermann reaction and repeated dark-field examinations were negative. Cultures showed Staphylococcus aureus and albus.
DISCUSSION

Dr. Guy said that he saw the case previously and that dark-field examinations, Wassermann and provocative Wassermann tests with mercury injections resulted negatively. He regarded the lesion as tertiary.

SYRINGOMA. Presented by Dr. Guy and Dr. Jacob.

A colored woman, aged 24, presented a deep seated papular eruption over the upper part of the chest. The individual lesions varied in size from 0.25 to 0.5 cm. in diameter. They were of firm consistency, hyperpigmented and shiny. Subjective sensations were lacking. The condition was of two years' duration. A section was presented which showed cystic epithelial masses and scattered epithelial strands in the corium. The epidermis showed slight acanthosis and an increase in the normal pigment.

DISCUSSION

Dr. Guy remarked that a few of the lesions fulgurated had disappeared entirely, and that the roentgen ray had had no effect.

Stanley Crawford, M.D., Secretary.

PHILADELPHIA DERMATOLOGICAL SOCIETY

Regular Meeting, Oct. 9, 1922

Frank Crozer Knowles, M.D., Presiding

ICHTHYOSIS HYSTRIX. Presented by Dr. Corson for Dr. Knowles.

E. R., an unmarried white girl of 21, had no family history bearing on her case. She had always had a dry, harsh, somewhat crackled skin. Five years ago, it began to take on the characteristics now present. The face, scalp, palms and soles were normal, but the rest of the body was dry and slightly scaly throughout, with the exception of certain areas in which the disease took on more of a keratotic, almost verrucose appearance. These areas were noted chiefly on the flexor surfaces of the wrists and elbows, the axillae and ankles. On the points of the elbows there was no elevated thickening, but it was present over both patellae. The back of the neck showed marked lichenification with diamond-shaped figures. The dorsal surfaces of the hands and the extensor surfaces of the forearms also showed some lichenification, but had been improved by the use of roentgen rays.

Professor Lucien Pautrier of the University of Strasbourg, had seen the case a few days earlier and regarded it as one of erythrodermic ichthyosiforme congenitale.

DISCUSSION

Dr. Schamberg said that he regretted the last named definition, as he felt that the name of the basic condition was used as an adjective—an ichthyosis of an unusual type. He felt that the symptomatology placed it properly in this group. There was thyroid disturbance in some of the cases reported, though in others no such relationship could be traced.
Dr. Knowles said that he agreed with the preceding speaker. No derangement of the thyroid had been noted in this patient.

CASE FOR DIAGNOSIS. Presented by Dr. Schamberg.

A mulatto girl, aged 19, presented an eruption of five years' duration. It consisted of pigmented patches, slightly raised and irregular, with a keratotic surface. It occurred on the back and sides of the neck, between the breasts and in the axillae. Subjective symptoms were wanting, and the condition was slowly progressing. In addition to the eruption described, pigmented macules were present over the chest, scrapings from which showed Microsporon furfur. Between the breasts were linear keratotic, pigmented elevations. Sections from a biopsy made by Dr. Greenbaum showed acanthosis, a considerable degree of keratosis and some slight inflammatory changes around the vessels and in the upper arm. There was considerable hypertrophy of the malpighian layer. The diagnosis of acanthosis nigricans was suggested. That condition was often associated with malignant disease of the viscera, but this patient seemed perfectly healthy otherwise. There was no disease of the mucous membranes. There was also the question as to the rarity of the disease in this race.

XANTHOMA TUBEROSUM. Presented by Dr. Greenbaum for Dr. Schamberg.

I. K., a Jewish tailor, aged 53, had noticed firm lumps on the left knee and right elbow for more than two years. On examination, a small group of hard nodules of reddish inflammatory color, some of them with orange tinted tops, four or five in each situation, were noted. The patient had presented himself for the first time, and detailed study had not been undertaken. No examination of the urine had been made. There was no discussion, as all considered the case to be one of xanthoma tuberosum, possibly of the diabetic type.

MACULAR ATROPHY. Presented by Drs. Strauss and Sidlick.

A mulatto woman, aged 30, presented a more or less generalized eruption which had lasted for five years. In addition, two almost typical butterfly patches on either side of the nose had been present for two years and a half. It was thought that two conditions were present, an erythematous lupus and a macular atrophy. She had received a great deal of treatment for the more widespread condition, directed toward the eradication of syphilis, which her former physicians had believed to be the condition present. The generalized eruption occurred chiefly on the trunk and arms and consisted of thickly set, puffy, foveated grayish-white scars, soft to the touch. There were no active lesions present on the trunk, but on the forearms and to a lesser extent on the upper arms were located a few reddish papules, each about the size of a small pea. They were almost uniform in size. The Wassermann test had been persistently negative.

DISCUSSION

Dr. Schamberg said that he found the case interesting on account of the great extent of the eruption. He felt that all would agree as to the diagnosis of the condition of the face. On the body were suggested the benign soft tumors of Schweninger and Buzzi. He recalled a case designated as atrophoderma pemphigoides shown before the Society two years before. He classed this disease as one of the atrophies.
ACRODERMATITIS CHRONICA ATROPHICANS. Presented by Dr. Weidman.

A white woman, aged 23, married, had a skin condition which began at the age of 4. A long linear tract of atrophic skin extended from the left shoulder down to the fingers of that hand. A small patch occurred on the index finger of the right hand. To the patient's knowledge there had never been any swelling or redness.

As far as the history went, the primary condition was an atrophy. No induration, pain or other objective or subjective symptoms had been associated. The patch was partly pigmented and in some portions depigmented. Roentgen-ray examination of the neck showed no cervical ribs or other swellings. The basal metabolism was normal.

DISCUSSION

Dr. Schamberg said that he regarded the case as one of linear morphea in the stage of atrophy.

Dr. Corson said that the case closely approached one of linear scleroderma he had seen but without any history of induration or interference with joint action at any time; this diagnosis seemed unlikely in this instance.

Dr. Crawford mentioned the possibility of some nervous disturbance being causative as the strip of eruption rather closely followed the course of the ulnar nerve.

Dr. Strauss said that there was a possibility of its being an atrophy following a herpes zoster.

KAPOSI'S SARCOMA. Presented by Dr. Weidman.

A white man, 66 years old, had been presented before the Society several years ago and was shown again, partly on account of the striking improvement. He had received a variety of treatment, largely roentgen ray and radium, at the hands of various practitioners. The disease consisted of purplish nodules on the lower part of the legs, the average size being that of a grape. Much atrophy from destruction of old lesions was also present.

DISCUSSION

Dr. Schamberg remarked on the great improvement which had taken place since the time when he presented the case. There was an appearance suggesting scleroderma and some warty and pigmentary changes, doubtless from radiation.
PARAPSORIASIS. Presented by Dr. Klauder.

D. S., a white man, aged 24, a machinist, had been shown by Dr. Stelwagon in April, 1917. The condition had been present for nine years and appeared as slightly elevated, irregularly shaped, reddish patches, with a slight scale on the surface scattered over the body but located chiefly on the trunk. It was slightly itchy. The Wassermann test was negative. He had been treated with a chrysarobin preparation and radiation.

DISCUSSION

Dr. Schamberg said he felt that the case was one of erythrodermie pityriasique en plaques disseminées of Brocq. There was lichenification in some places. Others might call it parakeratosis variegata.

LUPUS ERYTHEMATOSUS. Presented by Dr. Klauder.

An 18 year old colored girl had a reddish eruption with pigmented borders, extending almost completely around both eyes for a width of from 1 to 2 cm. There was the appearance of denudation of epidermis in the inflamed area. Smaller and disconnected patches surrounded the ears. There had been a gradual extension from a small beginning along each ear, the duration being two years. The Wassermann test was negative, and the case was clearly one of lupus erythematosus, but the presenter felt that the rarity of the condition in this race warranted its presentation.

EDWARD F. CORSON, M.D., Secretary.

MANHATTAN DERMATOLOGICAL SOCIETY

Regular Meeting, Oct. 11, 1922

H. J. F. WALHAUSER, M.D., Presiding

NEURODERMATITIS. Presented by Dr. Rosen.

A woman, aged 48 years, married, born in the United States, presented a rather extensive neurodermatitis. The parts involved were the bends of the elbows, neck, chest, lumbar region, flanks and popliteal spaces. This condition had been present about one year without any improvement from various local remedies.

DISCUSSION

Dr. Levin agreed with the diagnosis of eczema and thought that it might be associated with an internal disorder. He cited a case he had recently observed, in which examinations revealed a carcinoma of the stomach.

SARCOID DARIER-ROUSSEY. Presented by Dr. O. L. Levin.

J. B., a woman, aged 36, married, presented skin lesions of six years' duration. The lesions were present on the upper and lower extremities and the buttocks. They consisted of bean-sized to silver dollar-sized flat and slightly elevated bluish-red and purplish lesions. Although they appeared flat, it was found on palpation that they were deeply infiltrated and could be
lifted up like paraffinomas. Some of the lesions showed a slight apple jelly-like tinge. One lesion on the leg was ulcerated from applications of an irritating salve. A scar on the left arm, resulting from excision of the lesion, presented the same characteristics as the other lesions. Biopsy revealed tuberculosis. General examination disclosed no evidence of tuberculosis. The Wassermann tests were negative. On treatment with tuberculin there was marked improvement, and about 50 per cent. of the lesions had disappeared in about six weeks. Treatment with the roentgen ray had previously been of no value.

**DISCUSSION**

Dr. Levin said that the sarcoids of the Boeck and Darier-Rousse type showed under the microscope changes observed in other forms of tuberculosis, but rarely showed a tendency to necrosis or ulceration. He called attention to the fact that roentgen-ray therapy had been of no avail, while the results obtained with tuberculin were marvelous.

Dr. Oulman said that the tuberculosis bacilli in lupus were demonstrated by the antiformin method, and he asked whether Dr. Levin tried this method to find the bacilli in sarcoids. About a year ago, he presented a case in which injections of cacodylate of soda cleared the condition.

**Pagetoid Epithelioma.** Presented by Dr. Bechet.

M. E., a woman, aged 52, said that the lesion had been present for three years. Six months previously a nodular ulceration had occurred in its center. Its growth had been very slow. On the right lumbar region was a lesion roughly rectangular in outline, about 1 inch wide and 1 1/4 inches long. It was perfectly flat, sharply circumscribed, with a pinkish surface covered with small scales and crusts. In its center was a nodule undergoing slight central ulceration. The borders of the nodule were elevated and pearly in appearance. At the upper border of the lesion distinct atrophy was discernible. The nodule was typically epitheliomatous in appearance, and it was a question whether the patch was Bowen’s precancerous dermatosis with an epithelioma in its center, or whether the whole lesion was a flat discoid epithelioma to which Darier affixed the name of pagetoid epithelioma because of its resemblance to Paget’s disease.

**DISCUSSION**

Dr. Mount said that this lesion fits in with the so-called precancerous dermatosis of Bowen. The name is a poor one, because the condition is demonstrable epithelioma from the beginning. In the case under discussion there was a reddened scaly area circumscribed by a fine pearly border, which on close inspection looked as if it were made up of very small flattened papules. When this border was examined microscopically, it showed epithelioma. The scales when removed disclosed a moist red eroded surface. This condition is sometimes mistaken for sclerosed lichen planus, syphilis or eczema. The Bowen type of epithelioma is a much better name for the disease.

Dr. Rosen agreed with the diagnosis; he referred to the case of a woman 65 years of age who had an involvement of the breast, which began thirty years before, and which at the time of examination showed an extensive infiltration of the entire mammary structure. The patient was in good physical condition. This case is just mentioned to illustrate how slowly progressive Paget’s disease may be.
HYDROCYSTOMA OF THE FACE. Presented by Dr. Wise.

Mr. L. I., aged 56 years, had the disease for thirteen years. Scattered over the face were numerous pinhead-sized firm skin-colored somewhat translucent lesions about 1/4 inch in diameter. A biopsy was made but has not yet been reported.

DISCUSSION

All agreed with the diagnosis.

ANNULAR LICHEN PLANUS. Presented by Dr. Bechet.

C. T., an Italian woman, aged 44, said that the eruption began fifteen years before. Most of the lesions were confined to the arms and legs, and consisted of shiny, violaceous umbilicated papules, irregularly quadrangular. A large number of them had coalesced to form perfect rings. The itching was, as usual, quite severe.

DISCUSSION

All agreed with the diagnosis.

ANGIOMAS OF THE TONGUE AND MUCOUS MEMBRANES OF THE MOUTH. Presented by Dr. O. L. Levin.

A Russian, aged 39, married, said that the tumors first appeared ten years ago and were treated by Dr. Blaschko in Berlin with radium; following about twenty radium applications the tumors had disappeared. Six months before, the lesions began to appear again. As presented, the lower lip showed a pea-sized bluish-red soft tumor. The dorsum of the tongue showed a quarter dollar-sized depressed scarred area on which there was a bean-sized elevated globular purplish tumor. A similar small lesion was seen on the left border of the tongue, and the mucous membrane of the left cheek showed a nickel-sized scar area in which a new tumor was appearing. On the left cheek, just in front of the auricle there was an atrophic area with telangiectasia, a result of previous radium applications.

DISCUSSION

All agreed with the diagnosis.

URTICARIA PIGMENTOSA. Presented by Dr. Parounagian.

H. W., aged 51, a Roumanian merchant, had had a skin affection for twenty years. No venereal history was obtainable. The family history was good; the father died at the age of 70, the mother at 50, after an operation for hernia. Five brothers and two sisters were living and in good health, and none of them was afflicted with skin diseases.

The lesions consisted of macules, papules, wheals and pigmented remains of the older lesions. The entire body was involved. Itching was not a prominent symptom; he experienced slight itching only when he was over-heated. A number of Wassermann tests had been made, with negative results.

DISCUSSION

Dr. Levin said that it was always difficult to make a diagnosis of urticaria pigmentosa, especially in the adult, and the question always arises whether the condition is not one of urticaria with pigmentation or urticaria pigmentosa. It is always important to have a diagnosis confirmed by a report on the pathology.
TUBERCULOSIS VERRUCOSA CUTIS. Presented by Dr. O. L. Levin.

T. G., aged 42, a technician of the department of pathology at Cornell, had a lesion over the metacarpal phalangeal joint of the index finger of the left hand. This lesion began six months before and slowly extended to its present size. As presented, the lesion was about 1 1/4 inches in diameter, elevated, sharply circumscribed, with a hard sloping border and a rough, scaly verrucose top.

**Discussion**

All agreed with the diagnosis.

EPITHELIOMA. Presented by Dr. Wise.

The patient presented a lesion 3/4 inch in diameter, which was clinically a basal cell epithelioma, but the duration was only five weeks. The rapid growth suggested the possibility of its being a prickle-cell cancer.

**Discussion**

Dr. Bechet said that he had recently observed a large basal cell epithelioma, on the center of which a prickle-cell epithelioma had developed. On curetting the mass, it was found that the prickle-cell epithelioma had eroded deeply in the center of the basal cell. He would like to inquire as to the frequency of such an occurrence.

Dr. Oulman said that he had a patient over 70 years old with numerous sebaceous warts with carcinomatous degeneration, who developed metastatic glands which showed the basal as well as prickle-cell type.

**Microscopic Examination:** Prickle-cell epithelioma (Satenstein).

DERMATITIS VENENATA RESEMBLING LICHEN PLANUS. Presented by Dr. Wise.

M. S., an engineer, born in Austria, aged 34 years, had the disease for five weeks. The entire face presented a discrete papulovesicular eruption extending down to the neck. In places the papules were fused, forming patches of erythema. On the flexor aspects of the forearms, especially of the right, were papules and linear scratch marks. Similar but more pronounced lesions were present on the abdomen. The back of both hands showed circular crusted patches with slight oozing. On the thighs were many linear lesions. The inner side of the left leg showed a crusted erythematous patch.

**Discussion**

Dr. Bechet thought that the lesions on the hands and arms resembled a dermatitis. The lesions on the legs strongly suggested lichen planus. The occurrence of the shiny papules in the linear scratch marks rather corroborated such a diagnosis. It was not, however, a typical eruption.

Dr. Levin said that the lesions present were those of a dermatitis (eczema). There were a few lesions present that suggested only lichen planus but were not the characteristic lesions of that disease.

Dr. Parounagian was of the opinion that the eruption was that of lichen planus, on account of the severe itching, symmetry, violaceous color and shining papules, in spite of the accompanying dermatitis, which might be due
to his occupation. He also suggested that Dr. Wise present the patient at the next meeting so that it might be observed whether there was any change in the condition.

Dr. Rosen agreed with the diagnosis of dermatitis from some external irritant. The patient also had an epidermophyton infection on the lower extremity. The diagnosis of lichen planus could be excluded if one carefully studied the character of the lesions, which were vesicopapular, although some were linear in distribution. He had the opportunity to study this case in daylight and failed to notice the presence of any lichen planus papules.

Dr. Gilmour said he believed this to be lichen planus, especially as there were characteristic lesions on the right forearm. He said that he thought the dermatitis was a secondary result of his occupation and scratching.

Dr. Oulman regarded the lesions on the arm, etc., as a secondary dermatitis in connection with the epidermophytosis of the leg. Microscopic examination: Dermatitis, subacute (Satenstein).

DUHRING'S DISEASE OR DERMATOPHYTOSIS? Presented by Dr. Wise.

F. Q., a salesman, single, aged 46, born in Ireland, had the disease six months. The right axilla presented a sharply circumscribed pea-sized patch with an erythematous base and ruptured vesicles scattered throughout. There were similar lesions on the pubic region, extending backward to the perineum. There were a few papules around the umbilicus. The blood showed 1 per cent. eosinophils.

DISCUSSION

Dr. Levin regarded the case presented as one of Duhring's disease. He called attention to several cases that he had seen recently, which may be divided into two classes: one, a mild form with few lesions, while the other, a severe form, showed widespread eruptions with pustule formation and marked reaction in the skin, which tended to go on to scarring and pigmentation.

ALOPECIA UNIVERSALIS. Presented by Dr. Levin.

H. L., aged 29, a photographer, single, said that he had noticed a falling out of the hair of the scalp for about one and a half years prior to presentation. There was a gradual loss of hair of the scalp until there was complete baldness. This then spread to the hairs of the rest of the body, and within three months there was no hair on the body. As presented, the patient showed a total loss of hair in the usual sites. There was nothing in his past history to indicate an etiologic factor. He had had influenza three years before the onset of the condition. The Wassermann test was negative. The patient is to be thoroughly studied, especially in regard to metabolic disorders and disturbances of the internal secretions.

MULTIPLE PIGMENTED HEMORRHAGIC SARCOMA. Presented by Dr. Bechet.

E. L., aged 67, a Polish Jew, who had lived in the United States for thirty-six years, said that he first noticed the eruption six months before. On the feet, ankles and around the knees, were large numbers of reddish-blue to purplish, pea-sized nodules, with here and there diffused infiltration of a verrucose
appearance. A considerable capillary dilation could be noticed around the nodules. An eczematoid eruption was also present on the legs.

DISCUSSION

Dr. Rosen had seen this case in the wards of the Mt. Sinai Hospital about three months before. At that time there was an epidermophyton infection present on the tumors, which gave the condition the appearance of a hypertrophic lichen planus.

REINFECTION IN SYPHILIS. Presented by Dr. Parounagian.

T. R., aged 42, a man, born in the United States, first reported at Bellevue. Aug. 10, 1921, presented remains of chancre in ano, and a generalized roseola of secondary syphilis. The Wassermann reaction was ++++. He said that he had been operated on for hemorrhoids six weeks previously, and that the eruption had been present about four weeks. The patient received a course of silver arsphenamin and after a total dosage of 1.95 gm., the Wassermann reaction became negative. The Wassermann reactions on Sept. 21, 1921, April 3, 1922, and Aug. 28, 1922, were all negative. On Sept. 18, 1922, the patient reported with a small ulcer at the coronary border, of three days' duration. He had been exposed five days and one month before. The dark-field examination was positive for Spirocheta pallida on Sept. 18, 19, Oct. 3 and 10, 1922. The Wassermann reaction was one plus on Sept. 19, 1922, one plus on Sept. 26, 1922, and two plus on Oct. 3, 1922. Another Wassermann test was made, Oct. 10, 1922. The lesions have progressed in size. A faint roseola is appearing.

DISCUSSION

Dr. Levin said that a positive diagnosis of reinfection could not be made in this case, because all the data were not present. In order to make a diagnosis of reinfection, it was first necessary to prove that the patient had been cured of his first syphilitic infection. In this case, all the criteria of a cure were present except evidence of a negative spinal fluid previous to the onset of this apparently new infection. The most that we can say in a case of this kind is that it is a superinfection. If it can be shown that the spinal fluid was still negative, this may prove that the case presented was a reinfection.

Dr. Parounagian said that this patient was treated for his previous infection on our service, presenting anal chancre, roseola, condylomas and a four plus Wassermann reaction. On Aug. 28, 1922, his Wassermann reaction was negative. On Sept. 18, 1922, he reported with a chancre on the coronary border of the glans penis, with a history of exposure five days and a month before the appearance of his genital lesion. Dark-field examination on three occasions disclosed numerous Spirochaetae pallidae, each Wassermann test showed a stronger reaction, and the patient complained of headaches, sore throat and roseola, which should convince us that this was a case of reinfection.

EPITHELIOMA OF ALA NASI. Presented by Dr. Wise.

H. F., a man, born in Austria, had a growth on the left ala nasi, seven years before. Six years before he received radium treatment. The left nostril
was almost entirely destroyed. Around the destroyed area the skin was bluish red and slightly edematous; it showed no definite nodules. Biopsy showed epithelioma, basal cell, and chronic radiodermatitis (Satenstein).

LUPOID SYCOSIS. Presented by Dr. Wise.

A. G., aged 44, born in Russia, married, an upholsterer, had a lesion for fifteen years. He had had practically no treatment. On the left side of the cheek there was a patch of atrophy and complete loss of hair measuring 2 by 4 inches. Along its margins, extending into the bearded region of the neck and hair line of the forehead the process seemed active, that is, there were isolated and confluent erythematous and pustular lesions involving the hair follicles. There was no improvement under roentgen-ray treatment.

D. L. SATENSTEIN, M.D., Secretary.

CHICAGO DERMATOLOGICAL SOCIETY

Regular Meeting, Oct. 18, 1922

HAROLD N. COLE, M.D., Presiding

KERATOSIS PUNCTATA. Presented by Dr. Lieberthal.

A man, aged 44, presented an affection of the left palm, which had been present for over eight years. He did not know of any skin disease in his family, nor had he himself been subject to any except the present one. There were no subjective symptoms except a feeling of dryness. The palm was diffusely keratotic and showed pointlike depressions with horny plugs. The fingers in their proximal volar parts, in their webs and the dorsal extension of the latter, as well as the radial and ulnar sides of the left hand, were erythematous with a faint indication of keratosis.

Dr. Lieberthal said that when he first saw the patient he was not inclined to make a diagnosis of keratosis punctata, as the latter was described as a condition affecting both palms and soles without an erythema in the periphery.

DISCUSSION

Dr. Forster called attention to the fact that Buschke and Fischer had described a condition clinically similar to this, and he thought a case was shown at the recent Minnesota meeting by Dr. Sweitzer. One of the striking features in this patient was that the disorder appeared on only one palm. He did not recall any similar limitation in other reported cases.

A CASE FOR DIAGNOSIS. Presented by Dr. Lieberthal.

A girl, aged 7, had lesions on the arm and back. The disease had been present for one and a half years in recurring attacks of blotches, which caused little itching but were gradually healing leaving white spots. Below the shoulder over the lateroposterior aspects of the humerus on each side there was a quarter-sized shallow, faintly pinkish nonsymmetrical plaque with roundish outlines, consisting of aggregations of minute flat papules closely set, with scanty desquamation. A similar lesion was present on the back
below the right shoulder, and on the medial side over the lower third of the right humerus there was a narrow, longitudinal, irregular papulocorneous streak. A long oval white spot was noted over the left cubita and a dime-sized one on the right arm, which were formerly the seat of plaques. The child was otherwise normal.

**DISCUSSION**

Dr. Senear said that he was inclined to think the condition was a seborrhoic process in a girl with keratosis pilaris. She had a number of comedones scattered over the scalp.

Dr. Ormsby said he thought it was an example of lichen spinulosus of Crocker. This disorder occurs in small patches in young children, about the neck, arms and trochanters, exactly where the lesions were in this case. As it clears up it may leave white areas, and he considered the case rather a typical one of that disorder.

Dr. Lieberthal said that he could not account for such an intensive pigmentary disturbance, considering that the original lesions were of such a mild inflammatory character.

**A CASE FOR DIAGNOSIS.** Presented by Dr. Stillians for Dr. Waterman.

An American woman, aged 24 years, a ticket agent, in May, 1921, had a febrile attack lasting four days, symptoms of a "bilious attack," with an eruption on the right cheek and upper central portion of the chest which lasted until October 1, then gradually faded under treatment. In April, 1922, she had another febrile attack which lasted for three days and was accompanied by sore throat, eruption on both cheeks, nose, ears and chest. The eruption had since spread to the chin, neck, hands, wrists and arms. There was no itching or pain. The Wassermann reaction was negative; the white blood count was 2,050 to 3,200 on four different occasions; the differential count was about normal. Careful search revealed no indications of chest involvement or any other internal disorder. Urinalysis revealed much indican, which cleared up, together with foul breath and perspiration, under treatment for colon stasis. There was moderate secondary anemia.

At the time of presentation, there was sharply defined erythema which involved the face, up to the lower lids, with the exception of a few areas under the mouth and nose. It was red and infiltrated with slight scaling. On the chest was a large, triangular, sharply infiltrated, ham colored patch with a deeper red line at the border, which was sharply raised. On the neck were several groups of large, flat papules. On the backs of the hands were slightly infiltrated papules and erythematous patches which did not cover the joints, over which the skin was clear. The right forearm was involved over the lower half of the extensor surface. There was a patch on the left upper arm and smaller ones on the right arm, the eyelids and forehead. Under the diascopy a distinct yellowish infiltrate was visible.

**DISCUSSION**

Dr. Ormsby said that he saw the patient in May, 1922, when the trouble had been present for six weeks. At that time there was an eruption on the face and chest, and the lesions were very much as at present. There was swelling and considerable edema, with a bright erythema. The lesions were well defined. There was a slight scaling about the lips, and a few papules
about the neck. The patient gave a history of a similar attack, with increased temperature, in 1921. They considered it a recurrent toxic erythema from some internal infection, and he felt the same about it now as he did then.

Dr. Zeisler suggested the diagnosis of lupus erythematosus disseminatus, and he said that he thought the disorder should be differentiated from pellagra. The sharply demarcated triangular lesion on the upper part of the chest and the erythema of the face suggested this diagnosis. At the same time, a lesion on the upper arm, which was not exposed to sunlight and which showed some atrophy, indicated an acute disseminated lupus erythematosus.

Dr. Stokes said that he thought the case was one of lupus erythematosus and that the Society might be interested in hearing the results of three necropsies at the Mayo Clinic on similar cases. Each of these cases had shown mesenteric tuberculosis, although in one of them no tuberculous glands were recognized in the abdomen at exploratory operation. All of the patients had had lower abdominal symptoms which had led to diagnosis of typhoid, appendicitis, etc. During the past summer the Section on Dermatology had had a patient under observation, whose leukopenia reached 1,700 cells. The patient's temperature ranged between 102 and 104 F., for days at a time, with profound emaciation and a sudden myocardial collapse. A metastatic abscess appeared in the calf of the leg, which on drainage was found to contain streptococci. Repeated blood cultures were negative. Arthritic symptoms developed late in the course of the disease. The eruptive manifestations were those of a toxic erythema with a peculiar dry livid appearance of the skin of the face so often seen in disseminated erythematous lupus. A typical patch of discoid erythematous lupus had appeared on the cheek, and there were patches on the scalp which had been identified a year and a half before. The patient's temperature subsided by lysis, and repeated relapses occurred. There were mouth lesions so closely resembling tuberculosis of the mucous membrane that a consultant who had seen a good deal of mucous membrane tuberculosis requested that radium be used. It was remarkable what a proportion of these cases experience errors in diagnosis and presumably reach a fatal termination without identification.

During this boy's prolonged febrile attack, the eruptive manifestations gradually cleared up, only to reappear with each renewed outburst. Dr. Stokes said that he felt that disseminate erythematous lupus presents its peculiar clinical picture because of an etiology of which either tuberculosis or streptococcosis is the basis, the exciting cause of the explosion being a combination of the infections. In all probability the tuberculosis furnishes the hypersensitive background and the streptococcal infection accidents produce the explosion.

Dr. Waterman asked Dr. Stokes whether his cases ever cleared up and then recurred.

This patient was employed by the elevated road and was referred to him by the surgeon for that company, who had been much interested in the case. At one time the eruption cleared up entirely, with the exception of a spot on the chest. The spots on the face, arms and fingers disappeared, so that the improvement was noticed by many people; but in forty-eight hours they were all back.

Four days before presentation, according to the statement of the patient's mother, the condition had cleared up again, but the following day the spots were all back.

There was a history of dementia praecox in the family, and the father was an alcoholic; but the patient presented no neurotic symptoms.
Dr. Waterman had exhausted every means to find the etiology. The tonsils had been removed; the sinuses examined; roentgenograms made of the gastrointestinal tract; the blood pressure was normal; the blood sugar normal, but creatinin increased; the urine was normal except for indican. When she was first seen, there was a very foul breath and a foul, musty odor from the body.

The skin was examined for the usual and unusual parasites. Cultures were made of the scales of exudate on at least one-half dozen kinds of culture mediums. The scales were examined for moles, yeast and the higher types of bacteria; the tropical parasites were also considered in the search, but all these gave a negative response. The patient had gained 15 pounds (6.8 kg.) in weight during the last two months.

Dr. Pusey said that he did not think the rapid appearance and disappearance precluded the view taken by Dr. Stokes. He had seen a patient with unmistakable lupus erythematosus on the face with toxic erythema lesions on the extremities.

A CASE FOR DIAGNOSIS. Presented by Dr. Stillians.

A woman, aged 27 years, who presented small white spots on the back of the neck, shoulders and sides of chest, when she was 22 years old, had had deep red pimples on the back of the neck. They appeared in successive crops, not discharging pus, and gradually disappeared, leaving while papules. During the last year, she had noticed many new, small white spots on the back, shoulders and neck and the sides of the chest. These maculopapules varied in size up to 0.5 cm. in diameter. A hairdresser had given her some treatment with the electric needle.

DISCUSSION

Dr. Foerster said he thought it was a case of acne keloid.

Dr. Stillians agreed that it was the result of acne but said that he thought the development of the small hypertrophic lesions was interesting, some of them being a few millimeters in diameter.

RINGWORM OF NAILS FOLLOWING RINGWORM OF PALM. Presented by Drs. Ormsby and Mitchell.

A man, aged 38 years, presented a disorder of one and a half years' duration. In 1918, he had had an epidermophytton infection of the hands, feet and genitocrural region, which cleared up successfully under treatment; but there had been three recurrences.

At the time of presentation, the index and ring fingers of one hand and the middle and ring fingers of the other hand were involved. The involvement of the nails began about two and a half years after the first infection. The nail surfaces presented the usual wormeaten, crumpled appearance. The fungus had not been identified by culture, and it was not known whether or not the palmar eruption was due to the same organism as the nails.

DISCUSSION

Dr. Ormsby said they would treat the disorder with the roentgen ray.

LYMPHANGIOMA CIRCUMSCRIPTUM. Presented by Dr. Oliver.

A girl, aged 12 years, had had lesions since birth, which had grown with the child. On the right scapular region were groups of small, deep-seated vesicles, which resembled frog's spawn. There were no subjective symptoms.
A CASE FOR DIAGNOSIS. Presented by Dr. Hedge (by invitation).

A woman, 22 years of age, presented a lesion on the right palm, right thumb and thenar eminence which had been present for ten years. There had never been any lesions on the scalp, elbows, knees or elsewhere over the body. The lesion had been healed several times, but always recurred. The Wassermann reaction made on Oct. 14, 1922, was negative. The patient was in good health and had no other dermatoses.

DISCUSSION

Dr. Oliver said that he saw the patient about eight years before, and that Dr. Ormsby saw her at about the same time. The lesion now was in about the same condition that it was then. They made a diagnosis of psoriasis then, and he thought there was no change. He asked what treatment had been used.

Dr. Hedge said that he had used the quartz light under pressure, and the condition had cleared up on three occasions. He believed it was psoriasis.

Dr. Pusey said that he believed a diagnosis of psoriasis could not be made on the basis of a lesion of the palm alone. In his opinion, the case was one of the dry type of dermatitis repens. The condition persists indefinitely. He had seen such a case in a farmer, which had lasted for twenty-five or thirty years.

Dr. Ormsby said that he did not recall having seen the case before, but his only impression at present was that it was dermatitis repens. He had had a case under observation for a long time. Sometimes there was a dry, scaling border, and sometimes this was vesicular.

Dr. Stillians said that he did not see the undermined border in this case, but with the great improvement under treatment it did not look like dermatitis repens to him.

Dr. Oliver said that when the patient was first seen there was much more undermining than at present. They had tried all the remedies suggested for dermatitis repens, and that diagnosis was considered but given up in favor of psoriasis, as it resembled that condition more then than at present.

A CASE FOR DIAGNOSIS. Presented by Dr. Senear.

A woman, aged 55 years, had fallen fourteen years ago and injured herself in the right supraorbital region. She opened the lesion with a needle and obtained pus. Later a swelling developed in the glabellar region. This was opened, but had not healed. Two other lesions had appeared on the forehead and been opened. At three of these openings, reddish tumors had appeared. The Wasserman reaction was negative, and there was no history or sign of tuberculosis in the case. The patient had received five injections of arsphenamin and some mercury a year and a half before.

DISCUSSION

Dr. Stokes said that he thought the amount of treatment this patient had received did not eliminate the diagnosis of syphilis. He spoke of a rare and
as yet unidentified tumor process invading the bones of the nose and palate, perhaps akin to gangosia or to "malignant granuloma" recently spoken of in the British literature, of which he had seen one case.

Dr. Cole asked whether they had made a microscopic examination.

Dr. Senear said that he had seen the patient only once before, in the surgical clinic, and there had been no opportunity for careful examination. The anti-syphilitic treatment was given before they saw her.

CHONDRODERMATITIS NODULARIS HELICIS. Presented by Dr. Mitchell.

A man, aged 45 years, had had a lesion on the margin of the left ear for six months. It was exceedingly tender, making it impossible for the patient to sleep on the left side. At times there was, in addition, a considerable degree of pain. There had been at no time scale formation or erythema.

When first seen, July 19, 1922, there was a slightly elevated nodule, 1 cm. in length, along the margin of the upper pole of the ear. It was slightly yellowish and waxy in appearance. There was a crust approximately the size of a pin-head in the center. Under repeated applications of carbon dioxide snow and radiotherapy, there had been a marked decrease in the sensitiveness of the lesion.

DISCUSSION

Dr. Foerster said he thought it was an instance of the condition described by him in 1917, and also by Winkler, as painful nodule occurring on the rim of the ear, which at times involves the cartilage. The nodules were always small, rose-red, less than wheat-grain-sized, firm lesions, described as very painful on pressure.

Dr. Oliver asked whether a number of these cases were not preceded by frost-bite.

Dr. Mitchell said that this type of case was first described by Winkler, whose article had been abstracted in the Year Book for 1915. The lesion was a nodule and not an epithelioma, and was preceded neither by keratosis nor by frost-bite. The lesion is extremely tender rather than painful, and does not yield to treatment. It was not a common disorder in his experience. He and Dr. Ormsby had had another patient with a similar lesion under observation for several years. This patient appeared in the clinic last summer. The patient presented worked indoors, and there was no question of frost-bite. The other ear was entirely free. Winkler gave the disorder the name of "chondrodermatitis nodularis helicis," carefully excluding keratosis and epithelioma. Dr. Mitchell said that before treatment the lesion was a nodule, slightly elevated, practically skin colored, with no erythema, and with a central crust the size of a pinhead. They saw keratoses in that location, probably half a dozen a day, but he had never seen a keratosis that in any way resembled this nodule.

Dr. Foerster said that he had been interested in these cases for years, but had seen perhaps only ten or twelve. They were all identical, as much alike as two peas. He had never seen a hyperkeratotic patch as the first sign; there was no resemblance to hyperkeratosis, and the lesion was always a small nodule. There was no history of scaling, but the lesion appeared as a nodule at the very start. Several of these cases had shown a tiny central depressed area, like a pin-point, and sometimes the cartilage was involved in an inflammatory change.
Dr. Ormsby said that Dr. Foerster's report of this disorder came out just about the same time and entirely independent of any foreign report. The two reports were similar, and he thought Dr. Foerster entitled to just as much priority in the matter as Dr. Winkler.

A CASE FOR DIAGNOSIS. Presented by Dr. Stillians.

A Jew, aged 55 years, had had Sternberg's tuberculosis over three years. This disease of the glands yielded to roentgenotherapy, but the patient had recently been losing weight. He was presented before the Chicago Dermatological Society in 1920 because of an indolent ulcer posterior to the anus, which healed under roentgenotherapy. About Oct. 5, 1922, the right ankle became swollen, and hemorrhagic areas appeared. The ankle was painful and tender.

At presentation, there were hemorrhagic areas on both ankles, with blood bullae averaging 1 cm. in diameter at the center of each area. Where the bullae had broken, ulcers with jagged borders, about 0.5 cm. in diameter and 0.3 cm. deep, were seen at the center.

DISCUSSION

Dr. Pusey said he thought that the lesions were those of dermatitis from stasis in the circulation of Thuley.

Dr. Stocks said he was impressed by the fact that the man had enlarged glands in the neck, and that some of his lesions were situated at points where trauma was not likely to occur. The lesions gave the impression of being a crop which had appeared almost at the same time, were bullous in character, and now presented dry necrotic centers that could be scraped out. He said he thought that the possibility of a tuberculid could not be dismissed, but that the extreme inflammatory reaction about the lesions was unusual.

Dr. Seneir said that the patient still had definite bullae on the leg, the contents becoming slightly purulent. He thought that a papulonecrotic tuberculid was the most probable diagnosis, but the other symptoms suggested that the whole process might be eczema.

Dr. Stillians said that he saw the patient first with this eruption three or four days before. He believed that some of the lesions that were now broken down had been bullous. The case struck him as being some blood borne infection, and reminded him of some diphtheritic bullae he had seen. He wondered whether it could be a mixture of tuberculosis with some secondary infection—a very acute hemorrhagic tuberculid.

EROSIO INTERDIGITALIS BLASTOMYCETICA. Presented by Dr. Mitchell.

A Jewess, aged 40 years, had lesions which had been present for a year and a half in the first and third interspaces of the left hand and in the third interspace of the right hand. The left thumb was broken when she was a child, the break resulting in close apposition of the thumb to the hand.

The patient was presented because of the unusual location of the lesion in the first interspace, and to demonstrate the marked improvement resulting from the application of copper sulphate solution as a wet dressing.
DISCUSSION

Dr. Pusey expressed his appreciation at seeing these cases, and said he thought it was interesting to have them brought to the attention.

Dr. Cole asked what strength solution was used and whether there was a continuous dressing of the copper sulphate.

Dr. Mitchell said that the patient was shown for two reasons: She had a broken thumb when a child, and as a result the thumb was in close apposition to the hand; and it was the first case in which he had seen the disorder in the first interspace. The patient had used Whitfield's ointment, chrysarobin and roentgenotherapy without benefit. It occurred to him that copper sulphate might be of value. He had tried it in two cases, applying it twice a day as compresses, and it had given better results than anything else he had tried. He had tried everything used in ringworm infection, and had used potassium permanganate in a half dozen cases over a long period of time, without any benefit.

A CASE FOR DIAGNOSIS. Presented by Dr. Stillians.

A washwoman, aged 60 years, presented an eruption between the fingers which had been present for twelve years, never clearing up entirely. The lesions resembled those of erosio interdigitalis blastomycetica. No fungus could be found, but treatment with Whitfield's ointment caused marked improvement.

At presentation, fading lesions were present between the ring and little finger and between the ring and middle finger of the left hand.

Dr. Stillians said that at first they thought it was a case like those reported by Dr. Mitchell and that they would be safe in trying Whitfield's ointment. Since there had been an unexpected improvement with Whitfield's ointment, it was probably some other ringworm fungus. The lesions had been markedly erythematous with central erosions.

DISCUSSION

Dr. Pusey said he thought it was not the same condition as that in Dr. Mitchell's case.

Dr. Mitchell said he thought it was not of the same type. There was no collarette of scale, no whitened, sodden appearance, and the organism had not been found. Therefore, he believed the diagnosis of erosio interdigitalis blastomycetica was not justified at the present time.

URTICARIA PIGMENTOSA. Presented by Drs. Ormsby and Mitchell.

A Jew, aged 51 years, had had the disorder for two years. The lesions first appeared on the face during the summer. Later, they developed on the arms and trunk, and lastly on the hands. There had been only occasional mild itching. The lesions had not changed in appearance since the onset. Friction produced only moderate urtication. Microscopically, there was found no increase in mast cells.

DISCUSSION

Dr. Pusey said he considered it a case of acquired urticaria pigmentosa.

Dr. Mitchell said that that had been their diagnosis. There was only a moderate amount of urtication and a gradual onset. The lesions at first were
more violaceous than usual, but they had been unable to come to any other conclusion. The fact that mast cells were absent did not rule out this diagnosis.

LEPROSY (MIXED TYPE). Presented by Dr. Stillians.

A Chinaman, aged 32 years, whose disorder was first noted three years ago, while working in the South Sea Islands, had at that time had an eruption of skin colored nodes scattered over the trunk and limbs, which disappeared spontaneously in about a month. The present eruption of nodules appeared on the right forearm accompanied with some sensation of numbness in the fingers, followed by ulceration which had resisted all treatment. Both ulnar nerves were palpable, with atrophy of the interossei of the right hand and loss of sensation in the tip of the right little finger. A filbert-sized epityroclear gland was palpable at the right elbow.

DISCUSSION

Dr. Oliver said he thought this man resembled very much the patient shown last winter who presented the maculo-anesthetic type of leprosy. He had had the disorder for eight years; it began on the legs and the patches on the body were much like the ones on this man's arms. The ulnar nerves were much thickened.

Dr. Lieberthal called attention to the feature of anesthesia and that the center of the patch was not a scar. He thought the patch was rather typical.

Dr. Stillians said that he had seen the patient for the first time the day before presentation. Dr. Chan had tried to get a smear from the ulcers but was unsuccessful. There had been no attempt to get a smear from the nose. He thought the case was very suspicious of leprosy on account of the enlargement of the ulnar nerves, the anesthesia of the tip of the little finger and the atrophy of the interossei on that side. The patch had been treated with some irritating solution. The patient would be taken to the County Hospital where he hoped to be able to study the case further.

GRANULOMA INGUINALE. Presented by Dr. Eisenstaedt.

A negro, aged 38 years, had a penile lesion of seven years' duration. The Wasserman reaction was reported negative, but the patient had received antisyphilitic treatment several years before, consisting of twelve arsphenamin and approximately ninety mercury salicylate injections.

DISCUSSION

Dr. Stokes asked whether antimony tartrate had been tried intravenously in this case. Dr. Harry Foerster had asked about the outcome of the case of the patient of whom Dr. Stokes spoke in January at the annual meeting. At that time several members of the Society had particularly advised the continuous bath. The outcome of an attempt to apply this treatment had been highly unsatisfactory. The final stage of two years' treatment, which had resulted in cure, was an excision by the actual cautery of the sole remaining lesion, carrying the excision down to the fascia of the gluteus maximus with a 3 inch (7.62 cm.) margin. This cautery excision healed until the ulcer reached the size of the original lesion, and then again came to a standstill. Whole thickness skin grafts reduced it still further in size. Finally, the following of a suggestion made by Dr. Irvine regarding the use of minute fractional doses of radium about the periphery, one minute exposures with a 20 mg. half strength plaque, had resulted in final healing.
Dr. Pusey said he thought these cases were essentially chronic ulcers in a peculiar area; the condition was sometimes leishmaniasis and sometimes a phagedenic chancre. It was not always the same condition. He believed that in this negro there had been a chronic inflammation, which had caused a secondary elephantiasis which did not heal. He thought many of the cases were not typical inguinal ulcers, but chancroids. During the war he saw about 150 such cases in one group of negroes, the lesions varying in size from that of this one to those that covered the whole area. He said that he thought they were not all the same process.

Dr. Lieberthal asked whether Dr. Stokes' case was a chancroid.

Dr. Stokes said that the case referred to had been an erosive and gangrenous balanitis in which a physician had attempted to inject oxygen subcutaneously. An enormous horseshoe-shaped ulcer involving all the external genitalia and extending posteriorly to the sacrum, had resulted. It had required four years to heal.

Dr. Lieberthal said he thought the point made by Dr. Pusey was very well taken. Most of these cases were not chancroidal. In those which were, the continuous bath would give relief.

Dr. Pusey said he had had one case in which the process was very similar to this, but it was a blastomycosis. The man had the unhealed areas following ulcers of blastomycosis.

Dr. Eisenstaedt said that he felt very much as Dr. Pusey did as to the clinical differential diagnosis between granuloma inguinale and phagedenic chancre. Certain cases of the first type can be diagnosed by finding the Donovan bodies, but this is not a constant finding. He thought in a case of this kind that had not yet been worked up histologically it would be worth while to make an attempt with tartar emetic. He thought the possibility of epithelioma should be considered. He had had a case that was practically identical in which he had found epithelioma, and that case also was in a young colored man. He thought the case was interesting from this point of view.

A CASE FOR DIAGNOSIS. Presented by Dr. Stillians.

A man, aged 34 years, who had been well until three weeks previously, two weeks before had developed some pimples on the leg, which looked like boils. He had had a genital lesion ten years before. The Wassermann reaction was three plus. About some bullet wounds which were received in 1917 were follicular papules with a corymbose arrangement.

DISCUSSION

Dr. Pusey said that he considered this a corymbose syphilid—a large nodular lesion with small papillary lesions around it. He did not think it was due to a syphilis ten years before, but that the man had forgotten that he had had a chancre, probably ten or twelve months before.

Dr. Stillians said they had considered the lesion a syphilid but had never seen a corymbose syphilid with such horny folliculo-papular lesions.

Dr. Stokes asked whether any of the gentlemen present had been impressed with the frequency of the corymbose syphilid as a form of recurrence in inadequately treated cases.
Dr. Ormsby said he thought former experience with syphilis would answer that question. Most of the corymbose syphilids occurred from the ninth to the twelfth month after infection with or without treatment, as used before the discovery of arsphenamin.

Dr. Stillians said that he once saw corymbose lesions occur during treatment with vanadium. This was the case that discouraged further research with this drug.

Dr. Mitchell said that he had seen this occurrence as a result of inadequate arsphenamin therapy in the clinic quite frequently.

LICHEN PLANUS HYPERTROPHICUS. Presented by Dr. Stillians.

A negro, aged 40 years, had had the disorder for seven years. There were lesions on the right leg and on both forearms, dark brown, slightly raised horny patches.

DISCUSSION

Dr. Pusey said he thought it was valuable to bring in these cases. He liked to see a lichen planus in the negro, and he considered the case very interesting.
Book Reviews


Witherbee and Remer's book is devoted to a statement of the method of roentgen-ray measurements which has been popularized in dermatology, especially by MacKee. It gives in detail the facts which it is necessary to know in order to apply the method, and it is a useful book. The description of the details of the method is, however, involved and difficult to follow, and in future editions it is to be hoped that the authors will make their statements simpler.

THE VENEREAL CLINIC. The Diagnosis, Treatment and Prevention of Syphilis and Gonorrhea. A Handbook of Venereal Disease in Relation to the Individual and the Community. Edited by Ernest R. T. Clarkson, M.A. (Cantab.), M.R.C.S., L.R.C.P.

SYphilis OF THE INNOCENT. A Study of the Social Effects of Syphilis on the Family and the Community. By Harry C. Solomon, B.S., M.D., and Maida Herman Solomon, A.B., B.S.

These two books differ from the ordinary works on syphilis and venereal diseases, chiefly because they place emphasis on the social aspects of these diseases. Both are to be commended, especially for this feature.

"The Venereal Clinic" gives an adequate presentation of the diagnosis and treatment of venereal diseases. It would seem to the reviewer that "Syphilis of the Innocent" is not a good title for the second book; a much better title is the subtitle, "A Study of the Social Effects of Syphilis on the Family and the Community." This is a well done study, made under a grant from the United States Interdepartmental Social Hygiene Board, and it takes up the many aspects of the social problem of syphilis. It is free from the "sob stuff" that mars so much of this sort of literature, and is a commendable book.
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HYDROA VACCINIFORME SEU AESTIVALE *

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CHICAGO

In looking up the literature in association with the two cases of
hydroa vacciniforme presented herein, we found that no extended
review of the subject in English had been made for many years; we
felt therefore that the following review was justified.

As is so frequently the case in dermatology, a number of names
have been used in this field to designate the same or different forms
of a single disease. Analysis of the cases of recurring summer eruption
must lead one to the conclusion that we are dealing with a group of
conditions of varying clinical form, all of them, however, having a
common etiology, and differing only in the degree of reaction to the
exciting factor. It seems feasible, then, to divide them into two groups,
in one of which the reaction is insufficient to produce scar formation;
this group is well named hydroa aestivale. In the second group, scar
formation is the distinguishing feature, and the name hydroa vaccin-
iforme is satisfactory.

Evidence of the close relationship between the two groups is easily
found, as there are several important features common to both: (1)
a tendency to appear in spring and summer, although in neither is the
eruption necessarily strictly limited to these seasons; (2) the action
of the sun's rays as an exciting factor; (3) the age at which the disease
is usually seen. In one case reported, the disease existed for some
years as hydroa vacciniforme, and later, after a remission of several
years, assumed the aestival form. In a series of experiments in his case,
Moller was able to produce at will, by varying the time of exposure
to ultraviolet rays, lesions of different degrees of severity, varying

from a mild erythema, through Hutchinson’s prurigo, vesicle formation, vesicobullous hydroa and finally true hydroa vacciniforme.

For the purpose of this paper, we have attempted to select from the reported cases of recurrent summer eruption those which conform to the hydroa vacciniforme type, and to present the important clinical and experimental features of the disease.

The first observation was that of Bazin,1 in 1862. He described a typical case, calling it hydroa vacciniforme. Sixteen years later Hutchinson2 reported fourteen cases in which an eruption was produced by hot weather or exposure to the sun’s rays, and called them prurigo aestavalis, seu prurigo adolescentium seu acne prurigo. In the light of our present knowledge, it appears that the cases represented several different diseases, and that one or two of them may have been hydroa vacciniforme. Hutchinson did not relate his group to Bazin’s case, as he was unaware of the latter.

The next report came ten years later, when Jamieson,3 likewise overlooking Bazin’s work, presented two cases at a meeting of the British Medical Society, stating that they were allied to xeroderma pigmentosum. In the same year, Hutchinson4 reported a typical case of hydroa vacciniforme as a recurrent summer eruption, “a form of xeroderma pigmentosum,” and suggested the formation of a single group of diseases, the essential feature in all being a congenital susceptibility of the skin to the sun’s rays. His “summer prurigo” constituted the mildest form; the case then reported was one of intermediate severity and xeroderma pigmentosum of the most severe type. At the time of his presentation he seemed not to have been aware of Jamieson’s opinion, and these two observers independently related hydroa vacciniforme to xeroderma pigmentosum. Schultz,5 in 1874, reported as pemphigus leprosus a case that was probably hydroa vacciniforme.

In 1889, Handford,6 describing and picturing a typical case in the illustrated Medical News, properly classified it as hydroa vacciniforme of Bazin. From then on the disease was recognized with increasing frequency, although the cases were variously reported as hydroa vacciniforme, hydroa aestivale, summer prurigo, or recurrent summer eruption, while in some instances two or more of these titles were used, showing the tendency to regard them as essentially synonymous. Twenty-five years had elapsed, however, since Bazin’s original description before the disease became accepted as an entity.

2. Hutchinson: Rare Diseases of the Skin, 1878, pp. 126 and 133.
Later some confusion arose through the description by Unna\textsuperscript{7} of a group of cases which he designated hydroa puerorum. Many authors have looked on these cases as variants of hydroa vacciniforme, although others, following Unna's original idea, have felt that they more closely resemble dermatitis herpetiformis. Haase and Hirschler,\textsuperscript{8} in 1908, in describing a case of Unna's hydroa puerorum, declare the latter to be an entity, and so well have they presented their evidence that it is difficult to regard the disease as a form of hydroa vacciniforme or of dermatitis herpetiformis.

We have been able to discover in the available literature seventy-eight cases which we feel can be considered as hydroa vacciniforme, and the following discussion of the disease has been based on the analysis of these cases. To these we add two cases.

\textbf{REPORT OF CASES}

\textbf{Case 1.---History.---A. M., an American, 31 years of age, a riveter, was seen in May, 1921. At the age of 4 years the patient had measles. About three months later, he developed some lesions on the pinnae of the ears. The lesions soon increased in number, but for some time remained localized on the ears. Later the cheeks and lips became symmetrically involved, and eventually other parts of the face. About ten years after the first outbreak, the backs of the hands became affected. At the age of 16 the cornesas were involved, and the patient was seen at this time by Dr. James N. Hyde, who has a photograph of the patient in the seventh edition of his textbook.}

The patient's mother was alive and well. His father died at the age of 72 from "kidney trouble." (The father once had an eruption in one popliteal space, which was aggravated by hot weather.) The patient had two brothers, one of whom was a twin, and neither of them had had any condition similar to the patient's. There was no history of any other skin disease in the family.

The eruption has always been at its height in the spring. Exposure to summer sun, however, produced an outbreak at any time. The patient, who was very intelligent, asserted that not only the sun's rays, but any sudden change in temperature produced the lesions, as did cold or sharp winds.

The lesions were characteristic of the hydroa vacciniforme type, beginning, after preliminary burning sensations, as vesicles. The latter ruptured in three to five days, leaving inflammatory bases surmounted by crusts. The crusts were dense and adherent and varied in color from yellowish to blackish. They fell off in about a month, leaving a typical varioliform scar. There was umbilication in many of the vesicles.

The disease is still active, new outbreaks occurring repeatedly after exposure, but it is somewhat less severe; and there have been no lesions on the cornes for many years.

\textbf{Examination.---The skin of the face, ears and dorsal surfaces of the hands was covered with numerous pinhead to split pea-sized varioliform scars, the skin of the face resembling exactly that of a patient badly scarred from smallpox.}

\textsuperscript{7} Unna: Monatschr. f. prakt. dermat. \textbf{9}:97, 1889.

\textsuperscript{8} Haase and Hirschler: Jour. Cutan. Dis. \textbf{26}:199, 1908.
The ears had a somewhat grisly appearance, as a result of the atrophic changes. The cornneas were dotted with numerous opacities which interfered considerably with vision.

On the nose, cheeks, ears and on the anterior surface of the neck as far down as the clavicles were numerous fresh lesions in varying stages of development. some of them being early vesicles, others crusted lesions, while the oldest lesions showed only a slightly reddened fresh scar. The lower lip was studded with numerous lesions. The early vesicles were somewhat smaller than a split pea. The contents were clear as a rule, but they sometimes became purulent. The vesicle assumed a dark brown color at the center, sometimes became umbilicated, and eventually ruptured and became crusted. The crusts were often blood stained. Frequently there was considerable edema about the active lesions, giving the skin a glossy appearance where they were numerous.

Special Examination.—Examination of the patient’s urine, which had never been noticed to be red, disclosed traces of hematoporphyrin spectroscopically, while all precipitin tests were strongly positive, showing the pigment to be present in excess of the normal amount. Biopsy was performed, the excised tissue including two vesicles in different stages of development, located on the ear. The Wassermann reaction was negative. Unfortunately, the patient was forced to leave the city before an examination of the blood or further urine examinations could be made. The general physical examination revealed nothing of interest.

Case 2.—History.—P. H., a schoolboy, 11 years of age, was seen in July, 1921. The previous year he had had a febrile condition, which was suspected of being typhoid fever, lasting from Thanksgiving until the end of December. Shortly after this, he developed an eruption over the buttocks, which was at first thought to be due to some medicine which he had taken. This practically disappeared in about three weeks, but it recurred immediately, and soon healed under local treatment. In March, 1921, he developed an eruption on the ears, and a short time later the face and neck became involved, and there were a few lesions on the arms. This eruption consisted of vesicles, some of which became pustular. These lesions ruptured, became crusted, and disappeared in a few weeks, leaving small scars. New lesions had appeared in crops from time to time since then, all running the same course. When seen in July, he had a number of papulovesicular and pustular lesions in the butterfly area of the face, on the ears, forearms and on the buttocks. On the backs of the hands there were a number of pinhead-sized vesicular lesions. The ears, face, back of neck, and backs of the hands showed a number of small white scars, which could scarcely be called vacciniform. The boy spent the remainder of the summer in Virginia, and by avoiding exposure to the sun, had been comparatively free from the eruption. He was seen again on March 15, 1922. The mother said that he had had no lesions during the winter, but that about a week before he had gone on a “hike” with his Boy Scout company, the day being both sunny and windy. On the following day the eruption appeared, preceded by itching and burning. It involved only the butterfly area of the face, the ears and backs of the hands. The eruption at this time consisted of pinhead-sized crusted lesions, which had evidently been vesicular. The crusts were of a clean honey colored appearance, and not adherent. The lesions did not seem sufficiently severe to result in scar formation. No umbilicated lesions had been seen at any time. There was slight burning and itching with the outbreaks, but not enough to cause scratching of the lesions, so the scarring could not be ascribed to trauma.
Examination.—The health of the boy, aside from the attack of questionable typhoid, had been very good. The tonsils and adenoids had been removed six years ago, but some tonsillar tissue still remained. The cervical glands had become enlarged at the time of his febrile attack, and had never involuted completely, so that he still showed some enlargement of the posterior cervical glands. His physical condition otherwise was excellent, as reported by his physician, Dr. George Musselman, after a thorough examination. The patient was an only child. His Wassermann reaction was negative. The urine showed no hematoporphyrin, and was negative otherwise. Examination of the blood showed: red blood cells, 4,120,000; white blood cells, 92,000; hemoglobin, 78 per cent. The differential count showed: polymorphonuclears, 68 per cent.; small mononuclears, 21 per cent.; large mononuclears, 6 per cent., and eosinophils, 5 per cent.

ETIOLOGY

Bazin, from his observation of the first case, regarded hydroa vacciniforme as of arthritic origin, since the patient was benefited by drinking alkaline waters at Bourbonne. The influence of light has been recognized by all observers, and while it is now definitely established that the actinic rays of the sun are the irritating element, there was a difference of opinion in earlier years. Graham⁹ believed that the heat rays played an important part, because of the summer occurrence, and because he was unable to produce lesions artificially in his case by using an electric light, in which he stated chemical rays predominated.

Ehrmann¹⁰ was probably the first author to study experimentally the effect of light on a patient suffering with hydroa vacciniforme. Using a Finsen light with a blue filter, he exposed parts of the skin normally covered by the clothes, and was able to produce typical lesions which resulted in scar formation. Ehrmann concluded that short actinic rays not absorbed by blue glass, but absorbed by red glass, acting on persons with an idiosyncrasy for these rays, produce the eruption. Because of the similarity to epidermolysis bullosa congenita, he proposed the name of epidermolysis photoactinica congenita. This conclusion has been confirmed several times by other writers, and leaves no doubt of the correctness of Ehrmann’s view. Further evidence of origin from the chemical rays of the sun lies in the observation that in hydroa vacciniforme the lesions appear some hours after exposure to the sun’s rays, and it is well known that this is always the case with reactions to the chemical rays, while the reaction to heat rays occurs almost immediately.

The question of the etiologic importance of other atmospheric factors than the actinic rays of the sun is unsettled. In a number of cases it has been stated that the wind was capable of exciting the eruption.

In a few, the eruption is supposed to have been induced when the patient had not been outdoors, but had sat near an open window with a warm wind blowing on the face. Some writers are of the opinion that it is impossible to rule out exposure to the sun in these cases, and that all other factors can be discounted.

In the case of our first patient, however, we feel confident that he is correct in his observation that the wind or sudden changes in temperature can produce the eruption. Although this point cannot be regarded as settled, it seems certain that if other atmospheric factors can act as exciting agents, they play a minor part.

In the series of eighty cases, including our own, we find that the physician has recorded the exciting agent in fifty-two. In forty-two of these, or 80 per cent., the sun's rays alone were incriminated. In five both sun and wind, in three "summer weather," in one sun or sea air, and in one the wind alone were listed. It was noted that in those cases in which the eruption occurred in the winter, it was particularly likely to appear when the sun had been shining on the snow.

Attention was first attracted to the possible etiologic significance of hematoporphyrin in the urine in 1898, when McCall Anderson reported two cases of hydroa vacciniforme in brothers. The first patient had noticed a Burgundy red color of the urine at every outbreak of the eruption. At first this color disappeared entirely between attacks, but later it persisted for some time after the eruption had cleared up. In his brother's case, the urine appeared never to resume the normal color between attacks. Dr. F. Harris, a chemist, who examined the urine in these cases, found that the red color was due to the presence of an ally of urohematoporphyrin, a protein and iron-free pigment. This particular form had been seen rarely, and was regarded as occupying chemically a position between hematoporphyrin and urohematoporphyrin.

Hematoporphyrin is a physiologic pigment in certain animals. A porphyrin regarded as identical is found normally in human urine, but only in traces. It has been observed in quantity in the urine in diseases of the liver, in which the administration of sulphonil, the use of alcohol, or lead poisoning may play a part, as well as in typhoid fever, tuberculosis, amyloidosis, and other diseases. It is closely related to the bile pigment bilirubin and urobilin. Urine containing hematoporphyrin may be only slightly colored, or it may be of a more or less deep red color.

When introduced into the body it manifests its poisonous action in part by photosensitization. Hausmann found that white mice injected

with hematoporphyrin, and then exposed to bright light, soon died with characteristic symptoms, while control animals kept in the dark showed no symptoms. Black mice could not be sensitized. Perutz 13 fed rabbits increasing doses of sulphoneal until hematoporphyrinuria was induced, and then exposed them to the rays of the quartz lamp for from three to five minutes. After a few hours redness, infiltration and vesicle formation occurred. This was followed by crust formation, and eventually scarring. Histologic examination disclosed a microscopic picture similar to that of hydroa vacciniforme. Control animals gave negative results. Meyer Betz 14 had a small quantity of hematoporphyrin injected into his arm, and an area the size of a dollar was then exposed to the Finsen lamp. The next day the site of the exposure was infiltrated, painful, and hemorrhagic; later it became crusted, and scar formation ensued. On the day following the injection he exposed himself to the sun's rays for a short time, and a severe edema of the face and hands developed which lasted several days. No vesicles were formed, but an intense pigmentation resulted. Linser 15 was able to produce hematoporphyrinuria at will in a patient suffering with hydroa vacciniforme by exposing the hand to roentgen rays or the quartz lamp.

In 1917, Perutz 16 reported a case of hydroa vacciniforme in which the urine showed porphyrinogen rather than hematoporphyrin. The former has been shown to be an intermediary substance in the formation of hematoporphyrin. He says that in another case of his hematoporphyrin and porphyrinogen alternated in their presence in the urine.

In the eighty cases examined, hematoporphyrin was found in fourteen, or 17.5 per cent., and in addition was present in a third case of Raedeli's, which he thought to be hydroa vacciniforme, although he had not been able to study it sufficiently to be certain. In only seven of the other cases was it stated that no hematoporphyrinuria was present. To the foregoing must also be added Perutz's case, in which porphyrinogen only was present, and another case in which it was stated that the urine was dark or black. Hematoporphyrin was also found in the stool in one case in which it was present in the urine.

With all of the foregoing evidence, one must conclude that in some cases at least the presence of hematoporphyrin serves as an explanation of the sensitization of the individual to the actinic rays, although we cannot explain the origin of the hematoporphyrinuria. Perutz believes that the light destroys the red blood cells, thus liberating hemo-

globin, which in turn gives rise to hematoporphyrin. Only careful experimental work can determine for us the importance of hematoporphyrinuria in these cases, and it is suggested that in every case seen in the future, search be made for hematoporphyrin and porphyrinogen in the urine. Spectroscopic examination is often necessary for its detection.

Other urinary findings were of little interest. Albumin was present in three cases, in one only at the time of cutaneous outbreaks. In Cappelli’s 17 case, acetone and indican were present in addition to hematoporphyrin.

**BLOOD**

The findings in the blood have been investigated in few cases, and in these nothing of importance has been discovered. Eosinophilia has been recorded three times; leukocytosis with 84 per cent. of polymorphonuclear cells was found once. The Wassermann reaction has been negative in the five cases in which it has been investigated.

**SEX**

Hydroa vacciniforme has long been known to occur more frequently in males, and our figures show fifty-four cases in males and twenty-six in females, a ratio of practically two to one.

**AGE**

The disease usually begins in childhood, although a few cases have begun in young adult life, and in several questionable cases, not included in this series, the condition first appeared in middle life. In one of the latter group, a woman who had been taking sulphonal for some time, developed a vesicular eruption which was thought to be hydroa. In twelve cases, it began during the first year of life; in thirty-one, from the age of 2 to 5 inclusive; in twenty, from 6 to 10 inclusive; in ten, from the ages of 11 to 20; and in two, at the ages of 24 and 26, respectively. In five cases, the age at which the disease began was not recorded. The earliest beginning reported is at 1 month.

Graham 9 believed that the disease began later in life in females than in males, but we find the average age of onset is 6 years in females and 6.2 years in males.

The average age of the patients at the time their cases were reported was 15.7 years. In a number it had been noted that the eruption is less severe following the age of puberty, and in several cases the eruption had ceased at about the age of 20. In thirteen cases, it was still active in the third decade of life; in seven cases, in the

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fourth; and in two cases, in the fifth. The average duration of the disease from the time of its beginning to the time when reported was 9.8 years.

**HEREDITY**

In five of the cases, the disease was found among brothers or sisters. Anderson's 11 two patients were brothers; Ehrmann reports a brother and sister affected; Gross 18 says that two sisters of his male patient had hydroa, while in one of White's 19 cases, a brother of the patient was probably suffering from the same condition. Artz and Hausmann 20 report two brothers with the disease, their parents being first cousins. This is the only instance of consanguinity recorded. Raedeli 21 reports a boy with hydroa vacciniforme, whose father probably had the same disease, hematoporphyrinuria being present in both cases.

In only nine of the other cases was the family history given, and in none of these were there other cases in the family, although in most of them there were a number of brothers and sisters. In our Case 1, a twin brother was unaffected, and a similar condition existed in one other case. It can probably be assumed that in most of the other cases in which the family history was not mentioned there were no other cases in the family, as they would hardly escape attention. Apparently, therefore, in about 10 per cent. of cases the familial element must be considered.

**RACE**

The disease has been observed in many countries, reports having come from France, England, America, Germany, Russia, Denmark, Scotland, South America, Italy and others. A dark complexion is apparently not absolutely protective, as there have been four or five cases reported from Italy and one from South America, while Moreira 22 reports one case developing in a patient one of whose parents was a mulatto. There are, however, no cases reported in the colored races.

**INFLUENCE OF OTHER DISEASES**

In five cases, the parents said that the disease followed shortly an attack of measles, one of them being our Case 1. In another case, vaccination for smallpox preceded the appearance of the eruption by a short time, and in our Case 2 a protracted febrile disease was present.

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just before the cutaneous disorder appeared. In the rather frequent association with measles, one finds room for speculation, but as hydrea vacciniforme is likely to begin at the period when measles is commonly seen, this may have to be disregarded.

GENERAL CONDITION OF PATIENTS

The patients affected with hydrea vacciniforme do not appear to suffer any chronic ill effects systemically, and conversely, the disease appears to occur in persons of average health. In twenty-four of the eighty cases, note was made of the patient’s general health. Of these, sixteen were in good health, three were “delicate,” one had chronic bronchitis and frequent colds, in one splenomegaly was associated with ascites, ending fatally, while in three cases in Italians, the patients were probably tuberculous. This latter finding is of interest, as tuberculosis may give rise to hematoporphyrinuria. In one case the patient was congenitally syphilitic.

CLINICAL PICTURE

Season.—Hydrea vacciniforme is chiefly a disease of the spring and summer months. In practically all cases, the eruption is confined to or at its height during these seasons, although in White’s\textsuperscript{19} two cases of hydrea vacciniforme of the bullous type, the eruption was much worse in winter. March and April are the chief months for the onset of the annual attacks, with recurrences during the spring and summer months, or sometimes through the fall and winter. August and September are usually the latest months in which any considerable eruption is present. The reasons for this seasonal occurrence are obvious. During these months the luminous intensity of the sun’s rays are greatest. Pautrier\textsuperscript{23} suggests as additional factors the diminished amount of pigment in the skin after the passing of winter and the theory that the air in the spring, washed by the frequent rains, contains few dust particles to filter the sun’s rays.

In the series of eighty cases, the seasonal occurrence was noted in seventy. In twenty-seven the disease was said to be apparent only in the summer, in six during the spring, and in twenty-two during spring and summer. In thirteen it was present during the winter as well, and in the two mentioned before, during the winter only. In the majority of the cases in which it is said to occur in the summer, the term is probably used loosely to include both spring and summer.

Distribution of Eruption.—The exposed parts are, of course, those chiefly involved, but it should be understood that the predilection for these parts exists only because they are exposed to the light. It is probable that in affected persons the eruption might occur on any

\textsuperscript{23} Pautrier: Bull. soc fran\c{c}. de dermat. et syph. 21:528. 1913.
part of the cutaneous surface exposed to sufficiently intense sunlight. This has been demonstrated repeatedly, both clinically and experimentally. The distribution as recorded in seventy-four of the eighty cases is given in Table 1.

The parts affected most frequently are: (1) the ears, (2) the face, especially the nose and the flush portions of the cheeks, and (3) the dorsal surfaces of the hands. The palms were involved in only one case. In the two cases in which the face was spared, it was said that this was due to protection of the part from the sun’s rays.

An interesting involvement is that of the cornea. This was present in nine cases; those of Schultz, Ledermann, Moller, Halberstaedter, Scholz, Kreibich, Plöger, Gunther and our Case 1. In many of these patients, it was noted that the vision had been affected to some extent, and in one instance the patient had become hunch-backed because his photophobia forced him to walk with the head bent forward.

The mucous membranes of the mouth have not been exempt, as they were affected in two cases, and the tongue in one.

The nail plates or nail bed has shown lesions in three cases, those of Schultz, Ehrmann, and Arzt and Hausmann.

**Character of Eruption**.—Although the vacciniform type of eruption is the characteristic form, we find several varieties when we consider all the cases of scar producing hydroa.

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**TABLE 1.—Distribution of Eruption in Seventy-Four Cases**

<table>
<thead>
<tr>
<th>Part descriptions</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face and ears only</td>
<td>4</td>
</tr>
<tr>
<td>Face, ears and hands</td>
<td>31</td>
</tr>
<tr>
<td>Face, ears, hands, forearms</td>
<td>11</td>
</tr>
<tr>
<td>Face, ears, hands (forearms also in some), feet (legs also in some)</td>
<td>14</td>
</tr>
<tr>
<td>Face, ears, hands, arms, trunk</td>
<td>3</td>
</tr>
<tr>
<td>Face, ears, arms, legs, trunk</td>
<td>3</td>
</tr>
<tr>
<td>Face, legs, buttocks</td>
<td>1</td>
</tr>
<tr>
<td>Face, hands, feet, buttocks</td>
<td>2</td>
</tr>
<tr>
<td>Extremities alone</td>
<td>2</td>
</tr>
<tr>
<td>Face, arms, legs, trunk (all parts except palms and soles more or less involved)</td>
<td>1</td>
</tr>
</tbody>
</table>

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In the vacciniform type, erythematous lesions develop first, and on these appear transparent vesicles of a herpetiform character. At times these begin as hard nodules, which increase peripherally and gradually rise above the level of the skin. They may be single or more or less grouped. They vary in size from that of a pinhead to that of a pea, but through coalescence they may form bullae. These lesions, if small and superficial, may dry up in a day or two, leaving a thin crust, or may rupture and leave a thicker yellowish crust. The larger and more deeply seated lesions have at first a clear content, which may later become purulent or brownish. The center sinks in, and a brownish or blackish crust, which gradually enlarges peripherally, forms. At this stage the lesion resembles closely a vaccination pustule, and like the latter, does not collapse when punctured, as disseipements give it a multilocular character. In this type, the crust may not be shed for several weeks. The lesions as a rule have a reddish areola.

Variations from the characteristic eruption may be of three types. In the first of these the eruption is of a mild character. The lesions are papulovesicular, fairly superficial, and never of the umbilicated type. The duration of the individual lesion is short. In spite of this, and without the aid of trauma or secondary infection, scarring is produced. Our Case 2 is an example of this form. These cases form a connecting link between the nonscarring hydroa aestivale and the vacciniform variety.

The second group comprises those cases in which the lesions, covered with a thick yellowish crust, assume an impetiginous form. In several instances this impetiginization has masked the essential picture, leading to error in diagnosis for a time.

In the third form, the eruption is of a severe bullous variety. In many of the vacciniform cases, some bullae are present, but White has recorded two cases, and Constantin a third, in which the lesions were of great size. White had some doubt as to the identity of his cases, especially as they occurred during the winter months; but Constantin found characteristic vacciniform lesions associated with the enormous bullae in his patient, and the histologic picture conformed to that of hydroa vacciniforme.

In seventy-four cases in which the character of the eruption was stated, we find the usual vacciniform type in fifty-three, a vacciniform and bullous type in five, a vacciniform and impetiginous type in two, a pure impetiginous type in two, a papulovesicular type in six, a vesicopustular type in two, an abortive pustular type in one and a bullous type in three.

In only one case was any degree of complication in the cutaneous picture noted. pyoderma and vegetations occurring. An interesting

observation in Capelli's case was the development of hypertrichosis in all parts affected by the eruption. In another case hypertrichosis was noted, although it was not stated that it had developed with or in the sites of the eruption. A third author remarks that his patient had an abundant growth of hair.

That the formation of scars does not protect against the eruption is proved by the observation of new lesions developing in scars resulting from previous attacks.

The character of the scar formation depends, of course, on the type of the eruption. In seventy-five cases the descriptions in Table 2 were given.

Local Symptoms.—The outbreak is often preceded by sensations of burning or fulness in the affected parts. After the eruption is once established, the patient may suffer itching and occasionally pain, but frequently does not complain of any symptoms.

<table>
<thead>
<tr>
<th>TABLE 2.—CHARACTER OF SCARS IN SEVENTY-FIVE CASES</th>
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<tbody>
<tr>
<td>Vacciniform or varioliform scar........................ 39</td>
</tr>
<tr>
<td>Deforming scar formation.................................. 5</td>
</tr>
<tr>
<td>Shallow scars.............................................. 2</td>
</tr>
<tr>
<td>Large, smooth glossy scars.................................. 4</td>
</tr>
<tr>
<td>Minute scars................................................ 23</td>
</tr>
</tbody>
</table>

In this series, itching or burning or both were noted in twenty-five patients, itching and pain in four and pain alone in one. It is to be assumed that in many of the remainder these symptoms were present, but not mentioned.

General Symptoms.—In a number of cases, the attacks have been ushered in by some general symptoms, such as chills and nausea, at times with vomiting; malaise and slight temperature are the symptoms most frequently seen. Lymphadenopathy has been noted in only one case. One patient reported that her attacks were much more severe during the menstrual period.

Histopathology

Bowen, in 1894, was the first to describe the microscopic changes occurring in the affected tissue. He found the outer layers of stratum corneum unbroken, but the lower layers, together with the entire rete, were completely necrotic. The middle and lower layers of the rete were converted into a reticular tissue, forming a network filled with granular detritus and an occasional leukocyte. This network was everywhere necrotic. At the border of the rete and corium, the net-

work ceased, but the necrosis extended downward beneath the vesicle through the entire corium. The connective tissue cells had in great part lost their staining properties. The fibers were broken up and forced apart, with granules and detritus contained in the interstices. In the papillary region were seen enlarged necrotic blood vessels filled with blood cells, often with free hemorrhage into the necrotic tissue in their neighborhood. The necrosis ceased quite abruptly at the sides and base of the lesion. The epidermis adjacent to the necrotic portion was slightly increased in thickness. The corium about the necrotic tissue was filled for a considerable distance with small round cells.

Study of an early lesion, in which was found a vesicle in the middle layers of the rete, led Bowen to outline the pathologic process as follows: Inflammation in the epidermis and upper part of the corium, soon followed by vesicle formation in the rete. After this necrosis of the epidermis and underlying corium takes place, the necrotic corium, with its dilated and necrotic vessels and hemorrhagic foci shows through the vesicular epidermis, thus producing the dark red to violet points which are seen objectively.

In 1896, Mibelli 34 made an exhaustive histologic investigation, and recorded certain changes not enumerated in the foregoing. He noted that the stratum granulosum was usually reduced to a single layer of cells. The vesicular cavity was traversed by slender columns of flattened rete cells which served to divide it into a number of parts. Some of these ran from top to bottom of the cavity, while others had one end free. The cells comprising these chains could be seen to be continuous with the intact epithelium about the vesicle, with the epithelium of some hair follicle, or with the epithelial cells at the base of the vesicles which had not yet been destroyed. These columns themselves become invaded and broken up by the serofibrinous exudate, and the cells become hydropic, or undergo Leloir's alteration cavitaire.

Mibelli noted that the changes in the rete did not result from liquefaction or coagulation necrosis of the cellular protoplasm, but that they were due to dilatation of the intraspinous spaces and compression of the epithelium, the latter acting so rapidly that the cellular elements do not have time to undergo any degeneration other than considerable flattening. Only in places in which small masses of cells have resisted this pressure is there any alteration cavitaire.

In the corium he found no plasma, mast or other pathologic forms of connective tissue cells, the infiltrate consisting of lymphocytes and numerous fusiform cells. The sweat glands were not destroyed, but were surrounded and pressed by the cellular infiltrate. In the papillary portion the elastic tissue was diminished, and the collagenous fibers

paler, fragmented, with little affinity for stains. The collagenous bundles and elastic fibers in the reticular derma and hypoderm were spared. Mibelli also noted the great changes in the blood vessels.

In more advanced lesions he found that the division of the vesicles into compartments had been lost, and the lesion was filled with a uniform granular mass. Mibelli was struck by the fact that the elastic fibers were so little affected in the intense necrotic process, and recalls that Dubreuilh has noted the same condition in acne necrotica, a condition which histologically closely resembles hydroa vacciniforme.

As the result of his study, he feels that the process is probably due to the vasodilatation which takes place in the superficial network of vessels.

Eddowes 35 found that the process was an edematous necrogenic inflammation beginning high in the corium and involving the epidermis secondarily.

Wolters 36 compared the histologic changes in a typical vacciniform lesion and in one of the milder type. He found that while in the former the vesicle had the papillary layer of the derma as its floor, in the latter the rete was undisturbed, the vesicle having as its roof only the outer layers of the epidermis, including the stratum granulosum.

Constantin, 32 Malinowski, 37 Moller 26 and others have given histologic reports, but add nothing not disclosed in the foregoing.

We removed from the ear a piece of skin containing two lesions, one in an early, and the other in a late, necrotic stage. The findings were largely a duplication of those already given, but they will be set down briefly.

**Epidermis.**—The stratum corneum was practically intact, but somewhat thinner. The stratum lucidum was unusually well developed in the epidermis adjoining the necrosis, but was not apparent in the affected parts. The stratum granulosum was three or four layers thick in the adjoining epidermis, and reduced to a single layer over the necrotic area. The stratum mucosum and stratum germinativum were completely destroyed by necrosis, and replaced by a mass of granular detritus. There was a sharp line of demarcation between the epidermis of the affected and unaffected portions. The epidermis not affected by the necrosis showed slight acanthosis.

**Derma.**—At the center of the lesion, the corium was replaced in the papillary layer by an extension of the necrotic mass seen in the epidermis. At the margins of the lesion some collagenous bundles, swollen and fragmented, and some connective tissue nuclei were seen, showing

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the process to be most advanced at the center. The degree of involvement of the collagen gradually decreased so that in the lower part of the reticular layer and in the hypoderm it was practically unaffected.

Elastic Tissue.—This was destroyed at the center of the lesion in the papillary region, and was fragmented and reduced beyond this, but it was relatively less affected than the collagen bundles.

Blood Vessels.—These were completely destroyed in the upper papillary portion, and much free hemorrhage was seen. In the lower papillary and upper part of the reticular layer the vessels were dilated, tortuous and distended with red blood cells.

Lymphatics.—The lymph spaces were greatly dilated.

The necrotic mass was made up of fibrin, lymphocytes and débris, with a few flattened connective tissue nuclei in the peripheral portions. The cellular infiltrate, which consisted of small lymphocytes and a few cells, was only moderate in density in the necrosed and necrosing areas, but was so dense that it had nearly obliterated the collagenous tissue surrounding the degenerating area.

No adnexa were seen in any part of the tissue.

TREATMENT

The list of applications used in an attempt to protect the skin is long, but none of them seems to have had much effect. Ointments containing quinin have been most widely used, and esculin, which is credited with the power of absorbing actinic rays, has been tried on two occasions, in one with some success.

Eddowes,25 who believed that the intense edema was responsible for the necrosis, advocated early puncturing of the vesicles in order to reduce the tension and thus lessen the amount of destruction.

Parana 26 has recently reported a case of hydroa aestivale occurring in a patient with incipient tuberculosis and troubled with profuse menstruation. In view of the menstrual history, ovarian extract was used. This had no effect on the menses, but caused the eruption to disappear in two weeks, in spite of sunny days. It returned when the extract was omitted, and disappeared again under its use.

SUMMARY

1. In a review of eighty cases of hydroa vacciniforme, the sun's rays alone were listed as the exciting factor in 80 per cent., while in the remainder of the cases there were additional factors, usually the wind.

2. Hematoporphyrinuria was present in 17.5 per cent. of the cases, but was recorded as being absent in only seven of the others. Thus it

must be assumed to be present in a considerable proportion, and perhaps in the majority of cases. The exact significance of the presence of hematoporphyrin in the urine of these patients is not known, although it must be conceded that the relationship between hematoporphyrinuria and hydroa vacciniforme is a very direct one.

3. The disease occurs in a ratio of two females to one male.

4. Hydroa vacciniforme usually begins in early childhood, although a few cases have begun in young adult life. As a rule, the eruption ceases or becomes ameliorated at puberty, but it may persist for some years following puberty.

5. Heredity apparently plays some part, as more than one member of the family was affected in five instances.

6. The eruption usually appears only in the spring and summer, but it was present during the winter also in nearly 20 per cent. of the cases.

7. The exposed parts alone are involved ordinarily, but covered parts are occasionally affected to some extent.

8. The resultant scarring may vary from a very superficial type to a severe disfiguring form.

9. Subjective symptoms are usually mild, but itching and burning sensations are occasionally troublesome.

10. Prodromal symptoms of a general character occasionally precede the eruptive attacks.

11. Treatment has been of little avail, although ointments containing quinin or esculin have been reported as of value in some cases.

DISCUSSION

Dr. Harvey P. Towle, Boston: As Dr. Gilchrist has said, the field opened up is enormous. The sensitization of the skin to sunlight is an old story. It is known to all of you that years ago when the roentgen ray was in its infancy many attempts were made to increase the power of its rays. One well-known New Yorker advocated the use of quinin internally to give greater sensitization to the skin. He was so far justified in that quinin is known to be light absorbing. It absorbs light and then not only gives forth the amount of light it absorbs, but, apparently, a little more. Eosin has the same property. Fluorescein has it to a marked degree. Crude coal tar has it, and I would warn you against using crude coal tar on exposed parts and then exposing the patient to sunlight. I have had some annoying experiences of this kind. I am a little surprised at the author's advocating the use of quinin, as it is known to be fluorescent. This was discovered by a man working on the bactericidal effect of quinin on malaria. In the dark there was no effect, but he noticed that in the tubes in the window it killed the organism.

I have found in the treatment of this disease that protection against marked reddening is sometimes quite helpful. It is palliative but not, of course, curative. By combining a cream made of ichthyol, zinc oxid and petrolatum and smearing it on before going out into the sunlight, the severity of the disorder can, in a large measure, be mitigated.
Dr. Charles M. Williams, New York: I should like to ask why a red umbrella is better than a black one? The object is to get rid of the actinic ray. Why should a woman not use black veils instead of red?

Probably pigment in the skin does not protect because two of the cases reported were from Italy. We think of the Italians as dark, but there is such a large admixture of light races there, dating back at least to the invasion of the Lombards and the Goths, that unless the statement was made that the patient was dark it does not carry any weight.

Dr. Lloyd W. Ketron, Baltimore: I think that there must be a variety of these cases in which factors other than the light are concerned in the production of the cutaneous reaction. One patient whom I studied had attacks of a severe bullous eruption on exposed parts during the spring, fall and winter, but was usually entirely free from the eruption during the hot summer months. He could prevent the attacks by remaining indoors or protecting his neck, face and hands from the sunlight. Very soon after a severe attack in December, I attempted to reproduce the eruption after exposure to ultraviolet light and sunlight with and without the addition of a strong draft of air from an electric fan. His reaction to this was no more severe than the control and the resulting erythema healed in the usual time.

Dr. Francis Eugene Senear, Chicago: In reply to Dr. Towle, regarding the local application used, the reports in the literature show that therapeutic measures have been unsuccessful. A good many local applications have been employed. We listed about forty, taken from various case reports. Some had proved protective, others without value; some were effective in some cases and not in others.

Concerning red umbrellas: I presume this idea has arisen through the fact that red filters out the actinic rays and that blue will not filter them. The black umbrella, merely furnishing shade for the patient, would be equally effective.

I think Dr. Williams’ point concerning a dark complexion is well taken. I do not recall that in the five cases reported from Italy in the literature it was stated that the patients were dark skinned. We have stated that one patient was blond and the other, not a brunette, but dark.

I do not think we will find hematoporphyrinuria in all cases, but where it occurs it may be present only during attacks. In the first case reported by Anderson, the patient had it only at the time of the outbreak; later it persisted for some time after the eruptive attacks. In the case of the brother, it was present constantly during the period of eruption and at other times. In three of the cases from Italy the patients were tuberculous, and since it has been shown that hematoporphyrin can be produced by tuberculosis, it may be that these patients are only affected at certain times on this account.

With regard to the protection furnished by the glove mentioned by Dr. Ketron, that is not a certain prophylactic treatment, as in the cases in which the eruption has been present on the trunk as well as on the exposed parts, it has been shown that the clothing does not completely protect the body from the actinic rays, and the shoulders and particularly the buttocks are affected by the disorder.
PITYRIASIS ROSEA*
A FEW SIMPLE FACTS

WALTER J. HIGHMAN, M.D., AND RAY H. RULISON, M.D.
NEW YORK

The diversity of impressions concerning this remarkable disease is rather amazing. Clinically, the condition is clear cut, what with the herald spot, the disseminated exanthem, the lack of enanthem, the frequency of itching, often very severe, the rarity of constitutional manifestations, the uniformity of the course and the rarity of recurrences. These compose a picture establishing the disease as a clinical entity beyond peradventure.

Undoubtedly, the malady is infectious; and, since the agent is unknown, it is difficult to state whether the infection is purely local or general. Favoring the hypothesis of a general infection, according to reports in the literature, is the occasional presence of constitutional symptoms such as fever, malaise and slight arthralgia. Against the theory of general infection is the absence of an enanthem. If it were not for this fact, in isolated cases it might be more justifiable to regard the disease as an acute eruptive fever, not unlike scarlatina or measles. But it may be stated here that the evidence against a generalized infection is not quite complete, for the herald spot might conceivably be the portal of entry, and the generalized eruption bear the same relation to this that the rash does to the throat in scarlet fever. Nor is this far fetched, judging from the analogy supplied by ringworm and the trichophytids.

The last statement might equally well apply to pityriasis rosea conceived as a local infection, whether of bacterial or fungous derivation. What further favors the external nature of the disease is the low ratio of general manifestations as contrasted with cases in which the patient complains of nothing but the eruption and itching. The absence of mucous membrane involvement is further negative evidence supporting the external nature of the disease.

A striking feature of the condition is the immunity conferred by one attack. Such immunity brings it more in line with the acute exanthems than with local infections; but recent investigations in the domain of fungus infections indicate that among these a certain number provoke at least a relative immunity, and it is not wholly without the bounds of likelihood that pityriasis rosea is a fungus infection determining such immunity.

The foregoing reflections were stimulated by a criticism\(^1\) which ran as follows: "One can hardly subscribe to the itching of pityriasis rosea as often very intense, or that bromides need to be prescribed for it. . . ." Highman says: "It occurs prevailingly in the spring and fall in an epidemic manner. Thus it is clearly infectious. . . . but this is not clear from the fact that it is of seasonal occurrence, 'in an epidemic manner.' The same thing is true of freckles in summer at the seaside resorts."

The critic's analogy to freckles is excellent satire and clearly points out looseness of sequence on the part of the writer, which was due, however, in part, to the latter's belief that the simple facts concerning the disease were well enough known to justify a categorical statement. Such an assumption is always unjustifiable; and for this reason we analyzed a series of cases which entirely support the statements adversely criticized, and which seemed to bring out so many interesting clinical facts that the present paper may be acceptable on the grounds that the striking features of a well-known disease are vague even to many experts.

**THE SOURCE OF THE MATERIAL**

Of seventy-four cases available for study, in only fifty-two were the records sufficiently complete for analysis. Subsequent paragraphs will show the considerations that appeared pertinent to the matter at hand, for it is our design mainly to indicate that the disease is epidemic, and that aside from its characteristic eruption, one of its outstanding features is itching, frequently severe enough to warrant the use of sedatives. It is further characteristic of the disease that the annual epidemic curve reaches two peaks, although sporadic cases are encountered throughout the year, but rarely in July. The cases in question extend from November, 1909, to March, 1922, and during this entire period in our series not one has been observed in the month of July, which serves as a dividing line between the fall epidemic, which has a low fastigium, and the winter and early spring epidemic, which reaches its high point in March.

**LITERATURE**

*Itching.*—According to Brocq,\(^2\) there is rarely intense pruritus, although there may be severe and rebellious itching in the neurotic and in persons with alimentary intoxication. Koposi, Riecke, Sutton, Török, I. Bloch and Joseph, in their various textbooks, deny itching. Darier\(^3\) says that the eruption is slightly pruriginous, a view shared by

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Hartzell, who states, in his textbook, that some degree of itching is present in most cases, while occasionally it is severe enough to cause distress; a view also expressed by Ormsby in his textbook. E. Lesser 4 says the itching is usually marked, and Finger 5 concurs. Thibierge 6 states that slight itching and warmth may be present, and that it is severe in subjects predisposed to itching, in toxic persons, in those suffering from alcoholism or uremia, and in neuropathic patients. Nicolas 7 is of the opinion that the degree of itching is individual rather than an inherent feature of the disease.

Other Clinical Features.—All authors agree that, characteristically, the disease begins with an isolated patch, universally called the herald spot, which pursues a solitary existence for a few days, or weeks, and which is followed by a stage of dissemination, as a rule lasting no longer than two months. At times, the duration is six months; and Thibierge quotes a case of Hallopeau's alleged to have lasted four years. A detailed description of the lesions requires no space in this article, as their appearance is perfectly well known to everyone. The disseminated lesions have the same attributes as the herald spot, and the only points worth recording are that sometimes there is vesiculation, sometimes some of the lesions are papular, and sometimes seborrhea is simulated. Sabouraud 8 does not consider the disease an entity, but the principal type of a group which Brocq called the seborrhoids.

For the most part, the condition is not associated with systemic manifestations, but Fox 9 hints at its relationship to multiform erythema, while Alderson 10 endeavors to find a relationship between the disease and nervous or internal derangements. In other words, its relationship to other skin diseases seems to have afforded a great deal of speculation.

Etiology.—To say that anything definite is known as to the cause of the disease would be to state something that the literature does not reflect. About half the writers think that it is an internal disease, and the rest that it is external. Those who consider it internal ally it to disturbances of the alimentary tract or nervous system, primarily. With slightly more reason, it is regarded by some as exanthematous. It is particularly the French authors who champion its internal causation.

The German authors, notably Hebra, regarded it as external and parasitic. In the older days, such writers as Chapard, Vidal, Biett and Cazenave devoted a great deal of attention to differentiating the disease from other forms of pityriasis. It is unnecessary to pursue this phase of the subject, as the artificialities involved have long since ceased to occupy dermatologists; but it is noteworthy to recall some of Vidal's beliefs as recorded by Chapard. Vidal found no specific microorganisms in the scales of pityriasis. He believed that its infectious origin could be excluded because of symmetry in distribution, and uniformity in the size and shape of the lesions.

In Sutton's textbook, Towle is quoted as finding it more common in women than in men, and more frequently in the fall than in any other season; while Hartzell in his textbook states that it is more common in males. Ormsby believes it to be more frequent in spring and fall than in any other seasons. To revert for a moment to the bacterial or fungous origin of the disease, Vidal, DuBois and M. Oppenheim have all described different types of micro-organisms.

Summary of the Literature.—The following facts stand out in the literature:

1. Pityriasis rosea is an acute disease starting in a definite manner and running a characteristic course.

2. Its causation is regarded by some as due to a parasite operating externally and by others as due to an internal agent whether infectious or metabolic.

3. Its incidence, as to sex, season and certain symptoms, is variously described.

Analysis of Authors' Cases

Sex.—Fifty-two cases were analyzed. Of these, thirty were in females and twenty-two in males.

Age.—Two were in children of 4 years, one in a child of 7, one in a child of 10, six between the ages of 11 and 20, thirteen between 21 and 30, twenty-one between 31 and 40, three between 41 and 50, three between 51 and 60, and one at the age of 62. In one instance, the age was not recorded. It is apparent, therefore, that two thirds of the cases occur between the twenty-first and the fortieth year, or during the prime of life. In this series, the disease is as exceptional in the fifth and sixth decades as in the first. What inferences are to be drawn from this, it is difficult to state. It evidently occurs in the period of maximum human activity in all physical and mental departments of life. It can hardly be assumed to be a matter of undue exposure, as in traveling, for, as noted, it is far more frequent among women than among men.

Season.—Eight cases occurred in January, six in February, thirteen in March, four in April, two in May, one in June, none in July, one in August, two in September, four in October, four in November and seven in December. Dr. Howard Fox has kindly turned over to us a report of a series of ninety-one cases. In this series, nine occurred in January, seventeen in February, eight in March, six in April, eight in May, seven in June, three in July, six in August, five in September, six in October, five in November and eleven in December. In our cases combined, seventeen occurred in January, twenty-three in February, twenty-one in March, eight in April, ten in May, eight in June, three in July, seven in August, seven in September, ten in October, nine in November and eighteen in December.

Dr. Fox's more extensive observations virtually paralleled ours, but the composite curve of the two indicates a peak in the four winter months from December to March, with the apex in February, and only three cases all told in July.

Itching.—In seven cases, there was no itching; in nineteen it was mild; in eleven moderately severe, and in fifteen so severe as to be the outstanding feature of the complaint. In four of the last group, sedatives had to be employed, and in one of these, opium. Thus, in 50 per cent. of the patients, the itching was absent or only mild; while in nearly 29 per cent., it was severe, and in the balance moderately severe.

It cannot be stated that, in a single instance in which there was itching, there was any reason to believe that the patient was a malingerer, or even exaggerated the discomfort. It is extremely unlikely that a syphilitic roseola or parapsoriasis in the same people would have itched. This disposes of the contention that pruritus is due to the individual and not to the disease, unless we wish to apply the principles of Christian science, when it is convenient to force a theory. In short, except in 15 per cent. of the cases, itching was present in some degree. So much for the prevailing impression that the malady is not characterized by itching.

Character of the Eruption.—The eruption in all cases was classic, with evidence of the herald spot and characteristic disseminated rash. Any cases not obviously pityriasis rosea were not included in this analysis. The smaller lesions were reproductions in aspect of the primary patch. All of the ordinary objective findings, which it would be redundant to enumerate, were present.

Incubation Period.—In eighteen cases, the patient could not state the length of time that elapsed between the appearance of the first lesion and the dissemination of the rash. In four instances, it was stated that the entire eruption appeared without the herald lesion; but evidences
of such a lesion were present, and probably the patient inaccurately observed the onset. Of the remainder, the incubation period was three days in one, four in one, one week in four, ten days in six, two weeks in nine, eighteen days in two, three weeks in one, five weeks in four, six weeks in two, and twelve weeks in one. Thus, in nineteen of the thirty patients who observed themselves closely, the incubation period was from seven to fourteen days, and rarely longer than five weeks.

Course.—Of the total series of patients, eighteen appeared only once, and thirty-four submitted to observation until they were well. Of these, four recovered in one week, eight in two, five in three, nine in four; six in five and two in six weeks. The term "well" signifies that there were no subjective or objective symptoms left of pityriasis rosea; but in several instances the skin seemed excessively dry, possibly because of the type of medication employed. Emollient ointments controlled this feature. In the acute stage of the disease, the use of creams usually provokes acute dermatitis, regardless of the substances incorporated in them. For this reason, dusting powders and lotions containing salicylic acid or menthol or both in low concentration were used. The object of local therapy was purely to relieve the itching and to hasten exfoliation with mild keratolytics. No internal medication was employed excepting sedatives in four cases. These were used because the patients were sleepless. In general, mentholated zinc stearate powder controlled even severe itching sufficiently to insure adequate rest during the first two weeks, when pruritis is at its height.

Thus, the average duration of cases in which treatment is given is between two and four weeks, a few disappearing in one week, a few more requiring up to six weeks. There are no observations to offer on the time, in untreated patients, required for spontaneous recovery. It may be assumed, however, that of the eighteen patients seen only once, those who were not examined in consultation must have had short mild affections, unless failure to return indicated dissatisfaction with their physician. In that event, entirely different inferences would have to be drawn as to the duration.

Site of Herald Spot.—An analysis of the areas at which the herald spot occurs is interesting. Observations could be made in thirty-five cases of the series. Five occurred on the neck, eight on the upper extremity (shoulder four, arm three, forearm one); thorax thirteen (axilla two, breast four, chest seven); abdomen four; lower extremity five (buttocks two, thigh one, knee two). Thus, thirty of the thirty-five occurred above the level of the great trochanters, and twenty-six of these above the abdomen. Excluding those on the neck, forearm and knee, it will be seen that the origin of the disease is in areas in which the clothes touch the body most snugly, and this, too, holds true of
the eruption in its general distribution, for it rarely is found below
the knee or above the line of the collar.

**COMPARISON WITH CHAPARD'S TEN CASES**

Chapard analyzed a short series consisting of fifteen cases, ten of
which were in women. He found no itching in three, slight itching in
six, moderate in two, and severe in four, or about the same proportions
as the authors' series reveal.

The months in which his cases occurred were from February to
June, inclusive, with one case in November. In April, May and June,
there were four cases each. In other words, the high point in France
seems to be about three months later in the year than in New York,
a fact also noted by Moingeard, who observed thirty-five of fifty-six
cases between April and June.

**COMPARISON WITH HOWARD FOX'S CASES**

In Fox's series, no notation was made of pruritus in ten cases. Of
the eighty remaining, there was none in forty-two, mild in thirteen,
moderate in eleven and severe itching in sixteen, or in 20 per cent. of
the patients. In one of Fox's cases, the disease occurred at the age
of 17 months, in one at 20 months, in one each at the age of 8, 9 and 10
years. Fifteen cases occurred in the second decade, thirty-five in the
third, nine in the fourth and ten in the fifth. He observed none after
the age of 50. He, too, found the highest incidence between the
twentieth and fortieth years.

The site of the herald patch was on the face in two cases, neck
in four, upper extremity in fourteen (shoulder one, scapula three, arm
two, forearm seven, wrist one); thorax in nine (chest seven, axilla
two); abdomen in eight; back in three; and lower extremity in ten
(thigh seven, leg three). Eighty per cent. occurred above the level of
the great trochanters, 74 per cent. having been found where the clothing
most closely wrapped the body.

In every respect, then, there was a striking similarity between our
cases and Dr. Fox's. The widest divergence existed in sex distribution;
for, in his series, forty-eight patients were men and thirty-three women,
while in ours twenty-two were men and thirty women. Such dis-
crepancies as exist may be referable to the personal equation, for he
may have included cases we would have thrown out, or we may have
excluded cases unwarrantedly according to his conception.

**ETIOLOGIC RELATIONSHIP TO INTERNAL DISTURBANCES**

In not one of the fifty-two cases was there a single symptom or
sign of any general disturbance, as fever, malaise, chilliness, chills,
alimentary affections, gross urinary changes, or any finding such as
accompanies even the mildest exanthems, such as German measles or Duke's disease, or the various toxic erythemas. In patients in whom the itching was severe enough to disturb sleep, there were evidences of the slight wear and tear accompanying transitory insomnia.

There was, thus, no more trace of associated general derangement than exists in other generalized eruptions. In fifty-two persons it is rather astonishing that the general picture should have been so neutral; for it is probable that if a similar number of apparently healthy persons were examined at random, at least a tenth of them would show signs of morbidity. The evidence points to its being a purely external disease. Barring the fact that any illness is the expression of an academic internal disturbance, pityriasis rosea must be classed as a disease of external origin.

We have a clear picture following a definite sequence. First, there is the herald spot, leading an isolated existence within time limits more stereotyped than those of the syphilitic chancre; second, there is a disseminated rash. It is fair to infer that the herald spot is either a focus of dissemination, bearing a relationship to the rash which is analogous to that of kerion to trichophytids, or it is a portal of entry, the relationship being analogous to that of the chancre to the syphilitic eruption. In either event, the disseminated eruption of pityriasis rosea could be due to the effect of a still undiscovered micro-organism or to its toxins. Which of these hypotheses is correct is not a subject for debate but for research.

Thus far the investigations have been unfruitful. In other words, methods of study are still inadequate. It would be unprofitable to enumerate the various, implicated, polysyllabic micro-organisms dotting the literature, and characterized by every sort of attribute except the essential one of being convincing. Nevertheless, the general features of the disease indicate its infectious origin too emphatically for denial.

It most commonly occurs in an epidemic manner when winter ends; namely, in March, in our climate, and a little later in Europe. It has a definite incubation period, and runs a definite course. At this point, it may be reiterated that recurrences are practically unknown, as though permanent immunity were conferred. Thus, we maintain that it is an infectious disease following definite, seasonal, epidemic laws.

The favorite season being one in which the clothing worn is heavy, and often too heavy for the outside temperature as spring approaches, it appears that increased surface moisture and temperature favor the development of the malady, even as the summer sun favors the development of freckles, which may be considered epidemic, though obviously not infectious, a distinction the critic alluded to earlier in the paper might ponder.
The diseases with which pityriasis rosea is clinically confounded are seborrhea, psoriasis, erythema multiforme and disseminated tinea. The first three of these are prone to recurrence. None have the herald spot, and all occur on areas which pityriasis rosea never reaches. At times, the aspect of individual lesions may furnish cause for confusion, but in their broader clinical aspects they no more resemble pityriasis rosea than lepra.

But pityriasis rosea and disseminated tinea do often look alike. At present, the demonstration of fungi must be considered the main point of differentiation, until we find a micro-organism consistently present in all cases of pityriasis rosea. That this will some day be accomplished is highly probable, although we have no convictions as to the nature of the organism.

CONCLUSIONS

1. Pityriasis rosea is a clinical entity running a definite and characteristic course.
2. It is presumably caused by an external infectious agent, and the disease occurs epidemically, prevailing in March in this climate.
3. Aside from itching, which is often very severe, there are no subjective symptoms.
4. It has no relation to any other similar condition.

780 Madison Avenue.

DISCUSSION

Dr. H. H. Hazen, Washington: It seems to me that in Washington pityriasis rosea must be a little different from what it is in New York. We occasionally find that cases recur. One of my physician friends has had three attacks, and I know of other patients who have had two attacks. Recurrences are extremely rare, but they do occur. In the second place, we have had two cases with lesions of the mucous membrane.

The most striking thing, I think, is the relationship to the tonsils. We have been quite interested, in this connection, in pityriasis rosea for several years, and in every case we have the tonsils examined as carefully as possible. We have found just one case in a series of 150 or 200 with tonsils entirely enucleated in pityriasis rosea. On the other hand, in practically every case we have found some slight infection of the tonsils. My physician friend with each attack of pityriasis rosea has had a severe attack of tonsillitis. It seems rather striking to us that the patients who have no tonsils do not have pityriasis rosea, and those who do have pityriasis rosea almost invariably have some tonsillar infection. Apparently pityriasis rosea, in Washington at least, is not always of external origin.

Dr. William Thomas Corlett, Cleveland: I am much interested in Drs. Highman and Rulison's paper and agree with practically everything in it. A number of years ago I had under my observation a case in which the initial lesion on the trunk was followed by a scattered eruption: from a careful study of that case I have never regarded it as a localized infection, but an infection which appears as a localized lesion which in turn becomes more or less generalized over the body, disappearing in the order of its invasion and spread.
During a winter nine cases of the disease were admitted for investigation at Lakeside Hospital. An endeavor was made to find a micro-organism, if possible, and its causation. Failing in that, as has happened many times before, we endeavored to inoculate the disease to others not afflicted. Nine volunteers appeared, and we tried in various ways to communicate the disease, but with negative results.

With regard to itching, I think that depends on the individual. A slight dermatitis will cause itching in one patient and will not be noticed by another.

As to the length of time the disease lasts, I was of the opinion that it ran its course in about eight weeks. Under treatment, with me, it has run about the same course—six to eight weeks; all the cases I have seen have been variously treated, but whether or not the treatment cuts short the disease, I do not know.

**Dr. Fred Wise, New York:** I wish particularly to call attention to two points: First, in association with this disease in many instances there is an adenopathy, usually of internal origin. Second, the disease is frequently seen in syphilitic patients. This is not a scientific observation, but simply a clinical fact.

**Dr. E. L. McEwen, Chicago:** I feel confident that this disease may appear in epidemic form. Many cases were seen in Chicago during the autumn of last year. I feel confident, too, that it may recur in some instances; I recently saw a case which was unquestionably a second attack. As to the question of itching: In the cases which I have observed I have seldom found this a pronounced symptom. I have never seen a case in which a sedative was necessary. As to the location of the lesion, I have seen a number of cases in which the classical distribution was not present; the exposed parts being involved in some instances. It is on the whole an obscure disorder and one which is worthy of study in all its aspects by every one.

**Dr. Harold N. Cole, Cleveland:** I would like to know whether any one has seen two cases in the same family. I have had two patients with recurrences.

**Dr. James Herbert Mitchell, Chicago:** I should like to ask whether Dr. Highman has encountered orbicular lesions on the arms coexisting with pityriasis rosea. The late Dr. Harris demonstrated a number of such cases at meetings of the Chicago Dermatological Society. Since that time I have seen a number of similar cases and have made a few photographs. Whether the coexistence of these lesions with pityriasis rosea is merely a coincidence, or whether it is an unusual manifestation of the disorder, I am unable to say. I should like to know whether other members of the Association have observed these lesions in pityriasis rosea.

**Dr. Charles J. White, Boston:** I think the only two generalized cases I have ever seen occurred in July. One was in a physician and the other in his wife; there was no surface not involved.

In regard to the itching: All cases in which I have seen that phenomenon have been overtreated. Dr. Stelwagon advocated sulphur. I dislike to suffer with him on any subject, but the patients that do best are those treated with mild washes.

As an illustration of this point, I wish to mention a patient from Chicago who had used an ointment containing sulphur and oil of calf; he had as bad a case of eczema as I have ever seen.

**Dr. Jerome Kingsbury, New York:** I should like to endorse the observations as to the epidemic quality, the frequency of general adenopathy and the
probable external origin of the disease. Several years ago various routine examinations were made in a fairly large number of cases from my dispensary service, and the frequent enlargement of the more easily palpable glands together with a slight run of temperature was particularly noted. In many of the cases, especially in children, the adenopathy was similar to that of measles. The elevation of temperature seemed to be present only in the early cases, often before the eruption had assumed its characteristic appearance.

Dr. Howard Fox, New York: From the academic standpoint pityriasis rosea is an interesting disease to dermatologists, but from the practical standpoint it is of relatively small importance. It is a self-limited disease, running a comparatively short course, and in the majority of cases not causing any appreciable subjective symptoms. I have never noted any pruritus that was severe enough to require an opiate, the itching being generally readily relieved by an ordinary calamine and zinc lotion. The chief importance of the disease lies in the possibility of its being mistaken for the macular syphild.

I have nothing to add regarding the possible causation of pityriasis rosea, but I might mention a point not touched on in Dr. Highman’s paper regarding the types of lesions in this disease. In making notes on my cases I have been in the habit of recording three types of lesions—punctate, macular (often fusiform) and circinate. The circinate lesions are certainly the most striking in appearance and by many considered most typical of the disease. They constituted, however, only 54 per cent. in my series of cases.

Dr. Uno J. Wile, Ann Arbor: I should like to subscribe to Dr. Highman’s view regarding the epidemic character of this disease. I have an unusual opportunity to observe it, no doubt, because we have a migratory population of about 10,000 students who come from various parts of the country. We know that every year when they return to school we shall have an epidemic of pityriasis rosea. Last fall I saw twenty-three cases within three weeks; I have seen two young ladies who lived in the same dormitory come down with pityriasis rosea, and I have seen the same thing occur in the fraternity houses. A few years ago I had an opportunity to hospitalize some patients because we had a little outbreak in the hospital, and it occurred to me that nothing had ever been done to demonstrate a possible virus as the causative agent. The possibility seemed at least tenable. In two patients we removed as much tissue as we could by scalping, took them up with salt solution and passed them through the Berkefeld filter, much as we were then doing with the molluscum contagiosum experiments. The filtrate was implanted in my own skin and that of my assistants, with absolute failure to demonstrate any virus. Our experiments were too limited, however, to exclude a virus definitely.

Dr. Sigmund Pollitzer, New York: So many facts in the history and development of this disease indicate that it is an infection that it seems to me that that is the most plausible hypothesis. All attempts to demonstrate any organism in the lesions, however, have been failures, perhaps for some one reason; namely, that efforts are made to find the organism in the characteristic lesions of the disease. It seems to me obvious that the characteristic lesions are secondary; that they are analogous to an eczematoid or to a tricophytoid eruption, resulting from the primary or mother patch. Consider the course of the disease—first, the primary patch lasting several days or several weeks, and then, quite suddenly, a more or less universal eruption over the body exactly as if there had been a sudden dissemination from a fungus which had matured and its spores then scattered over the surface, or as if there were a toxic absorption from the primary patch which resulted in an eruption of lesions analogous
to the eruption of an exanthematic fever. Against the idea that there is a
development of spores is the apparently symmetrical distribution of the disease.
You cannot imagine dissemination of spores from a patch, for example in
the groin, producing lesions with almost perfect symmetry over the body. For
my part I am strongly inclined to the view that we have an external or local
infection giving rise to the primary patch with secondary development of the
other lesions as the result of some toxic absorption from the primary patch.
On the other hand, observers in general are quite unanimous in reporting the
occurrence of a primary patch in only a moiety of the cases. It seems to me
hardly likely that a primary patch could develop and disappear, so that a trained
observer could not find at least an area of pigmentation, in the few short weeks
before the development of the rash. This is important—have these cases always
a primary patch?

Dr. Highman did not mention the proportion of his cases in which the
primary patch was observed, and I should like to hear from him on that subject.
If there is no primary patch in a large series of cases it still further com-
plicates the situation and leaves us still further in the dark.

With regard to frequency of occurrence, our statistics are exceptionally
harmonious. In a report which I shall present tomorrow, in 48,611 cases of
skin diseases, 10.3 cases per 1,000 were pityriasis rosea, and in the last report
made in 1916, an exceptional coincidence, practically the same number of cases
per thousand—8.2—were pityriasis rosea. This dermatosis occurs, therefore, in
the ratio of about one case in 100, in American dermatologic practice. Recur-
rence in the same person is unlikely when we consider the small number of
cases that are seen, but the fact that we do get a few recurrences would
completely negate the idea of any protection or immunity.

Dr. Charles M. Williams, New York: Regarding the recurrence, the cases
reported are the ones observed having dermatitis. I believe the disease is much
more common generally than these figures indicate.

Dr. Thomas Casper Gilchrist, Baltimore: In one case I thought all of
the symptoms occurred in one day. I found definite spores and decided that
my diagnosis was wrong. A medical student exposed his chest one day, and
the eruption which appeared twenty-four hours later looked like punctate
pityriasis rosea.

Eighteen months ago I called attention to another case of the type brought
out by Dr. Wise. Dr. Strobel and I have watched some cases that persisted; ex-
amination revealed latent syphilis. I think that also holds true in many other
diseases of the skin. Patients with latent syphilis contract some other disease;
the syphilis then alters the character of the disease.

Dr. William Allen Pusey, Chicago: One point in regard to the itching:
The disease is so trivial that careless people, if they do not fear syphilis, are
likely to pay no attention to it. The class of patients with pityriasis rosea
who come to a clinic will probably not come at all unless itching is present;
I think this factor as regards itching in the cases in the clinic should be
considered. In private practice it is the unusual case in which there is severe
itching.

Dr. Harry E. Alderson, San Francisco: I should like to know whether
any of the patients observed by Dr. Highman had lesions on the face or hands.
I saw one last week with lesions just under the ear and on the backs of the
hands.
Dr. Walter J. Highman, New York, (closing): I did not say there were no recurrences. I said they were rare and I had never seen one.

As to the element of the relation to the tonsils, I confess a weakness. I have in my etiologic meanderings focused on the faucae, but I cannot see any relationship between focal infection and something that obviously starts as a local disorder. If it were due to focal infection, not only in the tonsil, but at other parts of the body, it might be incriminated. Pityriasis rosea may be due to the tonsillar infection, but it seems to me so far-fetched that I question it.

I cannot agree with Dr. Wise in regard to the presence of syphilis. I have not looked into the matter particularly, but see no reason why a syphilitic patient should not have pityriasis rosea.

In answer to Dr. Cole's question: I have never seen any familial cases. I wish I might, for it would support my convictions greatly. Neither have I seen any orbicular lesions. I did not pay particular attention to these lesions so far as this report is concerned.

I agree with Dr. White regarding overtreatment in pityriasis rosea. The points he brought out are contained in the paper, but I did not mention them in the course of the abstracts read. I find that local medication that is tolerated well consists of lotions and powders and that creams and ointments of any sort increase the eruption and irritation.

In the fifty-two cases taken up there had been no previous treatment. Otherwise, I would not have included them in the series.

As to the question of adenopathy, I did not find any enlarged glands in my series. I do not doubt that Dr. Kingsbury did in his, but I am reporting mine. I do not believe a temperature of 99 F. in the afternoon is remarkable. I believe if we took our temperature in the afternoon we would often find as much fluctuation in apparently well people as in those with pityriasis rosea.

Replying to Dr. Pulitzer's question as to the number of cases in which there was a primary plaque: In forty-nine out of the fifty-two cases this was definitely seen.

In regard to Dr. Pusey's idea of the clinic patients complaining of itching: the fact that itching brings them in might influence the diagnosis. These were all private cases that I reported.

I do not know whether Dr. Alderson refers to the disseminate lesions on the face—I have never seen one.
MYELOID LEUKEMIA OF THE SKIN*

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Baltimore.

Leukemic infiltrations in the skin must apparently be regarded as an exceptionally rare condition in myeloid leukemia, although numerous instances associated with the lymphatic type are recorded.

Hazen,1 in 1911, in a thorough review of the skin changes in the leukemias could find in the literature only five cases of the myeloid type. These were reported by Hindenberg,2 Nékám3 (two cases), Rolleston and Fox4 and Bruusgaard.5

Arndt,6 in the same year, in his extensive studies on the lymphadenoses of the skin refers to only two cases, namely, those of Hindenberg and Bruusgaard.

Of a later date we have been able to find only one instance of this condition, that published by Saphier and Seyderheim7 in 1920. These authors in their review of the literature state that they were able to find only one case with a histology similar to that of their own and that was the one published by Bruusgaard. They did not include Rolleston and Fox's case because of the absence of premature myeloid cells in the skin nodules and because the diagnosis was not supported by necropsy.

Of these six cases the cutaneous lesions were demonstrated to be composed of a cellular infiltration of myeloid elements in only three. Hindenberg's patient had a single small apple-sized tumor on the thigh which, however, was not examined histologically. The two patients of Nékám, according to Hazen, had maculopapular eruptions, but here also no histologic examination was apparently made.8 There remain then only the cases of Rolleston and Fox, Bruusgaard, Saphier and Seyderheim, the first of which showed an infiltration in the skin of mature myeloid cells and the other two of immature myeloid cells.

3. Nékám, quoted from Hazen.
8. Since this paper was read, this statement has been verified by an examination of Nékám's article; see discussion by Hazen. Nékám: Ueber die Leukaemischen Erkrankungen der Haut. Hamburg and Leipzig, 1899.
CASES REPORTED IN THE LITERATURE

1. Rolleston and Fox's Case.—A woman, aged 58, had firm, slaty gray or plum-colored nodules most thickly distributed over the front of the trunk and above the pubis. A few were also present at the top of the sternum and on the back and extremities. The highest white cell count was 730,000 with 50 per cent. polymorphonuclear leukocytes, 31 per cent. large lymphocytes, 4 per cent. small lymphocytes, 2 per cent. eosinophils, 10 per cent. myelocytes and 3 per cent. eosinophilic myelocytes.

Histology: The corium and upper portion of the subcutaneous tissue showed between the collagen bundles a dense infiltration of cells which appeared to be lymphocytes and polymorphonuclear leukocytes. There was a complete absence of plasma cells and only a few mast cells were found.

2. Bruusgaard's Case.—A man, aged 38, had, on the trunk and upper extremities, bluish infiltrations the size of a pea or larger, which extended into the subcutaneous tissue. Larger flat infiltrations were present in the lower dorsal and sternal regions. There was a slight enlargement of the submaxillary and axillary glands. The spleen was 39 cm. in its long diameter. Necropsy revealed typical changes of myeloid leukemia in the internal organs.

Histology: In the subcutaneous tissue, around the hair follicles and especially about the sweat glands, there was a cellular infiltration lying in a fine connective-tissue stroma. With Ehrlich's stain the majority of the cells showed large pale nuclei and a moderate amount of protoplasm with violet granules; these were identified as neutrophilic myelocytes. They varied in size, some of them being true micromyelocytes. Eosinophils, mast cells, neutrophilic leukocytes and cells with a weakly staining basophilic protoplasm, either large lymphocytes or myeloblasts, were also present. Occasionally small lymphocytes and still more rarely nucleated red blood cells were found.

Blood Examination: This revealed: red cells 5,140,000, white cells 410,000, neutrophilic myelocytes 60 per cent., polymorphonuclear leukocytes 18 per cent., eosinophils 6 per cent., basophils 4 per cent., large lymphocytes 6 per cent., small lymphocytes 2 per cent. and large mononuclears and transitional 4 per cent.

3. Saphier and Seyderheim's Case.—A woman, aged 47, first came under observation about a year previous to the appearance of the skin

9. We have included this case because a consideration of the blood picture renders it almost certain that it was one of myeloid leukemia. In the brief histologic report, the only reference to the type of cellular infiltration is that it appeared to consist of lymphocytes and polymorphonuclear leukocytes. One feels that with special methods of staining immature myeloid cells might have been found.
lesions while she was receiving roentgen-ray treatment in the hospital for leukemia. There was improvement in the blood picture and decrease in the size of the liver and spleen. She had a relapse and was again admitted to the hospital about one year later. While she was in the hospital reddish cutaneous and subcutaneous nodules, varying in size from that of a pea to that of a bean, developed on the nose and along the ramus of the jaw. These were covered with crusts in from twenty-four to forty-eight hours. The under lip was swollen and infiltrated. During the next ten days other lesions appeared on the forehead, which, however, showed no tendency to break down. The patient died eleven days after the first appearance of the cutaneous lesions. The anatomic diagnosis was myeloid leukemia.

The blood count about two weeks before development of the skin lesions was: white blood cells 280,000, polymorphonuclear leukocytes 16 per cent., myeloblasts and myelocytes 58 per cent., eosinophils 15 per cent., mast cells 8 per cent., and lymphocytes 3 per cent. On the day of her death the blood count showed a decrease of white cells to 17,600 with 69 per cent. of myelocytes and myeloblasts.

Histology: (Nodule taken from nose; pus formation in the center.) A cellular infiltration was found, most marked in the subcutaneous tissues but also around the hair follicles and sweat glands in the cutis. The majority of the cells were myeloid leukemic elements, consisting of neutrophilic myelocytes, mast myelocytes, eosinophils and large lymphoid cells which were probably myeloblasts, although the oxydase test was not made. A few erythroblasts and red cells were found. Endothelial cells were seen about the distorted capillaries.

REPORT OF A CASE.

A woman, aged 63, in whose family and past history there was nothing of importance, first came under observation in March, 1916, when she was admitted to The Woman's Hospital for an attack of bronchopneumonia, from which she recovered without complications. At this time there were no skin lesions.

Early in December of 1916, just nine months later, she developed an attack of what she termed "sciatic rheumatism." The condition was described as a severe pain in the lower part of the back which radiated down the dorsal surface of the right leg to the heel. Gradually the discomfort shifted up into the abdomen, and there was pain which was especially severe in the upper quadrants.

A few days before the onset of these severe pains she had noticed an eruption below the costal margins on the abdomen. These lesions were described as bluish-red nodules somewhat like hives. They were slightly elevated and itched intensely. They increased rapidly in size and within a few days fresh nodules had appeared on the top of the head, around the neck and
Fig. 1.—Actual oil immersion field in fatty layer of skin nodule taken at necropsy. Extreme upper border shows eosinophil with double nucleus. Immediately below are two degenerating cells. Near the center are three large phagocytic cells. Most of the remaining cells are neutrophilic myelocytes.
within and behind the ears. On December 6 she was again admitted to The Woman's Hospital complaining bitterly of generalized abdominal tenderness and itching of the skin.

Examination.—On admission the patient was well nourished and showed no loss of weight. She was sallow and her mucous membranes were pale. There was no elevation of temperature. Examination of the chest was negative. The heart was slightly enlarged. The abdomen was tense. On light palpation there was generalized abdominal tenderness, most marked in the right and left upper quadrants. The liver was enlarged, palpable four fingerbreadths below the costal margin. It was hard and tender, and apparently nodular. The spleen likewise was enlarged, smooth and tender. The notch was not palpable. There was slight general glandular enlargement. The reflexes were normal. The

Fig. 2.—Myeloid leukemia of the skin.

extremities revealed no abnormality. The skin eruption consisted of bluish-gray, slightly elevated nodules which varied in size from that of a pinhead to that of a pea. They were distributed over the upper part of the abdomen and the lower thoracic region, and there were a few lesions over the sides of the neck. There were also many nodules behind and within the ears, and the entire scalp was intensely infiltrated, suggesting, as the patient described it, a "nutmeg grater."

11. The patient was under the care of Dr. Sidney R. Miller until her admission to the Johns Hopkins Hospital.
The examination of the blood revealed a secondary anemia without any variation in the differential formula of the white cells. The urine contained a trace of albumin. The blood Wassermann test was negative.

The clinical impression at that time was that the nodules were metastases from some abdominal tumor. The patient was discharged from the hospital unimproved, after fourteen days.

**Second Admission.**—About two weeks after her return home she began to have "choking spells," and on Jan. 30, 1917, she was admitted to the Johns Hopkins Hospital, two months after the appearance of the skin lesions. A most remarkable change had taken place. The eruption had spread over the entire body. The nodules had become greatly enlarged, some measuring 2 or 3 cm. in diameter (Fig. 2). The canal of the right ear was almost closed by the confluent nodules (Fig. 3). The lesions were shiny, elastic, sensitive to pressure and had a mahogany color. The study of the blood revealed nothing more than a secondary anemia. No Bence-Jones protein was found in the urine. The condition of the abdomen had greatly improved. There was no rigidity or tenderness. The spleen and the liver had decreased in size and neither organ was tender. The nose and throat examination revealed enlarged tonsils with numerous nodules similar to those seen in the skin scattered over the mucous membranes. In the mucous membrane of the pharynx there were

**Fig. 3.—Myeloid leukemia of the skin. Same as Figure 1.**
numerous nodules and petechiae. The eyegrounds showed no abnormality. The blood examination showed 4,112,000 red cells per cubic millimeter; white cells 3,100, hemoglobin (Sahli) 48 per cent., color index 0.59. The differential count of 250 cells was as follows: polymorphonuclear neutrophils 55.6 per cent., polymorphonuclear eosinophils and basophils each 0.8 per cent., small lymphocytes 11.2 per cent., large lymphocytes 25.2 per cent., transitionals 64 per cent. A number of large mononuclear cells were also present, the classification of which was difficult. No regeneration forms were seen. The clinical impression was that we were dealing with a moderately advanced secondary anemia. Other laboratory examinations, including the blood Wassermann test, the stool, the renal function and blood culture, were entirely negative. The urine constantly contained a small amount of urobilin and a trace of albumin. Dr. T. C. Gilchrist, who saw the patient at this time, thought the condition resembled a nodular leprosy, but this was ruled out by the examination of nasal secretion and material from nodules.

Course of Illness.—The patient's progress in the hospital was most remarkable. During the first two weeks a distinct improvement was observed. The skin eruption retrogressed until the nodules were nothing more than discolored macular areas. The spleen and the liver were no longer tender although they could be easily felt. The nodules on the mucous membrane of the throat had entirely disappeared.

A week later the patient's temperature, which had previously been about 99 F., suddenly rose to 101 F. She complained of tenderness in the region of the spleen. Coincident with this symptom there appeared over the entire left leg, which was quite hard and tender on pressure, a hemorrhagic eruption, made up of innumerable spots irregular in size. These were bright red and in some areas confluent. They did not appear on any other portion of the body except the buccal cavity, where one could see a number of discrete petechiae in the mucous membrane. In the course of a few days there was some improvement in her general condition, and in about two weeks the eruption had entirely disappeared. The blood examination made at the appearance of the hemorrhagic eruption had revealed a decided increase in the large mononuclears with a decrease in the polymorphonuclear cells (Table 1).

During the last week in March the temperature again became elevated, and the patient complained of general weakness with abdominal tenderness. There was marked mental apathy. The nodules which had practically disappeared suddenly began to increase in size and number, and fresh groups were noted over the front of the chest, the hypochondrium and the back. These lesions were cyanotic, glistening, reddish gray. On the pharynx a number of fresh red elevations were seen. The liver and the spleen had again become greatly enlarged and there was marked tenderness below the costal margins. The examination of the blood on March 23 revealed: red blood cells 3,816,000, leukocytes 10,000, hemoglobin (Sahli) 49 per cent. The differential count is given in Table 2.

Two normoblasts and six megaloblasts were seen in counting 200 cells. The oxidase reaction showed that 70 per cent. of the white cells contained an oxidase ferment. An analysis of the differential count showed that 68.5 per cent. of the cells were myeloid, 21 per cent. were lymphoid and 10.5 per cent. were unclassified elements. The blood picture at this time suggested an atypical myeloid leukemia, atypical because of the relatively low leukocytosis.

The patient grew rapidly worse. About three days after the onset of the acute symptoms the examination of the blood showed that the leukocytosis had
# TABLE 1.—RESULTS OF BLOOD EXAMINATIONS

| Date   | Red Blood Cells | White Blood Cells | Percentage of Red Blood Cells | Hemoglobin | Color Index | Neutrophils | Baso-Eosinophils | Transient Myelocytes | Total Myeloid Cells | Small Lymphocytes | Large Lymphocytes | Total Nucleated Lymphocytes | Unclassifiable Cells | Percent of Myeloblasts | Skin Eruption |
|--------|-----------------|-------------------|-------------------------------|------------|------------|-------------|------------------|---------------------|----------------------|-------------------|----------------|----------------|----------------------------|---------------------|-------------------|--------------|
| 12/1/17 | 4,112,000       | 3,150             | 45                            | 6.70       | 35.6       | 6.8          | 6.4              | 6                   | 63.6                | 11.2              | 25.2           | 0              | 30.4                       | 0                   | 0                 |              |
| 1/30/17 | 4,112,000       | 3,150             | 45                            | 6.70       | 35.6       | 6.8          | 6.4              | 6                   | 63.6                | 11.2              | 25.2           | 0              | 30.4                       | 0                   | 0                 |              |
| 2/2/17  | 4,358,000       | 3,000             | 38                            | 6.00       | 28.5       | 0            | 0               | 32.0                | 0                   | 10.5              | 9.3            | 0              | 9.3                        | 6                   | 0                 |              |
| 3/3/17  | 4,358,000       | 3,000             | 38                            | 6.00       | 28.5       | 0            | 0               | 32.0                | 0                   | 10.5              | 9.3            | 0              | 9.3                        | 6                   | 0                 |              |
| 3/14/17 | 4,124,000       | 3,500             | 55                            | 6.07       | 30.0       | 1.0          | 0               | 18.5                | 11.5                | 7.5               | 68.5          | 9.5            | 7.5                        | 21.0                | 10.5             | 5             |
| 3/20/17 | 3,816,000       | 40,000            | 19                            | 6.4        | 30.0       | 1.0          | 0               | 18.5                | 11.5                | 7.5               | 68.5          | 9.5            | 7.5                        | 21.0                | 10.5             | 5             |
| 3/27/17 | 3,816,000       | 40,000            | 19                            | 6.4        | 30.0       | 1.0          | 0               | 18.5                | 11.5                | 7.5               | 68.5          | 9.5            | 7.5                        | 21.0                | 10.5             | 5             |
| 3/29/17 | 3,100,000       | 3,350             | 28                            | 0.45       | 21.0       | 0            | 0               | 40.0                | 0                   | 0                 | 0             | 0             | 0                          | 0                   | 0                 | 0             |
| 3/30/17 | 3,100,000       | 3,350             | 28                            | 0.45       | 21.0       | 0            | 0               | 40.0                | 0                   | 0                 | 0             | 0             | 0                          | 0                   | 0                 | 0             |
| 4/1/17  | 4,250,000       | 3,000             | 28                            | 0.45       | 21.0       | 0            | 0               | 40.0                | 0                   | 0                 | 0             | 0             | 0                          | 0                   | 0                 | 0             |
| 4/11/17 | 4,144,000       | 16,900            | 28                            | 0.45       | 21.0       | 0            | 0               | 40.0                | 0                   | 0                 | 0             | 0             | 0                          | 0                   | 0                 | 0             |
| 4/11/17 | 4,144,000       | 16,900            | 28                            | 0.45       | 21.0       | 0            | 0               | 40.0                | 0                   | 0                 | 0             | 0             | 0                          | 0                   | 0                 | 0             |

been replaced by the original leukopenia. During the last ten days of her life numerous purpuric spots appeared in the skin accompanied by minute petechiae in the mucous membrane of the pharynx and conjunctivae. Ulceration of the nodules on the face and neck began. Frequent bleeding from the nose and throat necessitated transfusion, but there was no improvement in her condition. On the day of her death there was a leukocytosis of 64,000 cells, and the examination of the blood confirmed the clinical diagnosis of chronic myeloid leukemia.

**Gross Pathology.**—The heart showed numerous hemorrhagic areas throughout the endocardium, many of which were fresh and a brilliant red. There were numerous fresh hemorrhages under the pleurae. The spleen extended down to the level of the umbilicus and weighed 1,350 gm. It was bright red, slightly mottled and pulpy in consistency except for the presence of several hard nodular areas. The liver weighed 2,200 gm. The capsule was smooth and glistening. No nodules or hemorrhages were seen. A number of small old and fresh hemorrhages were scattered through the mucosa of the intestines and the capsules of the kidneys. There was general glandular enlargement. The glands were dark in color, showing numerous hemorrhages. In consistence they were soft and pulpy.

**TABLE 2.—DIFFERENTIAL BLOOD COUNT**

<table>
<thead>
<tr>
<th>Type of Cell</th>
<th>Number of Cells Counted</th>
<th>Percentage</th>
<th>Absolute Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polymorphonnuclear neutrophils</td>
<td>60</td>
<td>30.0</td>
<td>3,000</td>
</tr>
<tr>
<td>Polymorphonnuclear eosinophils</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Polymorphonnuclear basophils</td>
<td>2</td>
<td>1.0</td>
<td>100</td>
</tr>
<tr>
<td>Transitional cells</td>
<td>37</td>
<td>18.5</td>
<td>1,580</td>
</tr>
<tr>
<td>Myelocytes</td>
<td>23</td>
<td>12.5</td>
<td>1,350</td>
</tr>
<tr>
<td>Myeloblasts</td>
<td>15</td>
<td>7.5</td>
<td>750</td>
</tr>
<tr>
<td>Small lymphocytes</td>
<td>10</td>
<td>5.0</td>
<td>500</td>
</tr>
<tr>
<td>Large lymphocytes</td>
<td>17</td>
<td>8.5</td>
<td>850</td>
</tr>
<tr>
<td>Pathologic lymphocytes</td>
<td>15</td>
<td>7.5</td>
<td>750</td>
</tr>
<tr>
<td>Nuclei unclassified</td>
<td>21</td>
<td>10.5</td>
<td>1,050</td>
</tr>
</tbody>
</table>

Total... 200 100.0 10,000

**Microscopic Pathology.**—Sections of the various organs revealed an infiltration of large mononuclear cells, identified as myelocytes. In the liver, spleen and lymph glands there were many mitotic figures. These organs also showed a number of small cells which contained what at first appeared to be parasites but which later were decided to be nuclear fragments. They varied in number from two to four to a cell. The protoplasm of the cells took a pale eosin stain. In no way did they resemble the myeloid cells.

In the section of a skin nodule made in January, 1917, before the death of the patient, similar cells were seen associated with lymphoid and connective tissue cells. This section was studied by the entire pathologic staff of the Johns Hopkins Hospital, and the consensus of opinion was that the condition was not that of a myeloid leukemia, but that it was possibly some parasitic infection. The oxidase stain was done on this section and it was negative for the oxidase ferment.

The section of a skin nodule at necropsy showed an entirely different type of cellular infiltration as well as a different arrangement. The picture was definitely that of a chronic myeloid leukemia. The oxidase stain was positive for myeloid granulation. The small granules contained in some of the cells, which at first had suggested parasites, on further study were thought to be fragmented nuclei.
HISTOLOGIC STUDY OF THE SKIN

(1) Necropsy Material.—This consisted of three pieces of tissue, each about 1 inch (2.54 cm.) in width, which extended into the fatty layer. They had been fixed in Zenker's fluid and mounted in paraffin. Fresh sections were cut from the blocks and the common laboratory stains were made, including Giemsa's and Wilson's stains for blood cells. Good preparations were obtained with both of these stains, which gave practically identical results.

One of these pieces of tissue had included a small nodule involving about one half of its width, the remaining portion being practically unaffected. This was used for the histologic description.

The epidermis showed no definite changes worthy of note.

Fig. 4.—Low magnification of skin nodule taken at necropsy. Infiltration in cutis is shown.

In the cutis and upper portion of the subcutaneous tissues there was an infiltration of cells forming dense confluent masses in the fat columns, surrounding the sweat glands, hair follicles and blood vessels, with also a partial diffuse infiltration consisting of rows of cells extending out between the collagenous bundles of the reticular layer. The infiltration was most extensive in the fatty layer, extending roughly upward in cone shape where it diffusely infiltrated a small portion of the reticular layer, which occupied relatively the center of the nodule. There was no invasion of the epidermis and the papillary layer was comparatively unaffected (Figs. 4 and 5).

No changes were noted in the collagenous tissue except in so far as it was crowded out by the invading cells.
Character of Cellular Infiltration, Giemsa's Stain: Neutrophilic Myelocytes: These were by far the predominating cells of the infiltration. They were larger than the usual leukocyte and had a well defined ring of finely granular protoplasm which stained a muddy pink. The nuclei were comparatively large and most of them were round, but frequently irregular forms were noted. The chromatin was arranged in a coarse reticulum of variable density and took a blackish stain with a moderate degree of intensity. Mitotic figures were frequently seen (Figs. 1 and 6).

Small Lymphocytes: These were the cells encountered next in order of frequency. They contained small round or irregular nuclei which stained intensely blue in contrast with the more blackish tint of the myelocytes. Around most of them a faint, thin, nongranular rim of protoplasm was visible which usually stained pinkish with both Giemsa’s and Wilson’s stains. These

Fig. 5.—Same as Figure 4, but infiltration in fatty layer of the skin is shown.
lymphocytes, although present to some degree in all fields of the microscope, were unevenly distributed, varying from only a few cells in some areas to the predominating cells in others.

Phagocytic Cells: There was a considerable number of these cells distributed all through the infiltration. They were much larger than the myelocytes, but the nucleus was comparatively small, often no larger than that of a small lymphocyte. They contained an abundant, finely granular, pinkish-staining protoplasm which usually assumed an irregular outline. These cells were actively phagocytic, many of them containing nuclear fragments and occasionally whole cells.

![Image](image_url)

Fig. 6.—High magnification of the same tissue as in Figures 4 and 5, showing character of cellular infiltration. In the center is a large triangular phagocyte containing nuclear fragments. Just above is an eosinophil with a double nucleus. At either side there are degenerating cells. Most of the large cells are myelocytes.

Eosinophilic Cells: Occasionally cells were seen which were on the average smaller and contained somewhat coarser and more pinkish-staining granules than the myelocytes previously described. They contained usually two bluish-staining nuclei situated often at opposite sides of the cell. The coarseness and intensity of staining of the granules, however, was not so striking as in those usually encountered in cells of this type found in the skin in other diseases.
Cells with Nuclear Degeneration: These were rather numerously scattered throughout the infiltration and were unusual in appearance, suggesting at one time the possibility of intracellular parasites. In cells so affected the nucleus had apparently been broken up into anywhere from two to ten or fifteen homogeneous chromatin masses, of various sizes and shapes, scattered about within the protoplasm of the cells. These stained intensely blue in contrast to the blackish color of the nuclei of the myelocytes. Where the semblance of the nucleus was left the chromatin had gathered around the edge in two or three homogeneous black, oval or triangular masses. Occasionally these small nuclear fragments were found lying free or in the protoplasm of the phagocytic cells.

Fig. 7.—Low magnification of skin nodule taken during the first eruption.

It was difficult to determine in the later stages which cells were affected by these peculiar degenerative changes as the granulation was often indistinct; but most of them were apparently derived from the eosinophils and perhaps occasionally from polymorphonuclear cells. No connecting links were found which suggested their origin from the myelocytes or lymphocytes.

Neutrophilic leukocytes, metamyelocytes and a few other cells difficult of classification were occasionally encountered.

No mast cells were seen and only one small group of plasma cells was found lying about a small blood vessel at some distance from the principal
infiltrating mass. The sweat glands and hair follicles were well preserved, and no definite changes were found in the blood vessels or capillaries.

The other two pieces of tissue showed changes identical with the one just described, except that the infiltration was far more limited in its extent.

(B) Tissue Obtained During the Life of the Patient.—This consisted of a small nodule which was excised during the first eruption of nodules. This material had been preserved in liquor formaldehydi, and we were unable to stain it with the blood cell stains used in the necropsy material, although good preparations were obtained with hematoxylin and eosin. As will be noted in

the necropsy report, these sections varied considerably in appearance from those obtained at necropsy. The infiltration consisted of cells with large round or oval nuclei which resembled more those of connective tissue or endothelial origin than myeloid elements (Figs. 7 and 8). They were arranged in masses of various sizes or in strands between the connective tissue bundles, which, when not too much crowded by the invading cells, were well preserved. Although there was a fine granular or reticulate intercellular substance, they did not have the definite individual mantle of protoplasm shown by the myelo-
cytes in the necropsy material. There were comparatively few cells of a different type present. A few small lymphocytes and occasionally rather poorly staining eosinophils were noted.

None of the large phagocytic cells was present, and the degenerating cells described in the foregoing, although encountered, were not so numerous as in the necropsy material. Mitotic figures were occasionally seen.

**SUMMARY**

A woman, aged 63, noticed an eruption of bluish-red nodules along the costal margins early in December, 1916. A few days later she began to have severe pain in the lower portion of her back and upper abdomen. The nodules rapidly increased in size and distribution, appearing on the head and neck. They were associated with intense itching. Physical examination at this time revealed abdominal tenderness and enlargement of the liver and spleen. The blood examination showed only a secondary anemia. Within a period of two months the nodules had spread over the entire body. They had a mahogany color, and some of them measured as much as 3 cm. in diameter. The spleen and liver, however, had decreased somewhat in size, and there was no abdominal tenderness. The nodules then gradually disappeared, leaving only discolored macular areas. On February 21, there appeared over the left leg a hemorrhagic eruption. This was of two weeks' duration. Repeated study of the blood showed nothing of special importance. In the beginning of March, 1917, the skin nodules again suddenly made their appearance over the body and in the throat, associated with general weakness, a rise in temperature and enlargement of the spleen and liver. The blood count then for the first time showed the picture of myeloid leukemia. The patient died on April 11, about four months after the first eruption of skin nodules, and one month after the blood examination had shown the presence of a myeloid leukemia. Necropsy confirmed the clinical diagnosis.

**Histology:** Nodules taken from the skin at necropsy showed an infiltration in the cutis and subcutaneous tissues of myelocytes, lymphocytes, large phagocytic cells and curiously degenerated eosinophils. A nodule excised during the first nodular outbreak gave, however, a different picture. Here the infiltration was composed for the most part of large round or oval cells which resembled endothelioid cells more than myeloid elements. Lymphoid cells and a few of the degenerated eosinophils were also present, but none of the phagocytic cells were found which were encountered in the necropsy material. The oxydase test was positive in the necropsy material but negative in that taken during the first eruption.

**COMMENT**

This patient presented some unusual and rather remarkable features. The complete absence of any changes in the blood suggestive of
leukemia, until within a few weeks before death, made a diagnosis impossible before this time, and even then the white cell count was comparatively low and never reached the proportion usually encountered in this disease.

The skin lesions were the most remarkable feature of the case and offer considerable difficulty as to interpretation. While there is no doubt that the last outbreak of nodules, occurring a short time before death, was a true leukemic infiltration of the skin, it is difficult to explain the cutaneous histologic findings during the first eruption when the invading cells were of an entirely different type and when the blood showed no changes suggestive of leukemia.

The first question, then, which must be answered is: Were we dealing during the entire illness of the patient with a leukemia cutis or was the first nodular outbreak some other disease? Certainly the possibility of a patient having two clinically similar, nodular eruptions of different etiology during one continuous general illness of four months' duration would be remote. The histology and clinical appearance of the lesions of the first eruption would rule out any of the ordinary nodular diseases of the skin with the exception perhaps of metastases from some malignant growth. This solution, however, would not hold, because necropsy did not reveal any indication of a primary neoplasm.

If we accept the conclusion that the first eruption was also a leukemia cutis, how are we to correlate its histology with that of the second eruption? In the latter was found an infiltration of cells, the majority of which were characteristic of the usual picture of myeloid leukemia and in which the oxydase stain was positive, whereas in the former the cells were of an entirely different type and gave a negative oxydase reaction. We believe that there is only one possible explanation. If the first nodular outbreak represented a myeloid leukemia of the skin, the invading cells must have been myeloid cells during some stage of their evolution. Since they are definitely not myelocytes or any of their derivatives, they must necessarily be somewhere in the scale previous to the myelocyte stage, that is, they must represent some primitive type or hemoblastic cells too young to give a positive oxydase reaction.

Some of these cells, then, must have been carried to the skin through the blood stream, but they were undoubtedly very few and were probably not recognized in the blood studies. A note made in the differential count of January 30 is rather suggestive in this connection. It was stated that "A number of large mononuclear cells were present, the classification of which was difficult."

Since these cells were so few in number in the blood stream, there must have been considerable local proliferation in the skin. The process
here might be analogous to that taking place in some extensively metastasizing malignant growth. In the second eruption, when the infiltrating cells were of a more mature type, local proliferation probably was not so extensive, although here the comparatively low cell count of only 10,000-64,000 shows that involvement of the skin is not dependent on a high cellular content in the blood, that is, the skin does not serve merely as a depository for the excessive cellular output of the hematopoietic system. It must depend, in some cases at least, more on the vegetative power of the premature white cells and their ability for at least a limited degree of self perpetuation in the skin than on the rapidity of their output in the blood stream. The more immature the cells, the greater would likely be their power of local growth.

No explanation can be offered for the curious nuclear degeneration of the eosinophils.

The large phagocytic cells may have originated either from the endothelial leukocytes of the blood or from fixed tissue cells. It is rather curious that none of them were found in the nodules of the first eruption, but here the degenerating cells were less numerous, perhaps insufficient to stimulate their activity.

**CONCLUSIONS**

A case of myeloid leukemia of the skin is reported. This condition is apparently rare; only three cases were found in the literature in which a histologic examination had been made.

The disease is characterized by a nodular infiltration of the skin, the most important cells of which are usually the immature myeloid elements, which characterize the blood picture of most of the cases of this form of leukemia, that is, myelocytes.

The cutaneous infiltration, however, may be composed of still more immature myeloid cells or hemoblasts, which do not give a positive oxydase stain.

Involvement of the skin in myeloid leukemia does not depend on the quantity of cells in the blood stream, but is more likely due, in part at least, to the power of the cells for heterotopic proliferation.

The extensive involvement of the skin in this case, with a nodular cellular infiltration, undoubtedly metastatic from the hematopoietic centers, points to leukemia as being more of the nature of a malignant neoplasia than an infection.

**DISCUSSION**

Dr. Walter J. Highman, New York: I think Dr. Ketron's paper is a remarkable study of this tremendously rare disease. He emphasized the most interesting points in his conclusions, and I can see no other interpretations than his own that would apply. Some practical points to the students of histopathology arise. Often the histologist is accused of being unable to
help the clinician, and that is because the practitioner expects so much of the histopathologist. Unquestionably, Dr. Ketron would not have been able to classify the case as myeloid leukemia after the appearance of the first nodule. Further than that, we often excise and examine the wrong lesions in making our histopathologic studies, but here, apparently, Dr. Ketron was able to trace the nodules from their inception to their final development, and I think he has not only cleared up the question of myeloid leukemia in the skin, but has also thrown some light on what happens in myeloid leukemia in a medical sense, and when it ultimately becomes sufficiently developed so that we can recognize it.

I think Dr. Ketron has made one of the best contributions that has yet been made in a wide and varied literature.

Dr. Thomas Casper Gilchrist, Baltimore: I saw this case in the beginning in consultation with the author. On the first appearance of the eruption one might have thought it was leprosy; but I would not accept a diagnosis of leprosy unless the bacilli were found. Dr. Ketron makes these sections himself and he investigated the case thoroughly.

There is another way of looking at the case. Cancer is an overgrowth of cells of malignant nature; here is another overgrowth of cells. As I recall the case, the patient entered the Johns Hopkins Hospital the first time and was given large doses of arsenic; this may have had something to do with the disappearance of the lesions.

Dr. Gay, the collaborator, is present and, with the consent of the members, I should like to hear what he has to say about it.

Dr. L. N. Gay, Baltimore: I did not have the opportunity to see the patient before her death. From the clinical standpoint it has been of great interest to compare the morphology of the blood with the histology of the skin, both before death and at necropsy. Without the terminal leukocytosis which the patient showed one would have been doubtful clinically as to the type of blood disease. As Dr. Ketron has stated, the first nodule revealed a number of cells which might be considered young migratory blood cells. This brings up the origin of blood cells, which has never been definitely established. A number of views exist. Drinker summarizes the situation by suggesting the undifferentiated hemoblast as the earliest known blood cell. From this cell the myeloid and lymphoid cells as well as all red blood cells develop. He suggests the endothelial cell as the mother cell of the so-called mononuclear and transitional cells. Is it not possible that these questionable cells found in the first section were undifferentiated hemoblasts?

Dr. H. H. Hazen, Washington, D. C.: It is rather difficult to discuss such a paper without an opportunity to read it carefully and study the sections. The patient may have had a mixed leukemia. The early findings may have been interpreted as mixed, although the myelocyte may not have been present at that stage. In 1910 and 1911, I went over the literature carefully and thoroughly and decided that at that time only five cases were on record, and one case Dr. Ketron did not refer to. My impression is that in Nékání's cases the histologic findings were reported. It is difficult for me to imagine any German worker publishing a case without saying something about the histologic findings, but not having read the literature for so long it is difficult to be sure as to what was in the paper. Fox's case was absolutely typical, as was Bruusgaard's. We must remember that we have two types of cutaneous leukemia. In one there are definite blood cells in the skin, as Dr. Ketron
showed in the final section, and in the other there is a skin eruption associated with toxemia, in which we do not necessarily find the predominating cell.

There are two other interesting facts: First, some of these cases do not show a marked leukocytosis until near the end. There is a terminal leukocytosis, and it should be borne in mind that if we have a case in which there is no leukocytosis early a blood count should be taken shortly before death, for sometimes the terminal leukocytosis is quite marked. The other interesting fact is the question of what attracts the blood cells to the skin. Do they come from a lymphoid tissue in the skin as some have suggested, or are they attracted by some form of chemotaxis which draws out the cells?

Dr. Ketron's paper also shows how many cases are really aleukemia cases at the start.

Dr. Jay Frank Schambor. Philadelphia: The case referred to by Dr. Ketron is of great interest and importance. A striking feature of his excellent report is the variation in the blood picture from time to time. This should teach us that it is hazardous to commit oneself to a diagnosis without repeated blood examinations. At one period it appears that the patient had a distinct leukopenia. I should like to inquire whether the patient had received any roentgenotherapy because it is known that the roentgen rays or radium will produce a marked reduction in the white cells which may persist for a considerable period of time.

Dr. Fred Wise, New York: There is one point of interest to me especially, because I come in contact with the younger men studying dermatology. This paper demonstrates conclusively that biopsies to be of any value in diagnosis must be taken at different stages of evolution in certain skin diseases. Single specimens are often of no value in the problems confronting the diagnostician. Early, late and intermediate specimens should be examined whenever possible.

Dr. Harold H. Cole, Cleveland: I was greatly struck with the close resemblance of these pictures to those of a patient with Hodgkin's disease recently under observation. That patient had small tumors scattered over the thighs and an intense infiltration of the breast. All of the tumors showed true Hodgkin's disease. I think only by careful study of these cases will we be able definitely to classify them and differentiate them.

Dr. Lloyd W. Ketron, Baltimore (closing): With reference to Hodgkin's disease, I have had the privilege of studying a nodular Hodgkin's disease, but there was no resemblance of its histopathology to that of leukemia cutis. In the latter there was a pure cellular infiltration, while in the former it was for the greatest part a proliferation of the fixed tissue.

With reference to Dr. Hazen's remarks, we know that in the discourses on lymphatic leukemia of the skin there has been a great deal of discussion as to whether the cells originate from the blood stream entirely or whether they come from lymphoid tissue in situ. This question certainly cannot be raised in relation to myeloid leukemia cutis as there are no possible sources of origin of these cells in the skin.

We believe that these tumors in our case were composed of cells metastasizing through the blood stream. If the cells are very young, they may be capable of considerable local proliferation.

I believe the term "mixed leukemia" is not used very much at the present time. Dr. Gay, however, who is an experienced hematologist, can tell you better about this than I.
Dr. L. N. Gav, Baltimore: With regard to the term "mixed leukemia":
The literature is filled with such terms as, aleukemia, mixed leukemia and pseudoleukemia. In the early literature the term pseudoleukemia was limited to Hodgkin's disease. Later, however, when various types of atypical leukemia were encountered the same term, pseudoleukemia, was applied. Considerable confusion consequently has arisen. Many of the cases described resemble what we now consider cases of aleukemic leukemia, either myeloid or lymphoid in type. As to the term "mixed leukemia," it is not used; in fact, I recall seeing it in the literature only in a few instances.
PITYRIASIS RUBRA PILARIS—FAMILIAL TYPE*

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CHICAGO

Pityriasis rubra pilaris was first described by Devergie,1 in 1857, as "a disease characterized by scaly and horny productions situated chiefly in the sebaceous follicles and by a more or less generalized cutaneous hyperemia." Later Besnier and Richaud described the same clinical condition under the name of pityriasis pilaris. The disease is today generally accepted to be identical with Hebra and Kaposi's lichen ruber acuminatus. The points of identity of the two were recently brought out in an admirable paper by Feldman.2 Among American authors cases have been described by Taylor, White, Robinson, Zeisler,3 Ravogli, Heidingsfeld, Shields, Markley and Levin. Nothing definite is known about the pathogenesis. The disease usually begins in early life and persists with occasional exacerbations and periods of remission. Although Hebra's cases terminated fatally, most cases observed in this country have been relatively benign. The particular interest that prompts the present report is the observation of four cases in one family, which occurred in a father and three children. This is the first instance of the familial occurrence of the disease noted in this country, although there are two reports of a similar nature from the continent. The subjoined report is given as added evidence that heredity plays a rôle in the etiology of this rare condition.

REPORT OF CASES

Case I.—H. K., a man, aged 46 years, had had a cutaneous eruption since early childhood. The patient was presented before the Chicago Medical Society in 1899, by the late Joseph Zeisler, as having a typical example of pityriasis pilaris. A brief description appeared in the Chicago Medical Recorder as follows: "The patient, at this time aged 23, presented large areas of erythroderma; branny desquamation in many of these places, exaggeration of the natural folds and furrows of the affected regions, horny punctiform blackish plugs on the dorsal surface of the hands, chiefly the first phalanges, and also ulnar side of the back of the hands corresponding to the follicles of lanugo hairs; hyperkeratotic scaly patches over the knees and elbows. There was

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no itching and the mucons membranes were free." A report on the pathology of the condition by Dr. Pardee at this time confirmed the diagnosis. Treatment consisted largely of local medication and injections of pilocarpin. The disease gradually improved and for the last twenty years has been so mild as not to interfere with his occupation. In 1902, the question of marriage was discussed. The patient was assured that it was perfectly safe for him to marry as there had been no report of a hereditary transmission of pityriasis rubra pilaris up to this time. Of four children born within the next ten years, three developed the disease during the first year of life.

Examination revealed a healthy, well developed person with normal physical and blood findings. Examination of the skin revealed slight, but unmistakable, evidence of pityriasis rubra pilaris. On the scalp was a branny erythroderma, with involvement of the ears. The face, chest and back were entirely free.

Fig. 1.—Lesions on face of patient in Case 2.
There were scaly rough plaques, chiefly on the extensor surface of the arms below the elbows, and characteristic black "plugs" on the dorsal phalanges and backs of the hands. On the lower extremities were oblong red scaly patches over the knees and on both sides of the calves. The palms and soles showed a diffuse thickening with traverse striations of the nails. There were no subjective symptoms.

Case 2.—M. K., a boy, aged 12 years, had had a cutaneous disorder since early infancy. With the exception of diphtheria and scarlet fever at the age of 4, and measles at 6, his medical history was uneventful. He complained of slight itching in winter and a drawn feeling about his face. The skin of his hands cracked and bled easily in cold weather. During the summer the condition improved and the lesions almost disappeared.

A careful physical examination revealed no evidence of organic disease. The boy was well developed and bright. The tonsils were small and buried. There were small cervical and axillary glands. The thyroid was not enlarged and there was no retrosternal dulness. The genitalia were normally developed. There was no physical evidence of endocrine disturbance.

Case 3.—S. K., a girl, aged 16 years, had always been healthy with the exception of measles at the age of 4. She complained of difficulty in breathing, especially on exertion, which she thought was due to adenoids and enlarged tonsils. The cutaneous disorder began shortly after birth and had gradually improved from year to year, with exacerbations in the cold weather. Pruritus was negligible. Menstruation began at 14 and had been irregular.

Examination revealed a well developed girl with a tendency to adiposity, a full rather slow pulse (60 to 65) with respiratory dyspnea even while at rest. The positive physical findings included the following: A fissured tongue, enlarged cryptic tonsils, cervical adenopathy, a fairly large soft thyroid, slight cardiac enlargement without murmurs and dulness over the upper sternum on percussion. A roentgenologic examination showed a mediastinal shadow which was interpreted as a probable thymus hyperplasia, although a retrosternal thyroid was also considered. The lungs were normal.

Case 4.—H. V., aged 14 years, a sister of the foregoing patient, had had the cutaneous disease in mild form since she was 1 year old. With the exception of a diffuse goiter, large tonsils and a geographic tongue, examination was negative. Another younger child was examined, but presented no evidence of cutaneous disease, and the mother was likewise unaffected.

Laboratory Findings.—The blood findings in Cases 2 and 3 were: an average hemoglobin estimation of 95 per cent.; leukocyte count, 6,500; red blood count, 5,200,000; differential count: polymorphonuclears 77, small mononuclears 19, large mononuclears 3 and eosinophils 1. The blood pressure in Case 2 was: systolic 115, diastolic 85; in Case 3: systolic 110, diastolic 85. Chemical examination of the blood in Case 3 showed a total nitrogen content of 2,560 (normal 2,650), urea nitrogen 9.6 (normal 10), ura 23.5 (normal 21.4), uric acid 1.9 (normal 1.8), and creatinin 1.4 (normal 1.35). The urine findings were negative in all cases.

Cutaneous Lesions.—The eruption in all three children was so strikingly similar that a single description will suffice. The scalp showed a diffuse redness with branny desquamation. The hair was not excessively dry, and there was no alopecia. The cheeks, forehead, nose and ears showed a shiny seborrheic type of inflammation with exaggeration of the lines of the skin. On palpation the affected skin was thickened, inelastic and rougher than normal,
The lower lid in one case (Case 2) was slightly everted. At the lower border of the neck the erythroderma terminated abruptly in a sharply demarcated border. There were a few small scaly lesions over the upper part of the chest, but otherwise the trunk was free. The arms presented variously sized scaly, grayish-red plaques of a psoriasiform appearance, chiefly affecting the exterior surfaces around the elbows. On the wrists and back of the hands were rough erythrodermic patches made up of scale-covered conical papules, some of them pierced by hairs, with marked exaggeration of the normal lines. In only one of the cases (Case 2) were found the "black" punctiform plugs which are so
characteristic of the disease. These were present on the dorsal surface of the wrists and to a lesser extent on the phalanges. The palms showed a diffuse thickening. The nails were not affected. The lower limbs presented confluent scale-covered patches with islands of normal skin intervening. The nutmeg

Fig. 3.—Distribution of lesions of patient in Case 3.

grater feeling was very apparent on palpation. The knees, thighs and buttocks presented oblong, irregular plaques. Below the knees, extending over the dorsum of the feet, the scaling and roughness was more marked and suggested an ichthyosis. The soles showed a diffuse hyperkeratosis with numerous fur-
rows. The toe nails were thicker than normal. The eruption was everywhere remarkably symmetrical. The shiny seborrheic inflammation on the face was in marked contrast to the dry psoriasiform type of eruption on the extremities.

Clinical Course.—The patients were under observation over a period of several years and always showed spontaneous improvement in the summer months. The results of treatment will be recorded in a subsequent paragraph.

HISTOPATHOLOGY

Pieces of tissue were obtained from the back of the hands in Case 1 and from the psoriasiform areas in Cases 2 and 3. In addition, sections from a recent generalized case of the disease were studied. Hematoxylin and eosin, polychrome methylene blue, and Alzheimer's stains were used. The histologic appearances in all cases were similar and corresponded to those reported by other observers. The most conspicuous feature of the histology was the marked hyperkeratosis, chiefly around the mouths of the pilosebaceous follicles. The stratum corneum was greatly thickened, particularly in the older lesions and was composed of wave-like parallel laminae. The horny layer passed without interruption into the cylindrically or conically dilated mouths of the follicles and there formed onion-like concentric pearls, within which were found stumps of hairs. These colorless cornified globular pearls may occur in the epidermis doubly, apparently independently of the sebaceous or coil ducts. There were some distinctly nucleated cells in the horny layers (parakeratosis). The other layers of the epidermis showed a variable degree of hypertrophy. The rete pegs were lengthened in some sections, widened in others, and the basal layer stained more intensively than normal. Cutis changes were found in all sections and consisted of a cellular infiltrate in the papillary and subpapillary zones, chiefly about the affected follicles, and at times with a peri-vascular arrangement. The cells were mostly round deeply staining mononuclear fibroblastic spindle cells, and there were a few mast cells. The arrectores pilorum were markedly hypertrophic. The deeper parts of the coil and sebaceous glands showed no changes.

The conclusion I would arrive at from a study of recent papules and older ones is that the histologic changes differ only in degree. It is not possible to say whether the primary changes are in the epidermis or whether these are secondary to the inflammatory changes in the corium.

COMMENT; SUMMARY OF PERTINENT LITERATURE

The interesting features of this group of cases are the obvious hereditary and familial tendency, the remarkable similarity of the eruption as regards distribution and certain atypical features, the mild but persistent character of the disease in the second generation, the tendency to exacerbation in the winter months and the absence of sub-
jective symptoms. In the literature I have been able to find two reports of familial pityriasis rubra pilaris. De Beurmann, Bith and Henyer report a group of four cases, two brothers, aged 23 and 25 years, and two sisters, aged 28 and 12 years. They all showed the typical pityriasic lesions on the body; a shiny uniform redness and slight desquamation of the face, hyperkeratosis of the palms with epidermal cones on the forearm, dorsal surfaces of the hands and fingers and similar lesions on the legs and feet. The nails

Fig. 4.—Section through horny spine on dorsal phalanges, showing mass of cornified epithelium within hypertrophied follicle.

were thick, brittle, thin at the edge and had longitudinal cracks in them. The sebaceous secretion on the face, scalp and thorax was intense, while the limbs, on the contrary, were very dry. These characteristics were present in all. In the study of the hereditary antecedents the father was found to have had for years a redness and scaliness of the face. The mother had no cutaneous affection and two other members of the family were not affected. There was a definite history of

tuberculosis in the family. Recently Gaertner reported a case of pityriasis rubra pilaris in a man of 29, beginning at the age of 3 years. The father had a similar affection from the fifth year to his death at 81. Gaertner would classify the disease as a congenital anomaly of cornification belonging to the so-called "universal genodermatoses" of Meirowsky, in which the "Keimplasma" is the determining factor. The familial tendency in pityriasis rubra pilaris is, however, not as marked as in such diseases as ichthyosis, porokeratosis and keratosis follicularis, but is probably more like the occasional familial tendency seen in such diseases as psoriasis.

DIFFERENTIATION FROM OTHER TYPES OF PITYRIASIS RUBRA PILARIS; RESEMBLANCE TO PSORIASIS

Pityriasis rubra pilaris, as described in the present group of cases, differs from the more severe cases originating in childhood and the

acute cases occurring in adults. I have had under my care three additional cases of a much more severe type, one in a child and two in adults. In the latter, the eruption at the onset consists of discrete conical papules. By close aggregation and new formation of papules, hyperkeratotic scaly patches are produced closely resembling psoriasis. The eruption rapidly becomes universal, the erythroderma and profuse scaliness suggesting an exfoliative dermatitis. After partial involution

there remains a residual eruption located chiefly on the face and scalp, elbows, knees, axillae, genital region, popliteal space, sacral region, hands and feet. In these severe cases the nails show remarkable changes. The nails of both hands and feet become opaque, thickened, transversely striated and pushed upward by an enormous subungual hyperkeratosis. The distal end of the nail shows a grayish-yellow discoloration, is lifted up by a friable subungual deposit and has a tendency to curvature in a longitudinal direction, resulting in a claw-like deformity. The palmar and plantar hyperkeratosis may be so severe as seriously to interfere with the use of the limbs. The hands are often

Fig. 6.—Section showing double horny pearl in epidermis.
swollen and deformed with a feeling as if they were incased in a cast, as one patient expressed it. The black "plugs" on the dorsal phalanges and backs of the hands are regularly found in these cases. The preceding observations agree with the nail changes as reported by Heller, Friedmann, Dubreuilh and Riecke. In contrast to this is the absence of nail changes in the familial type of disease, the freedom of involvement of the trunk and the inconspicuous nature of the follicular papules on the backs of the hands. I believe we must therefore recognize that pityriasis rubra pilaris may occur as both a mild familial

type and a more severe acquired form. It may be recalled in this connection that Thibièrge has already emphasized the multiformity and variability in the clinical aspects of pityriasis rubra pilaris. The resemblance of the lesions to psoriasis is worth commenting on from the standpoint of differential diagnosis. The silvery white scales covering the plaques on the elbows and knees strikingly resemble psoriasis. Careful inspection and palpation will, however, disclose acuminated papules. The absence of bleeding points on removal of the scales, and the palmar and plantar changes will be of value in the differentiation.

RELATIONSHIP TO ENDOCRINE GLANDS

The etiologic relationship of pityriasis rubra pilaris to endocrine glands is suggested by the favorable response to medication with such glandular extracts as thyroid and pituitary and the occasional association with symptoms of endocrine disturbance. Levin has demonstrated a number of cases before the Manhattan Dermatological Society which showed signs of dyspituitarism and which improved under the administration of pituitary substance. Bechet 8 mentions a male adolescent with a classical pityriasis rubra pilaris who had a typical Fröhlich syndrome characterized by excessive adiposity, deficient sweat, dry skin and dry, strawlike hair. There was slight improvement in the eruption after administering pituitary extract. The relationship to the thyroid gland is equally obscure as many cases which present no sign of a pathologic condition of the thyroid improve with the administration of thyroid extract. Levin and Smith 9 report an interesting case of pityriasis rubra pilaris with symptoms of hypothyroidism in a male adult with apparent cure by thyroid therapy. In this case they record the following symptoms: dull, stupid facial expression with minor mental changes; marked evidence of senility; sparseness of the eyebrows and absence of the outer half; relaxation of ligaments; poor muscular tone; slow pulse; extreme constipation; dry scaly, itching skin, and chilliness. The thyroid gland was not palpable. They urge the administration of thyroid extract in cases with minor symptoms of hypothyroidism as a valuable therapeutic test and even when thyroid symptoms are not present for its effect in improving the nutrition of the skin, increasing its glandular activity, stimulation of hair growth, and enhancing the desquamation of the unhealthy horny layer with reproduction of a new covering. These conditions are present in pityriasis rubra pilaris and also account for the beneficial effect of


thyroid in ichthyosis and allied conditions. In my series of seven cases I was able to find definite evidence of hypothyroidism in only one, although the improvement in the cutaneous condition under thyroid administration in all was marked. In one of the unusually severe cases of pityriasis rubra pilaris under my care at the Cook County Hospital, which rapidly became generalized under treatment with arsenic (sodium cadodylate injections) and had assumed a type resembling exfoliative dermatitis, there was remarkable improvement under treatment with thyroid extract. The desquamation and erythroderma over the trunk cleared almost entirely leaving only a few areas present on the elbows, knees and scalp. The hyperkeratotic condition of the palms and soles improved slowly under treatment. A roentgen-ray examination of the chest in this case showed no pathologic condition, and the sella turcica was normal in outline. The basal metabolic rate was within normal limits. After taking 1 grain (0.06gm.) of thyroid three times a day for four weeks, definite symptoms of hyperthyroidism presented themselves—a marked tremor, eye symptoms and rapid pulse, necessitating discontinuation of the treatment. Thyroid extract should therefore be administered with care, and, if possible, controlled by basal metabolism tests. Regarding the possible presence of an enlarged thymus in one of my cases, I am inclined to look on this as an accidental finding. Interest in the association of the thymus gland with another dermatitis, psoriasis, has been aroused by Brock's hypothesis that there is a hypofunction of the thymus in this disease and the attempt to stimulate this by small doses of roentgen-rays.

Recently the patient mentioned in the foregoing received a stimulating dose of roentgen-ray over the thymus area, with continued improvement.

**RELATIONSHIP TO TUBERCULOSIS**

In 1901, Milian announced the theory of the tuberculous origin of pityriasis rubra pilaris, which was based on the great frequency of tuberculosis in the patients observed by him, the existence of intermediary cases between certain tuberculids and pityriasis rubra pilaris and the positive tuberculin reactions. Milian would consider the disease as a perifollicular tuberculid. Gaucher has also found that several patients treated by him for pityriasis rubra pilaris succumbed to tuberculosis. De Beurmann obtained a definite history of tuberculosis in the family studied by him. All of the members gave positive tuberculin reactions. The father had repeated attacks of bronchitis, and in one of the children the right apex was affected. Other observers have not been able to confirm these observations. In the four cases described in this report, nothing was found to indicate the presence of tuberculosis. The Pirquet tests were negative and physical and roentgen-ray evidence was lacking. Even in the patient who had had the disease
for twenty years there was no impairment of health. The theory of
the tuberculous origin of the disease appears to rest on indefinite
evidence.

THERAPEUTIC OBSERVATIONS

In the series of cases that I have had under observation the greatest
amount of improvement was noted with thyroid therapy. Small doses
of thyroid, 1 grain three times daily (0.06 gm.), were effective in
controlling the disease but failed to effect a complete cure. Possibly
better results will be secured with Kendall’s thyroxin. My experience
with other endocrine substances was not so favorable. Arsenic, as
solution of potassium arsenite, Asiatic pills and sodium cacodylate,
appeared to aggravate the condition. In contradistinction may be men-
tioned the results of Kaposi, who cured some of his patients with
heroic doses of arsenic, and Heidingsfeld who managed three cases
successfully by the administration of intestinal antiseptics, a carefully
regulated diet, the external application of tar and the hypodermic
administration of arsenic in the form of atoxyl, or cacodylic acid.
Pilocarpin, a remedy formerly much used, I have had no experience
with. Diet has not influenced the course of the disease. Locally, I
have found the free use of baths followed by some mild emollient,
such as benzoinated lard or lanolin, better than stronger keratolytic or
reducing agents. The careful use of the roentgen ray appears to aid
in the involution of the lesions. The disease in my experience improves
up to a certain point, but becomes refractory to further roentgenization.

CONCLUSIONS

1. Pityriasis rubra pilaris may occur as a hereditary, familial disease.

2. The familial type of disease represents a mild persistent derma-
tosis beginning in early life and presenting atypical features resembling
psoriasis.

3. The disease is occasionally associated with evidences of endo-
crine gland disturbance.

4. There is no evidence of a relationship to tuberculous.

5. Thyroid extract is the most valuable therapeutic agent in con-
trolling the disease.

ABSTRACT OF DISCUSSION

Dr. Richard L. Sutton, Kansas City, Mo.: The point Dr. Zeisler brought
out regarding an occasional familial tendency in this disease should be empha-
sized. In chronic skin diseases of doubtful etiology, one should be careful in
giving advice regarding the probable freedom from inheritance of the offspring.
In this instance, the patient undoubtedly blamed the physician who had told
him that there was no danger of his children contracting or inheriting the
disease. A few years ago, I was consulted by a patient with a large and
unsightly birthmark, who wanted to know if it would be safe for him to marry and beget children. I told him that the condition sometimes was an inherited one. The first (and thus far only) baby had a disfiguring birthmark, similar to the one carried by the father.

Dr. Harold N. Cole, Cleveland: I saw one of the patients Dr. Zeisler referred to when she was in Cleveland, and she had a characteristic case of pityriasis rubra pilaris.

Dr. David Lieberthal, Chicago: I do not believe Dr. Zeisler is to be criticized for not advising against marriage. So far as I know, the first patient was married twenty years or more ago, and at that time Dr. Zeisler was not in practice and none of us had all the information we have gained since that time in regard to this and many other diseases.

Dr. William Allen Pusey, Chicago: These facts were not known to many of us before. I am glad to learn that the affection is familial, and the opinion of Drs. Sutton and Lieberthal makes little difference.

Dr. Erwin P. Zeisler, Chicago, closing: I believe my paper emphasizes the point that care should be exercised in permitting patients with chronic dermatoses to have children. Even such disorders as psoriasis are occasionally hereditary, and patients should be informed of this fact.

30 North Michigan Avenue.
EXPERIMENTAL PRODUCTION OF PARAFFIN OIL TUMORS IN MONKEYS *

FRED D. WEIDMAN, M.D., AND MARJORIE S. JEFFERIES

PHILADELPHIA

By this time, the medical profession has become thoroughly aware of the danger which lurks in the surgical use of paraffin for cosmetic purposes, but, although by now almost an old story, the discussion pro and con still goes on. Thus, one of the most recent pronouncements is that of Davis,¹ who concluded that for paraffinomas to develop in the skin there must be a predisposition on the part of the patient, since the majority of people into whose skins paraffin is injected do not develop paraffinomas. (The reader must keep in mind that we are speaking now of solid paraffin and not paraffin oil.) He concludes, on the other hand, that "the affliction is common enough to clothe the procedure of paraffin injection with a distinct risk," and that occasionally even epithelioma may develop. Oppenheimer,² too, has voiced a condemnatory note. On the other hand, an Englishman, Spencer Mort,³ extols the use of paraffin in facial surgery, stating that the results will be favorable if a very pure grade of paraffin is used, with a melting point of from 110 to 115 F.

The first impression is that Mort was very fortunate in not encountering any persons who were predisposed, and that the employment of paraffin as a cosmetic agent will depend on how much of a gambler the physician as well as the patient is. For, obviously, since the tumors develop in only a small percentage of cases, often only after many months, and since surgeons cannot follow up every patient whom they do so treat, the surgeon will be able to dogmatize only after he has treated many indeed, say some scores of cases. But now that we know what we do about paraffin oil, it may be that, as Mort states, the elimination of the lower fractions of the paraffin (which are the ones related to the paraffin oils) will also eliminate the development of tumors. It may be fairer to reserve final judgment until hard paraffin has been definitely incriminated, but, in view of the tissue reaction, which is that of a nonspecific foreign body, we believe that it will finally be shown that the introduction of any foreign body will be

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followed by an order of this "tumor" reaction, provided the person's tissues are thus disposed; and that this will take place regardless of whether the inert body is pure hard paraffin, soft paraffin, paraffin oil, celloidin or cellulose.  

Coming to the subject of paraffin oil tumors, we find that, as the parenteral use of oil is so much more recent than that of paraffin, the dangers from its use have not become so generally or so widely known. And, therefore, it is much more important to human medicine that the dangers of these injections be known than that those of solid paraffin be known, not only because they are practiced so much nowadays, but also because they are likely to be more widely used as parenteral injections are employed more and more in the future.

This danger we have attempted to advertise directly to the profession in a recent note. Stokes and Scholl, DuBois, Cole and others have done the same, as they reported cases in which tumors developed variously from subcutaneous or intramuscular injections of the oil. And there are objections from other directions, for Rost, experimenting on guinea-pigs, asserts that impure paraffin oil is poisonous when injected intraperitoneally, and notes necrosis as having occurred in human beings after mercuric salicylate injections in such oil. It is encouraging that the warning has now appeared in Sutton's textbook on diseases of the skin, but it should extend beyond the narrower realm of dermatology and be brought close home to every practitioner.

We, therefore, feel justified for this communication: (1) to continue the campaign against the use of paraffin oil injections; (2) to collate more or less the scattered data which appertain to the subject, and (3) to report certain experimental work which will confirm previous clinical ideas and round out the chain of evidence against use of the oil.

**REVIEW OF LITERATURE**

It may have been as far back as 1913 that the first untoward effects were recorded in connection with paraffin oil injections, although they

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4. We have seen foreign body giant cells and granulation tissue develop around strips of celloidin introduced into the cranium for drainage purposes, and around gauze experimentally placed in the abdominal cavities of guinea-pigs. Other instances are too well known to require repetition.

5. Weidman, F. D.: Camphorated Oil Tumors, J. A. M. A. 78:58-59 (Jan. 7) 1922.


were not referred at that time to the oil itself but to the active agent in it. At that time, Hazen, 11 among others, was testing the possibility of administering arsphenamin by the intramuscular route. He used paraffin oil as the vehicle and reported adversely on account of tardily developing abscesses. The oil was naturally unsuspected at that time, in view of the concomitant presence of such an agent as arsenic; nor can we even today unequivocally indict the oil, for the recent paraffin oil tumors have never exhibited features acute enough to have been mistaken by Hazen for abscesses.

The two Freniet brothers 12 appear to have been the first to have described paraffin oil tumors (1917). They reported that the incubation period was several weeks, occasionally eighteen months or even as long as two years. Even an abstract of their detailed speculations as to the mechanism of the tumor production would be beyond the scope of this communication. Among other things, they mention impurities in the paraffin oils and individual hypersusceptibility.

Mook and Wander 13 very shortly thereafter reported one of a series of six cases which they had observed. The tumors developed in the arms after an attack of influenza. These observers emphasized strongly that paraffin oil should not be used subcutaneously, nor as a vehicle for mercurials.

Following these, Letulle and Alglave 14 described a case in a soldier who had received injections during typhoid fever. The buttocks contained such numerous and confluent tumors that they were not amenable to surgical excision. Their second case concerned a 5-year-old tumor in a woman who had received camphorated oil during puerperal fever. A third case was one of multiple tumors of the breast which had been present for sixteen years. The nature of the oil injected was unknown. In discussing this paper, Balzar stated that he was very much opposed to the use of oil for subcutaneous or intramuscular injections, and that, whereas few people were susceptible to tumors, he thought that those few were tuberculous. In this connection, we wish to report that neither of our monkeys was tuberculous (necropsy findings).

In DuBois' 7 patient, the tumors appeared three months after the injections in the arm, following which the lymph nodes became hard but not tender. DuBois remarks in passing that injections of mercury in paraffin oil sometimes produce nodes in the muscles.

In 1920, Cole, Littman and Sollman 8 conducted a set of experiments in regard to the rate of absorption of the various mercury preparations. At first, they used liquid petrolatum as the vehicle for their mercuric salicylate, but later turned to hydrous wool fat emulsion in order to avoid the dangers of paraffin oil tumors, which they evidently recognized. This, of course, refers to intramuscular injections.

Bivona's 15 case report is interesting because it concerned the serotum. The patient had employed someone to induce this lesion in order to avoid conscription into the Italian army. He was unsuccessful in this, and had it excised when he contemplated marriage. Histologically, the picture was such as to lead Bivona to believe that paraffin oil or some related substance had been used to produce the tumor.

Most recently, Stokes and Scholl reported their case. It affected the upper part of the arm, and from it lines of tumor extended as though in lymphatic channels not only toward the axilla but also in a downward direction almost to the elbow. Their last word was a plea for medical publicity, lest the tumor be mistaken for tuberculosis or a malignant neoplasm.

There is thus ample accumulation of reported cases to show that, occasionally, the injection of paraffin oil is followed by the development of tumors which, while not as a rule painful, are large enough to be inconvenient and disfiguring. The treatment of choice has been surgical. However, in one instance, the lesion was so extensive as to preclude an attempt at removal, and, in another, there was recurrence because it was impossible to remove every trace of the oil collection. It was thought, in the latter case, that the oil globules had divided and subdivided repeatedly, extended outward into the tissues and stimulated the development of new tumors. In one or two cases, it has been reported that radiation benefited the tumor.

As to the basic nature of the process, there is no doubt that the lesion is a foreign body granuloma, and in no sense of the word neoplastic. The term tumor is misleading. The bulk of the tumor is but a hyperplasia of white fibrous connective tissue, of young type in the earlier tumors and old hyaline in the older ones. Scattered through this stroma are smaller and larger oil globules, and, on staining sections with sudan III, vacuoles are sometimes found to contain the oil. In frozen sections, the oil largely drops out, even when the tissue is fixed before freezing. Around the vacuoles, larger and smaller collections of endothelial cells may be seen, and giant cells of foreign body type are frequently intermixed. Necroses such as are seen in tuberculosis have not been met. Good photomicrographs may be found in Stokes and Scholl's and Freniet's article.

WEIDMAN-JEFFERIES—TUMORS

ANIMAL EXPERIMENTAL WORK

While there seems no doubt that liquid paraffin was responsible for the tumors reported in the foregoing, we feel that it was not a superfluous piece of work to round out the evidence by experimental means any more than for Gelderin to produce paraffinomas in the subcutaneous tissue of the dog. At the same time, we broached, in a small way, the question why some individuals were susceptible to the tumors and others were not.

Technic.—We have used three oils, paraffin, olive and cottonseed, arranged in two series. One series consisted of the pure paraffin oil

and the second of the oil plus camphor (10 per cent.). A preliminary set of experiments was conducted on guinea-pigs and monkeys, the injections being made into the shoulders, camphorated oil on the one side and plain oil on the other. In these preliminary trials, we obtained no positive results. In no case, as practiced on six guinea-pigs and three monkeys, did the experiments produce oil tumors, even after several months’ (from eight to seventeen) duration.

This raised the question as to what accessory factor might be necessary to induce the tumor growth. We therefore anesthetized two monkeys and made multiple injections in all their extremities. The accompanying drawings will show where the injections were made. Tattoo marks were made on the skin for the purpose of identifying the precise points at which the injections were made. It will be observed that for injection purposes each half of the animal’s body was divided into four parts: arm, forearm, thigh and leg. In each one of these four parts, the six oil combinations were injected, i.e., twenty-four injections on each side of the body. We followed the plan of injecting the cottonseed oil at the lowest position, olive oil in the middle, and the paraffin oil at the uppermost. The plain oils were injected on the mesial side of the extremities, and the same oil plus camphor opposite it on the external or lateral aspect of the limb. It thus came about that, in each of these six injections, the paraffin oil was uppermost mesially, while the camphorated oil was uppermost laterally.

In the case of one monkey, some of the axillary and inguinal nodes on one side were dissected out to create a possible disturbance of absorption. This animal will hereafter be referred to as the monkey which was operated on. The second monkey was not thus treated.

Results of Injections.—At the end of three months, tumors could be observed in several positions in both animals. They were more numerous but not larger in the monkey which was operated on. The animals were next observed eleven months afterward, and the positions of the tumors on the monkey operated on, plotted as in Figure 1. The first thing that stands out is that the operation on the lymph nodes had no effect on the development of tumors. There were practically as many on one side of the body as on the other. The second point is that out of forty-eight injections there were nine “takes,” i.e., nine tumors developed. Of these nine, all but two were in the position of the paraffin oil injections; and there is no choice between the plain paraffin oil and the camphorated. The two are equally capable of producing tumors. As was expected, then, it is the paraffin oil and not the camphor content which is the responsible factor. The disturbing phase of the results was the appearance of tumors also at the site of the cottonseed oil injections near the elbow. We do not at this time propose to attempt to explain this. It would involve additional experimentation of rather extensive character.
The foregoing observations were made eleven months after injection. Seventeen months after injection the monkey which had been operated on was killed and examined postmortem, and the positions of the tumors were verified by dissection. The internal organs were examined, but no important changes were noted except in the lymph nodes, which will be described later.

As to the tumors, we found first that none had disappeared (Fig. 2). Secondly, a new set of tumors had developed, and, in addition, a chain

![Diagram of monkey with marked tumors]

Fig. 2.—Result seventeen months after injection.

of nodules had extended in some instances from previously recognized tumors and had coalesced with other injection points. It appears from this that the paraffin oil may remain for as long as eleven months before inducing the development of tumors, and that, having once developed, extension may take place, giving rise to a chain-like mass of tumors.¹⁷

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From the negative standpoint, we must call attention to the fact that tumors did not develop in four of the sixteen points injected with paraffin oil. There were no swellings there and no paraffin oil on histological examination. This suggests that other factors than impurity of oil and individual hypersusceptibility must be concerned in yielding tumors. May it be that no tumors developed in those cases in which the needle opened up larger lymphatic channels and the oil had ready egress to regional lymph nodes? An unqualified explanation of this variability in "takes" is impossible at this time.

The foregoing facts had to do only with the monkey which was operated on. The animal whose lymph nodes were untouched also developed several nodes, all at paraffin oil sites, and on both arms and legs. It was used and killed in another research and was not followed as was the monkey operated on, once the lesions had been produced and the noneffect of lymph node extirpation had been demonstrated on the monkey operated on.

**MORbid ANATOMY**

**Tumors.**—The 17-months-old tumors ranged in size up to 11 mm. in diameter, and were tightly adherent to the skin and the underlying muscle, rounded, never encapsulated and had a pale creamy color. None exhibited the brawny or purple color described for human cases. They were hard like wood; when incised they did not bleed notably, and no
oil characters could be predicted from naked eye examination of the cut surface. The cut surface was homogeneous and pale creamy white like the exterior. We saw no necroses.

Under the microscope, the changes were encountered that have been already so thoroughly described for human cases. That is, in peripheral, presumably younger, parts of the tumor there was the same sort of young fibrous stroma and lymphocytic infiltrate in which the giant cells of various sizes were placed. Some of the latter contained fat globules; others did not. The yet larger spaces have also been seen, more or less surrounded with endothelial cells or by narrow, more or less perfectly formed giant cells. It has been our experience, in staining by sudan III, that the original fat globules of the subcutaneous fatty areolar tissue tend to remain in the spaces more nearly constantly than does the paraffin oil. For the most part, the latter appears to have run out dur-

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Fig. 4.—Eighteen months old skin tumor; peripheral, younger portion; more highly cellular than in Figure 5; globules smaller; numerous giant cells.
ing the process of cutting the frozen sections; whereas that in the areolar tissue has remained. For this reason, it is better to work with thick sections, at least 0.05 mm. thick. The two kinds of fat may be distinguished in several ways. First, the normal fat can often be recognized by being gathered in the usual lobular aggregations, and by its uniformly large globules. In the second place, the paraffin oil takes a less decided color with the sudan III than does the normal subcutaneous fat. In the third place, the presence of endothelial cells will serve certainly to betray the paraffin oil wherever such cells are present. Of course, the extremely large spaces could represent nothing other than paraffin oil—not the normal subcutaneous fat. There were no abnormal changes whatsoever in any epidermal cells in any of our sections.

Fig. 5.—Eleven months old skin tumor; central, older portion with old fibrous tissue around the oil globules; paraffin section.

In the central parts of the tumor, the oil spaces were larger, and the surrounding fibrous stroma was of dense hyaline type. Giant cells and lymphocytic infiltrates were scarce here.

Lymph Nodes.—A further finding whose value in relation to paraffin oil is somewhat discounted because three different oils were injected into the one monkey, lay in the fact that oil was found in the lymph nodes. At necropsy, the axillary, inguinal and submental nodes were moderately enlarged but never adherent to the surrounding areolar tissue. They were easily dissected out and were of normal consistency. Whereas some of them appeared normal to the naked eye, others, both externally and in the section surface, exhibited patches somewhat resembling a frog’s lung. That is, they were pale creamy white, and closely dotted with submerged translucent, watery spheroids. In some
instances, the whole node was thus transformed, but generally the fatty areas were restricted to one part of the node. It is curious that, in a given cluster of inguinal nodes, one node should be very heavily infiltrated with oil; whereas contiguous ones were sparingly so or not at all. Portions of these areas placed fresh under the microscope were found to consist almost entirely of oil globules, and these globules became the proper pale color when sudan III was applied, but not the same black with osmic acid that olive and cottonseed oil controls did. Certainly the oil was paraffin oil. The spongy appearance was not recognized in the abdominal nodes. The submental nodes contained no oil on microscopic study. The enlargement of the latter was referable to a lymphoid hyperplasia.

Fig. 6.—Right inguinal lymph node seventeen months after injection; very low power; oil mainly in medulla; paraffin section.

In sections, the nodes exhibited globules of various size, from the most minute intracellular ones to those which could be seen with the naked eye as the slide was held to the light. They were located for the most part in the medulla with a few in the cortex and none in the cortical follicles. The lymphocytes adjacent to the larger vacuoles were crowded together as though by an expansive effect of the oil. Otherwise, the oil features were of the same type as those described in the young skin tumors, some surrounded more or less by endothelial cells or giant cells, others phagocytized by such cells. We wish to emphasize that the fibrosis and lymphocytic inflammatory infiltration of the skin tumors has most singularly never been repeated in any of the lymph nodes. It appears that the lymph node was but passively accepting and storing the oil. Certainly the only hint of reaction was the hyperplasia of endothelial cells necessary to the act of phagocytosis or encapsulement.
These phenomena show that the paraffin oil must metastasize; i.e., we have an oil embolism of lymphatics. Both of the animals had cage palsy (osteomalacia), and had been splenectomized in another research several years previously, but it is not likely that either of these circumstances played a part in the oil phenomena, in view of the microchemical tests showing that it was paraffin oil that was at fault. We cannot explain why the oil should provoke fibrosis in the skin and not in the lymph nodes. It would be interesting to try injections directly into the spleen.

Fig. 7.—Lymph node: high power; paraffin section; no fibrosis; large oil globules partly surrounded by endothelial cells; $P$, phagocytosis of smaller and larger oil globules.

We have also tested the tumors which developed at the site of the cottonseed and the olive oil injections (Fig. 2) as to the kind of oil they contain, by crushing teased portions on glass slides, staining with osmic acid and examining under the microscope. In every instance, globules were found which did not blacken with osmic acid as others did in the same preparations. The latter served the useful purpose of a control, and were to be expected as coming from the normal subcutaneous fatty tissue. In the case of tumors too small to allow the gross extraction of bits, frozen sections were resorted to and confirmed the coarser results, i.e., osmic acid-negative globules were found between the osmicated normal fat globules.
Fig. 8.—Frozen section; tumor at cottonseed oil site in leg; purposely thick and overstained to bring out unstained (paraffin oil) globules at $P$ against large, solidly stained normal subcutaneous fat globules at $N$; stained by osmic acid and hematoxylin, watery mount.

Fig. 9.—Oil in fascia of muscle near inguinal lymph node.
These findings make it appear that neither olive nor cottonseed oil, although injected (each) in sixteen places in one monkey, were capable of producing tumors. But, as intimated earlier in this paper, our position is weaker because several different kinds of oil were used.

**INGUINAL LYMPHATIC SPACES**

When dissecting out the inguinal lymph nodes at necropsy, the tissue over the underlying muscle appeared pale and mushy. Sections of the muscle and overlying mushy substance disclosed vacuoles, large and small, in the fascia over the muscle, but not within the muscle. The type of reaction was the same as that in the lymph nodes; not the frank one of the skin sections. The vacuoles were surrounded by endothelial and giant cells, with practically no intervening fibrous hyperplasia.

**SUMMARY**

Although the subject is but 5 or 6 years old, it has now been shown beyond a doubt that the subcutaneous or intramuscular injection of paraffin oil as a vehicle is attended with the danger of subsequent tumor formation. Tumor formation is not dependent on the technic of the injection, but probably on individual predisposition.¹⁸

To protect the patient and himself, the physician should insist that, if a proprietary preparation is used, it shall be specified that no mineral oil is employed as the vehicle.

Clinically, it has been found that the tumors undergo metastasis toward lymph nodes, or even extend distally—"retrograde metastasis." Under these circumstances, they simulate tuberculosis or malignant tumor. The tumors have substantially the same histologic characters as the better known paraffinomas.

We have shown, experimentally, on monkeys that paraffin oil will produce tumors at the site of injection by inducing a foreign body granuloma (twelve "takes" in sixteen injection points). The oil may then be transported by lymphatic channels to regional lymph nodes and be there deposited. They do not always induce granulomas en route nor did they ever induce inflammatory reaction in the lymph nodes. Olive and cottonseed oil appear, contrariwise, to be innocuous.

To the well-known oil embolism of the blood circulatory system, the general pathologist should now add that of the lymph vascular system.

¹⁸. Compare Davis, B. F., Footnote 1, and Freniet, Jacob, and Freniet, Faure, Footnote 12, for details.
TUMOR FORMATION AFTER INJECTION OF MERCURIC SALICYLATE IN VEGETABLE OIL

WITH CASE REPORT

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Owing to asepsis and the selection of the less irritating mercury salts, nodosities following the deep injections of mercury are rather rare. When they do occur they are due to: (1) the use of mineral oil as a vehicle for the salt; (2) reaction from the presence of the mercury, or (3) traumatic gummas.

Fig. 1.—Although the injections were made high in the buttock, the suspension seems to have obeyed the law of gravity.

By far the greatest number of nodular lesions at the site of puncture are due to the use of mineral oil as a vehicle for the mercury. In spite of the wide publicity that has been given the dangers from its use, liquid petrolatum still enjoys a dubious popularity. When severe local reactions follow the intramuscular injection of mercury in vegetable oil, it is conceivable that the element itself is at fault, or that the result-
Ing lesions are expressions of allergy and are, therefore, traumatic gummas. The nature of the reaction can be ascertained from the clinical picture and from examination of the oil, and by an early roentgen-ray examination and by biopsy.

Fig. 2.—Picture taken four days after the eighth injection.

REPORT OF A CASE

Clinical Aspect.—Deep in both buttocks were scattered well-defined infiltrated nodules, from 3 to 6 cm. in diameter, which were a cold red. There was no local heat nor tenderness. The nodules were solitary and were not connected by chains of smaller nodules as in the case of probable paraffin oil
tumor reported by Stokes and Scholl.

Over the sacral region was a poorly defined patch of brownish pigmentation. Biopsy was refused, but a roentgenogram revealed shadows on the site of the last injection, corresponding slightly to those of gray oil, published by Cole and others.

*Physical Examination.*—The patient was a young man in robust health. He was entirely normal except for a general glandular enlargement. A serum Wassermann test was strongly positive and there was a faint trace of albumin in the urine.

*Examination of the Medicament.*—The oil was centrifuged out. It was optically different from mineral oil, reacted with osmic acid and was not rancid. The preparation was linseed oil with mercuric salicylate suspended in it, so that 1 c.c. represented 1 grain (0.065) of the salt.

*History.*—The patient was seen through the courtesy of Drs. A. R. and A. M. Rogers. He had acquired syphilis three years previously and had received eight injections of the preparation, the tumors appearing in slight degree after the sixth. All injections were made high up in the hip, the suspension evidently working downward along the fascia of the glutei. At no time were there any symptoms of salivation, nor was there any pain in the buttocks.

*Treatment.*—The injections were stopped as soon as the reaction became obvious, but the tumors slowly increased in size. Hot sitz baths and massage were recommended.

SPOROTRICHOSIS

EARL D. CRUTCHFIELD, M.D.

GALVESTON, TEXAS

Sporotrichosis is an infectious granuloma affecting the skin and subcutaneous lymphatic tissues, caused by a definite pathogenic fungus, or by a saphrophyte which has become pathogenic.

The micro-organism of sporotrichosis was first described by Schenck in 1898 and corroborated by Hektoen and Perkins in 1900. It has been found in the lungs and mouth, in the nasal discharge of persons and domestic animals, and in the blood culture of animals suffering from a sporothrix infection.

The histopathology is that of an infectious granuloma, and has characteristic features similar to those of blastomycosis, tuberculosis, syphilis, and other granulomas. So far as I can ascertain, there have been only two reports of cases of sporotrichosis occurring in Texas. Its apparent prevalence in other localities leads to the report of two cases which occurred in Galveston. Three other cases, which were clinically typical, have come to my knowledge, but in these a clinical diagnosis only was made.

Sporotrichosis was first described in 1898. In 1900 there were about thirteen authentic cases on record. Since that time, there have been over two hundred cases reported, many of which occurred in localities where an epizootic among animals existed. The report of so many cases in so short a time leads one to believe that many of the so-called cases of tuberculous lymphangitis, multiple superficial gummas and multiple cold abscesses, which have been reported by older clinicians, were cases of sporotrichosis. Fortunately, most of the cases are so definite clinically that once the practitioner's attention has been called to the disease, there is little danger of overlooking the diagnosis. The following two cases show the characteristic features and the course of the disease.

REPORT OF CASES

Case 1.—History.—M. K., woman, aged 26, reported to the clinic complaining of sores on her arm and hand, and malaise. Her history was negative, except for a syphilitic infection some years before. She had a house dog which she cared for constantly. Five months before when she rubbed a blister on the hypothenar eminence of the right hand, the tissues under the blister became

indurated in an area the size of two silver dollars. A month later, a similar lesion was noticed an inch above the wrist joint on its medial aspect. In a short time many fiery red papular areas with much induration under them, extended up the medial and flexor surfaces of the forearm, following the lymph vessels. The cubital glands became so enlarged that she could not flex the forearm. The axillary glands were also swollen but not tender. The swelling of the cubital and axillary glands disappeared spontaneously, while the nodular areas began to break down about a month after the patient first noticed them, and discharged a yellowish pus. The areas on the hypothenar eminence were lanced several times.

Physical Examination.—There was a large indurated, fiery red area, the size of a dollar, on the hypothenar eminence of the right hand, with numerous scabs, pustules, and sinuses which profusely discharged thick, dirty, yellowish pus. There was a large indolent ulcer and three smaller ones. There was a similar area on the medial side of the dorsum of the right hand with punched out indolent ulcers which discharged a yellow pus and serum. Pustules and papulo-pustules crowned the summit of the discharging sinuses. There were several scarlet red nodules along the course of the lymphatics on the flexor surface of the right forearm, one of which was covered with a large scab. The cubital glands of the right arm were enlarged, but there was no involvement of the axillary glands. The healing ulcers appeared as violaceous indurations. The Wassermann test was positive.

Case 2.—B. W., a man, aged 40, entered the skin service complaining of "knots on his arm." The history was negative. The patient had two dogs of which he was very fond.

Examination disclosed a healing ulcer on the left fifth finger, which had been mashed one month ago. A few days later a hard, brawny, bluish, ulcerating lump appeared at the site of the injury. Sixteen nodules varying in size from that of an almond to that of a hen's egg were present on the right arm. The nodules, which apparently followed the lymphatics, were of varying consistency; some were firm but most of them were soft and fluctuating. The skin showed evidence of lymphangitis. Red striae extended up the arm, ending in a large mass of fluctuating axillary glands. The skin was hard, tense and brawny. The skin around the nodules was apparently not affected. A Wassermann test was negative.

Fig. 1 (Case 1).—Sporotrichosis of five months' duration.
Fig. 2 (Case 2).—Initial lesion at site of traumatism to little finger.

Fig. 3 (Case 2).—Sporotrichosis nodules along line of lymphatics extending to axillary glands.
Aspiration of two soft nodules, yielded 2 c.c. of thick, reddish pus resembling anchovy sauce. Two nodules were removed for tissue examination.

The onset of these cases was slow with an incubation period of about one month. The duration of the disease was indefinite, with only a slight tendency to spontaneous healing. The lesions were practically painless. Both patients complained of malaise. It was notable that both patients, while having no definite symptoms, felt as if they had influenza.

Fig. 4.—Smear from Case 2 showing pus cells, red blood cells and spores. Gram stain; high power; X 500.

The lesions in these cases of sporotrichosis varied. There were lesions resembling furuncles, gummas, tuberculosis of the skin, and blastomycosis.

The nodules in Case 1 which had not broken down were hard, indurated and inflammatory and sharply circumscribed from the sur-
rounding skin; some were tender, but differed from pyogenic lesions in having sharp margins. The older nodules were more indurated and had a tendency to fluctuate in the center. Those which had been opened had a punched out appearance, suggesting a broken down gumma. Some lesions which had been opened had small nodules developing in the edge of the wound. Sinuses, crowned with small nodules, developed where the histoury had entered.

Fig. 5.—Tissue section showing multinuclear giant cells containing double contoured spore. Hematoxylin-eosin stain; high power; X 600.

The color of the older lesions ranged from deep red to a violet tinge. The healing nodules were all a peculiar violet color with a hard brawny induration. In Case 1, the lesions which were opened resembled blastomycosis, while the unopened lesions resembled gummas. Case 2 came to us in a more acute stage with lesions definitely along the lymphatics without the fungating granulations. Typical red striae led from one nodule to another. The skin in one area was a reddish brown
color and adherent to the underlying structures. This indurated area was leathery and the brawniness so suggestive of an acute infection that the patient came to us with a diagnosis of furunculosis and erysipelas.

The pus in all lesions was very profuse. In Case 1, it was of a dark grayish color, and thick. In Case 2 it resembled anchovy sauce. In both cases spores were demonstrated in smears. The spores were round or oval and about one-half the size of an erythrocyte. Cultures were made in both cases on various types of mediums, but we were unable to grow the organisms. Our finding them more easily in smears was unusual. The organism, which can usually be demonstrated in the secretions, is a mold of the sporothrix group. It appears in culture as a mycelium with spores. The hypha and chlamydospore in stock cultures appears as a double-contoured oval spore 3 to 6 microns in diameter.

Fig. 6.—Smear from Case 1 showing spores. Gram stain; high power; X 500.
Tissue removed for examination was stained with hematoxylin and eosin, methylene blue and by Gram's method. Two nodules were excised, one small and firm, which apparently was a lymph node, and another resembling a cold abscess with a fluctuating center, which, when opened, extruded a large quantity of mahogany colored pus.

The sections showed little change in the epidermis such as has been described by most pathologists. The infiltration was characteristic of a granuloma. The cytology varied as to plasma cells, round cells, polymorphonuclears and epithelioid cells, depending on the extent of development. Evidence of tissue reaction was found in necrosis in the more advanced areas of the lesions. Here polymorphonuclear cells predominated, but away from the necrotic center round cells predominated. There was a marked increase in the vascularity of the tissue.

Fig. 7.—Central area of necrosis in a sporotrichosis nodule. Hematoxylin-eosin stain; low power; X 150.
as indicated by new blood vessels. There was a good admixture of epithelioid cells and fibroblasts. Here and there a typical Langerhans' giant cell was found surrounded by a mixture of mononuclears, polymorphonuclears, and fibroblasts. Spores could be seen in the Gram stained sections as well as in those stained with methylene blue. In a section stained by hematoxylin and eosin, a giant cell was found which contained a typical spore with a double contoured wall. These, although frequently described in animals, have not been seen in human cases before. The edema, the characteristic down growth of the rete, and the miliary abscess which is common in other mycotic granuloma, were not observed.

**TREATMENT**

The usual forms of treatment in sporotrichosis are: (1) potassium iodid internally; (2) roentgen ray; (3) iodin injections; (4) surgery.

In our cases surgery and potassium iodid were used. Patient 1 came to us after repeated lancing of the nodules. This made the condition worse. The lesions healed by scar formation, and it was noted that where a lesion was completely excised for biopsy, the scar formation was less than in those lesions which had been discharging.

Lain treated eleven cases with roentgen ray and potassium iodid. We cannot draw conclusions from so few cases, but reasoning from analogy, this would be the method of choice. At times when the potassium iodid was omitted, and Lugol's solution applied or injected, the lesion failed to respond. Patient 1 developed iodism just before recovery, and potassium iodid was stopped. At this time arsphenamin and mercuric salicylate were given, and it was interesting to note that these remedies had apparently no effect.

We were unable in these cases to demonstrate the rapid specificity of potassium iodid. While both cases responded to this remedy it took about two and one-half months to effect a cure, with doses as high as a dram (3.75 c.c.), three times daily. Patient 2 received also tincture of iodin injections into the nodules which were suppurating, apparently with little effect.

The prognosis is always good, and a cure can be effected with potassium iodid in from six to ten weeks.

News and Comment

DEATH OF SIR JAMES GALLOWAY

The British Journal of Dermatology and Syphilis reports the death of Sir James Galloway, which occurred in London on Oct. 18, 1922. Sir James occupied one of the foremost positions among English dermatologists; he had been editor of The British Journal of Dermatology and Syphilis from January, 1896, to December, 1904. His death is a loss to his specialty.

DEATH OF DR. J. J. PRINGLE

Notice has just been received of the death of Dr. J. J. Pringle, the distinguished dermatologist of London. Dr. Pringle recently retired from practice. He was on a trip around the world when he died on Dec. 18, 1922, at Christchurch, New Zealand. Dr. Pringle is remembered by most American dermatologists who have visited London. He was not only one of the foremost British dermatologists, but he was a charming gentleman. He endeared himself more than most men to those who knew him.
Abstracts from Current Literature


In the investigation of a series of acne cases, no constant defect of nitrogen retention products was found; nor was the calcium content increased, although hyperglycemia was present in 50 per cent. of the cases studied. Carbohydrate tolerance showed a normal blood-sugar curve; the renal glucose threshold was decreased in four patients out of twenty-three, and a mild acidosis was found in thirty per cent. of cases. The metabolic rate was slightly increased, and a majority showed fecal carbohydrate fermentation. It is thought that there is a possible thyroid dysfunction. Reduction of carbohydrates, gastrointestinal correction, administration of alkalis and organotherapy were of value in treatment.


Wile warns against the overenthusiastic and intensive treatment of cases of syphilis in which the liver and heart are involved. He advocates a slower method of treatment and a cautious use of intravenous medication. Some cases apparently do better if untreated or treated cautiously than if treated intensively, and in some the correction of the syphilitic process allows atrophy or some other process to complete the destruction of the viscus involved. These patients do better if the cases are considered as individual problems, and the use of mercury and the iodids is recommended. Cases are cited illustrating the points discussed.


A supplementary series of 430 parallel Wassermann and Sachs-Georgi reactions is reported, with the conclusion that the latter test is often difficult to read and that it is not as delicate and trustworthy as the Wassermann test. A fairly high percentage of reactions with the Sachs-Georgi test are the reverse of those with the Wassermann test and the number of nonspecific reactions is too high to consider it (the Sachs-Georgi) a reliable diagnostic aid or a dependable test of treatment.


Latent syphilis is not considered cured, but the disease may be arrested, and the author feels that the cases treated have shown results worth the effort. Institutionalized cases are not generally fitted for treatment, as no benefit
resulted in his treated cases. Of 1,500 patients examined, 12.5 per cent. had a positive Wassermann reaction, and 26.2 per cent. of these showed signs of neurosyphilis.


The work of other investigators on this subject is reviewed, and the author's results added to theirs. His findings agree with those of other writers in that cord Wassermann reactions cannot be relied on unreservedly in making a positive diagnosis of syphilis. Investigation should extend to the parents and should be maintained during the early life of the child.

NOTES ON TWO CASES OF CUTANEOUS MYIASIS CAUSED BY THE LARVAE OF SARCOPHAGA Sp.? W. S. PATTON, Indian J. M. Res. 10:60 (July) 1922.

Two cases in which larvae of flies were found in abscesses, one of which was probably infected after operation, are reported.


A case is noted in which a pure culture of a new streptothrix was obtained from sinuses on the leg. Although the new organism is called a streptothrix, its exact nomenclature is still undecided, although some class it with actinomycetes, others with nocardia.

JAMIESON, Detroit.


In a careful investigation, there was a total agreement in the tests of 85.5 per cent. But the disagreements were most serious,* 33.3 per cent. of positive Wassermann reactions being missed by the Sachs-Georgi test in known syphilitic persons, and 26.5 per cent. of positive Sachs-Georgi reactions being unconfirmed by the Wassermann test and clinical findings. The general conclusion reached was that the Sachs-Georgi test is greatly inferior to the Wassermann test in the diagnosis of syphilis.


The laboratories of the Michigan Department of Health have performed over 20,000 Kahn tests in comparison with the Wassermann reaction. The Kahn method has demonstrated its value in this comparative investigation and is now reported to physicians in conjunction with the Wassermann results.
ABSTRACTS FROM CURRENT LITERATURE


A carefully conducted investigation showed that mercurosal had practically no effect on the Wassermann reaction and that its spirocheticidal value (judged by dark-field examination) was very low. In the effect on lesions, it was not equal to mercurial ointment or red mercuric oxid. In four of twenty-three patients, venous sclerosis occurred.

MICHAEL, Houston, Texas.

CANCER AND PARASITE. ISIDOR KROSS, J. Cancer Res. 6:257 (Oct.) 1921.

Experimenting in the Institute of Cancer Research of Columbia University, this investigator repeated the work of Nuzum with Mouse Carcinoma 11 of the Crocker Institute. He found many micro-organisms, but not the gram-positive diplococcus of Nuzum. When the tumor-cell factor was ruled out, without the destruction of bacteria, growths failed to take place on transplantation, though the controls showed 60 per cent. takes. The tumor-cell factor was eliminated in one series of experiments by lethal roentgen-ray dosage, and in another by freezing and thawing the culture material. The conclusion drawn was that the tumors in Nuzum's series were not parasitic in origin but probably spontaneous new growths.

H. R. FOEISTER, Milwaukee.


Two cases of this infection are added to two previously reported. As in the other cases, the cutaneous lesions were furuncular in type, and the larvae could be expressed from them. Another case, from Pittsburgh, was cited, but it was probably due to larvae of another species. A detailed description of the larvae is also given.

ACTINOMYCOsis IN A FOSSIL RHINOCEROS. R. L. MOODIE, J. Parasitology. 9:28 (Sept.) 1922.

Fossil remains from Nebraska are described which have a pathologic process strongly suggestive of "lump jaw."

JAMESON, Detroit.

FUSIFORM BACILLI AND SPIROCHETES IN PREPUTIAL SECRETIONS. JULIUS BRAMS and ISADOR PILOT, Tr. Chicago Path. Soc. 9:292 (June 1) 1922.

Under normal conditions, fusiform bacilli with spirochetes and also various staphylococci, streptococci and diphtheroids, were found in fifty-one of 100 persons examined. The flora from these normal secretions closely resemble those found in cases of balanitis.

SPORO-AGGLUTINATION IN THE DIAGNOSIS OF SPOROTRICHOSIS. D. J. DAVIS and O. GARCIA, Tr. Chicago Path. Soc. 9:293 (June 1) 1922.

The agglutination test in suspected sporotrichosis is advanced as a reliable diagnostic aid in the presence of the negative cultural findings frequently obtained in old cases or in those in which there has been considerable iodid medication.

A case is reported with necropsy findings.

XANTHOMA TUBEROSUM MULTIPLEX. B. B. Beeson, Tr. Chicago Path. Soc. 9:306 (June 1) 1922.

A typical case is reported in which there was an increase of the blood cholesterol.

Foerster, Milwaukee.


Presented by J. Nicolas and M. Favre.

The presenters, in association with Durand, in 1913, described an inguinal glandular suppuration occurring in small foci, which were isolated and disseminated throughout the parenchyma of the gland. Occasionally there were fistulas. Exceptionally, ulcers were seen. The pus from these abscesses was thick, viscous and yellowish white, and was difficult to aspirate. The pus consisted of caseous granules which were made up of polymorphonuclears, small and large lymphoid cells, large acidophilic microphagic mononuclears and, finally, some chromatophilic granules.

The inguinal lesion may be unilateral or bilateral. It may occur also in the axilla. The evolution is chronic. The infiltrated inguinal plaques are made up of a mass of glands spreading from place to place through new foci, until therapeutic intervention takes place or spontaneous cure occurs.

The ganglionic inflammation is consecutive to a genital ulceration. The disease in its early stages occasionally gives some general toxic symptoms, although this is not always true. The Wassermann reaction is always negative.

The histopathology is always definite. The chance of inoculation is a plasmona without polymorphonuclears, with newly formed vessels on the surface and sometimes a small abscess in the deep corium.

The glands show, on microscopic section, miliary gummas, and lenticular abscesses with giant and epithelioid cells at their border; as well as great numbers of giant and epithelioid cells isolated throughout. There is a disappearance of the normal structure of the glands which is replaced by all types of cells, including lymphoid, mononuclears, connective tissue, large acidophils, polymorphonuclear neutrophils and eosinophils, which characterize the granuloma, from which the name of lymphogranulomatosis was originally chosen; but which it is better to drop because of the confusion with the German disease malignant ganglionic granuloma, in which the suppurative adenitis is distinctly different.

The malady is essentially one of the adult male, at the height of his sexual activity. Occasionally, it is seen in man and wife. It appears in every part of the world. Incubation is from ten to twenty-five days.

All efforts to find the pathogenic agent have failed. Favre has obtained some cultures, but their value must be demonstrated. A few men have obtained positive results by inoculating the eye of a rabbit, but they were unable to find the organism.
The treatment of choice is: radiotherapy, complete curettage or surgical excision. Others have obtained good results from emetin injections associated with iodid given intravenously.

This disease is a definite entity and should take its place with the other venereal diseases. It is called "a climatic bubo."

Discussion.—Subacute Inguinal Polyadenitis Under the Name of Lymphogranulomatosis: Teissier, Gastinel and Reilly studied twenty cases. They support the views of Durand, Nicolas, and Favre. They insist on the temperature curve, which may be cyclic or undulating. The authors differentiate this bubo from that of pest bubo, especially by the abscesses, necrotic plaques, and a thrombosis of the lymphatic vessels by the bacilli of Yersin, as seen in pest.

Milian refuses to recognize lymphogranulomatosis as a morbid entity. He considers it a syndrome which may be produced by several conditions, such as tuberculosis, syphilis and soft chancre. The absence of the bacillus of Ducrey establishes nothing, as it is always difficult to cultivate; and also, at the beginning of the soft chancre, autoinoculation may be unsuccessful.

Dubreuilh and Petgès (of Bordeaux) do not share the opinion of Milian, but confirm the researches of Nicolas and Favre. They enumerate the fundamental distinctive characteristics which separate soft chancre from lymphogranulomatosis.

Ravaut does not compare lymphogranulomatosis to soft chancre. He considers it more of a general infection. He found ameba in the pus and, for this reason, employed emetin.

1. Bory confirms the general opinion, which is contrary to that of Milian. His remarks are similar to the preceding. Slight positive Wassermann reactions have been noted, but this is only a coincidence.

Lymphogranulomatosis Inguinalis and Syphilis: Spillmann, Drouet and Michan (of Nancy) reported observation of a patient who had several attacks of inguinal adenitis presenting all the characteristics of lymphogranulomatosis, and at the same time two syphilitic chancres. This proves that the two may exist together.

Lymphogranulomatosis (Ulcer of the Skin—Hodgkin's Disease): Nanta (of Toulouse) observed a patient having this condition, described in France under the name of "metatypique lymphadenoma" by Bezancon and Labbé, a short time after the work of Palfaut-Sternberg. This affection is accompanied by cutaneous complications in the form of tumors, exanthems, often pruriginous erythrodermas and ulcerations coming on in the course of tumors. In the author's case, there existed some primary ulcerations of the skin, near the orifices.

DIVERSE COMMUNICATIONS

Tertiary Syphilis of the Incisor Teeth.—Nicolas and Massia (of Lyon) point out that incisor teeth may be attacked by syphilis either during intra-uterine life or later in adult life. The congenital lesions are dystrophic and may involve the superior incisors (as in Hutchinson's teeth). If the lesions appear after birth they are classified as tertiary. One notes localized gummatous osteitis of the intermaxillary region, such as tumor, ulceration, fistulas and sequestrums. A roentgenogram is useless.

Multiple Locations of Hereditary Syphilis.—Nicolas and Gâté report the history of a girl, aged 18 years, who had hereditary syphilis appearing in several locations: the skin, bones (by hydarthrosis), ganglions, teeth and eyes.
(interstitial keratitis). She had a positive Wassermann reaction. The interesting point is that the patient was treated for ten years for tuberculosis, showing how closely the symptoms of pseudotuberculosis resemble hereditary syphilis.

A Case of Venereal Granuloma.—J. and M. Peyri (of Barcelona) observed a patient having a venereal inquinal bubo, with a serpiginous phagedenesis which was neither soft chancre, tuberculous, syphilitic nor mycotic. These are rare cases, which have not been catalogued.

Reticulated Pigmented Poikiloderma of the Face and Neck.—Civatte presented three cases of a dermatosis characterized by a mottled eruption, which had a predilection for the face. This affection appeared especially in women about the time of the menopause. It was characterized by intermingled red, brown and white macules. The whole picture was that of a network of erythematous, pigmented macules, which appeared on a white background. Under this mixture, the skin atrophied. The histologic picture was one of degeneration rather than of inflammation. The author thinks that these are cases of degenerative endocrine origin. He treated two of them with suprarenal glands, with great improvement. One of these cases was treated with ointments, without result.

They may be a definite clinical type associated with the endocrines. One can put these cases in the poikiloderma provisional group, but only in order to separate them from the type described by Jacobi.

The Reaction of Connective Tissue to Cutaneous Epithelioma.—J. Peyri and Carreros (of Barcelona) believe that, in all epitheliomas, a definite factor lays the foundation for the consecutive lesions. It is a process of senile skin: congenital senility in xeroderma pigmentosum; acquired senility in radioderma; physiologic senility in the old. The degree of connective tissue reaction indicates the gravity of the process: in grave neoplasms, the connective tissue is embryonic; in benign neoplasms, the connective tissue is adult in type, abundant and well organized. The authors have studied this connective tissue organization after the method of Rio and the triple coloration of Calleja.

Pagetoid Epithelioma of the Abdominal Region.—A. Eliacheff has observed in an aged woman a mixed metatypic epithelioma of the abdomen which had been present for twenty years; in addition to spinous cells, some dyskeratotic cells were found.

Darier spoke of the importance of a biopsy in this case, because it determined whether the treatment should be surgical or radiotherapeutic.

Treatment of Keloids by Radium.—Cottenot has obtained excellent and rapid results with radium. One or two months of treatment with massive doses causes the keloid to disappear. The results are much better than those obtained with the roentgen ray.

Jeanselme has observed good results in keloids and sclerodactylitis with ionization of potassium iodid, but the procedure is too inconvenient.

Carbon Dioxide Snow and Acne.—Spillmann and Watrin (of Nancy) have obtained good results in acne rosacea and papulopustular acne by friction with carbon dioxide snow. The reaction disappears in forty-eight hours and treatment can be given again in a week.

A Case of Voluminous Rhinophyma.—Nicolas and Lacassagne (of Lyon) reported the case of a man, aged 55 years, who had a slight acne of the cheeks and neck, thirty years ago. Within the past few years, his nose had grown gradually larger, interfering with eating and sleeping. The tumor was removed by cautery and weighed 800 gm. It was a fibromyxomatous mass.
Porokeratosis and Hyperkeratotic Nevi.—Chatellier (of Toulouse) reports a case of porokeratosis of Mibelli, localized on the lower left leg, but distributed along the whole course of the sciatic nerve, from buttock to foot. This case brings up some observations of Truffi, of Pellier, of Brocq and Pautrier and of Scholl. It seems that this is a case of nevus.

The Treatment of Tuberculous Lupus by Finsen Therapy.—L. Bizard presented a certain number of cases cured by Finsen therapy and did some research in regard to changing the method. He used pure ultraviolet rays, with and without compression.

Lupus Pernio.—Dubreuilh (of Bordeaux) reports some observations on lupus pernio, which is a special affection, being neither lupus vulgaris nor tuberculous lupus, and which is characterized histologically by an infiltration into the derma of epithelioid cells without giant cells. Its localization may be diverse, and recently Schaumann has thought it was a benign lympho-granuloma. There is nothing to affirm that it is tuberculous in character.

Ether Benzyl Cinnamic in the Treatment of Lingual Tuberculosis.—Jacobson presents three cases of lingual tuberculosis which he has treated by ether benzyl cinnamic in the clinic of Jeanselme by daily intramuscular injections. The patients were greatly improved. The author concludes that this treatment causes the infiltration to recede; the suppuration is stopped; the ulceration is progressively cicatrized and encircles the active lesion as in lupus, but more rapidly. The pain is rapidly ameliorated.

The Epidermatolysisoscope.—Milian has observed in syringomyelia some bullous trophic lesions; the patient did not present Nikolsky's sign; but, by the application of the cryocautery for fifteen seconds, one could produce bullous lesions immediately. However, they did not appear in a healthy subject until twenty-four hours later. This method may be used to study the skin resistance.

Three Cases of Nevocarcinoma.—Hudelo and Caillian have in three subjects observed some nevocarcinomatous lesions with associated sarcomatous lesions. Certain parts of the tumor showed islands of nevus cells and also some nevocarcinomatous neoplastic areas. Other zones showed some islands of nevocarcinomatous neoplastic mass. The classic character of the sarcoma encountered in these tumors was emphasized (vessels without walls and nonconnecting cells, divided in a fibrillar frame).

Histologic Study of Mycosis Fungoides.—Hudelo and Caillian have followed three cases of mycosis for three years and studied them by biopsy in the different periods. The histologic diagnosis is rarely possible in the erythematolichenoid stage. There is an inflammatory reaction. The glands at this period show some signs of embryonic regression, with reappearance of germinative centers, in hyperactivity and very hypertrophic, forming some germinative cells; also some inflammatory elements and sometimes some eosinophils.

Already at this period slight evidence of a metatypal is observed in the germinative cells and the cells of the first and second generation. From this metatypal, follows a real "atypical" to the tumor stage in the skin, as in the gland. The cutaneous tumors have a reticulum in the meshes, in which are some normal, or inflammatory or neoplastic elements; the same aspect as the glands. Here the neoplastic state can be affirmed either by the fixed cells of the framework or by the free cells of the meshwork. The inflammatory state tends to disappear before the neoplastic state. The lesion ultimately corresponds to a lymphocytoma.
Mycosis fungoides corresponds to inflammatory and neoplastic lesions of the hematopoietic tissue, developed by the skin to a pathologic state. Following the inflammatory process in the first period, the lymphoconnective tissue cells proliferate, inflammatory and neoplastic cells in the period of young tumors, and pure neoplastic (lymphocyтома) in the period of old tumors. One may also have a lymphomatous or aleukemic myelomatous type predominating in the skin. (To be continued) McCafferty, New York.


In recent cases, with a negative Wassermann reaction, syphilis may be radically cured with one course of treatment of arsphenamin and mercury. Two or three courses should be given in cases of this kind, to be sure of a permanent result. After the Wassermann test has become positive, the abortive treatment should not be attempted.


Silver arsphenamin is at least as active as arsphenamin. The clinical results obtained and the effect on the Wassermann test are the same as with arsphenamin. Neo-arsphenamin is inferior to the arsphenamin, although it has the great advantage of keeping for an indefinite time in the presence of air.


The action of the salts of bismuth is more energetic than that of mercury but less than that of the arsphenamins.


The author has used this preparation in the treatment of fifty patients. He concludes that it is a good, energetic antisyphillitic. The Wassermann test was negative in nineteen of the twenty-five patients that finished the treatment.


The author uses a common microscope with the oil immersion lens applied to the skin. He uses a bright light on an angle of 45 degrees. In this way, he has been able to study the changes in the vessels of the papillae, in the gland ducts, in the corneus layer and in the pigment and hairs. He reports the dermatoscopic changes observed in many skin conditions, such as ulcers, chancre, erythemas, dermatitis exfoliativa, acne, scabies, mycosis fungoides, leprosy, sarcoma and xanthoma.


Report of a case is presented, with discussion of the differential diagnosis with lichen ruber acuminatus.

This is a report of a case with a discussion on the etiology. The author thinks his case was due to an endocrine disturbance. The patient had symptoms of hyperthyroidism.


Two cases of this condition are reported. The disease is familial. The hyperhidrosis is not a constant feature, and the sweat glands may be intact, there being no connection between them and the popular or vesicular lesions. The author thinks the condition is due to a circulatory disturbance, with passive hyperemia and chronic inflammation. The process is similar to that of pernio.


The author reports the case of a woman who suffered from attacks of herpes gestationis during her fourth and fifth pregnancy. Afterward, she had recurrent attacks of herpes coincident with menstruation. The child born at the time when the mother had the second outbreak of herpes gestationis presented an eruption of the same kind. Tommasi suggests the possibility of the endocrinous origin of this dermatosis, and feels inclined to believe that the suppression of the ovarian function during pregnancy is the direct cause of the condition.

TREATMENT OF TRICHO PHYTOSIS WITH INJECTIONS OF LUGOL SOLUTION. P. A. Meineri, Riforma med. **38**:1015 (Oct.) 1922.

The author reports the case of a patient with trichophytosis of the beard cured by intramuscular injections of Lugol's solution. He uses a solution containing 1 gm. of iodin, 2 gm. of potassium iodid, and 100 c.c. of distilled water, of which he injects from 1 to 10 c.c. in the gluteal region every day. The patient received twenty injections, and the cure was complete.

Pardo-Castello. Havana.


Examination in ten cases of idiopathic zoster revealed the presence in each case of "corpuscles" in the nuclei of the prickle cells. Fresh eruptions stained according to Giemsa showed corpuscles of varying shape and size, located in the hydropic nuclei but also in the protoplasm. The corpuscles stained bright red, sometimes showing a granulated structure. Herpes genitalis showed similar corpuscles. In a few cases, Lipschütz succeeded in inoculating the human skin with herpes genitalis. The vesicles thus obtained contained the same "corpuscles" in the nuclei.
INVESTIGATION AS TO THE EFFECT OF IRRITANT BODIES FOLLOWING THE CELL DECAY CAUSED BY ROENTGEN-RAY IRRADIATION, WITH SPECIAL REFERENCE TO THEIR HEMOSTATIC QUALITIES. MÜLLER, Beitr. z. klin. Chir. 125:414, 1922.

Irradiation causes development of vasoconstrictor substances in the blood, which probably originate from the decayed cells. The quantity of these substances is in proportion to the dose given. The author believes that the general effect of roentgen rays on the constitution is due to these vasoconstrictor substances, which act as an irritant (Reizkörper). This is a new explanation for roentgen-ray nausea and the damaging and beneficial effect of the roentgen rays (e. g., the hemostatic effect, and the influence on tuberculous foci).

AHLSEWEDE, Hamburg, Germany.


A plea is made for the early recognition of differences between these lesions, because proper treatment in the early stages is important. General anesthesia and thorough incision of carbuncles, even in incipiency, is advocated.

SOFT CHANCRE WITH METASTASES AND BACTERIEMIA. ROBERT AMSTAD, Dermat. Wchnschr. 74:441 (May 13) 1922.

A case of soft chancre occurring on the right middle finger near the border of the nail is reported. The patient was a physician, and the lesion developed twenty-four hours after his care of a case of septic abortion. It started with erythema, swelling, pain and pustulation, changing within two days to a smooth ulceration, sharply circumscribed and slightly undermined, the floor covered with a yellowish, speckled, dirty film. Bacteriologically, the Ducrey bacillus was found. For several weeks, the temperature rose and there were signs of bacteriemia, accompanied by a popliteal phlebitis, swelling, and knotty infiltration of the leg, as well as ulceration of the right elbow at a distance from the affected lymphatics. The Wassermann reaction was negative. A bronchial pneumonia developed, but the patient survived the infection. Iodoform treatment locally was most effective.


The best form of treatment was roentgen therapy, epilating doses being employed. Cultural investigation revealed that the spores live for long periods of time in the room inhabited by the patient. It seemed to the author that school infections were uncommon.

WIND AND COLD URTICARIA IN CONGENITAL SYPHILIS. R. WAGNER, Dermat. Wchnschr. 74:489 (May 27) 1922.

The patient, aged 17, had congenital syphilis, and an accompanying generalized, persistently recurring urticaria, which appeared on exposure to wind and cold. It had never appeared in the summer except once, after a very cold bath. The author accounts for the condition by an injury to the central nervous system caused by the syphilitic infection, affecting the nerves controlling the blood vessels.
EXPERIENCES WITH THE PRECIPITATION REACTION OF DOLD. F. JACOBSOHN, Dermat. Wchnschr. 71:491 (May 27) 1922.

Four hundred and seventy serums were simultaneously examined by the Wassermann, Sachs-Georgi, and Dold technics. After careful investigation of non-syphilitic and syphilitic persons in various stages of the disease, the author concludes that the Dold reaction is technically easy to perform and to interpret, and the results obtained by it are in greater accord with the results obtained by the Wassermann technic than are those obtained by the Sachs-Georgi method.

MUCOUS MEMBRANE AND BLOOD CHANGES IN DARIER'S DISEASE. E. SKLARZ, Dermat. Wchnschr. 71:563 (June 3) 1922.

A case of Darier's disease occurring in a man, aged 43, is described, in which there were numerous pinhead sized soft efflorescences situated on the gums and inner cheeks, and the blood picture showed an increase of transitional leukocytes. Differential counts indicated that the latter were between 20 and 30 per cent.

ANDREWS, New York.


Colloid reactions make possible a qualitative examination of the albumin conditions in the spinal fluid and thus constitute a distinct progress in liquor diagnosis. The colloidal gold reaction is preferable to the mastic reaction in general. The colloid curves in many cases facilitate the clinical diagnosis, particularly in syphilis.

MERCURY AS A STIMULANT IN STOMATITIS ULCEROSA. KÖTHE, Deutsch. med. Wchnschr. 48:6, 1922.

The author makes use of the stimulating effect of very small doses of mercury on the tissue. He treats stomatitis by washing the mouth with hydrogen peroxid, painting it every other day with 8 per cent. zinc chlorid, and by oral medication: black mercuric oxide, 0.01 gm. and sugar of milk to make 10 gm., a teaspoonful three times daily.

SCABIES IN SUCKLINGS. HEILMANN, Deutsch. med. Wchnschr. 48:9, 1922.

Lesions can be found on the scalps and faces of sucklings, which does not occur in adults.

BOTRYOMYCOSIS. SCHURMEYER, Deutsch. med. Wchnschr. 48:47, 1922.

Examination of ten cases indicates that the tumor-like proliferation of the capillaries is the primary disturbance; while the superficial inflammatory layer develops secondarily and is due to the irritating effect of the tumor, which penetrates the epidermis. The author therefore suggests the name "angioma proliferans polyposum."


A case is reported which, apart from myogenous contractions, showed various skin symptoms, from erythema to atrophy, besides an edema of the affected muscle areas. While the prognosis is doubtful and the etiology uncertain, the treatment should be directed toward the contractions.

The author treated cachectic tuberculous children with daily injections of from 0.5 to 2 c.c. of horse serum. Up to 100 injections were given without causing anaphylactic symptoms. In the summer, however, there were pronounced anaphylactic symptoms in many cases. In the following winter, the same measures under the same conditions did not cause disturbances. The frequency of certain dermatoses in spring, such as psoriasis, eczema and urtica, is analogous to the occurrence of those due to endocrine disturbances.


The influence of roentgen rays on the growth of wheat plants, beans, etc., was tested. Results obtained varied much, according to the plant and its biologic condition. While one-twentieth of an erythema dose still impeded the growth of a bean, 1¼ times a dose promoted the growth of dry wheat. The length of time before success was attained was inverse to the size of the dose.


Following the application of old tuberculin (for subcutaneous diagnosis) to 171 patients, the authors obtained eleven focal reactions, six of which had decidedly damaging effect. They deny the value of diagnostic tuberculin injections in general, as the damage done is usually greater than the benefit derived.


Mercury does not kill spirochetes, but acts on the lymphocytes, which partly decay, thereby producing lipomatosis, which again decomposes, the spirochetes thus bringing lipoids into the blood, which strengthen the Wassermann reaction.


The authors give two examples which prove that a negative Wassermann reaction of parents who previously had syphilis does not guarantee healthy children. In both cases, the father, and in one, the mother, had been treated energetically. In one, the father had been treated fourteen years ago, in the other, three and one-half years ago. The Wassermann reactions were negative. In spite of this, the children developed pronounced skin and bone symptoms of congenital syphilis which resulted in death.
SQUAMOUS CELL EPITHELIOMA DEVELOPING ON A LUPUS ERYTHEMATOSUS. Presented by Dr. Fraser.

Mrs. K., aged 55, between the ages of 10 and 14 was subject to "abscesses" on the neck, which would break open and heal, leaving scars. The lupus area developed when she was 40 years of age, but there was no evidence of tumor growth until four months ago, when what the patient described as a small pimple appeared on the lupus area and grew rapidly. Examination at the time of presentation showed an elevated, circular, soft warty-like growth about 1 inch (2.54 cm.) in diameter, situated about midway between the outer margin of the right eye and lower lobe of the right ear.

Microscopic examination of a section showed the tumor to be a typical epithelioma of the squamous cell type.

DISCUSSION

Dr. Satenstein asked what started the epithelioma on the lupus lesion, and whether there had been long continued treatment of the lesion with caustics. In such cases as had been reported, the epithelioma developed as the result of long continued treatment of the lupus lesion.

Dr. Maloney replied that there was no history of any treatment preceding the development of the epithelioma.

Dr. Highman said that he was inclined to believe that the earlier lesion was lupus vulgaris rather than erythematosus. It was often difficult to differentiate between the two clinically.

Dr. Howard Fox said that he was aware that it was often difficult to distinguish clinically between lupus vulgaris and lupus erythematosus. He thought the eruption in this case was lupus vulgaris, especially in view of the fact that cancer developed much more often on lupus vulgaris than on lupus erythematosus.

Dr. Lapowski remarked that one saw more cases of lupus vulgaris than of lupus erythematosus.

Dr. Wise said that it seemed to him to be lupus vulgaris, not lupus erythematosus; and he suggested that a biopsy be made of the flat lesion, not of the epithelioma.

Dr. Howard Fox disagreed with Dr. Lapowski. He said he thought that in this country we saw more cases of lupus erythematosus than of lupus vulgaris.
RECURRING LYMPHANGITIS (ERYSIPELOID). Presented by Dr. ABRAMOWITZ.

Mrs. G., aged 56, a widow, born in Germany, who had been in this country for twenty-nine years, and whose household duties were her only occupation, was well until five months ago, when a small red patch appeared below her left eye, and spread rapidly over her face and the upper part of her chest, the eruption being associated with high fever and constitutional symptoms, necessitating hospitalization for eight weeks. She appeared at the Vanderbilt Clinic shortly after she left the hospital, with a slight recurrence of the eruption, which showed as a diffuse erythema of the face, especially of the cheeks, which were slightly edematous. There was a mottled erythema of the palms and a moderate alopecia of the scalp. She showed, on presentation, a slight redness and puffiness of the cheeks; she had had two recurrences during the last month.

DISCUSSION

Dr. Andrews said that so far these cases had not responded very well to roentgen-ray treatment. He had not observed any improvement in this case; but perhaps this was due to the fact that treatment had not been continued long enough. Theoretically it should be of some value, and the German literature reported success by this method; but we have not been able to draw any conclusions from our work so far.

Dr. Howard Fox inquired whether any one had tried autogenous vaccines in such a case.

Dr. Wise replied that they had treated five patients with autogenous vaccine made from the nasal secretion, and only one case responded favorably.

Dr. Wertheimer said he wished to know what results had been obtained from using leukocyte extract in the treatment of erysipelas. He used it in every possible case, giving large doses, and it had happened that after forty-eight hours there had been a crisis, and the patients had recovered. One of the patients was an infant of 6 months who received from 0.75 to 1 c.c. and promptly recovered. In only one instance was there no result.

Dr. Levin said that he had observed a rapid effect from the injection of 10 c.c. of Hiss' leukocytic extract in a patient suffering from an obstructive case of erysipelas.

Dr. Abramowitz said that one patient with recurring lymphangitis of the face had received seven or eight roentgen-ray treatments with definite improvement. The case of a private patient started with erysiploid of Rosenbach that involved the right index finger. She had three recurrences in seven months, each attack leaving the finger more swollen. She was given six injections of streptococcus vaccine, and at the same time one quarter Holzknecht skin units, unfiltered, at weekly intervals for six weeks. She had no further attacks in the past four months, and the right index finger was normal in appearance. In another patient whose lip was involved, he was able to find the streptococcus in the upper layers of the cutis, so that these conditions can be reached, even with unfiltered rays. He had had no experience with a leukocytic extract.

HYDROCYSTOMA. Presented by Dr. Abramowitz.

Lena I., housewife, born in Russia, had lived about fifteen years in this country. The eruption had been appearing on her face every summer for the
SOCIETY TRANSACTIONS

last thirteen years. On the upper part of her nose and cheeks there were numerous pinhead sized, firm, translucent skin colored vesicles. In addition, she had an area about 8 inches (20.32 cm.) in diameter made up of telangiectases, atrophy and pigmention, located on her lower abdomen, which followed a roentgen-ray picture taken about twelve years ago.

RETICULAR ATROPHY OF THE FACE. Presented by Dr. Abramowitz.

L. H., a boy aged 10 years, born in this country, had an eruption on his cheeks, of two years' duration. Closely aggregated minute depressions were visible on the cheeks, with no other lesions. No other members of the family were affected, and there was no history of a previous lesion.

DISCUSSION

Dr. Wise said that the case was a replica of one reported some years ago by Drs. MacKee and Parounagian, and in his opinion it belonged to the nevus group of diseases. There were no preceding lesions and no blackheads. The cases all occurred in children. He did not think the condition was a true nevus, but that it belonged in the group of nevoid malformations, such as von Recklinghausen's disease, ichthyosis, etc.

Dr. Highman said that, from his recollection of the slides, he did not believe the case was a nevus. Clinically and histologically it reminded him of ulcerethema ophryogenes, and also of the atrophic stage of keratosis supralficularis, not the early state, but the state in which puckering atrophy was present, and he so expressed himself at the time. He did not recall the details of Dr. MacKee's and Dr. Parounagian's cases, but the condition did not impress him as a nevus so much as one of the primary atrophies.

Dr. Parounagian said that he saw quite a clinical resemblance to the case reported by Dr. MacKee and himself.

Dr. Rosen referred to the case described by Dr. MacKee which he had an opportunity to study. His patient was a girl of 13 years, both sides of whose face showed a reticulated atrophic condition associated with erythema and numerous small comedones in the affected area. No acne lesions were present. The patient presented at this meeting failed to show the erythema which is one of the important associated symptoms.

Dr. Highman said the description which Dr. Rosen gave of the condition substantiated the view he mentioned. He did not understand how any condition in the nevus class could start as a follicular hyperkeratosis leading to atrophy. In his opinion, the condition belonged more closely and particularly to the keratosis follicularis group, leading to the type of atrophy shown by this boy.

Dr. Lapowski said that he agreed with Dr. Highman. He had followed the case for two years, and called it keratosis follicularis. He had not seen any erythema. The comedo was a peculiar formation. It was not like the ordinary comedo which could be easily squeezed between two fingers. It had a hard end point which resisted very much when squeezed between two glass slides. He had never seen such a specimen except in keratosis follicularis. It was four or five years since he had seen the case.

Dr. Highman said the point raised by Dr. Lapowski about his original impression that one of the conditions was a tuberculid reminded him that
there was a group of persons who regarded ulerythema ophryogenes as lupus erythematosus; consequently, if it suggested a tuberculid to Dr. Lapowski, it might very well have been one.

CONGENITAL ECTODERMAL DEFECT. Presented by Dr. Wise.

C. R., a schoolboy, aged 14 years, born in the United States, had had the condition since birth. His parents, brothers and sisters were living and well.

The boy was well developed and normal mentally. The scalp was bald, except for sparse tufts of long velvety hair. There was also alopecia of the outer third of the eyebrows. The bridge of the nose was depressed, resembling the saddle nose of syphilis. The boy had only two milk teeth; of the permanent teeth only the upper central incisors, first molars and right lateral incisor had appeared. The voice was high pitched and of nasal quality. There was absence of sweat secretion, which made the patient uncomfortable during the hot weather. A histologic examination showed absence of sweat glands. The Wassermann test was negative.

DISCUSSION

Dr. Wise said the interesting features of the case were the alopecia, the absence of sweat glands, and the presence of cysts of the cheeks and forehead. The patient had never perspired. There was an edentulous condition, there being only two or three teeth. No work had yet been done on the case, but Drs. MacKee and Andrews intended to investigate it and publish their findings later.

Dr. Rulison said the child had volunteered the information that both parents had syphilis.

Dr. Lapowski said that the question raised by this case was one of great interest to every dermatologist. In his opinion, syphilis could not be excluded even after a minute clinical examination.

Dr. Levin expressed regret that he had not seen the case presented by Dr. Wise. He said that two years ago he had treated a boy at the Cornell clinic who had been referred to them as having congenital syphilis. Several Wassermann tests were negative, and several injections with arsphenamin and mercury were without effect. A diagnosis of ectodermal defect was finally made. The patient had a rough, dry skin, marked alopecia of the scalp, absence of several teeth, a saddle back nose and other defects. When the clinic was converted into a pay clinic the boy ceased his calls, and Dr. Levin was inclined to think that this was the same patient, who had drifted to the Vanderbilt clinic.

Dr. Lapowski asked what improvement was to be expected from treatment. That form of syphilis was not an active disease.

Dr. Highman said that a discussion like this reminded him of Gulliver's visit to Lilliput. It made no difference whether the boy's parents had syphilis or not. The boy had a congenital ectodermal defect, whatever the etiology or basis. Doubtless something in his ancestors determined the defect, and that was all one could say. The point of interest was that a patient could be born with so imperfect an ectoderm. It could not be proved by antispecific treatment that the boy was a congenital syphilitic, for there was nothing pathologic present that could be so tested.
HERPES ZOSTER AND VARICELLA OR HERPES ZOSTER GENERALISATUS. Presented by Dr. Maloney.

L. S., aged 54, born in the United States, a pantryman, five days previously began to have severe pain in his left shoulder, extending down over the left arm. A few hours later typical lesions of herpes zoster appeared over the outer edge of the left scapula and on several places on the left arm. At the same time, isolated vesicles appeared scattered over the trunk and extremities. These vesicles went through the changes typical of varicella lesions, and new crops have been observed each day since on the body, face and scalp. The zoster lesions have remained without change. The patient now presents typical lesions of herpes zoster and of varicella.

DISCUSSION

Dr. Lane said that cases had been reported in which the clinical appearance was so distinctive that there was little doubt that there was a simultaneous or nearly simultaneous eruption of herpes zoster and varicella. In a case like the one presented it would be impossible to decide whether it was varicella alone, herpes zoster alone, or a combination of herpes zoster and varicella, until the organisms causing the disease had been found, or until some means other than clinical examination had been found for differentiating the two diseases.

Dr. Parounagian said that he had questioned the patient, who informed him that the eruption had appeared all at once, and there was no history of any one else in the household being ill or having any skin eruption. In his opinion, it was quite unlikely that two different diseases would appear at the same time.

Dr. Wise said he believed the eruption was one of zona and varicella.

Dr. Michael was of the opinion that the patient presented a generalized zoster, such as had been recorded first by Tenneson. As to the etiologic relation of zoster and varicella, it appeared from the literature that there was some basis for the belief that the diseases had a common etiology, but he was certain that there were records of the same patient having had both diseases at different times, and the inference from this was obvious.

Dr. Highman agreed with Dr. Lane from the standpoint of the application of rigorous standards, but thought that some conclusions could be inferred from the clinical appearance. As Dr. Wise had pointed out, the literature contained many articles on the subject, showing that the association of the two conditions was not infrequent. McEwen's article was probably the most comprehensive American one on the subject, and he noted cases of varicella following exposure to zoster. Dr. Highman said that he did not think that zoster was related to varicella, but he believed that possibly the organism that caused varicella occasionally was capable of producing the same pathologic conditions in the spinal cord as herpes zoster; so that if the two were associated, it was because on occasion micro-organisms causing varicella might cause zoster, although there was a definite herpes zoster that had nothing to do with varicella.

Dr. Abramowitz told of a woman, 50 years old, who had an attack of herpes zoster involving the left side of her abdomen and thigh, with scattered vesicles on the face and trunk. These vesicles did not appear in crops, were not on an inflammatory base, and the patient had no rise in temperature. He had looked on this patient as having a case of herpes zoster with aberrant vesicles.
In the patient now presented, the lesions seemed to be of the same period of development; there were no lesions in the mouth and a number on the palms—rather unusual symptoms of varicella.

Dr. Rosen said that he believed the patient was suffering from two distinct conditions, herpes zoster and varicella. The varicella lesions were in different stages of development: some were vesicular, some umbilicated and others in the involuting stage; while the herpetic eruption was uniformly vesicular. The appearance of both at the same time was merely a coincidence, as might occur in other diseases.

Dr. Rostenberg said that the man distinctly stated that the area diagnosed as herpes zoster was very painful, whereas on the locations designated as varicella he had no pain. This point would rather lead to the assumption that he had the two conditions simultaneously.

Dr. Lapowski said the point he was questioning was whether the clinician could distinguish between the two diseases. In his opinion, this could not be done; it was impossible from the lesions alone to distinguish between varicella and herpes zoster.

Dr. Goodman (by invitation) said that he had made a study of the literature of so-called herpes zoster generalisatus, on the basis of the case mentioned by Drs. Parounagian and Rulison, which he had seen at Bellevue Hospital. The number of cases of herpes zoster generalisatus reported was small. Many authors had reported such cases as association of herpes zoster and varicella. In most of these the herpes had been followed in a short time, three to five days, by the generalized eruption, which looked like varicella. In the cases of this association in which the name herpes zoster generalisatus seemed applicable, the patients apparently were either aged or old in their tissue reactions. It had appeared that such persons had not been able to react in the ordinary way to herpes zoster, and there had been an overflowing of the eruption, so that it was more or less generalized. In some of the cases the generalized eruption could not be clinically distinguished from the eruption of varicella. In young children, the literature was replete with case reports of associated herpes zoster and varicella, as one disease in an adult was followed by the other in a child. Usually the herpes zoster was recognized in the adult patient first, although in a few cases the reverse had been true.

Although Tenneson was the first author to report the presence of aberrant vesicles in herpes zoster, Hasilung probably reported the first case of herpes zoster generalisatus. Bokay was the first author to consider a common etiology for herpes zoster and varicella, following his experience with an epidemic of these diseases among schoolchildren. Lipschutz had recently reported the results of his researches on a bacterial cause for herpes, but no note as to any similar findings in varicella had been made.

Dr. Becher said that both herpes zoster and varicella were common affections. The number of cases in which the two diseases were associated were few in comparison to the frequency with which they were encountered. Personally, he did not think that sufficient evidence had been brought forward to establish a relationship between the two; the occurrence of the two diseases in the few cases reported might well be a matter of coincidence.

Dr. Maloney said that this case began on Thursday, and the man was seen on Friday and each day since except Sunday. On Friday he had typical herpes zoster lesions on the shoulder and arm and isolated vesicles of varicella on the trunk and extremities. Each day since he had developed new crops of varicella lesions.
URTICARIA PIGMENTOSA. Presented by Dr. Scheer.

L. S., a boy aged 15, born in the United States, had had the eruption for three years. The lesions consisted of disseminated isolated spots varying in size from that of a pinhead to one-quarter inch (6.35 mm.) in diameter; they were light brown and slightly raised. On rubbing, some of the lesions became red and more raised. The lesions were most numerous on the outer surfaces of the upper extremities, less numerous on the trunk, and least on the lower extremities. The face, palms, soles and genitals were free from lesions. The only subjective symptom was slight itching when he was overheated.

SYRINGOCYSTOMA. Presented by Dr. Abramowitz.

M. R., a man aged 20, a clerk, single, born in Russia, who had been in this country for twenty years, had a mild acne on his face and a few furuncles on his buttocks. On being stripped it was observed that he had a profuse eruption on his trunk, principally on the anterior surface. The eruption consisted of brownish papules, millet seed sized and larger, and rather firm to the touch. There were no subjective symptoms. The diagnosis was confirmed by biopsy, and the patient was given roentgen-ray treatment. It was too soon to learn the result.

KAPOSI'S SARCOMA WITH OSTEOGENIC SARCOMA OF THE TIBIA. Presented by Dr. Abramowitz.

J. F., a man aged 60, a Russian, who had been in this country for seventeen years, a married man, unemployed, had been receiving roentgen-ray treatment at the Vanderbilt clinic for the last eight years for recurring violaceous infiltrating plaques on his hands, feet and legs. The clinical and pathologic diagnosis was that of Kaposi's sarcoma. He was discharged ten months ago and remained well until two months ago, when his left knee became swollen and painful. As presented, the skin on his legs showed pigmentation from previously healed lesions, with telangiectases on the backs of his hands. There was a diffuse, rather hard swelling of the left knee, which roentgenographically was diagnosed as osteogenic sarcoma. He was referred to Dr. Jaeger of the orthopedic department, who confirmed the diagnosis, and who advised the new intensive roentgen-ray therapy for him.

NEVUS, VERRUCOUS AND PIGMENTED. Presented by Dr. Abramowitz.

B. B., a girl, aged 2, born in this country, was brought to the Vanderbilt clinic by her mother, who said that she first noticed the eruption on the child when the latter was 7 months old. It appeared to her then like prickly heat. As presented, the eruption involved the entire body, with the exception of the face and hands, and consisted of grayish-brown patches arranged in streaks and various figures. Those on the back resembled the branches of a tree. There were areas of normal skin in between the nevus patches; both the flexor and extensor aspect of the extremities were involved. No other member of the family had the eruption.

Dr. Wise reported briefly on a case of syringocystoma of the trunk, treated with the roentgen ray by Dr. MacKee and cured.

DUHRING'S DISEASE. Reported by Dr. Abramowitz.
SYPHILITIC BURSITIS AND TUBEROSERPINOUS SYPHILIDS CURED. Presented by Dr. Levin.

L. P., a woman aged 30, married, an American, came to the Cornell clinic six weeks ago complaining of a swelling of the left elbow of two years' duration, of the left knee of seven months' duration, and of the right knee of one year's duration. Five months ago, she noticed an ulceration over the swelling of the left elbow. Her past history was negative for syphilis, except for a miscarriage six years before. Just below the extensor surface of the left elbow there was a pigeon egg sized hard swelling, which was movable on the deeper structures but seemed to be attached above. Over the swelling, the skin showed a serpiginous lesion made up of three confluent bean sized, dark ham colored tubercles with punched out ulcers. Over both knees similar tumors were present. On the skin over the knee there was a reniform, punched out ulcer, the size of a twenty-five cent piece, and above this a pea sized ulcer. A histologic examination revealed bursitis. The Wassermann test of the blood was four plus. The patient has received six arsphenamin and seven mercury injections.

PARAPSORIASIS. Presented by Dr. Williams.

L. K., a woman, aged 28, first came under observation for a face eruption (acne) with which she had been troubled for eight years. Two years before she had noticed an eruption of the lower extremities, arms, trunk and buttocks; this condition waxed and waned. The trunk, buttocks, legs and arms presented discrete areas of slightly scaly noninfiltrated, erythematous patches, with exaggeration of the normal skin lines. There were no scratch marks, no enlarged glands, no vesicles and no papules. The areas between the breasts and scapulae were clean. The scalp was slightly scaly. The patient's lateral incisors were missing, and an older sister exhibited the same lack. The skin of the forearms was hairy; on the back of the wrist it was coarse and thick, with exaggerated lines; the face was inclined to hairiness. She was decidedly nervous, suffered from indigestion, nervous headaches and dizziness, and was inclined to drowsiness at times. The menses occurred every four to five weeks. The Wassermann test was negative. A biopsy had been made, but the report had not been received. All treatment with ointments, Alpine sun, etc., had proved fruitless, except for temporary improvement at times.

There was a general agreement with the diagnosis.

XANTHOMA TUBEROSUM MULTIPLEX: CHRONIC JAUNDICE. Presented by Dr. Levin.

C. B., a woman, aged 41, married, a native of Russia, who had been in this country for fifteen years, appeared at the Beth Israel dispensary five months ago, complaining of a skin eruption of three months' duration. She said that the jaundice had been present for four years. She presented on the extensor aspects of the elbows and knees, on the buttocks and palms, innumerable pin point to small pea sized, yellow and yellowish-pink, elevated, firm and hard tubercles. On the lower lids, there were slightly elevated buff
colored plaques. The skin of the whole body showed a greenish yellow jaundice. The past history revealed a cholecystectomy performed five years before for cholelithiasis. Two years before, she had another operation for relief of the chronic jaundice. One year previously she was a patient at the Beth Israel Hospital, for persistent jaundice. Diagnosis at that time lay between carcinoma of the liver and pancreas, cholelithiasis (duct) and post-operative adhesions. At this time, she complained of the chronic jaundice, epigastric pains relieved by vomiting, intense pruritus and loss in weight. The urine showed the presence of bile. The stools were pasty. Blood examination showed: red blood cells, 4,500,000; white blood cells, 11,400; neutrophils, 50; large leukocytes, 5; small leukocytes, 45; hemoglobin, 60 per cent.; bleeding time, three minutes. Blood chemistry revealed: carbon dioxide, 47; glucose, 0.07; urea nitrogen, 15; nonprotein nitrogen, 35; calcium, 110 mg. per thousand cubic centimeters; blood cholesterol, 225. The blood Wassermann test was negative. The roentgenographic examination of the gastro-intestinal tract was negative. The Lyons test showed infection of the biliary system.

TERTIARY SYPHILIS OR DRUG ERUPTION? Presented by Dr. Parounagian.

O. A., aged 43, came to the hospital with the following history. He had had a chancre about twenty years previously, and had received some treatment. He claimed not to have had any other recent single sore. For some time he had been treating himself with patent medicines and other prescriptions, the nature of which he did not know. He came to the hospital with a papular eruption of the front of the trunk, the forehead and extremities. The back was clear. The eruption was polymorphic, but the papular element was greatest. The mucosae were clear. The regions about the anus and the axillae showed vitiliginous areas. The Wassermann reaction was four plus. The eruption on the forehead and some of the other lesions had cleared up since he came to the hospital, and the patient maintained that he was better. He had received no treatment.

DISCUSSION

Drs. Pollitzer and Gilmour said they believed the condition was syphilis.

Dr. Abramowitz said the man had a marked eruption on the forehead, especially at the hair line (corona veneris), and a few papules on the face. In his opinion, the condition was syphilitic. Although the man gave a history of having had a chancre twenty years before, the present eruption was of the secondary stage.

Dr. Chargin said that at first glance the eruption suggested lichen planus, particularly on the body; but on closer inspection, this diagnosis could be ruled out. The eruption was grouped in many areas; it was lichenoid in character, reddish brown, and especially marked on the face, particularly at the border of the scalp, and apparently was a secondary syphilitis. The history that the man gave of an initial lesion twenty years before could be disregarded in the light of the present eruption.

Dr. Howard Fox agreed with Dr. Chargin that the eruption was of the secondary and not of the tertiary type, and that the diagnosis should be based on the objective evidence rather than on the patient’s statement.

Dr. Parounagian said that from the beginning he did not consider the diagnosis of drug eruption seriously. He also did not regard the eruption as
secondary syphilis but tertiary, because the patient gave a history of a chancre twenty years before (the scar of which was perceptible), because there was no evidence of a recent chancre on the body, and because there was strong evidence of neurosyphilis—a positive Romberg sign, exaggerated reflexes, fixed pupils and patches of leukoderma in the axillae and the gluteal ridge, which are often noted in cases of tabes. Against secondary syphilis were absence of adenopathy, mucous patches, condylomas, and the fact that the eruption was not generalized.

SYMPHILITIC REINFECTION. Presented by Dr. Parounagan.

T. R., aged 22, born in the United States, came to Bellevue hospital on Aug. 10, 1921. He presented a small ulcer of the glans penis near the meatus and a roseola of syphilis. The Wassermann test was four plus. The roseola had been present for a month. The patient was treated with silver arsphenamin, and the Wassermann test on Sept. 27, 1921, was negative, as it was on April 3 and Aug. 28, 1922. On Sept. 18, 1922, he came to the hospital with a small sore on the coronary border, of three days' duration. He admitted coitus five days and thirty days previously. The dark-field examination for spirochetes in this lesion was positive on September 18, September 19, October 3 and October 10. The Wassermann test was one plus on Sept. 19, one plus on Sept. 26, one plus on Oct. 3 and four plus on Oct. 11, 1922. No treatment had been administered at this time. Since October 11, the patient had received four injections of neo-arsphenamin.

SYMPHILITIC REINFECTION. Presented by Dr. Chargin.

B. R., a man, aged 25, single, said that he had had a chancre on the penis six years ago, which was followed in three weeks by a generalized secondary eruption. The Wassermann test was four plus. He had received seven arsphenamin injections, a week apart, followed by four salicylate of mercury injections. Treatment was then discontinued. The Wassermann test at this time was negative. From that time to August, 1922, he remained free from external manifestations of syphilis, and the Wassermann test made once every six months always proved negative (about ten tests). The diagnosis was made and treatment given at the Detroit Department of Health Clinic. In August, 1922, three weeks after exposure, the patient developed a sore on the penis, not at the site of the first chancre. The sore became phagedenic, and in the course of three or four weeks involved half of the circumference of the shaft of the penis behind the corona. About six weeks after the appearance of the sore on the penis, he developed a scattered papular eruption, which with the healing sore on the penis was present at the time the patient was exhibited at the meeting. The Wassermann test prior to the appearance of secondary eruption was found negative on two occasions. At the time of presentation, it was four plus.

Discussion

Dr. Chargin said that he had seen four or five cases of reinfection among his own patients, and had presented three of them before the Academy. In his experience, the secondary eruption in the reinfection cases was of the papular variety, and, while generally distributed, was comparatively scant in amount.
DR. POLLITZER said that Dr. Chargin's case presented all the evidence required to establish a case of syphilitic infection; but he suggested that Dr. Chargin verify for himself the Wassermann reports, and state how long a period elapsed between the infecting exposure and the appearance of the lesion.

The case presented by Dr. Parouagian was also probably one of reinfection; but the unfortunate feature of the positive Wassermann test at the first examination, made a few days after the appearance of the chancre, cast a little doubt on the question of reinfection. On the other hand, the other elements in the case, the fact that the Wassermann test, feeble at the first examination, became strongly positive a few weeks later, would indicate that in all reasonable probability it was a case of syphilitic reinfection.

DR. LEVIN said that he believed both cases were probably syphilitic reinfection; but, before accepting this diagnosis, one should be careful to prove that the patients had been cured of their former syphilis; certain criteria should be verified; they showed all the evidence, except that the spinal fluid had not been proved to be negative. Before the diagnosis of reinfection was accepted, it was necessary to show that the first infection had been cured.

DR. WILLIAMS said he would accept both of these cases as cases of reinfection, even without the spinal fluid examination. What other explanation could be given? For many years, it was not thought possible, for the patients were not cured; but now that they were cured by thorough treatment, reinfection did occur. He could see no reason theoretically why a positive spinal fluid should be incompatible with reinfection; it is often obtained with repeated negative blood Wassermann tests, and Dr. Williams said he did not know any reason why such patients should not be reinfected with syphilis. The time had come when we should revise our opinion about these cases. He recalled a third case presented as a possible reinfection, but showing what was probably an ulcerating gumma.

DR. ABRAMOWITZ said that these two patients seemed to be, clinically, cases of reinfection. In the Dermatologische Zeitschrift for April, 1921, Arzt and Kerl cited the case of a patient treated eight years previously with neo-arsphenamin and mercury, who was found free of any clinical symptoms, whose Wassermann test of the blood and spinal fluid was negative, whose colloidal gold, Pandy and Nonne-Apelt tests of the spinal fluid were negative, and whose cell count was normal; yet excision of the scar from the healed chancre showed spirochetes in the dark field and in the tissue sections. Rabbit inoculation was positive. It seemed to them that in addition to the ordinary clinical and laboratory criteria for cure, negative animal inoculations were also necessary. Dr. Abramowitz was inclined to believe that since many cases of reinfection were being reported that seemed to conform clinically to fresh cases of syphilis, it was possible for such new infections to occur even though the patient still harbored a small number of spirochetes from a previous infection.

DR. LEVIN asked whether it was intended to make a distinction in the future between a reinfection and superinfection; also whether a patient was to be regarded as cured when all the accepted criteria had not been shown to have been fulfilled. We could not accept as cured a patient whose spinal fluid had not been examined, and in the case presented a positive reinfection could not be shown.

DR. CHARGIN, replying to Dr. Pollitzer's question, said that the penile sore appeared about three to four weeks after exposure. As to the criteria of a cure of syphilis before the theory of reinfection was accepted, strictly speaking
Dr. Levin was quite right in demanding a negative spinal fluid finding in addition to the usual criteria. Although experimentally in a percentage of the cases a patient having cerebrospinal syphilis could be infected with a fresh syphilis, in actual practice this was rarely encountered; so that when an infection occurred in a former syphilitic patient, in the absence of clinical evidence of cerebrospinal syphilis, a re-infection might reasonably occur.

It should be noted that clinically the patient who was presented showed no evidence of cerebrospinal involvement.

ERYTHRODERMA CONGENITALE ICHTHYOSIFORME. Presented by Dr. Parounagian.

G. A. N., a man, aged 43, born in this country, married, came to Bellevue Hospital with the history of having had an eruption on the body as long as he could remember. There had been no change noted either as age came on, or with seasonal variation, except that the skin had a tendency to “chap” in winter, and itched in summer. So far as he knew, there had been no familial history. His only child, a daughter aged 18, did not show any abnormality of the skin. The patient presented a generalized erythematous xerodermatous skin, especially of the flexors, with mild involvement of the scalp and in the regions of the eyes. The eruption was not greasy. The areas faded on pressure. The mucosae were free. The patient was healthy. The Wassermann test was negative.

DISCUSSION

Dr. Gilmour said the patient stated that the condition had always been red, as presented. That was not like the ordinary ichthyosis.

Dr. Pollitzer said that he agreed with the diagnosis, and said it was possible that many of the cases which were grouped under that name represented several types of disease; they were very rare—only a few had been seen—and it was possible that in time someone would discover that several diseases were classified under the head of ichthyosis. The name perfectly described the condition presented by this case.

Dr. Geckerman agreed with the diagnosis, and thought that in time we would be able to differentiate the various forms of ichthyosis, as Dr. Pollitzer said. He, himself, had been much impressed with the ichthyotic palm which this patient presented.

Dr. Abramowitz said that he agreed with the diagnosis. The man had erythematous areas on an ichthyotic skin, with involvement of the flexures, which was an important point against ordinary ichthyosis; but there were some customary features that were missing. The man had an area of skin on the chest which appeared to be practically normal. The palms were only slightly involved, and there was no history of an increased growth of hair and nails when the patient was younger.

Dr. Williams said that he agreed with the diagnosis and said that it was evidently a developmental anomaly, and that among other features the patient had a great many small, round, flat, bright red, slightly elevated angiomas.

LUPUS ERYTHEMATOSUS. Presented by Dr. Rostenberg.

N. L., a young woman, aged 18, unmarried, American born, was a stenographer by occupation. Her family and personal history up to the present illness were irrelevant. The present trouble started about a month before.
when the patient noticed a small reddish spot on her chin, which was then diagnosed and treated as a case of ringworm. The patient soon noticed the development of similar lesions on her forehead, neck and scalp. Examination revealed a circular area on the chin, the size of a fifty-cent piece, which looked like a superficial, smooth, somewhat atrophic scar, light pink and somewhat reticulated, with a few adherent scales at the periphery. There were two similar lesions symmetrically located on the temples and extending about 2 inches (5.08 cm.) on the scalp, where there was a decided loss of hair. There were about half a dozen smaller lesions scattered over the scalp, appearing as depressed, smooth, white, glossy scars, with a total loss of hair. On the back of the patient’s neck, there was a circular lesion, the size of a fifty-cent piece, where the skin appeared reddened, wrinkled and hypertrophic, and covered with a number of adherent scales.

DISCUSSION

Dr. Scheer agreed with the diagnosis.

Dr. Wise said that, taking all the various clinical features into consideration, especially the sinking in of the scar on the chin, he would consider it a probable sarcoid instead of lupus erythematosus.

CHEILITIS EXFOLIATIVA. Presented by Dr. Kostenberg.

Miss N. M., aged 43, a milliner, came to this country from Germany twenty years ago. Since then she had suffered from chapped lips every winter. The present condition began two years before on the lower lip, which became swollen and bled easily; the mucous membrane cracked and thick crusts formed; these soon dropped off and formed again. As presented, the entire vermilion border of the lower lip was involved; the mucous membrane being demuded, showing a reddened, fissured surface, with some adherent crusts. The patient complained of smarting and pain, especially while eating. She had received a large number of roentgen-ray treatments, without any permanent result.

DISCUSSION

Dr. Wise said that the case had been under observation at the Vanderbilt clinic for many months. It was a case of cheilitis glandularis, however, not exfoliative. The patient was treated with the roentgen rays, without any results. She was incurable so far as radium and roentgen rays were concerned, and should receive more drastic treatment, such as electrocoagulation, or curettage, or both.

MULTIPLE BENIGN CUTANEOUS SARCOIDS OF BOECK. Presented by Dr. Levin.

(Previously presented at the April meeting of the Manhattan Dermatological Society, and the October meeting of the New York Dermatological Society.)

CONGENITAL SYPHILIS IN BROTHERS. Presented by Dr. Parounagian.

C. V., aged 11, presented only two upper incisors, widely spaced, a high palatine arch and paralysis of the right side of the face. His Wassermann test was negative on June 17, 1922, and two plus on Aug. 22, 1922. He had since received eight neo-arsphenamin and six mercurosal injections.
F. V., aged 13, despite a four plus Wassermann test, showed no clinical stigmas of syphilis as to teeth, eyes, or hearing. He had received treatment similar to that given his brother.

Both the father and mother of these children had four plus Wassermann reactions. There had been no miscarriages, but two other children had died in infancy.

FOLLICULITIS DECALVANS. Presented by Dr. Levin.

L. P., a schoolgirl, aged 11, had had the condition of the scalp for one year. The vertex of the scalp showed the presence of a cicatricial alopecia and the presence of several pustular, inflammatory follicular lesions pierced by hairs. In the region of the bald area, there were heaped pustular crusts. The remains of an impetigo occurring with pediculosis capitis. Melcsia and spores were absent in the hairs and crusts.

UNILATERAL ZOSTERIFORM VITILIGO. Presented by Dr. Howard Fox.

S. J., aged 29, a full-blooded negro, born in the United States, a fireman, applied recently for treatment for a papular syphilid of late secondary type. Incidentally, he presented a unilateral vitiligo of the left side of the chest, which at first glance bore a striking resemblance to scars of a former herpes zoster. This condition was first noticed by the patient two years previously, the depigmented areas attaining their maximum size in three or four months. Since then they had remained stationary. There was no history of any symptoms suggestive of a zoster, such as painful eruption of vesicles. The patches of vitiligo were situated on the left side of the trunk between the midsternal line and vertebral column, and between the third and tenth ribs. They varied in size from that of a split pea to that of a palm; they were irregular in shape and contrasted strongly with the normal dark skin. There was no evidence of scarring or scaling or other change in the white patches other than the complete absence of pigment. The lesions had not been treated. The family history was negative. The patient had suffered from various diseases of childhood and from a chronic gonorrhea with many acute exacerbations during the last ten years. He denied any knowledge of having contracted syphilis. He was married in 1914. In the course of the next three years his wife had two stillbirths and one miscarriage. In December, 1921, he applied for treatment of sore throat and bone pains, at which time a Wassermann test was said to have been positive. He was given nine injections of neo-arsphenamin, according to his statement. About three weeks previously a papular eruption had appeared on the forearms, and the Wassermann test was strongly positive. The eruption had promptly disappeared under antisyphilitic treatment. The patient was a large, robust man in apparent good health.

DERMATITIS HERPETIFORMIS. Presented by Dr. Levin.

S. M., aged 30, a married woman, was first observed three months prior to presentation. She complained of a generalized intensely pruritic eruption of six weeks' duration. She presented at that time a generalized eruption of large erythematosous patches, on top of which there were numerous vesicles, bullae and pustules. There was no tendency to special grouping or distribution. The diagnosis was erythema multiforme bullosum. She was sent to the Mount Sinai Hospital. Within one week, the eruption changed its char-
acteristics in that the erythematous patches ceased appearing, and innumerable vesicles and bullae appeared all over the body, most marked over the scapulae, the sacrum and pubic regions. The vesicles arranged themselves in characteristic crescentic groups and quickly became pustular, giving rise to areas suggesting dermatitis vegetans. Under local and general treatment the condition improved; the lesions disappeared leaving deeply pigmented brown spots and scars. Six weeks ago the condition became severe again, and she was referred to Beth Israel Hospital. The generalized vesicular, bullous, pustular and vegetating eruption was accompanied by a severe conjunctivitis. The urine was normal, except that it contained albumin. The phenolsulphonephthalein test for kidney function showed elimination of 60 per cent. during the first hour, and of 10 per cent. during the second hour. Blood examination revealed: red blood cells, 3,820,000; white blood cells, 10,200; polymorphonuclears, 61 per cent.; eosinophils, 25 per cent.; lymphocytes, 5; small mononuclears, 9; hemoglobin, 60 per cent.; coagulation time, 4 minutes; a negative Wassermann test; blood glucose, 0.13; urea nitrogen, 16.2; nonprotein nitrogen, 23; creatinin, 28. Under arsenic administration there had been a steady improvement in the general condition, with a gain in weight, and the eruption had faded, leaving the generalized intense pigmentation and several areas of vesicles in crescentic grouping.

RECKLINGHAUSEN'S DISEASE AND SCLERODERMA. Presented by Dr. Levin.

J. B., aged 53, a Bohemian woman, married, complained of general aches and pains, bitemporal headaches, insomnia and loss of appetite for one year. She did not mention the skin condition. Examination revealed innumerable pin point to quarter dollar sized, round, oval and irregularly shaped brown and yellowish pigmented spots, with which the skin was covered. Scattered over the skin, there were numerous pinhead to five cent sized, sessile and pedunculated soft, elastic and hard fibromas. Some of these could be depressed and made to disappear as through a hernia-like ring in the skin. On the inner aspect of the right leg, there was a large patch which was hard and hide bound. The skin in this locality was swollen, edematous and purplish. The face showed asymmetry, fibromas, moles, hypertrichosis, thinning of the eyebrows, prominent frontal ridges and malar bones. The thyroid was enlarged. The blood pressure was: systolic, 180; diastolic, 100. The uterus was enlarged (probably fibroid) and retroverted. The urine was normal, with the exception of a trace of albumin. The Wassermann test of the blood was negative. The urea nitrogen of the blood was 22 and the creatinin 0.7. The roentgenogram of the sella turcica showed no abnormality. Under treatment with thyroneuleoprotein and suprarenal medication the headaches and general aches, as well as the other general symptoms, had been relieved, and the condition of the skin had improved.

NECROTIC GRANULOMA. Presented by Dr. Levin.

H. G., an unmarried woman, aged 29, complained of lesions on the dorsum of the fingers and hands, which had been appearing for one year. When first seen five months before, she had numerous hard, dark red papules, with necrotic surfaces, covered with firmly adherent crusts, varying in size from that of a lentil seed to that of a small pea. Lesions which had healed had left pitted
scars. General and roentgen-ray examinations revealed no evidence of tuberculosis. The Pirquet test was negative. Marked improvement had resulted from injections of tuberculin.

CHANCRE OF THE FOREARM. Presented by Dr. Howard Fox.

J. W., aged 17, a full-blooded negro, born in the United States, a professional boxer, was first seen on October 6, at which time he said that he had first noticed the lesion on his forearm three weeks previously. It had not, to his knowledge, followed any particular traumatism. This lesion, which he said was a small ulcer at first, had gradually enlarged to its present size. It had been noticeably free from pain and tenderness. About two weeks later he noticed an eruption on the trunk and genitalia. He had had no headaches, sore throat or general malaise. Examination revealed an elevated, markedly indurated mass about one inch (2.54 cm.) in diameter, with a central brownish crust on the ulnar border of the right forearm. It suggested an abscess at first glance, though the induration and entire absence of tenderness precluded such a condition. There was a profuse eruption of scaling flat papules on the penis and scrotum, and a few similar lesions were scattered over the trunk and extremities. There was a general adenopathy of small shotty type in the inguinal, postcervical and left epitrochlear regions. The right epitrochlear gland was markedly enlarged (the size of a walnut) and contrasted strongly with the corresponding gland of the opposite side. There was no evidence of an initial lesion about either the genitalia or the buccal cavity. There was a congenital phimosis, but no edema or discharge, and no visible sore or palpable induration of the genitalia. Furthermore, the enlargement of the glands in the inguinal and submaxillary regions was slight. The Wassermann test was later found to be strongly positive, and under antisyphilitic treatment the lesion on the forearm had healed and greatly decreased in size, while the other lesions had rapidly disappeared. At the time of presentation, the right epitrochlear gland had decreased in size, but was still noticeably enlarged. A photograph was also shown, portraying the appearance of the eruption before treatment.

TERTIARY SYPHILIS AND VITILIGO. Presented by Dr. Parounagian.

A. K., aged 45, a Greek, was admitted to Dr. Parounagian's service from the surgical wards of Bellevue Hospital. He denied syphilitic infection, but admitted a penile sore thirteen years before. The routine Wassermann test was four plus. The patient presented a vitiligo of the skin in segmental form about the abdomen, face, scrotum and the anal regions. Clinical and fluid examinations did not disclose any disease of the nervous system of syphilitic origin. He said the vitiligo had been noticed for about one year. The case was thought interesting because of the symmetry of the eruption. The patient showed an internal strabismus of the eyes.

CONGENITAL SYPHILIS. Presented by Dr. Parounagian.

Baby S., aged 6 months, was brought to Bellevue Hospital by her parents. The baby showed condylomatous lesions about the genitals and anus and ringed secondary lesions of the legs. The parents were both infected with syphilis, the husband about eighteen years previously, the mother since her marriage.
There was one other child, apparently well. The parents were not under treatment at the time of the conception of the baby, or during the intra-uterine existence.

**LESIONS OF THE PEBIS AND INDEX FINGER: SUPERINFECTION?**

Presented by Dr. Parounagian.

J. O., aged 32, reported to the hospital with a lesion of the coronary sulcus and one of the index finger of the left hand. He admitted exposure to venereal disease five weeks previously. He noted the lesion on the penis one week later, and the finger was thought to have been injured about ten days later. He had been treated elsewhere with an injection of arsphenamin. The inguinal glands were enlarged. Several dark-field examinations had been negative, as had been the examination on the day of presentation.

**GUMMA OF THE CLAVICULAR REGION.** Presented by Dr. Parounagian.

H. S., aged 43, came to the hospital the day before presentation. The patient denied any syphilitic history. He had been having "fits" for twenty years. During the last month, he had noticed a mass over the clavicle. The mass had been growing larger and had reached the size of a hen's egg. The mass was red, with distinct fluctuation in the center, but was not very painful to pressure. The clinical diagnosis of gumma was ventured.

**SARCOMA.** Presented by Dr. Scheer.

J. T., a man, aged 55, a pedler, born in Austria, noticed the present growth nearly two years ago. It had been growing steadily. The growth was situated on the inner side of the spine of the right scapula. It was circular, three fourths of an inch (19.05 mm.) in diameter, elevated about three sixteenths of an inch (4.74 mm.) above the skin surface. It was firm and lobulated, and the surface was waxy in appearance and covered by telangectasia. The growth extended into the cutis and moved in the deeper parts. It was exquisitely tender to the touch.

**NEW YORK DERMATOLOGICAL SOCIETY**

*Regular Meeting, Oct. 24, 1922*

**VITILIGO.** Presented by Dr. Highman.

M. A., a young Cuban woman of 17, first seen in September, 1921, had the same condition as her father, a man aged 70. The patient had had her first attack, of fifteen weeks' duration, a year before presenting herself, so that now the lesions were about 1 year and 3 months old. The original spot disappeared under treatment, but others developed on her body and persisted.

It proved to be a case which could be helped by treatment, and was presented to obtain the opinion of the members as to the problem of repigmentation.
Dr. Highman said that an interesting feature of the case was that when the patient first came for treatment she had only one patch on the right side of the lip. Hoskins and Hoskins showed that tadpoles treated with pituitary substance approximated the mature frog as to pigmentation. This led Dr. Highman to try the effect of anterior lobe of pituitary gland on this patient, and within a few weeks the spot on the lip disappeared; but it recurred six months later. An attempt to obtain the same results with the same kind of treatment a second time failed. The patient was then given suprarenal gland extract, and the spot on the lip disappeared and had not returned; but in other areas no results were obtained until the Kromayer light was used on one lesion on the back of the neck. This was on August 3. The endocrine therapy was maintained. In this patient, there had been a restoration of the pigment on the back of the neck but nowhere else. Apparently, the combination of Kromayer light and suprarenal extract had accomplished this, and the patient was presented for an opinion as to the feasibility of stimulating pigment by suprarenal gland administration and mobilization of it by the ultraviolet light.

**DISCUSSION**

Dr. Williams said that it was an interesting case. It was a question whether ultraviolet light was more effective than any other in fixing pigmentation. It was an interesting point that the pigment reappeared on the lip after one administration of pituitary extract, but did not reappear in any other spot after pituitary medication. It was doubtful whether the suprarenal extract had anything to do with the results, and whether just as good results would not have been obtained with the use of the ultraviolet light alone.

Dr. Whitehouse said that the case interested him very much, and he was sorry that Dr. Winfield was not present, as he had under observation a patient of his with the lesions extending around the neck, with hyperpigmentation at the borders. The patient had not menstruated for about three years, for no apparent reason, and her physician was interested in Dr. Timme's work and was giving her the female mixed glands, such as the pituitary, thyroid, ovarian extract, etc. Menstruation had occurred once or twice. Dr. Whitehouse had given her Kromayer light treatment for some time, and a marked change had taken place in the leukoderma—spots like freckles appearing in the depigmented areas. As a rule, no results were obtained in these cases by the use of the quartz lamp alone.

Dr. Trimble said when both treatments were employed it was difficult to know how much benefit was due to epinephrin or pituitary extract and how much to the Kromayer light. He felt sure, however, that the effect of the Kromayer light would be only temporary and that it would gradually disappear. In some cases of vitiligo he had instructed the patients to expose the hands to strong sunlight on the beach until they were thoroughly sunburned, and in that way the condition was apparently very much improved. This pigmentation faded out later. In treating cases with the Kromayer light for other conditions, the ensuing pigmentation faded out in time.

Dr. Highman agreed with what had been said; the striking feature of the case was that the spot on the lip healed without any trace. Unfortunately, he had not tested out the Kromayer light before using the other type of therapy, but the great cosmetic deficiency in the method was the difficulty in controlling the quantitative result. The new pigment might be permanent,
as it had persisted for ten weeks. The result was more a matter of theoretical than of practical interest, as there was no way of determining how even the repigmentation would be.

Dr. Williams said that he had seen the pigmentation left by the Kromayer light last for at least two months after exposure.

CASE FOR DIAGNOSIS. Presented by Dr. Whitehouse.

O. S., a man, aged 21, born in Austria, who had been in this country for two years, had been ill fourteen months. His family history was negative. He said that he was first treated for kidney trouble, also for heart trouble. The present eruption began ten months ago as a lymphatic edema of the lower extremities with nodular formations in the skin, on the face, and along the lymphatics of the trunk and extremities. As presented, the arms and legs were distinctly sclerodermatous, and the face was sclerodermatous and nodular, the facies closely resembling lepra. From time to time, the patient said this became much softer. For the first two weeks of his illness he had a fever of irregular type, and the spleen was distinctly enlarged. At the time of presentation, however, the size of the spleen seemed to have returned to normal. He was in the Kings County Hospital for seven weeks, and was given twelve injections: six of chaulmoogra oil, six of its ethyl esters and one of arsphenamin, and three silver arsphenamin injections intravenously. Apparently no benefit was derived from this treatment. After microscopic examination the nodule was reported to be infectious granuloma, possibly lepra. No lepra bacilli were found in several nasal smears, and none in the tissue, and objectively the heat and cold sensations were normal. No anesthetic areas were found. Both ulnar nerves seemed to be enlarged. There was a perforation of the nasal septum from which there was a discharge at times. He had had marked hoarseness from the beginning, but laryngologists' reports were negative, nothing being found to account for it. The hair was much thinned over the calvarium, and the scalp was distinctly atrophic and tightly bound down, although the patient said there had never been inflammatory trouble. The clinical effect was similar to that of an old favus. The patient's general strength was good, and he was able to work.

DISCUSSION

Dr. Fordyce said the case was a most interesting one, but could hardly be made to fit in with the clinical picture of lepra. Furthermore, all the investigations had ruled that out. The objective appearance strongly suggested scleroderma. As the sections examined showed a granuloma, apparently scleroderma must also be ruled out. In a case of this kind, which presented such extraordinary features, further investigation was clearly indicated.

Dr. Corlett (Cleveland) agreed with Dr. Fordyce that it was an unusual case; if one met the patient on the street, seeing only the face, one would naturally think the condition was lepra; but leprosy is a slowly developing disease, and in nine months it would not have advanced to such a degree. That was one point against that diagnosis. Another was that the nerve trunks were not involved, and there were no anesthetic areas present. Also, in lepra he had never seen extensive scleroderma, such as appeared on the legs in this case. He did not think, therefore, that it was a case of lepra, but he could not decide what it was from a clinical presentation alone.
Dr. Lane suggested that the lesions of the face might possibly be classified in the group of lymphogranulomas. The whole clinical picture was so atypical that all possibilities must necessarily be considered in trying to clear up the diagnosis.

Dr. Bechet said that the distinct tumors on the face and sharply defined tumefactions in the arms showed a tendency to a symmetrical arrangement. In the arms, they almost formed nodular strands. They were subcutaneous, and the overlying skin was normal. These facts suggested the possibility of a diagnosis of hypodermic sarcoïds of the Darier and Roussy type.

Dr. Wise said that he was inclined to agree with Dr. Lane's suggestion on account of the histologic findings, but he did not recall any form of granuloma giving such a picture as the one here presented. At all events, the histologic picture must be taken into consideration. The same objection held against sarcoïd, but by working on the theory of lymphogranuloma one would probably reach a diagnosis sooner than in any other way.

Dr. Howard Fox said he thought it a most unusual and very extensive lymphogranuloma.

Dr. Whitehouse expressed his appreciation of the suggestions, especially that of lymphogranuloma. He had considered various conditions—scleroderma, sarcoïd, etc., and he had been giving the patient pituitary up to 12 to 14 grains a day, together with thyroid, but without any benefit. One point that he could not reconcile with lymphogranuloma was the perforated nasal septum, which was discharging.

CASE FOR DIAGNOSIS. Presented by Dr. Trimble.

H. M., a man, aged 54, born in the United States, six years before first noticed a lesion on the tip of the right index finger. Three years before he was treated at the Skin and Cancer Hospital with roentgen rays, three exposures being made. After a few months, the lesion healed entirely; but it recurred after three months. It was again treated with roentgen rays at the Vanderbilt clinic, with no improvement. Since then there has been little change in the appearance of the lesion. The finger was permanently contracted, and in its middle was a superficial indolent ulcer, with epithelial proliferation in its center. The Wassermann reaction was negative, although there had been specific infection twenty years before.

A CASE FOR DIAGNOSIS. Presented by Dr. Trimble.

M. S., a man, aged 29, a physician, born in this country, said that the lesion began nine weeks before as a small papule on the right wrist, with central suppuration. A week later a fluctuating abscess developed immediately adjacent to the first lesion; a lymphangitis was also noticeable. A third lesion started two weeks later. Their centers became gangrenous, coalescing to form a single lesion, with an indolent, unhealthy granulating floor, and elevated, raised, rounded borders with a serpiginous outline. Two Wassermann tests were negative. A tuberculin skin test was also negative. A biopsy was taken, and the pathologic report was as follows: Deep in the corium was an area of dense round cell infiltration with a fair number of polymorphonuclear cells in places. The upper part of the corium showed edema, with a moderate number of free red cells in places. There was a moderate round
cell infiltration around the vessels and sweat ducts. The epidermis showed moderate hyperplasia, with intercellular and intracellular edema. Diagnosis: chronic inflammatory process.

**DISCUSSION**

Dr. Howard Fox said that the case of the physician with the lesion on the wrist was a most interesting one. There were two possibilities to be considered: granuloma inguinale and chancroid. He rather favored the first, since there was no accompanying adenopathy which chancroid would be likely to show.

Dr. Fordyce said that Dr. Fox's suggestion in regard to the lesion was worth following up. In his opinion, the finger lesion suggested a possible epithelioma.

Dr. Wise agreed with Dr. Fox in regard to the lesion on the wrist. The other case, the finger lesion, had been under observation at the Vanderbilt clinic for several months. The man had numerous warty keratoses on the soles and palms. The lesion on the finger had probably developed from a keratosis, and probably it was an epithelioma following the use of arsenic taken internally years before.

Dr. Williams said he thought Dr. Wise's explanation satisfactory, though the condition might not necessarily be due to arsenic. A man of middle age might develop a keratosis or an epithelioma without taking arsenic. He had keratoses on the feet also, and between the toes he had typical tinea, which would account for a good deal of the scaling.

Dr. Fox's suggestion of some of the rarer forms of infectious process on the other man's wrist appears to be a good one.

Dr. Highman said that he agreed with the views expressed by Dr. Wise in regard to the lesion on the finger, but that he could not agree with Dr. Williams' qualification of Dr. Wise's discussion. Keratoses did occur in men of this age, but not prevailingingly on the palms. Dr. Wise's suggestion in regard to arsenic would explain the conditions on the hands, and was in accord with Dr. Wile's article of a few years ago quoting a voluminous literature.

Dr. Whitehouse said that he agreed with what had been said about the finger case, but that he was not so sure about the nature of the wrist case. Why would the lesion change so much under boric acid ointment? Would granuloma inguinale respond to a placebo of that sort?

Dr. Trimble said he did not know what the condition was on the physician's wrist. He had not considered granuloma inguinale, but he would act on the suggestion and treat him accordingly if the present treatment failed to heal the lesion. Seemingly it had begun to heal with the placebo.

In the other case, Dr. Fordyce's suggestion of epithelioma appealed to him strongly. The question of keratosis had been considered, but the man denied taking arsenic of any kind. He had received eight or ten injections of arsphenamin, but he asserted that he had the warts before taking the injections. There was no border to the lesion. Dr. Trimble said he had seen two or three cases of epithelioma develop from arsenical keratosis, but they had shown the usual clinical signs of cutaneous epithelioma, rolled border, etc.

Dr. Fordyce said he thought the best method of treatment for the wrist would be complete excision under procain.
Dr. Trimble said that he had told the young man that the ultimate treatment might be curettage if ordinary treatment failed to cure.

Dr. Highman asked Dr. Fordyce whether the lesion on the finger looked like an extramammary Paget's disease.

Dr. Fordyce replied in the affirmative.

**PARTIAL DEPIGMENTATION, CHIEFLY OP THE FACE, IN NEGRO CHILDREN.** Presented by Dr. Howard Fox.

A family of three mulatto children, born in the United States, was presented on account of areas of partial depigmentation occurring particularly on the face. The first child, W. P., a boy, aged 7, had suffered from this condition for one year. The second child, M. P., a girl, aged 5, had had the same disfigurement for two years. The third child, a boy, aged 4, had been similarly affected for eighteen months. The first child presented the patches on the face, elbows, knees and right popliteal space. The patches in the second patient were confined to the face, especially affecting the chin. In the third patient, the areas of depigmentation were on the forehead and temples and along the lower jaw.

The areas in question consisted of partial depigmentation, which varied in amount in the different children and in the individual spots. They were quite noticeable in the girl, although not to be compared with the striking contrast produced by an ordinary vitiligo in dark skinned races. The patches varied in size from that of a dime to that of half a dollar, and were round, oval and irregular in shape. The borders were ill-defined. In some of the patches there was evidence of slight scaling, while others were entirely smooth. There was no conclusive evidence of any preceding scaly disease, such as ringworm or seborrheic eczema. The girl presented several areas of scaling on the scalp, without, however, showing any broken hairs. When examined under the microscope, neither hair nor scales showed the presence of ringworm. The patches occasioned no subjective symptoms, the patients applying solely for relief of the cosmetic defect. All of the children had the usual kinky black hair of their race, with no alteration in color. Neither the parents nor grandparents, as far as could be ascertained, had suffered at any time from a similar disfigurement. All of the patients seemed otherwise to be normal, healthy children.

**DISCUSSION**

Dr. Wise said that since Dr. Fox first called attention to such cases he had looked for them at the Vanderbilt clinic. There were many like the ones presented—some with ringworm of the scalp and some without. At the Vanderbilt clinic, they had never been able to find any ringworm fungus in the scrapings. In his opinion, most colored children in New York would show some such lesions if examined thoroughly.

Dr. Highman said that here were three children in one family presenting the same condition; thus it might be the result of an infection, or it might be a familial disturbance. There was the biologic possibility of atavism to be considered, the lesions harking back to white forefathers. He had asked the mother about the color of her husband, and she had said that he was slightly darker than she. Such lesions might appear in negroes in whom there was an admixture of white blood.

Dr. Trimble said that he considered it a temporary condition, as he could not remember having seen an adult negro showing the affection.
Dr. Howard Fox said he had for some years noted this condition of partial depigmentation occurring frequently on the faces of colored children. It was present in full-blooded negroes as well as in negroes with various admixtures of white blood. He had been unable to account for this condition or to give it a name. It apparently had no definite relation to any ordinary disease of the skin.

A CASE FOR DIAGNOSIS. Presented by Dr. Schuyler Clark.

Mrs. J. P., aged 24, a housewife, born in Italy, said that her parents first noticed a bluish pigmentation of her temples and lower eyelids at the age of 4 months, following a convulsion. In so far as she could learn, the bluish-gray spots scattered over the sclera of both eyes had been present since birth. The patient complained that the pigmented areas of her temples and lower lids seemed to be slowly spreading. She had never used argyrol or other silver preparations in her eyes or nose. On examination, the sclera of both eyes presented numerous bluish-gray pigmented spots about the size of a lentil, or larger. The temples extending back from the eyes into the hairline and up toward the forehead, as well as the whole area of the lower eyelids, were distinctly bluish-gray, which differed from the color in argyria, and the discoloration did not disappear on pressure. There was a gradual shading off into the surrounding tissues, rather than a sharp line of demarcation. There were no subjective symptoms. The fact of the presence of the pigmented spots in the sclera suggested strongly that the whole condition was a nevus.

DISCUSSION

Dr. Howard Fox said that he believed the condition was a pigmented nevus of an unusual slate color.

Dr. Fordyce said that he agreed with Dr. Fox that it was a pigmented nevus of rather unusual color. A few days previously a man of 65 had come into his office with a somewhat similar pigmentation of both upper and lower eyelids. When asked about this discoloration, he said that he had had it for years; and when asked whether he had ever used argyrol he replied no, but that for forty years he had used an ointment which a Berlin physician had given him for sties. It was yellow mercuric ointment, and he had rubbed it on his eyelids to prevent the sties. The pigmentation was exceedingly definite and very disfiguring, but he said that the sties troubled him more than the pigmentation, and he would continue to use the ointment.

Dr. Bechet said he did not believe it was a nevus. If it were not for the history, he would strongly suspect that it was due to the application of some cosmetic. Its symmetry and its general appearance pointed to some external irritant rather than to an internal factor.

FOLLICULITIS ULERYTHEMA RETICULATA. Presented by Dr. Wise for Dr. Fordyce.

L. H., a boy, aged 10, American, for the last two years had noticed tiny papules, followed by seven closely aggregated, minute depressions in two large areas, one on each cheek.

DISCUSSION

Dr. Williams said that he believed the condition probably was more common than was realized. Many children had these few small atrophic spots on the face, but not a sufficient amount of scarring to call attention to it.
Dr. Wise said he did not agree with Dr. Williams. This was the fourth case of the kind reported in New York. It was an uncommon condition, a well defined, separate entity, and in no way related to the punctate scarring so often seen in association with acne vulgaris. The paper by MacKee and Parounagian described the condition fully.

**MYCOSIS FUNGOIDES? ECZEMA SEBORRHEICUM?** Presented by Dr. Wise for Dr. Fordyce.

A. S., a woman, aged 36, an Austrian, presented a condition which began as a small patch on the chest and spread to the trunk and legs. The duration of the condition was nine weeks. Examination revealed yellowish-pink ten cent to palm-sized patches over the affected areas, especially in the armpits and groins and under the breasts. Some of the lesions suggested pityriasis rosea. In addition to these patches, there was itching of the scalp and dandruff.

**DISCUSSION**

Dr. Fordyce said that he had two patients who apparently were cured by a combination of roentgen-ray treatment and arsphenamin given intravenously. One had remained well for more than five years; the other had had no recurrence during the last two years. In all of the cases treated by the roentgen ray alone, relapses had occurred.

Dr. Wise said that he would like to know whether it was the consensus of opinion that the case was one of mycosis fungoides. The histologic changes were not sufficiently marked to enable one to make a diagnosis of mycosis fungoides.

Dr. Fordyce said that the histologic data were not yet sufficient to enable any one to say that it was or was not a case of mycosis fungoides.

Dr. G. H. Fox said that one might make a diagnosis of mycosis fungoides in this case from the clinical appearance. He had photographs of the thighs of several patients which presented an almost similar appearance. One case had been presented to the Society many years ago—a patient with discrete disseminated erythematous patches all over the body. Dr. Morrow had seen the case in consultation and called it psoriasis. The erythematous patches were slightly scaly and pruritic, but tumors finally developed and the disease proved fatal.

Dr. Trimble said that he thought it was a case of premycosis fungoides.

**A CASE FOR DIAGNOSIS: ULCERS OF THE PENIS.** Presented by Dr. Howard Fox.

A. B., aged 44, a laborer, unmarried, born in Italy, whose family history was negative and who did not remember having suffered from any illness of importance, gave no history of venereal disease, and said that he had not had sexual intercourse for six months prior to the appearance of the eruption seven months ago. He first noticed a small, elevated, slightly reddened spot about the middle of the dorsal surface of the shaft of the penis. This occasioned little tenderness or pain. One month later this lesion was incised by a physician, but no pus was present. The site of the incision was soon converted into an ulcer, which healed in about four weeks under the local application of a salve said to be mercurial. Coincident with the healing of the original lesion, a second one appeared near it. This ulcerated rapidly and
enlarged to the size of a quarter and also healed in about one month under the same local treatment. The process of a new lesion appearing coincidentally with the healing of an ulcer had persisted to the present. The large ulcer now present was the sixth, and the small one the seventh to have appeared in seven months. There had been no buboes and no rash. The patient had not received any general antisyphilitic treatment, according to his statement, and the Wassermann test on two occasions was declared to have been negative.

Examination revealed one oval ulcer on the dorsum of the penis, about 1 inch (2.54 cm.) from the end of the prepuce, measuring 1 inch in its long diameter. The margins were slightly elevated and indurated. The base was clean and granulating, with a slight serous discharge. There was no undermining of the edges, or any punched out appearance, the edges being sloping. The borders did not present a waxy appearance. A second smaller ulcer of similar character was situated on the dorsal aspect of the penis near its root. There was no enlargement of the inguinal glands, and there were no scars of incisions or ulceration in this region. Scars on the penis of the ulcers which had already healed were moderately indurated and covered by thickened non-pliable skin. A partial phimosis was present. The patient was a medium sized, muscular man, in apparent good general health. He had been seen for the first time on the previous day.

DISCUSSION

Dr. Clark said he believed it was a gumma and that it would clear up under antisyphilitic treatment. He had had a case with a similar history in which almost the entire penis was involved. This healed under antisyphilitic treatment, although the Wassermann test was negative all the time.

Dr. Fordyce suggested that the question of tuberculosis be considered.

Dr. Highman said that he believed it was either tuberculosis or an unusual syphilitic infection, such as sporotrichosis.

Dr. Guy (Pittsburgh) suggested the possibility of a chancreoid. Destructive ulceration, with auto-inoculation accounting for new lesions when old ones were about healed, would explain the local picture. The absence of bubo was against such a diagnosis, but was not conclusive.

Dr. Bechet said that Dr. Guy's suggestion might well be considered. He had recently read a French article on atypical chancreoids, in which the description fitted the case under consideration. Dr. Oulmann had presented a patient before the Manhattan Dermatological Society with a lesion above the pubis almost similar to the one under discussion. The case was presented for diagnosis. The possibility of chancreoid was mentioned; Ducrey's bacillus was subsequently demonstrated.

Dr. Howard Fox said that syphilis, tuberculosis, chancreoid and some fungus infection had been considered, but that no diagnosis was possible until sufficient time had elapsed for a thorough study.

LUPUS PERNIO. Presented by Dr. Bechet.

R. S., a man, aged 26, a letter carrier, said that the lesion began on the lobe of the left ear two years before. In cold weather it was violaceous, swollen and edematous. It was covered with a few scales, and there was slight atrophy in its center. The borders of the lesion were sharply defined.
No other part of the face was affected. In warm weather the color faded out, and the infiltration subsided, leaving only a few crusts and slight atrophy.

**DISCUSSION**

Dr. Whitehouse said that he believed it was a necrotic granuloma or tuberculid. A few years ago, Dr. Whitehouse presented a patient with necrotizing chilblains with lesions of this character on the rims of both ears, which would appear every winter and disappear in summer, and which had caused a notched condition of the rims of the ears. This young man had pernio of the hands and fingers also, and was much benefited by injections of sterile emulsion of tubercle bacilli.

Dr. Trimble said he was inclined to consider it lupus vulgaris.

Dr. Bechet said that a point against the diagnosis of lupus vulgaris was the fact that the lesion practically cleared up in the summer, the patient stating that only scaling was present at that time of the year. When the cold weather began the lesion became swollen, edematous and violaceous. If it were lupus vulgaris, the lesion would not change with the seasons.

**ADENOMA SEBACEUM TREATED BY DESICCATION.**

A. C., aged 28, an elevator man, a negro of light color from the British West Indies, who appeared to be a man of average intelligence, applied for treatment three months previously for adenoma sebaceum of both cheeks, the eruption being limited in extent and the individual lesions being small. The eruption had been present since birth. The left cheek only had been treated by desiccation (Clarke) for the sake of comparison. Four treatments had been given, resulting in the practical disappearance of the lesions.

**DISCUSSION**

Dr. Clark said these cases usually responded to treatment with the Kromayer lamp.

Dr. Trimble told of a young girl with mild adenoma sebaceum which improved markedly under the Kromayer light.

**KAPOSI’S SARCOMA.** Presented by Dr. Wise.

J. A., aged 22, a train salesman, single, had a condition on the left heel which began a year and a half ago. The patient had numerous cystlike bodies on the dorsum of the foot, which might also be lesions of Kaposi's sarcoma, like that on the heel. He was referred by Dr. Mount of Albany.

Examination revealed a dollar sized tumor on the inner side of the left heel, composed of six closely aggregated nodules, pea-sized and larger, brownish or purplish, soft and tender. One inch (2.54 cm.) from the larger tumor there was a pea-sized tumor, warty in configuration. On the back of the same foot there were three soft, cystlike tumors, each about the size of a ten-cent piece, pinkish to normal in color. There were also similar lesions on the wrist.

**DISCUSSION**

Dr. Fordyce said that he believed the lesions on the back of the foot were connected with the veins. He suggested that the entire lesion be excised and examined histologically.
Dr. Highman said that he believed the picture was that of Kaposi's sarcoma, and that the peculiar consistency of some of the lesions was due either to the cause mentioned by Dr. Fordyce or to a predominance of the angiomatosous elements. He believed that all the lesions would have to be brought under one grouping.

URTICARIA PIGMENTOSA TREATED BY THE ROENTGEN RAY. Presented by Dr. Howard Fox.

L. F., aged 44, a Jew, born in the United States, a printer, had suffered from an eruption for three and a half years. It was situated on the trunk, involving chiefly the lateral aspects, and to a less degree on the chest and back. It consisted of discrete, pinhead sized, brownish macules, which on friction became urticarial. Sometimes it was difficult to produce the wheals, while at other times they appeared on slight friction. He had been presented previously in 1921 by Dr. Wise (Arch. Dermat. & Syph. 3:325 [March] 1921). According to his statement, he had been treated vigorously with quartz lamps, with only a temporary disappearance of the eruption. For the sake of comparison, one side (the right) of the trunk had been treated by the roentgen rays. A total of eleven treatments had been given from April 7 to Oct. 17, 1921, the dosage being one-half Holzknecht unit (skin distance) unfiltered. After six treatments had been given to the right side of the trunk, the eruption had largely disappeared, and at the time of presentation only a few lesions were visible.

CONGENITAL SYPHILIS. Presented by Dr. Howard Fox.

A. M. D., a woman, aged 25, single, born in the United States of American parents, presented a classic example of saddle nose, frontal eminences, corneal opacities of both eyes, marked deafness and a "sabre tibia" of the left leg. At the age of 10, her second teeth were large, protruding and widely spaced. Later, they had been extracted. She was undersized, weighing 100 pounds (45.36 kg.), but she possessed average intelligence. She was able to read and write although she had not been able to attend school, and could make her own clothes and take care of the home. The eye symptoms were first noted at the age of 5 and the deafness at 15. She said that she had received antisyphilitic treatment at irregular intervals over a period of years, consisting of inunctions, internal medication, and a few arsphenamin injections. Several Wassermann tests had recently been negative. The patient's mother had had eight miscarriages, some of them self-induced. These were followed by one stillbirth and a live child who died "in convulsions" when 4 months old. The next child was the patient who was presented. Following her were two apparently healthy brothers, one of whom had recently been accepted for the United States Navy. The mother also showed characteristic scars on the site of an old nodular syphilid.

PSORIASIS FOLLOWING A LATE SYPHILID. Presented by Dr. Howard Fox.

B. L., aged 51, married, a Roumanian Jewess, presented a horseshoe shaped patch on the anterior surface of the left leg, with sharply demarcated, festooned borders, spreading in a serpiginous manner, leaving some pigmentation but no discernible scarring. The patches were dry, scaly and moderately inflamed.
trated, but without any distinct lumpiness characteristic of a nodular syphilid. There was occasional slight itching. There was a slight pityriasis of the scalp, but no distinct psoriatic lesions other than the patch on the leg. The Wassermann test was negative.

PSEUDOPELADe OF BROeQ. Presented by Dr. BEcHeT.

L. P., a man, aged 34, said that the lesions began twelve years previously. Since then new areas have appeared from time to time. He had never noticed any inflammatory symptoms, either before or after the occurrence of the bald areas. His scalp was covered with irregular, bald, atrophic areas, with here and there a reddened follicle. Some of the areas were cicatricial, others slightly atrophic, and still others as smooth as in alopecia areata. Brocq's description of pseudopelade exactly fitted the case. It was, however, in all probability, an atypical folliculitis decalvans. The two diseases were probably the same and not separate clinical entities.

SARCOID OF BOECK. Presented by DR. SCHWARTZ.

L. F., aged 44, a woman, married, appeared at the Cornell clinic on March 28, 1922, complaining of a facial eruption of two and a half years' duration. On the temporal regions and below the eye, there were about half a dozen lentil to large pea sized, round, slightly elevated, yellowish, scaly plaques. While she was under observation, new ones had appeared. They started as pinhead sized, yellowish lesions, which grew slowly. Microscopic examination revealed tuberculosis. The general examination was negative for tuberculosis, and the Wassermann test was negative. Guinea-pig inoculation was also negative. The crusty lesions were once treated with trichloracetic acid. Tuberculins had been used without effect.

A CASE FOR DIAGNOSIS. XANTHOMA? Presented by DR. WISE FOR DR. FORDyCE.

M. F., a boy, aged 20 months, presented disseminated lesions on the face and extremities, resembling xanthoma. The duration of the condition was ten months. The lesions were firm, nodular and flattened, ranging from pinkish to deep red, some level with the skin and others elevated.

EPIDERMOLYSIS BULLOSA. Presented by DR. WISE FOR DR. FORDyCE.

A. C., a boy, aged 4½ years, presented lesions which had been present since birth. The mother gave no history of a similar condition in the family, either direct or collateral. There were three older children in the family, perfectly normal. The patient was a full term child, and there was nothing unusual in the mother's pregnancy or confinement. At birth, it was noticed that the patient's feet were denuded of epidermis, and that they appeared raw and livid. The child was a bottle fed baby. Other than slight intestinal derangement, and pneumonia, with recovery in nine days, one year ago, the history was entirely negative. The teething of the child was somewhat abnormal, his back teeth having preceded his front teeth. Examination revealed an anemic child, who was mentally alert. His entire scalp was covered with a slightly yellowish crust. The eruption was chiefly confined to the extremities, although some lesions were present on the trunk and in the mouth. The lesions consisted of bullae up to 1 inch (2.34 cm.) in diameter, a few of which were
intact, but the remainder denuded of epidermis. There were some pigmented areas at the sites of healed bullae. There were also numerous pinhead epidermal cysts, most pronounced on the ears, but also present elsewhere. The nails of the fingers and toes were absent, and were lost at the age of 10 months. There was moderate contracture of the hands and fingers, due to atrophy. The hairs were intact. The lesions itched intensely, and the child scratched continuously. At the sites of injury, or scratching, new lesions appeared.

GRANULOMA ANNULARE. Presented by Dr. Wise.

A. H., a boy, aged 4 years, American, presented lesions of one year’s duration, confined to the hands and wrists, and giving the appearance of an incomplete circle about 1 1/2 inches (3.81 cm.) in diameter. The center of the lesions was clear. Each lesion was in the form of a border which varied from one fourth to one third of an inch (6.35 to 8.46 cm.) in width, surrounding normal skin. They were pinkish and felt somewhat infiltrated, the outer edge being raised one sixteenth of an inch (1.58 mm.) from the surface. No scaling was present, but there was lichenification with a few outlying papules. On the right wrist was a circular lesion half an inch (1.27 cm.) in diameter, with a raised border and healing center, the color of which varied little from that of the normal skin.

MANHATTAN DERMATOLOGICAL SOCIETY

Regular Meeting, Nov. 14, 1922

H. J. F. Wallhauser, M.D., Presiding

EPIDERMOLYSIS BULLOSA. Presented by Dr. Isidore Rosen.

H. N., 3 months old, developed bullous lesions immediately after birth, especially on the hands and feet. The lesions came and went, leaving slight pigmented discolorations in the skin. Examination on the day of admission to the clinic revealed a fairly well nourished child, with bullae of varying size, from that of a split pea to that of a small hazelnut. These lesions were filled with serum, and some of them were slightly hemorrhagic. The lesions were more marked on the hands and feet, but small vesicles and bullae were present on the trunk. The tongue was slightly ulcerated as a result of ruptured vesicles. Slight ulcerations were also seen on the inner surfaces of the cheeks. Syphilis was ruled out, on account of both the negative history and the serologic examination.

DISCUSSION

All agreed with the diagnosis.

MONILETHRIX. Presented by Dr. Max Scheer.

E. S., a boy, aged 10 years, presented on the occipital region, twisted, dry hairs, moderate alopecia and keratoses imparting a nutmeg grater feeling. Microscopic examination revealed beading of the hairs. The father and two paternal uncles were said to have the same anomaly.

DISCUSSION

All agreed with the diagnosis.
LARVA MIGRANS. Presented by Dr. O. L. Levin.

M. McG., a woman, aged 21, single, a stenographer, had had lesions on the neck for thirteen months. This first appeared after a visit to a farm in Connecticut. The lesions began as small red spots which enlarged centrifugally, varying in size from that of a twenty-five cent piece to that of a silver dollar, made up of a linear border, slightly elevated, dark red and about one-sixteenth inch (1.58 mm.) wide. Within this border the skin was slightly scaly or normal, the border gradually faded and the enclosed area became white, showing a loss of pigment. As presented, the patient showed several large areas of achromia and several linear serpiginous and circinate lesions suggestive of larva migrans. The Wassermann test was negative. Examination for spores and mycelia and larvae was negative. The case was presented for diagnosis.

DISCUSSION

Dr. Wise said that he believed the diagnosis of creeping disease was the most probable one.

Dr. Bechet agreed with the diagnosis of creeping eruption.

Dr. Gilmour said that he was sure this leukoderma was related to the moving forward of the lesions. The patient had several of these serpiginous eruptions followed by a loss of pigment behind the advancing border. This he confirmed at the clinic when the patient was studied with better illumination.

Dr. Fox said that he believed the waxy border of the patch bore some resemblance to a larva migrans. This, however, could not have caused the depigmented area as that had been produced by centrifugal extension.

Dr. Levin said that the lesions presented none of the characteristics of morphea, but simply presented inflammatory, linear, centrifugally spreading borders and areas of vitiligo.

KRAUROSIS VULVAE WITH EPITHELIOMA OF THE VULVA. Presented by Dr. Max Scheer.

L. K., aged 78 years, complained of itching of the vulva, which she had had for many years. Six months ago she noticed a sore on the vulva. There was marked atrophy of the vulva; the labia majora and minora had fused together forming an atrophic shrunken tissue. The mucosa was also atrophic and showed grayish-white areas. On the upper third of the right labium was a ten-cent sized ulcer with a pearly border of firm consistence. The patient refused excision.

DISCUSSION

All agreed with the diagnosis.

NEURODERMATITIS. Presented by Dr. Fred Wise.

A. L., a woman, aged 29, single, was presented largely on account of her previous history. She had had a generalized itching eruption for the last three years. She was confined to bed for seven weeks last summer with exfoliative dermatitis, and at that time was under the care of Dr. Wende of Buffalo. Intradermal tests showed hypersensitivity to milk protein. The eruption was aggravated by a milk diet and had improved since she stopped drinking milk. At present she shows lichenification of the back of the neck and bends of the elbows and knees, with slight erythema of the scalp and face,
where the skin is dry, wrinkled and pigmented, possibly from the roentgen-ray treatment she has received. A zosteriform leukoderma appeared on the right shoulder and arm after the attack of exfoliative dermatitis last summer. The condition was possibly Duhring's disease at first, but now the picture agrees with that of neurodermatitis.

**DISCUSSION**

Dr. Fox said he was not aware that the so-called neurodermatitis was associated with asthma or hay-fever. There had long been a prevalent idea that ordinary eczema was closely associated or frequently alternated with attacks of asthma or hay-fever. In an attempt to obtain information on this subject, he had made a note in every case of eczema during the past four years concerning this alleged relationship. His records showed that this was notably absent in the vast majority of cases.

**A CASE FOR DIAGNOSIS. LUPUS ERYTHEMATOSUS DISSEMINATUS (?)**. Presented by Dr. Howard Fox.

S. J., aged 32 years, a domestic, single, born in the United States, was a full-blooded negress. There was no family history of tuberculosis. The patient said that in the early part of May, 1922, both ears became bluish, swollen, moist and painful, and that they bled easily on traumatism. At the end of two weeks, the inflammation gradually began to subside, the entire surface of both ears becoming scaly and very dark. There was also marked itching at this time. A few days after the eruption appeared on the ears, she noticed sharply demarcated patches beneath the eyes, extending to the malar prominences. These patches were less inflamed than the ears, but itching was marked and scaling was said to be present. There were a few scattered lesions on the forearms in June. Until September 15, new lesions appeared on other regions. All of the eruptions had been accompanied by itching, especially in hot weather. The pigmentation of the ears was now said to be slowly becoming less marked. There had been a partial loss of the hair six months previously, most marked in pigmented patches in the occipital region. At the onset of the disease, the patient weighed 160 pounds (72.57 kg.), since which time she had gradually lost 20 pounds (9.07 kg.). She complained of having felt "feverish" for a long time and that she had an abnormal thirst and became easily tired. There had been no cough, night sweats or hemophysis. At the time of onset of the eruption, her family physician had noticed an enlarged gland the size of a walnut in the cervical region. Wassermann tests taken at Bellevue Hospital in May and June were said to have been negative. Two weeks previously she had developed pain in the left side of the chest, and at the Harlem Hospital a diagnosis of pleurisy had been made.

On examination, the entire surfaces of both ears, except the lobe of the right ear and the mastoid regions presented a marked brownish pigmentation. On each malar region were irregularly shaped areas of pigmentation about 1 inch (2.54 cm.) in diameter, in the neighborhood of which were several pea to dime-sized concrete areas of similar character. Other areas of pigmentation were noted on the neck, forearms and right deltoid region. In the interscapular region and on the chest were palm-sized areas of pigmentation, which also showed closely massed small pea-sized round, superficial scales. The patches were slightly infiltrated and dry and showed no scratch marks. In the
left anterior cervical chain of lymphatics was a large walnut-sized gland that was firm, painless and freely movable. Other pea-sized glands in this chain were palpable. The posterior cervical, deep cervical and submaxillary glands could also be palpated. The right epitrochlear gland was bean-sized. Subsequent physical and roentgen-ray examination of the chest failed to reveal evidence of pulmonary tuberculosis.

**DISCUSSION**

Dr. Levin said that the lesions and papules in this case differed from those in the case previously presented by Dr. Scheer, in that this case presented or showed distinct papules as well as the pigmentation. It was difficult to make a positive diagnosis, but in his mind the presence of the shiny papules and the old pigmentation suggested lichen planus.

**RECURRENT ERYTHEMA NODOSUM.** Presented by Dr. Andrew J. Gilmour.

F. S., a woman, aged 39, married, born in the United States, a housewife, whose family history was negative, and whose general health had always been good, gave an indefinite history of rheumatism in the left wrist eight years before. During 1899, 1905, 1909 and 1913, the patient had had attacks similar to the present one. All occurred in the left leg near the ankle. The lesions were tender and lasted about two and a half months. The present history is that four weeks ago, on the center and back side of the lower part of the right leg, there appeared four raised red spots with more or less edema. In the middle of August, they became so acutely red and painful that the patient had to go to bed for a few days. When the patient was on her feet much the lesions became more acutely red and throbbed. This condition was relieved by resting the limb and keeping it in a raised position. On Sept. 3, 1922, when first seen, there were two raised red, tender lumps the size of a small hen's egg; one was situated on the outer side of the lower third of the right leg, the second on the middle third of the leg near the median line of the back of the leg. This was quite tender. These changed somewhat, depending on how much the patient was on her feet. The Wassermann test and examination of the urine were negative. No point of focal infection was found.

**DISCUSSION**

Dr. Wise said that he recently had a case of erythema nodosum, which cleared up almost immediately after tonsillectomy.

Dr. Fox asked the members concerning their experience with recurrences in erythema nodosum.

**CASE FOR DIAGNOSIS: FOLLICULITIS AND ALOPECIA CICATRISATA.** Presented by Dr. Paul Bechet.

S. R., a boy, aged 15, born in the United States, said that the eruption began about ten years previously. He presented for examination several small semi-bald areas over the occiput, with some folliculitis. On the hairline, from the back of the left ear to the back of the right ear, and over the forehead, was one continuous line of folliculitis, which had apparently spread from the periphery to the center, so that over the forehead and back of the ears the hairline had markedly receded. The parts denuded of hair were
superficially cicatricial. There were minute follicular cicatrices and loss of hair on the outer third of the eyebrows, closely resembling an ulerythema ophyrogenes.

**DISCUSSION**

Dr. Wise said that he agreed with the diagnosis. He said that so far as he was concerned, this was the first time he had seen a case of this kind in which the lesions began at the hairline and spread centrally. He said that if he had seen the lesions on the back of the scalp alone, he would have diagnosed the case as folliculitis decalvans.

**NEVUS PIGMENTOSUS ZOSTER-LIKE IN DISTRIBUTION.** Presented by Dr. O. L. Levin.

P. D., a man, aged 21, single, a cashier, had had a mole on the lower part of the right side of the abdomen since birth. Three years before pigmentation occurred on the lower part of the right side of the abdomen and back, and this pigmentation had persisted. This gave no evidence of any local application or any other disturbance. The patient presented in the lower part of the right side of the abdomen a twenty-five cent piece sized oval, dark brown, elevated growth. This was in the midst of a brownish pigmentation which covered the lower part of the right side of the abdomen from the midline in front and extended around the side to the back, where it was present as far as the spinal column. There were no scales or elevation.

**A CASE PRESENTED FOR DIAGNOSIS.** Presented by Dr. Parounagian.

Mrs. Mary B., aged 57, born in the United States, married twice, the first time about thirty years ago, had had three miscarriages within eighteen months. She had been divorced and remarried six years ago. She had not been pregnant by this husband. The patient had trouble with the larynx, accompanied by spells of coughing. A tracheotomy had been performed. The blood Wassermann test was four plus; the husband also had a positive Wassermann reaction. The patient was referred to us for treatment. While with us she presented lesions on the forearms and lower extremities of papulocircinate character, a clear center, slightly raised, without pruritus. The eruption was symmetrical: it faded and reappeared, apparently without relation to treatment, as it was marked at the last presentation before this society. No treatment has been given since June 19, 1922, and the eruption is much fainter than at that time.

The total treatment during the last two years has consisted of nineteen arsphenamin, three silver-arsphenamin and thirty mercuric salicylate injections. The last Wassermann test, made July 11, 1922, was negative. There was a trace of albumin in the urine.

**DISCUSSION**

Dr. Levin said that he believed this was a case of parapsoriasis. Especially characteristic was the presence of the pin-point to pinhead sized shiny, lichen planus-like papules on the forearms near the bends of the elbows. The only unusual feature was the presence of the lesions on the extremities alone. The only other diagnosis which he had considered was the telangiectasia occurring occasionally in syphilis.

Dr. Wise said that a biopsy was made and that he believed it would be advisable to make another. He was not sure that this was parapsoriasis.
A CASE PRESENTED FOR DIAGNOSIS (POSSIBLE COLLOID DEGENERATION OF THE SKIN). Presented by Dr. Max Scheer.

M. A., a man, aged 28, single, born in Austria, noticed the lesions one year ago. On each side of the neck were about a dozen growths, from 1/4 to 3/4 inch (3.17 to 6.35 mm.) in diameter and slightly raised above the skin level. They were lemon yellow and moved freely on the deeper parts, but were partially attached to the overlying skin. Subjective symptoms were absent. On puncture, a small firm yellow-white body was extruded. There were similar lesions in both groins. They had not changed in size or number since first seen by the patient.

DISCUSSION

Dr. Fox said that he believed the lesions were ordinary sebaceous cysts.

Dr. Wise said that he agreed with Dr. Fox. He diagnosed the condition as being probably multiple sebaceous cysts.

Dr. Levin said that all lesions were sebaceous cysts. In colloid degeneration of the skin we do not find lesions which can be entirely enucleated. He said that he believed the lesions resembled those which were calcified and usually occurred in the scrotum.

MULTIPLE LIPOMAS. Presented by Dr. Gilmour.

D. B., a man, aged 40, a Russian Jew, a manual machine operator, whose past history was negative, came to the clinic for treatment of a seborrhea of the scalp of fourteen months' duration. Examination revealed that on both forearms there were several characteristic lobulated swellings, varying in size from that of a robin's egg to that of a small hen's egg.

GUMMAS OF THE EAR REGION. Presented by Dr. A. J. Gilmour.

S. M., a man, aged 22, single, Irish, about Jan. 12, 1921, discovered a sore on the penis. A diagnosis of syphilis was confirmed, and treatment was started at once. Between this time and Aug. 25, 1922, the patient received nineteen injections of arsphenamin and twenty-four injections of mercuric salicylate. At this date, about one month after the last injection, the Wassermann and spinal fluid tests were negative. About October 6, a small swelling appeared just behind and another just in front of the right ear. These were at first thought to be boils. When seen on October 28, the two characteristic gummas were found, with the long diameter vertical and about 3/4 by 1/2 inch (19.05 by 12.7 mm.) in size. Treatment was started at once. Following treatment with arsphenamin, mercuric salicylate and mercurial ointment (10 per cent.), the lesions improved wonderfully and they were now almost well. The case was presented because of the appearance of gummas so soon after the treatment and a negative blood and spinal fluid test.

VARICELLIFORM SYPHILIS. Presented by Dr. Paroucnagian.

J. F., born in the United States, aged 25, married, had urethritis about six months previously; he denied chancre, and no evidence of this was present. The patient had been exposed to the one woman only for ten months. The woman was examined and was found to be clinically free from syphilitic lesions. The patient had a patch on the left tonsil and an eruption closely resembling varicella distributed over the forehead, trunk, anterior and posterior, and
the extremities. There was a moderate glandular enlargement, and he had had pain in the legs for some time. The eruption had been present for about three weeks.

SECONDARY SYphilIS, ALOPECIA, LEUKODERMA COLII, SCABIES, ETC. Presented by Dr. Parounagian.

N. T., an Italian, aged 20, presented himself at the clinic on July 11, 1922, with a frenal sore of eleven days' duration. He had been exposed one month and one week previously. There were no other clinical signs of syphilis, but a diagnosis of scabies could be made clinically. Dark-field examination and the Wassermann test were negative. The patient did not return to the clinic until Nov. 9, 1922, at which time he had alopecia luetica, condylomas and leukoderma colii of about four weeks' duration. The patient was shown because he presented leukoderma colii in a male, associated with other cutaneous evidences of generalized syphilis plus scabies.

ANAL CHANCRE AND SECONDARY SYphilIS. Presented by Dr. Parounagian.

A. A., an Italian, aged 21, admitted malpractice (anal osculation) by a girl friend about two months ago. There had been little rectal distress, a generalized skin eruption and mucous patches, headache and pain in the limbs and chest for about three weeks. Dark-field examination of the remains of the chancre was negative.

GUMMA OF THE STERNUM. Presented by Dr. Parounagian.

J. P., an Italian, aged 40, denied all knowledge of venereal disease or syphilis. The patient said that the lesion on the sternum had been present for only one month. The patient was troubled with a cough, but the sputum has not been examined or a roentgen-ray examination made of the chest. The Wassermann reaction reported on November 9, 1922, was four plus. He was given two injections of neo-arsphenamin, and reported marked improvement.

Satenstein, Secretary.
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CERTAIN DERMATOSES OF MONKEYS
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PEMPHIGUS, SCABIES, SEBACEOUS CYST, LOCAL SUBCUTANEOUS
EDEMA, BENIGN SUPERFICIAL BLASTOMYCOTIC DERMATOMISIS AND TINEA CAPITIS AND CIRCINATA*

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In recording these dermatologic states, I feel that a word of justification is appropriate, for, with only one minor exception, namely that of scabies, a knowledge of them can never be of any direct value in the practice of dermatology. The value of this knowledge lies in the relation of these conditions to the basic processes of dermatology; and involves that comparison of human diseases with those of the lower animals which is known as comparative pathology. The value of this line of attack on the hidden things of medicine is just becoming realized in general medicine, as is shown by the comparatively recent establishment of chairs of comparative pathology in some of our universities.

A comparison is made of the differences and similarities in the manifestation of a disease in several animal species. Then, by analyzing these data (preferably from a series of cases), and taking into consideration known differences in the anatomies, the physiologic condition and bionomics of the animals, more or less definite deductions may be made, which I cannot go into here, and which cannot be set down until the case in point occurs.

The value of these animal cases varies. With some it amounts to no more than that a certain condition occurs in animals just as it does in human beings, and isolated cases of this kind are of only passing interest. With an accumulation of such occurrences, however (to the exclusion of related processes in human beings, for instance), their value rises, and they are therefore included in this series.

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Pemphigus in the Orang-utan

The first of these dermatoses that I saw was an attack of pemphigus in an orang-utan, of which a report has already been printed. Therefore I shall give only an abstract of the case. To our knowledge, the disease had lasted for about eighteen months, during which time there had been perhaps a dozen outbreaks, with brief remissions. The blebs occurred in groups, affected alike the extremities and the trunk, which never itched. The blister fluid was somewhat turbid and contained a large proportion of eosinophils. In summarizing this article, I said: "The case presents nothing unusual in the symptomology of pemphigus but is made reportable because it occurred in a lower animal and because it was associated with intestinal worms and was terminated by tuberculosis. The last two features are here recorded for what they are worth, without speculation by the writer. Future findings only will show whether they played any part in the etiology of the disease; but knowing what large numbers of pemphigus-free monkeys have died in the gardens of tuberculosis, and that, on the other hand, worm-infested Johanna (the cagemate of this orang-utan) has never shown cutaneous disturbances of any sort, we can state that their effect, if any, is only on especially susceptible individuals with lesions or functions disturbed in a way more or less nicely adapted and within narrower or broader bounds to produce the special lesion in the skin."

Scabies in the Orang-utan

My report concerns a young animal whose age was estimated at 3 years, and which had just arrived in the Gardens. Its skin from the very first was very harsh over the extensor surfaces and over the scalp, and was elevated into papillary eminences around the roots of the hair follicles as in keratosiis pilaris. The animal scratched itself continually, particularly over the back; and as a result the lower dorsal parts, extending almost to the anus, were largely bare. No lesions could be discovered between the fingers or over the ventral portions of the body to confirm the suspicion of scabies. In fact, the venter was much more free from signs of disturbance than the dorsal parts.

The only isolated skin lesions which could be discovered, even on examination under the lens, were three or four patches on the back, the largest 4 or 5 mm. in diameter, which looked like small, scaly, elevated patches of eczema. I could find no burrows. There were one or two smaller patches on the scalp, certainly not more than 2 or 3 mm. in diameter. Scrapings from these patches were examined in sodium

Fig. 1.—A and B are photomicrographs of human specimens and C is that of the orang-utan, at the same magnification. B, in passing, has the ovum at the anterior end, which is a most unusual position. The outline of the ovum is poor in this illustration because the mite could not be sufficiently flattened to bring it into the same focal plane as the cuticle.
hydroxid solution. In one preparation only were parasitic forms discovered, consisting of ova and a solitary itch mite, as shown in the photomicrographs.

*The Orang-Utan Mite.*—Flattened out under the coverglass after two weeks in 10 per cent. sodium hydroxid solution, it measured 0.40 mm. long and 0.32 mm. wide, and was of the same general broadly oval form as the human species. The structure of the head agrees with Fürstenberg’s\(^2\) original figure of the human variety, except that he represents four pincers (chelicers). This may have been a mistake on his part, for Megnin\(^3\) (a later worker) could make out only two, so that we may reasonably assume that the head of this orang-utan specimen has the same architecture as the human variety. Likewise,

Fig. 2.—*A,* ova of human species: *B,* ova of the orang-utan. The illustration shows the size of both, but not the form, as the ova of the orang-utan are empty and have collapsed. (The outline of the larva can be traced in one of the human ones.)

there was no disagreement with the human species as to the structure of the legs and the position of the anus and vulva.

In fact, the only features of this orang-utan specimen which could have any possible bearing in indicating a new orang-utan species were the cutaneous appendages, such as spines and hairs, and I will not describe these because their numbers and positions are about the same

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as in the human species, and they are better brought out in the illustrations. But it is necessary to indicate certain differences in form, etc., from the human. These are not important, being for the most part but relative differences, and they might be nonvalid if I had had larger numbers of orang-utan mites from which to construct a general picture. I do not wish to emphasize them—only to mention them. The "differences" between this one orang-utan mite and the (fifty) human ones which I studied in Philadelphia are:

1. This orang-utan specimen lacks the pair of minute chitinous "runways" immediately at the vulvar orifice, which is designed (Megnin) in the human variety to expedite the escape of the ovum.
2. The dorsal spines of the orang-utan mite are not as sharp.
3. The six dorsothoracic spurs are half as long as those of the human variety.
4. The pair of hairs at the nape of the neck (orang-utan specimen) could not be made out. This may have been due (unless they were actually absent) to obscuration by the mass of overlying mouth parts, since the specimen could be viewed ventrally only. (The mite was softened by the sodium hydroxid solution to the degree that it could not be turned over).
5. The fourteen preanal spurs (orang-utan specimen) are extremely blunt. They look "chopped off."

_Determination of Species._—Was this orang-utan specimen one of the human variety, or was it like one of those occurring on the lower animals? There was a bare possibility that the animal might have contracted the disease from a horse blanket of which she was very fond, and the equine variety has therefore been strongly suspected. Accordingly, the mite and the ova were photographed, measured and compared with actual human examples and with published data of the several animal species.
In this comparison it was eventually found necessary to consider all the known species of *Sarcoptes* because the orang-utan might have been exposed to infestation from a variety of animals while in the hands of keepers and dealers before she reached us. Canestrini and Kramer \(^4\) list fourteen species as valid and four as questionable. They were found on such different animals as the horse, dog, dromedary and lion,\(^5\) nineteen different animals in all. Other authorities do not agree that these are all separate species, and leave much to be desired in the way of a basis for settling the standing of the orang-utan mite.

It would be tiresome to recount here all the considerations involved in finally arriving at the taxonomic conclusion. In brief, both as to my human and orang-utan specimens, I do not believe that such a conclusion could at present be arrived at from the strict zoologic standpoint without making a laborious comparison first-hand of the several animal species. After studying my fifty human specimens and the data in the literature, I feel that in the absence of breeding experiments there are too many sources of error contingent on individual variation and the effect of environment to enable one to draw any conclusions on a purely morphologic basis.

But one factor in the determination of species which I wish to speak of particularly here is that of size. Considerable latitude in one and the same species must be allowed in this respect, and the technic of examination specified. The human mites I studied were mounted (and flattened) in liquor formaldehydi under coverslips. Measured thus, of fifty specimens examined, the largest mature specimen measured 0.572 by 0.442 mm, and the smallest 0.337 by 0.324 mm. Furthermore, size varies according to the degree of coverslip pressure. Thus, a mite photographed under a coverslip in an abundance of water measured 0.375 by 0.250 mm. With the water largely evaporated and the parasite flattened, it measured 0.433 by 0.355 mm,—an increase of about 14 per cent. in length and 20 per cent. in width. The ova behaved similarly, increasing 12.6 per cent. in length and 15.4 per cent. in width.\(^6\)

The strict zoologic relation between the orang-utan and human species has not been established. This is not true medically, for there are numerous individuals among my fifty human mites which would vary morphologically just as widely from the remainder as did the


\(^6\) Weidman, F. D.: Variation of the Ovum (*Sarcoptes scabiei*) Under Coverglass Pressure, J. Parasitol. 6:155 (March) 1920.
orang-utan specimen, yet which obviously had the capacity to produce human disease. The deciding argument from the practical medical standpoint was the further course of events. The beast's keeper later developed a severe case of typical scabies (wrists, hands, abdomen, chest and thighs), which cleared up under treatment with sulphur ointment; and shortly thereafter the keeper's wife had the same experience. There were no burrows on the keeper's skin, and I was not successful, as usual, in teasing any mites from the papules.

Scabies evidently occurs rarely on monkeys. Toomey, in his recent comprehensive survey of animal scabies in relation to man, mentions no cases other than mine. Fürstenberg reports that the human variety has been found in monkeys, but does not describe the parasite or give the original reference. The other authors—Megnin, and Canestrini and Kramer do not mention the occurrence of the parasite on monkeys or apes. The subject was beyond the scope of Heller's compilation of animal dermatoses.

From the general pathologic standpoint, we are fortunate in this ape case in having been able to work with the definite etiologic agent—a desideratum generally either absent in work in comparative pathology or so uncertain as to compromise its usefulness. But in this scabies case our good fortune enables us to declare that the differences between the skin of the orang-utan and human skin were sufficient to bring about a difference in the distribution and character of scabies lesions, for they were produced by the same agent. It would seem at first that a comparison and analysis of the distribution of the lesions and of the anatomy and physiology of the skins of the two hosts would lead to an explanation of the special distribution of human lesions, but I have not been able to devise one.

Summary.—An attack of scabies in an orang-utan which did not conform to human scabies in lesion or distribution is described. The single mite found may be accepted as identical with the human form in view of its morphology and the transmission of the disease to the orang-utan's keeper. The latter phase of the case should be kept in mind when dealing with scabetic persons who have pet monkeys.

PILOSEBACEOUS CYSTS IN RHESUS MACAQUE

Cysts occurred on the lids and brows of a young macaque (estimated as being 4 years old) following an injection of epithelioma contagiosum virus of birds. The latter procedure had no significance, however.

since the virus had been rubbed into the lower lid, whereas these lesions occurred only on the upper lid and on the eyebrow. Moreover, the virus had been rubbed into the eyelids of four different monkeys, and in only one did these cysts develop.

There were at first six closely-placed, miliary, yellowish-white nodules located on the right upper eyelid fairly close to the inner canthus but well above its ciliary margin. They were tense, yellowish-white, not umbilicated, and projected high above the skin surface after the fashion of molluscum contagiosum lesions. They persisted for eight weeks and showed no signs of regression at the time the animal was killed in other work. A few smaller, slightly elevated and poorly

![Fig. 4.—Sebaceous cyst; low power photomicrograph.](image)

developed nodules appeared later on the left eyebrow; one of these was excised and examined microscopically.

**Histologic Study.**—There is nothing resembling molluscum contagiosum in the illustrations; the essential lesion is a simple cyst lying in the corium. Examination did not reveal anything abnormal in the epiderm or in the corium, with the exception of the cyst. Several small sebaceous glands were noted, but none in immediate relation to the cyst. The cyst was lined by three or four layers of flattened squamous epithelium, the more interior ones of which contained coarse blue granules (hematoxylin and eosin sections) similar to those in the stratum granulosum of normal skin. There were no villous projections. The contents had escaped from paraffin sections, but were
observed in frozen sections, and comprised epithelial scales, fatty detritus and a few segments of lanugo hairs. There was no evidence of frank inflammation as in a folliculitis.

It is not necessary to discuss here the more minute classification of dermal cysts as set forth by Aschoff and Chiari, and more recently by Sherk. The presence of the stratum granulosum cells in the lining permits its inclusion among the sebaceous cysts, and the presence of hairs exclude the epidermoid (miscalled dermoid) cysts.

**BANDLIKE EDEMA OF THIGHS IN MENSTRUATING MONKEY (RHESUS MACAQUE)**

This monkey has been under my observation for five years. Four years ago, we began to mix solution of potassium arsenite (Fowler's solution), three drops three times a day, in her food in an attempt to induce arsenical hyperkeratoses. This medication was continued for six months, and altogether she received 4½ ounces (139.9 gm.) of the solution. While midway in the treatment, we noticed that when she was menstruating a heavy band of subcutaneous edema sometimes extended from the hips downward, and that it subsided, sometimes disappearing, as menstruation ceased. This phenomenon was not observed at every menstrual period. It has occurred two or three times each year for the last three years.

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In its most marked expression the lesion extended from the crest of the ilium downward over the lateral aspect of the thighs and backward over the popliteal space, where it became narrower, and then continued over the calf and tapered down to the ankle. In width the band varied between 1.5 and 2 cm. It was elevated fully 4 or 5 mm. above the general surface, and its margins were rounded. Its surface was depressed by transverse furrows at various intervals through its whole course from the hip to the ankle, which thus divided it off into shorter and longer segments, and gave it a lumpy character. The overlying skin had the normal bluish-gray shade of monkey skin—that is, there was no hyperemia or other evidence of inflammation. At other times, the band would shift to a more posterior position and be less highly developed, as shown in the illustration. The band must have contained a clear, watery interstitial fluid. Pressure could easily reduce the skin to almost normal thickness. The band was not due to urticaria, for there were no signs of itching, nor was it a wheal, for the fluid evidently lay in the subcutaneous parts. After it had receded with the cessation of menstruation the overlying skin remained slightly folded for a few days as though it had not quite recovered from being stretched. There was no resultant fibrosis—even after a dozen or more attacks.

So far as I have been able to learn, the presence of such a band is a rarity, if not indeed unique, at any time. The keeper at the Philadelphia Zoological Gardens says that he has never noticed it in any of the animals under his care.
This phenomenon is interesting in connection with monkey menstruation itself. It is common knowledge that the buttocks and external genitalia of the females of several species of monkeys (including *Rhesus*, especially, and the baboons) normally become extremely reddened and swollen during the molimen.

A third menstrual condition is that of the face. In some females it is normally never red, while in others of the same species it is naturally red at all times; some pale-faced monkeys become red during menstruation, and red-faced ones become more so. This condition corresponds to acne rosacea and acne vulgaris in human dermatology, which become worse in females during the molimen. We have a striking example in this monkey of the connection between the visceral phenomena and alterations in the skin exemplified in two cutaneous processes—edema and erythema. The facial erythema suggests a phylogenetic explanation for the human acne exacerbations, involving at least a latent reflex nervous pathway for the vessels of the face and the nervous tracts concerned during menstruation.

The constancy and consistency with which this cordlike or bandlike edema occurred perplexes as well as interests us. I never saw it otherwise, that is, it never occurred diffusely in this animal. In searching for an explanation, the mind naturally turns to the influence of some anatomic structure which extends lengthwise down the lower extremities. The clinical appearance of this monkey showed that there was no disturbance of the blood vessels. The anatomy of the lymphatic spaces is too uncertain to allow even the promise of profitable speculation. Only the nerves are left, and we recall the linear nevi, zoster, etc., but in the absence of further data, we can have only a strong suspicion that nervous stimuli, reflex from reproductive (or other) nervous tracts, may excite an edematous process in the subcutis quite apart from any circulatory factor and therefore through metabolic agencies. Looking at it another way, the edema in this monkey case reflects the metabolic perversion of tissue cells which are under the influence of abnormal nervous stimuli. From this it is but a step farther to our more or less accepted conception of the pathogenesis of certain noninflammatory dermatoses (the atrophies for instance) in which there is already the clinical suspicion of a nervous basis, but not the linear architecture to more or less clinch it.

It must be conceded that there may be an arsenical factor in this case, but there were no clinical evidences of neuritis, no palsies, and no albumin or casts in the urine. Arsenicism may well be playing a part in determining the edema and its linear distribution, but even granting this, it would not militate against the value of the menstrual cyclic phases of the case.
ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY

BENIGN SUPERFICIAL BLASTOMYCOTIC DERMATOSIS
OF THE AXILLA OF A MONKEY

A *Rhesus* *macaque*, which was sacrificed at the Zoological Garden as a tuberculosis suspect, but whose emaciation was found to be due instead to chronic suppurative peri-ophoritis, had a thick scaly surface deposit more or less entangled in the hair, which could have passed for "dandruff," except for its pale but distinctly lemon yellow color. At necropsy, it was considered as seborrhea. It affected both axillae, extended well down the sides of the chest, and gradually faded out into the surrounding sound skin. In other body parts, the skin was normal, except for some dandruff-like scales lying loosely in the hair of the back. The scalp appeared normal.

![Fig. 7 - Scrapings from axilla containing double-contoured yeast cells.](image)

Extemporaneous sodium hydroxid preparations of the axillary scales showed cornified epithelium interspersed with great masses of double-contoured spores, which collectively transmitted to the eye a distinct yellow tint; they were present in such quantities as to be easily responsible for the yellow tint seen clinically. Individual spores were of the same type as those of *Microsporon furfur*—double-contoured and with refractile hyaloid centers—but they were much larger, were collected into larger groups, and were unassociated with mycelium.

Cultures did not yield hyphomycetes. Besides various bacterial colonies, two kinds of blastomycetes developed. The first appeared as only one colony, grew rapidly and microscopically suggested a cryptococcus. It has not been regarded seriously as the valid organism of the disease, because it developed so sparingly (in spite of being a free-
grower) from original material that reeked with the cells, and for additional reasons that will be given later.

The second yeast was at first only observed intermixed as part of bacterial colonies from which I was never able to isolate it; but finally some pure colonies became visible. The latter, even when four weeks old were so small as to be invisible to the naked eye. They were detected only after three weeks during a microscopic survey of a petri dish planting; obviously this organism is a very weak grower. The colonies were round and colorless and homogeneous.

I have made repeated efforts to obtain subcultures from the originals, but without success. Thus, while still under the microscope, fishings have been made from them and transferred variously to glucose bouillon tubes, to glucose agar in tubes and plates, and to hanging-drop preparations (glucose bouillon). A "hanging-drop block" has been made by (microscopically) cutting colonies from the original plate and transferring them to the microscopic moist chamber. They have been kept both at room temperature and at 31°C. But under this new environment—one which is almost perfect—not one of the cells has been observed to bud.

All this means that this yeast grows best on glucose agar; but it grows feebly and only up to a certain point or for a certain time. At the same time, it is disconcerting that none of the cells has passed into the resting stage ("durable cells" of Guilliermond), which should be expected if their environment is unsuitable, and in view of the "durable cell" type observed in the extemporaneous sodium hydroxid preparations.

At this point it must be noted that this "feeble grower" was the only yeast observed among the original scales after they had been lying on glucose agar for two weeks. At this time, the larger part of the scale was covered with a deep yellow bacterial growth, while the remainder was gray-white; it was in this gray-white part that the feeble grower occurred pure or intermixed with smaller masses of bacterial forms. Here the double-contoured bodies originally seen had disappeared and must have developed into budding forms. This observation is important with the evidence already cited that the feeble grower is the one developing from the original double-contoured "spores" and not the free-grower.

Individual yeast cells from these weakly growing colonies are distinctive as pathogenic yeasts go. First, they are small. The largest forms measure 0.005 by 0.002 mm. and the smallest are scarcely distinguishable from bacilli, measuring only 0.003 mm. in length, and being from a third to a quarter as wide. Second, their form is not always the usual spheroid or ovoid one. Only larger forms are ovoid, and these may be apiculate at one end and contain a few small granules and occasionally a minute vacuole. Intermediate sized cells contain
no granules or vacuoles. They occur frequently in pairs, as though in process of transverse fission. Often a barely visible bud may be seen projecting from the point of separation; and more uncommonly, such a bud is seen on either side of this point. The smallest forms are elongated—fully four or five times as long as they are wide—have rounded ends, and are frequently more or less loosely joined in pairs, apparently undergoing transverse fission (*Schizosaccharomyces*). They might thus be mistaken for large bacilli but for the less opaque appearance of their substance and their more uneven sides. Mycelial forms, ascus formation or double-contoured cells have not been seen.

Histologic sections of axillary skin added nothing to our knowledge. Most of the surface scale was lost during the histologic process, and that which remained showed none of the organisms. There was not the slightest trace of epidermal hyperplasia, inflammation of the corium, or alteration of the sebaceous glands. A certain grade of capillary hyperplasia in the deepest part of the corium, attended by swelling of the lining endothelial cells, may have been due to the peregrinations of filariae with which the animal was infested.

This was evidently a harmless affection akin to the human tinea versicolor, but differing in location, color and causative organism. At most, it can be said that clinically it induced only a mild grade of surface hyperplasia.

I have been constrained to use a cumbersome title. Thus, the idea extant of blastomycosis is that it is deep-seated and must be a serious affection. The disease was not related to the hairs—it was not a trichomycosis. It was not inflammatory and not a dermatitis. I have already differentiated it from tinea versicolor. Biologically, it is the harmless, superficial, commensal condition which the title indicates. As a comparison with human disease, the case is pertinent only in that it is somewhat analogous in its pathology to human tinea versicolor, and in that a description is given of a micro-organism from a monkey which might some day be matched by one obtained from human sources.13

13. As this goes to press an instance of ringworm in two young Barbary apes comes to hand. One died, and necropsy showed three rings of scaleness over the left side of the abdomen, the centers of which were hairless. There were two or three smaller, solid patches also present farther around on the loins, which appeared seborrhoeic. In extemporaneous sodium hydroxid preparations a coarse, rarely-branching mycelium was found ramifying through the thickened follicle sheaths—not in the substance of the hair itself. The mycelium had a pale but definite brick-red color such as I have never seen before, and the metachromatic granules in the interior of the segments were much more strongly colored than the fungicellulose elsewhere. Cultures have just been started, and results therefrom will be reported later. The second animal is even more extensively affected, still alive and well, and has patches on the scalp as well as on the abdomen and flexor surfaces of the extremities where the hair is thin.
"In 1882, Colonel Macleod," in India, described a serpiginous ulceration of the genitals, probably the first case noted. In 1896, Conyers and Daniels,1 in British Guiana, adequately described and defined it as a clinical entity and gave it the name of granuloma inguinale tropicum. In 1897, Galloway1 added observations, and called the condition ulcerating granuloma of the pudenda. Cases have since been reported in Brazil, West Indian Islands, West Africa, Tripoli, South China, North Australia, New Guinea, and the South Sea Islands." Cases have been reported in different parts of the United States and dependencies by Goodman,2 in Porto Rico, four cases; Pederson,3 in St. Thomas, Virgin Islands, three cases; Geringer,4 in Panama, one case; Pardo,5 in Cuba, two cases; Grindon,1 in St. Louis, three cases; Symmers and Frost,6 in New York, two cases; Campbell,7 in New York, three cases; Jessup,8 in New York, one case; Reed and Wolf,9 in New Orleans, five cases; Lynch,10 in Charleston, S. C., nine cases; A. Randall, J. C. Small and W. P. Belk,10 in Philadelphia, eleven cases of their own, with four other cited cases, and Clyde F. Ross,11 in

*From the Outpatient Department, Surgical Clinic, Touro Infirmary.
7. Quoted by Campbell, Footnote 6.
Richmond, Va., seven cases. This makes a total of fifty-five cases reported in the United States and dependencies, to which I shall add four cases.

**Etiology**

"Conyers" and Daniels (1896), Le Donnc" (1900) and Jeong-
selme (1904) considered the disease a tuberculous infection. Le Donnc claims to have produced tuberculous lesions in animals by inoculating them with material obtained from granuloma inguinale.

"Wise (1906), Maitland (1906), and Bosonquet (1910), found spirochetes of the treponema type in the lesions, and these authors believed granuloma inguinale to be a manifestation of syphilis. Plehn (1914) said that he could see no reason for separating granuloma inguinale from phagadenc lesions of extratropical regions. Mac-
Lennon (1906) observed *Spirocheta refringens* in the lesion. Cleland (1909) found a spirochete in a case of granuloma inguinale in a native of Australia, which he named *Spirocheta aboriginalis*, which he con-
sidered the cause of the disease.

"In 1905, Donovan observed cell inclusions in granuloma inguinale, which have since been found in the mononuclear cells (endothelial leukocytes) of the lesion. Donovan considered these inclusions development stages of a gregarine. Carter (1910) looked on them as a gregarine type of a crithidia or herpetamonad. Flu (1911) thinks that the reaction of the infected cells in granuloma inguinale is suggestive of the chlamydozoa.

"Seibert (1907) and Martini (1913) identified the intracellular organisms as encapsulated diplococci. Martini was able to obtain the organisms in pure culture, and he produced local abscesses by subcutaneous inoculation which the author considered comparable with granuloma inguinale.

"Flu (1911) suggested that this intracellular organism of granu-
oma inguinale might belong to the group of capsulated bacilli. This author obtained a gram-negative, nonmotile, capsulated bacillus in culture from a lesion of a case of granuloma inguinale. In a second culture he obtained a gram-negative motile bacillus, and in view of these diverse results, he considered his results doubtful.

"Aragão and Vianna (1913) found the intracellular organisms constantly in cases of granuloma inguinale in Brazil. These authors obtained in pure culture an organism having the same morphological characteristics as those observed in the lesion. They considered the organism to be a schizomycete, but to constitute a new genus, which they designated as Calymmatobacterium, and named the specific organism *Calymmatobacterium granulomatis*. Aragão (1917) reaffirms the
claims of *Calymmatobacterium* as a distinct group of schizomycetes, to which the organism of granuloma inguinale belongs."

E. L. Walker 13 (1916) observed a case of granuloma inguinale in a Madeira-Marmore railway hospital, Porto Velho Amazonas, Brazil. He was able to demonstrate the capsulated organisms in the cytoplasm of the large mononuclear cells, of which several types could be distinguished. He considers the zoogloeic masses noncapsulated rods, and rounded bodies to be development stages of the organism. He also found the *Spirocheta refringens* type in the smears.

Walker was able to obtain in pure culture, in all types of culture mediums, a gram-negative, nonmotile bacillus (short plump rods, often cocobacilli) that showed a definite capsule. He classified the organism that he isolated with the so-called capsule bacilli of which *Bacillus mucosus-capsulatus* of Friedländer is the type. He injected pure cultures of the organism subcutaneously in laboratory animals and was able to produce lesions that were comparable to those of granuloma. The lesions usually healed in from two to four weeks and showed no evidence of chronicity, which is so characteristic of the disease. He also inoculated a monkey and two male negroes, with negative results. Randall, Small and Belk 10 of Philadelphia, also Lynch 9 of Charleston, S. C., have corroborated Walker’s work. However, they did not express an opinion as to the type of organism.

One can see from the foregoing the diversity of opinion that exists as to the etiologic factor of the disease.

Since granuloma inguinale was first described, three questions have engaged the investigators in this field and are as yet unanswered: 1. Is the disease a primary infection or is it a low grade secondary infection superimposed on a primary venereal infection? I believe that the majority of cases, if not all of them, are a primary infection of the external genitals, usually transmitted through sexual intercourse. However, the disease may be complicated by either chancroid or syphilitic infection, as shown by case reports in the literature. 2. Is the specific organism, whether it be a primary invader or not, the encapsulated organism described by Donovan? This organism, which has been demonstrated in lesions of granuloma inguinale by writers throughout the world, and which presents a definite and uniform morphology in all cases, having the same relationship to the endothelial leukocytes and their distribution in the tissue, seems to me to be the most probable cause of the disease. However, it may owe its foothold in the tissue to some other organism or organisms, as yet undetermined, acting in symbiosis with the organisms described by Donovan. 3. Is the organism

of the vegetable or the protozoan type? Its similarity clinically to other types of protozoan diseases, its marked chronicity, and prevalence in tropical and subtropical countries, and its quick response to tartar emetic medication, which has been heretofore most efficacious in diseases of the protozoan type, suggest that it bears a close relationship to the protozoan group. Although the organisms that have been cultured from the lesions conform to the bacterial group, and although lesions have been produced in laboratory animals that simulate the true lesions of granuloma inguinale, these lesions have not shown the chronicity of the lesions that occur in the human race.

BACTERIOLOGY AND PATHOLOGY

Smears were obtained from the lesions by means of the curet, the lesion having previously been cleansed with ether. This method of obtaining smears is not to be recommended, as too much blood is obtained, diluting the material, and fewer organisms are obtained. The best method is to take out a section of tissue and squeeze out the tissue fluid, making smears from this. Another satisfactory method is to clean the ulceration thoroughly, and if bleeding occurs, use pressure until it is stopped. Then, with a swab or knife, the surface should be scraped very gently and smears made from the scrapings. By this procedure, almost pure smears of the organisms can be obtained.

The smears were stained with Wright's stain, which gave very satisfactory results, the organisms showing a dark blue or red stain for the chromatin and a pale blue or pink stain for the cytoplasm or capsule.

The organisms were found in the cytoplasm of the endothelial leukocyte, while in some smears they are found free from the cells. They show different shapes and sizes in the same smear, which I consider development stages. Some of the endothelial cells contain only a few organisms (Fig. 5), while others are filled to bursting. The organisms are usually situated near the nucleus of the cell when they are in small numbers; and when in abundance they practically occupy the entire cytoplasm. Some of the endothelial cells show a vacuole in the cytoplasm, which contains large numbers; while others show partial or complete destruction of the endothelial cell by the organisms. Then again we see the endothelial cell overcoming the organisms by phagocytosis.

All types of bacteria, debris and blood cells can be found in the endothelial cells, which are great phagocytes, so one must be careful in drawing conclusions as to the presence of the Donovan bodies.

I have found the following types of organisms in the smears: (a) zoogleic masses containing single dots of chromatin; (b) bipolar
Fig. 1.—Drawings made from a smear obtained from a case of granuloma inguinale, and stained by Wright's stain. (Oil immersion; not drawn to scale.)

A, B, E and G show typical types of the organisms as found in the endothelial leukocytes: coccoid, bipolar (occurring in the form of coccoid and short rods), short rods and long rods somewhat curved. All the organisms show a definite capsule and seem to occur in a vacuole in the cytoplasm of the endothelial leukocyte. E shows for the most part organisms that are of the coccoid type, while some of the capsules or cytoplasm is void of organisms or chromatin. A, B and H show erythrocyte, lymphocyte and eosinophil contained in the cytoplasm of the endothelial leukocyte. C and F show organisms that have lost most of their characteristics in that they do not show a definite capsule, most marked in F. It is most probable that here the organisms are being phagocytized by the endothelial leukocyte.
organisms; (c) organisms presenting two short rods at each end; (d) long rods, some of them being curved. These different types can be seen in Figure 7. Not all of the organisms contained a capsule or cytoplasm. Some of the bipolar types show a constriction between the two dots of chromatin, which appears to be a division of the organism. Spirochetes of the refringens type were found in Case 2, but were few in number.

Fig. 2. (E. R., negro).—Typical lesions of granuloma inguinale around stump of penis (amputated), scrotum and inguinale region, with secondary lesions on thigh and at site of old suprapubic wound; elephantiasis of scrotum.

Cultures from the cases have been very disappointing. A gram-negative and gram-positive encapsulated organism has been obtained by culture. The culture from the first case was contaminated, and that from the second case showed the gram-positive organism. Inoculation of a rabbit in the inguinal region with pure culture from the second case produced no reaction in three weeks. Both cultures have been discarded, as I do not think that they had anything to do with the lesion.
A section was obtained from the lesion that presented normal skin on each side of the ulceration. The tissue was fixed in Zenker's fluid and paraffin sections were made and stained with hematoxylin-eosin and Mallory's connective tissue stain.

**Fig. 3.**—Results obtained by the intravenous medication with a 1 per cent. solution of tartar emetic. All lesions are healed except a very small line in the lesion on the thigh, the elephantiasis remaining.

**Epidermis.**—The most marked change in the epidermis was found at the margin of the granulomatous process; here the epidermis was greatly thickened, distorted, and folded on itself, showing attempts at regeneration and epidermization of the ulcer base, which, however, were aborted by the onward progress of the infection. This is well shown in Figure 6. The epidermal papillae at the edge of the lesion shows
marked proliferation and penetration downward into the papillary and reticular stratum. This penetration downward occurs for some distance from the edge of the lesion toward the normal skin, as shown in Figures 7 and 8. A few fissures are seen near the edge of the lesion that are partly filled with exudate which is undergoing organization, with a downward growth of epithelium, in an attempt to cover over the gap caused by fissuring. The epidermal papillae shows marked proliferation, as evidenced by the irregular edges and their penetration downward, with some of the basal cells entirely separated from the papillae. There are also offshoots from the papillae, which are about

Fig. 4 (Case 2, J. B., Negro).—Typical lesion completely encircling the base of penis, with extension onto the scrotum and into the pubic region. A typical papule is seen at the bottom of the scrotum, which has not ulcerated. This case also shows marked elephantiasis of the penis, which measured 8 inches (20 cm.) in length and 7½ inches (19 cm.) in diameter.

three cells in thickness, which penetrate the subdermal layer for some distance, ending by club formation of the epithelial cells.

As the base of the ulcer is approached beyond the edge of the lesion, we find almost complete loss of the epidermis. Here and there, we find islands of epithelium, while in other areas we only have the papillae remaining, with granulation tissue springing up between and separating the papillae. Some of these papillary buds show prolifer-
ation up to the stratum lucidum, and from these papillary buds the older parts of the lesion are epithelized; while in other areas the papillary buds are almost covered with the interpapillary buds of granulation tissue. Some of these buds of granulation tissue are quite fibrotic, as shown by the dense adult fibrous tissue (these dense nodules of fibrous tissue present a shotty feel when the hand is passed over the surface, and also produce the irregular ulcer base). There is some infiltration of the epidermis with polymorphonuclears, which we find in the intercellular spaces; the infiltration not being marked except at the ulcer margin. The cells of the epidermis retain their shape and are not much distorted except at the edge of the lesion. The prickle cells show the characteristic intercellular spines. There is, however, an increase

![Image](https://example.com/image1.png)

**Fig. 5.—Smear from Case 1. Photomicrograph showing the encapsulated organisms occurring in a vacuole in the cytoplasm of an endothelial leukocyte. The different forms of the organisms can be distinguished: coccoid, bipolar, and short rods. All have a distinct capsule. (Oil immersion.)**

in the size of the basal cells of the epidermis with proliferation. Mitotic figures were not present. There is complete loss of the pigment that is normally found in the basal cells, which is so conspicuous in the black race. Sections taken from the base of the penis or the inguinal regions show fissures that are nothing more than hair follicles that have lost most of their characteristics.

The papillary and reticular stratum of the corium which is composed of fibrous tissue, elastic fibers, and connective tissue cells which run parallel to the epidermis has been replaced by granulation tissue containing numerous blood vessels, with diffuse cellular infiltration (com-
The connective tissue cells and collagen fibrils in the papillary and reticular stratum run more or less perpendicular to the epidermis (Fig. 8).

The granulation tissue is very cellular and shows some sclerotic changes as the margin of the ulceration is approached, which is more evident beneath the ulcer base. Here, the connective tissue is very dense and the cells are more widely separated by the intervening collagen fibrils. The granulation tissue is very vascular, containing numerous large and small capillaries intermingled with angioblastic loops. They are not congested, only showing a few red and white cells in their lumina, while others are entirely void of cells. All of the larger vessels show perivascular cellular infiltration, this same type of cellular infil-

Fig. 6.—Photomicrograph of ulcer edge, showing attempts at epithelization of the ulcer base, which has been aborted by the onward progress of the disease, causing overproduction of epithelium at this point. This gives the edge of the ulcer its everted, elevated, indurated appearance.

There is considerable brown pigment found throughout the corium. The pigment occurs in clumps just beneath the papillae of the epidermis and in other areas it is more deeply situated. The clumps of pigment seem to bear a relationship to some type of cell, either the connective tissue or the endothelial cell, as evidenced by a nucleus which stains a dark purple, situated at the periphery or in the center of some of the pigment clumps. From the staining properties and the phagocytic character of the endothelial leukocyte, it is most probable that the
pigment has been taken up by this cell. The pigment is that which has been disassociated from the basal cells of the epidermis, or it is hemosiderin, resulting from repeated small hemorrhages that have taken place in the tissue, or a product from the connective tissue cell. If from one of these sources, it would act as a foreign body, and as the endothelial leukocyte is the chief phagocytic cell in the lesion, it points all the more to the pigment's being contained in the endothelial cell.

The most characteristic feature found in the corium is the dense round-cell infiltration, which is diffuse except some distance from the edge of the lesion. Here we find less granulation tissue, and the infiltrating cells appear more circumscribed, somewhat resembling tubercle formation, no giant cells, however, appearing here or in any other part of the lesion. This diffuse cellular infiltration is composed of polymorphonuclear, lymphoid, endothelial leukocytes, and a few plasma cells. Near the margin of the lesion and extending on both sides, the predominating cell is the polymorphonuclear, which is situated for the most part in the papillary layer of the corium, while in the reticular stratum we find very few polymorphonuclears, but large numbers of lymphoid cells and endothelial leukocytes, the endothelial leukocyte predominating. In some areas, we find epithelial cells that have been completely separated from the branching papillae of the epidermis. In one area I found pearl formation of these separated epithelial cells. If one is not careful, when this pearl formation is

Fig. 7.—Photomicrograph showing marked proliferation of the papillae of the epidermis and their elongation downward into the papillary layer; also the granulomatous subdermal tissue with diffuse round cell infiltration. This is near the ulcer margin.
found, the lesion may be interpreted as early carcinoma spinocellulare. It is possible that this condition occurs more frequently when the lesions occur on the glans penis or in the single ulcerated papule, as in these lesions the granulations are more cauliflower-like, clinically resembling carcinoma.

The tela subcutanea, which extends from the inner boundary of the corium to the fascia subcutanea, is normally composed of fibro-elastic tissue (the reticulum), and large amounts of fat, with hair follicles and sweat glands lodged in its meshes. This has been replaced by a sclerosing, round-cell, infiltrated connective tissue. The collagen fibrils are very dense and run in thick wavy bands in a purposeless fashion, the fibrous tissue resembling that seen in keloids, and characteristic of

Fig. 8.—Photomicrograph showing marked elongation of the papillae with considerable thickening of the epidermis. The papillae penetrate the papillary layer for some distance. Here the granulomatous condition of the subdermal tissue is plainly seen, with numerous small blood vessels and angioblastic loops; however, they are not congested. There is marked round cell infiltration in this area. This condition is found some distance from the ulcer margin.

that type of lesion. Mallory's connective tissue stain brought out the beautiful interlacing dense wavy bundles of the fibrous tissue and all of its minute ramifications, showing that the greater part of the section was composed of connective tissue. Some of the bundles are very compact, staining a homogeneous pink with eosin. The connective tissue cells are widely separated by the intervening bands of collagen fibers. These bundles run in different directions, shown in Figure 11, and are separated in some areas by round-cell infiltration (Fig. 9).
There are large and small nests of cells scattered throughout the tela subcutanea, which are surrounded by these dense bundles of connective tissue, shown in Figure 10. The fibrous tissue around the blood vessels, hair follicles and sweat glands is more cellular than in other areas. There are numerous blood vessels present, and the majority of them show marked congestion, containing large numbers of red cells and few white cells. There is marked cellular infiltration surrounding the blood vessels, hair follicles and sweat glands.

The cell nests in this area resemble tubercle formation, as there are large accumulations of endothelial leukocytes, with a few lymphoid and fibrous tissue cells and angioblastic loops, showing that there is an active process going on in these areas, which is due to the presence of the encapsulated organisms. The predominating cell in the tela subcutanea is the endothelial leukocyte, with a few lymphoid cells and eosinophils.

In order to demonstrate the presence of the organisms in the tissue, and to ascertain their location, whether they were superficial or occurred throughout the section, I stained the tissue by the methods of Wolbach and Gram, both methods demonstrating the organisms. The organisms were found throughout the entire section of tissue from just beneath the papilla of the epidermis and interpapillary tissue to the deepest layers of the tissue.
part of the section. They appeared in colonies and were most numerous where there was a large accumulation of cells. The largest numbers being found in the corium and tela subcutanea; they were scanty beneath the epidermis. The organisms also occurred between the bundles of connective tissue where the cellular infiltration was very scarce, and in areas where they were entirely absent. The organisms seem to bear the same relation to the endothelial leukocyte in the tissue as in the smears.

In studying the tissue stained by the foregoing methods, I find that the chief infiltrating cell is the endothelial leukocyte.

The pathologic picture of the disease is that of a sclerosing granuloma.

SYMPTOMS AND CLINICAL COURSE

The age of onset is between 20 and 40 years.

Incubation.—The length of the incubation period is not known (Hoffman 14). In one of my cases, the incubation period was a month. The disease usually manifests itself after sexual intercourse, and commences as an elevated papule, either primary or secondary to some type of venereal infection, which in the male is usually on or near the penis, and in the female, on the fourchette or labia minora. This papule may or may not cause any inconvenience. There may be a slight burning or itching sensation. The skin covering the papule is soon thinned out and is easily abraded, and a small ulceration may begin, which has a slight irritating discharge. The papule begins to increase in size and spread, the rate varying greatly in different cases. The disease spreads superficially, involving skin and mucous surfaces or both, and its advance is accompanied by new granulations at the spreading edge. This gives the edge a rolled-out elevated appearance, which is hard and indurated to the touch. This is due to the folding up of the epithelium, as described under the pathology. The granulations at the edge of the lesion are very coarse and, if curetted away, small white particles, oatseed in size, are obtained, being composed of sclerosed fibrous tissue. The whole mass appears as a coarse granular raised growth with serpiginous outlines, as a rule, without deep ulcerations except in those parts that have been excoriated and cracked from the discharges and in which secondary infection has occurred.

As the lesion spreads into the hairy parts, especially the pubic and inguinal regions, the hairs drop out. However, a few remain in the ulcerated area. The older areas are smoother and have a moist, shiny, glistening appearance, which is due to partial epidermization of the lesion, coming from the papillary buds of epithelium. These areas are

more depressed and are often converted into dense white fibrous tissue. The hand passed over this surface finds it irregular, and shotlike nodules are felt just beneath the surface, probably due to the interpapillary buds of granulation tissue that has undergone sclerosis and contraction. This contraction of the underlying fibrous tissue often causes puckering of the surrounding skin.

In the great majority of cases in the male, the lesion is on, or near, the penis, and when situated on the glans penis is more exuberant and cauliflowerlike. This condition is often interpreted as carcinoma, and the penis, and when situated on the glans penis is more exuberant and cause of amputation in Case 1.) When the lesion is situated on the glans, the part is much distorted. The granulations are very coarse,

Fig. 10.—Photomicrograph showing typical cell nest of endothelial cells surrounded by dense bands of connective tissue. Perivascular and periglandular cellular infiltration can also be seen. In these cell nests and around the blood vessels, hair follicles and sweat glands, the fibrous tissue is rather cellular, usually concealing the meatus and sometimes extending into the urethra, but only for a very short distance. When the lesion becomes annular on the penis, the formation of fibrous tissue beneath the urethra, with its resulting contracture, may cause typical cordee or a troublesome stricture.

The lesion not only spreads by direct cutaneous eccentric peripheral extension, but also by secondary papules that appear near the creeping edge, which break down and ulcerate, coalescing with the primary lesion; also by autoinoculation, which is responsible for the appearance, in the groin or base of the penis, of discrete nodules, which are probably set up by the penile ulceration or its discharges. The groin is the
favorite site of the ulceration, which extends along the soft, moist folds, or into the most hairy parts; and it is usually limited to these areas. From the folds of the groin, it may spread between the scrotum and thigh on one or both sides. In long standing cases, it creeps slowly onto the perineum and backward around the anus into which it sometimes extends for a short distance, causing an anal discharge of serosanguineous fluid. This extension backward is due to the excoriating action of the discharge which contains the organisms, which runs between the fold of the thigh and scrotum onto the perineum.

In the female, the earliest lesion is probably on the labia minora or fourchette. The lesion spreads along the cutaneous surfaces and the labia majora are soon involved. The perineum, even when the labia

Fig. 11.—Photomicrograph showing the formation of dense wavy bands of connective tissue occurring in the tela subcutanea, with infiltration of round cells between the bundles. This, as well as other areas in the tela subcutanea, simulates very closely the fibrous formation that is found in keloids.

majora are not involved, is affected early, and the lesion then passes backward, surrounds the anus and extends into the rectum, in long standing cases. Sometimes, it extends forward between the thighs, and then, by direct continuity, may invade one or both groins. The lesion may extend into the vagina, it usually does in old cases, but this may take place very early in some cases. The involvement of the vagina may extend up to the cervix (but never invades it.—Daniels 15).

The result of the disease is more serious in females than in males. When the mucous surfaces of both vagina and rectum are invaded, although there is no manifest sloughing, the lesions in the vagina and rectum seem to become continuous with each other through the thin fascial rectovaginal septum. In old cases, this progression of the disease along the rectovaginal septum finally results in rectovaginal fistula, which may be multiple. Ulceration either on the cutaneous or mucous surfaces is a secondary process, since the tissue, though vascular, is of low vitality and the epithelium is softened from the discharges and sodden dressings that these unfortunates wear.

In countries in which the disease is common, there are distinct variations, depending on the rapidity of extension, the varying tendency to form scar tissue, as well as the part involved. The disease is more destructive on mucous than on cutaneous surfaces, and spreads more rapidly when there is a certain amount of moisture present. When situated on the external parts of the thighs, the abdomen, or the neck, or in other places that have a relatively dry surface, the lesions remain localized, with no tendency to extension.

The lymphatic glands are not enlarged nor does suppuration take place ("a diagnostic point"). Daniels 15 writes: "There must, however, be some obstruction of the lymphatics, as a chronic edema, spurious elephantiasis of the vulva, penis, or scrotum is common without any evidence of filarial elephantiasis." The scrotum, penis and vulva under the foregoing conditions become very large and pendulous at times and produce considerable discomfort to the patient in walking.

**Duration of the Disease.**—The disease shows marked chronicity, extending over a period of from five to fifteen years without marked improvement in the condition. It is not manifested by any marked constitutional symptoms; although some of the cases show different grades of anemia, the general health is little affected.

**Diagnosis.**—The disease must be differentiated from tuberculosis, syphilis, cancer and chancreoid. As a rule, this is not difficult; but at times it is very trying, and a diagnosis is settled only by resorting to various laboratory tests. The typical history, the long duration, finding the Donovan bodies in smears from the lesion and the typical pathology displayed by the disease clinch our diagnosis. The development is more slow than that due to tertiary syphilis and more rapid than that of tuberculosis. The resemblance to tertiary syphilis is often very close, and, as very frequently happens, the disease is complicated by syphilis. A routine blood Wassermann test should be made on all cases.

Sometimes, the lesion very closely resembles carcinoma, especially when situated on the glans penis, as here the granulations seem to be more exuberant.
It is easily differentiated from chancroid by the sclerosing, everted rolled-out edges, in contrast to the undermined edge of chancroid, with negative inguinal glands.

Any patient presenting a chronic, sclerosing, serpiginous ulceration of a granulomatous type, on or near the external genitals, should be thoroughly examined for evidence of granuloma inguinale.

**TREATMENT**

Since the first reported case, granuloma inguinale has been treated locally by various methods, such as salves, lotions, curement, cautery, surgical excision, roentgen ray, and internally by the iodids, mercury, arsphenamin and antimony.

Salves and lotions are only mentioned to condemn them (with the possible exception of tartar emetic incorporated in an ointment to be used externally), as their action only increases the discomfort of the patient. Curetting the lesion very thoroughly until all the diseased tissue has been removed has brought about a cure in some cases. From the location of the organisms in the tissue, it seems highly improbable that curetting away all of the granulation tissue will secure a cure of the disease. After all granulation tissue has been removed, one comes to a hard shiny surface, which is the beginning of the sclerosing part of the lesion beneath which there are large numbers of organisms that cannot be reached with the curet. One can readily see why a recurrence takes place through failure to get rid of all the organisms. The same thing holds true for the use of the cautery, but more successful results have followed the use of the actual cautery. It may be used in some cases, but the results, as a rule, are very disappointing.

Surgical removal has been used with some degree of success, as quite a number of cases have been reported cured by this procedure. In India, the results have been very encouraging in these cases of surgical removal. If surgical excision is decided on, it should be carried out thoroughly and the lesion should be dealt with as if it were malignant. All the diseased tissue should be removed along the lines of débridement, and every effort should be made to prevent contamination of the wound. The cautery knife should be very efficacious in this procedure. In selecting cases for surgical excision, the lesions should be located in accessible parts where wide excision can be made; otherwise, the results will not be encouraging. I believe the surgical treatment of granuloma inguinale should be limited to those cases that occur in old people, especially those suffering from kidney lesions, as in these cases tartar emetic may aggravate the kidney lesion and produce serious results.
The use of the roentgen ray locally has proved satisfactory in some hands. De Souza-Araujo, quoted by Low and Newham, reported a cure by roentgen-ray treatment in 1915, in Brazil, and drew attention to the pioneer work of Macleod and Sequiera in this connection. In one of my first cases, the patient received nine roentgen-ray treatments without any noticeable improvement of the condition.

The internal administrations of the iodids, mercury and its salts, and arsphenamin, seems to have no beneficial effects on the course of the disease, except when it is complicated by syphilis. If syphilis is present as shown by a positive Wassermann reaction, the patient should receive active antisyphilitic treatment, and, in the rest period of the treatment, should receive tartar emetic intravenously; that is, tartar emetic should be alternated with the treatment for syphilis. Lynch of Charleston, S. C., suggested this method, which is a most excellent one.

Antimony was first used in tropical medicine by Mensil and Nicalle for trypanosomiasis, in 1906. Pliumer and Thompson followed this by employing the potassium and sodium tartrate of antimony in rats infected with such parasites. Subcutaneous injections cleared the parasites from the blood quickly. Sir Patrick Manson tried similar treatments on human patients in 1907, but the local reaction was so severe that he had to abandon the treatment. About this time, Broden and Rodhain, and independently of them, Lebouf, tried intravenous injections of tartar emetic in natives of West Africa suffering with sleeping sickness, without bad effects, and with rapid improvement. Still later, Kerandel became infected and treated himself with completely satisfactory results. Stimulated by these results, different authors have employed it intravenously for this condition, and for American leishmaniasis, Mediterranean and Indian kala-azar, and oriental sore.

To Argão and Vianna of Brazil, in 1913, we are greatly indebted for its use intravenously in the treatment of granuloma inguinale. And since then, its use has become universal in the treatment of this disease.

In the use of tartar emetic intravenously, great care should be exercised to prevent the drug being infiltrated in the subcutaneous tissue around the vein, as such infiltration is exceedingly painful and in large amounts may cause troublesome sloughing of the tissue similar to that which results from arsphenamin when it infiltrates around the vein. In old people suffering from debility and those having kidney lesions, great care and judgment should be used, as fatalities

17. Quoted by Law and Newham, Footnote 16.
have resulted from its use in such cases. In this type of patient, surgical removal combined with very weak solutions of tartar emetic should be used. If tartar emetic is used, the urine should be watched very closely.

Tartar emetic seems to be used universally in a 1 per cent. solution, and the dosage varies in different hands, some using as much as 20 c.c. of the solution at a time.

In preparing the solution, dissolving the tartar emetic in distilled water has been advised, then passing it through a Berkefeld filter until, on culture, it is negative. Five-tenths cubic centimeter of hydrochloric acid is added to prevent precipitation. We have not followed this method in the preparation of our solution, but use a much simpler method, which has given us gratifying results in our cases. The method that we use is as follows: To 100 c.c. of distilled water, 1 gm. of tartar emetic is added, the drug having first been finely powdered to facilitate its going into solution; then the solution is thoroughly boiled, after which it is ready for use. A solution fixed by the foregoing method has remained perfectly clear, without the slightest precipitation, for a month. The foregoing method does not seem to affect the drug in any way as to its efficacy in curing the disease or to its producing any harmful results. The method is very simple in its application, saves time and does away with apparatus; and the curative value of the solution is not destroyed.

We have used the method of administration described by Campbell, a most excellent one. We usually begin with 2 c.c. of the 1 per cent. solution diluted with 8 c.c. of sterile distilled water. The injections are given every other day, 1 c.c. more of the tartar emetic solution and 1 c.c. less of the diluent being used at each treatment, until the full 1 per cent. solution is used. We have not used more than 12 c.c. of the solution, and, at times, the patients have shown some slight reaction, such as a brackish taste, dizziness, nausea, and pains in the bones. In a personal communication, Dr. Reed, who has given the solution in a large number of cases, said that some of his patients have complained of headache, vertigo, nausea and vomiting, pains and diarrhea. We have used the foregoing plan of treatment in two cases, with complete cure of the disease and marked improvement in the general condition.

Usually, after the first two or three injections, the secretions diminish rapidly, and by the fifth injection, they have entirely ceased. Then rapid healing takes place. First, there is the drying up of the discharges; then the lesion takes on a healthy look, and epidermization rapidly takes place from the edge of the lesion, also from the islands of epithelium (papillary buds) scattered about the base. In a few weeks, from four to six, the lesion completely heals, leaving a whitish scar.
which is very thick and whose underlying connective tissue is very hard and irregular. The epithelium is rather soft in texture.

After all of the lesions have entirely healed, the patient should receive weekly injections for from two to three months; then injections twice a month for at least four months. The patient should be kept under close observation for at least a year, as relapses may occur in some of the cases. As soon as the lesion is completely healed over, patients think they are well, and will not continue treatment until they have a return of the disease. This happened in Cases 1 and 2. After complete healing, the patients did not return to the clinic for two months, at which time both had recurrence. If the foregoing plan of treatment can be carried out and the patient gives full cooperation, relapses will become a negligible quantity.

The treatment of the complications, such as stricture, rectovaginal fistulas, and elephantiasis of the external genitals, should not be attempted until at least a year after all lesions have completely healed.

The first case that came under my observation was the first reported case in which Donovan bodies were demonstrated, in Louisiana. This case has been reported by Drs. Reed and Wolf.* I first tried surgical excision of the lesion in this case, with complete failure. The lesion was on the penis. I only mention this case to show the fallacy of surgical removal in cases in which you cannot make wide excisions.

REPORT OF CASES

Case 1.—E. R., a negro, aged 30, visited the clinic, March 10, 1921, being referred by Dr. R. E. Stone.

There were sores on the genitals, abdomen and leg. For the last five years, the patient has suffered from a granulomatous lesion on the genitals. For the last year, he had had ulceration at the site of the suprapubic wound and a skin graft from the thigh. The ulceration entered the urethra and anus, and involved the inguinal region and the region between scrotum and thigh. There was elephantiasis of the scrotum. The Wassermann reaction was negative. Smears were positive for Donovan bodies. A section removed was pathologically typical of granuloma inguinale.

Granuloma inguinale was diagnosed.

The patient received nineteen injections of tartar emetic with complete healing of the ulcers. He remained away for two months, and returned with a recurrence. He has received twenty-five additional injections, with very slight healing.

Case 2.—J. B., a negro, aged 30, visited the clinic, Aug. 16, 1921, complaining of a sore on the penis. One year before, a small papule had appeared at the base of the penis, gradually increasing in size and forming a serpiginous outlined granulomatous ulceration. At present, it was creeping upward into both inguinal regions and backward to the perineum. There was a secondary papule on the scrotum. The penis showed typical elephantiasis. The Wassermann reaction was negative. A smear was positive for Donovan bodies. The section removed was pathologically typical of granuloma inguinale. After eleven
injections of 1 per cent, tartar emetic, the lesions completely healed. Against advice, the patient remained away from the clinic for two months. He had a recurrence which, after nine injections of 1 per cent, tartar emetic, completely healed.

Case 3.—E. P., a negress, aged 25, who visited the clinic, Jan. 7, 1922, three months previously had had a small papule appear on the right labium minorum, gradually involving the entire external genitals. The lesion was a sclerosing, serpiginous outlined granulomatous ulceration involving the labia minora, labia majora, posterior wall of the vagina and partly encircling the anus, into which it extended. The involvement of the rectovaginal septum had almost produced rectovaginal fistulas. The Wassermann reaction was negative. Smears were positive for Donovan bodies.

The patient received four injections of 1 per cent. tartar emetic solution, with marked improvement, after which she deserted. From the involvement of the rectovaginal septum, and without proper treatment, this patient will probably develop rectovaginal fistulas.

Case 4.—N. S., a negress, aged 42, who visited the clinic, Jan. 17, 1922, being referred from the gynecologic clinic, five months before began to have severe itching of the vulva, with a vaginal discharge. There was a pronounced granulomatous lesion, involving the labia majora, which were hard and eroded, the labia minora, the fourchette, the posterior wall of the vagina and the clitoris, which shows slight elephantiasis. The introitus of the vagina was practically closed, and the lesion was rather atypical, resembling carcinoma. There was a lesion on the inner side of the left thigh, which had very exuberant granulations. The whole lesion presented a sclerosed, serpiginous ulceration, with exuberant granulation and numerous areas, white in color, which were most probably cornified epithelium. There was a severe vaginal discharge. The Wassermann reaction was negative. Smears showed Donovan bodies. A section removed was pathologically typical of granuloma inguinale.

The patient received twenty injections, with marked improvement. Unfortunately she also deserted.18

CONCLUSIONS

1. The disease is a definite clinical entity. It occurs in the United States, being endemic in some states, especially in the extreme Southern States. It is endemic in Louisiana.

2. The cause is probably the organism described by Donovan, possibly a protozoa.

3. The disease presents definite clinical symptoms which extend over long periods. The symptoms vary somewhat in different persons, for the most part, showing a typical granuloma with a serosanguineous discharge.

4. The pathologic picture is that of a sclerosing granuloma.

5. Tartar emetic administered intravenously seems to be specific, although I think that when the lesions are accessible to surgical excision, this procedure combined with tartar emetic, will considerably shorten the healing time.

18. The case histories are greatly abbreviated on account of lack of space.
6. Every patient presenting a granulomatous lesion of the external genitals with negative inguinal glands should be searched for evidence of granuloma inguinale.

7. The cases should be watched for at least a year after treatment has brought about complete healing, as this will cut down the percentage of recurrences.

1929 Napoleon Avenue.
A CASE OF DERMATOMYOSITIS

HENRY JOACHIM, M.D.

BROOKLYN

History.—P. E. C., aged 37, a fireman, married, was admitted to Long Island College Hospital, Dec. 28, 1921; discharged, Jan. 4, 1922. His chief complaints were: (1) swelling of the head, wrists and legs; (2) stiffness of muscles throughout the body; (3) the presence of lumps at the back of the head, and (4) "gastritis."

His mother died of cancer of the breast, at the age of 56. The patient had had pneumonia at the age of 4. The past history was otherwise negative.

In July, 1921, the patient noticed painless swelling of the head and neck, which necessitated an increase in the size of his collar from 15 to 15⅞. He also noticed that he was rapidly gaining fat over his chest and abdomen. The swelling of the face did not cause any puffiness of the eyelids but was enough to change his facial expression by obliterating the folds of the forehead. There was distinct pitting over the forehead and neck, but no redness, tenderness or itching. This continued for seven weeks. In the latter part of July, the patient noticed a dull ache and heavy sensation of both upper extremities from the elbows to the shoulders. He described it as a "sensation a person would have who had been carrying some heavy weight at his side and then tried to raise and stretch his arms up over his head." It necessitated a distinct effort to overcome this sensation of soreness which was intensified when the patient raised his arms over his head as in fastening his collar at the back. This persisted for ten weeks. Accompanying this soreness, the patient noticed swelling of the forearm, wrists and hands. There was definite pitting. He was unable to clench his fist. One week later, both legs became swollen, more particularly the left. The feet were not involved, but the swelling extended up to the inner side of the left groin. It was less in the morning, increasing toward evening when the patient was up and about. About this time, there was a tightness and stiffness of the muscles all over the body.

About the beginning of October, the patient began to note definite discrete lumps behind his ears and the back of the head. The first lump appeared about the middle of September, hard, red, itchy and painless. It was about the size of an egg and disappeared entirely the next morning. The next night a similar lump, somewhat smaller in size, appeared behind the left ear, but was gone the next morning. These recurred for a period of about three weeks. About the same time, there was extreme swelling of the skin of the penis, which varied in intensity, usually being worse at night or after prolonged standing. About the middle of September, the lips became swollen. This condition was more marked after his morning meal, and lasted about two weeks. He experienced some difficulty in opening the jaws widely as the face had a sensation of tightening. At about this time, there was an eruption of "small pimples" at the edge and tip of the tongue and at the inner surface of the cheeks, and his mouth felt sore. Borax was applied, and the mouth and tongue improved, in ten days.

At about this time, the patient complained of palpitation, more marked at night. He also noticed that he tired very easily on exertion. In October, he began to have epigastric distress after eating. He was placed on a vegetable diet, and in about three months lost 25 pounds (11.3 kg.) in weight. He was then referred to the hospital for study, in December.
Fig. 1.—Atrophy, swelling of fibers and vacuolization.

Fig. 2.—Atrophy, swelling of fibers and vacuolization.
Physical Examination.—The patient was about 5 feet and 11 inches (1.8 meters) tall, and weighed 160 pounds (72.7 kg.). His hair was thin and dry, his cheeks were sunken, and the skin of the face was dry and adherent. The skin over the sternum was brown, scaly, dry and adherent; the skin about the arms, forearms and hands smooth, dry, shiny, tense and unable to be raised from the underlying structures. The skin of the left side of the abdomen presented the same condition. The left thigh and leg, in addition to the skin changes described, were markedly edematous. The patient experienced some difficulty in making a fist on account of tightness of the skin of the hands. The ears were slightly cyanotic. Examination of the heart revealed the apex beat 10 cm. from the midsternal line in the fifth interspace; there was a systolic thrill at the apex, not transmitted. The pulse rate was 124. Fine capillaries were noted at the costal margin. The lungs were negative; the liver and spleen not palpable. The reflex of the right upper abdominal quadrant was absent; the knee jerks were exaggerated. The temperature ranged from 98.2 to 100.4 F. (rectal).

Diagnosis.—From the history and physical examination, the following possibilities were considered: (1) scleroderma; (2) myxedema; (3) deficiency edema from beriberi or scurvy; (4) trichinosis; (5) dermatomyositis, and (6) trophoneurosis (angioneurosis).

Laboratory Procedures.—The basal metabolism was reported as plus 25. With this finding and the tachycardia, we felt we could exclude myxedema. A sugar tolerance test was not made.

Complete blood count revealed: hemoglobin, 70 per cent.; red blood cells, 4,860,000; white blood cells, 10,800; polymorphonuclears, 72 per cent.; lymphocytes, 28 per cent. In the absence of an eosinophilia, it seemed that trichinosis and anaphylaxis could be excluded.

The feces were negative for parasites and ova, and there was no blood present. The Wassermann reaction was negative. Thirty-eight food protein skin tests were made with the ordinary food proteins, but all were negative.

Test of the blood chemistry revealed: urea nitrogen, 27.2; urea, 58.4, uric acid, 3.33, and creatinin 1.58 mg. per hundred cubic centimeters of blood; blood sugar, 100. The blood gave evidence of some nitrogenous retention. Urinalysis revealed; urine, neutral, negative; specific gravity, 1.028. A renal meal gave a specific gravity varying from 1.022 to 1.032. The blood pressure was 125 systolic, 65 diastolic.

Fluid intake and fluid output were about equal.

The patient was referred to Dr. Potter, December 31, who thought that the diagnosis of dermatomyositis was the most probable one. We advised excision of a piece of muscle for histologic and bacteriologic study. Dr. Oliver cultured a specimen of excised muscle and reported no growth.

Histologic Findings (Drs. Murray and Coulter).—The muscle fibers show profound degenerative changes of two kinds. In the first, the fibers are greatly swollen, to four or five times the normal diameter. In some areas the fibrils are separated from one another but retain their striation; occasional large vacuoles are seen within the muscle sheath. In other areas the striation is wanting and the fibers appear uniformly hyaline and deep-staining with eosin. These changes are also seen combined in single fibers. The sarcolemma nuclei are normal, or are small and pyknotic. There is no wandering cell infiltration in muscle bundles so affected.

In the second type of degeneration, which represents apparently a later stage of the first, and for the most part involves uniformly separate muscle bundles,
Fig. 3.—Hypertrophy and atrophy of muscle fibers, with marked variations in size.

Fig. 4.—Hydropic degeneration of muscle fibers.
Fig. 5.—Diffuse round-cell infiltration and congested vessels.

Fig. 6.—Small round-cell infiltration, especially about the veins.
the fibers are much reduced in size or have disappeared; they are hyaline and contain occasional vacuoles. The spaces between the fibers are filled with edema fluid. The sarcolemma nuclei are large and increased in number. Some muscle fibers contain from one to six or more large vesicular nuclei and appear to be in process of regeneration.

The areolar connective tissue between the muscle bundles is edematous and contains many wandering cells; some scattered, others grouped about and within the walls of the smaller blood vessels or in isolated clumps. Approximately 50 per cent. of the cells are polymorphonuclears; the rest are plasma cells and small mononuclears. Some of the wandering cell nuclei stain faintly, and the cell appears necrotic. Inflammatory cells are seen also in groups at the periphery and scattered diffusely within the bundles of atrophic muscle fibers. Numerous small hemorrhages are seen within the intermuscular connective tissue. There is no increase in fibrous connective tissue and developing fibroblasts are not seen.

The subcutaneous areolar and fatty tissue is edematous and contains occasional small hemorrhages. There is a perivascular infiltration of plasma cells and lymphocytes about the smaller blood vessels.

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THE PATHOGENESIS OF MERCURIAL STOMATITIS
WITH A REVIEW OF THE LITERATURE ON MERCURY POISONING

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INTRODUCTION

In undertaking a study of the pathology of mercurial stomatitis, I was surprised to find that most of the theories advanced to explain those changes embraced secondary alterations or were far too narrow in their scope. In order to endeavor to explain the mouth lesions, it is necessary to comprehend the changes produced in other parts of the anatomy and then to attempt to piece all the findings together, in an effort to show that the lesions in the mouth depend for their origin as much on the general changes as on the local findings. It would be well, then, to place before the reader the most important observations made by investigators of mercurial poisoning in the past.

THEORIES

The theories which relate to the pathogenesis of mercurial poisoning may be set down as follows:
1. There is direct irritation with resulting inflammation. In conjunction with this would appear the hypothesis (or fact) that saliva and bile secrete mercury; and because of that fact an endeavor is made to explain why the crests of the intestinal folds are most affected. This view is now held to be obsolete by the later writers on mercury poisoning, and is considered only an auxiliary factor in those cases in which the mercury is administered by mouth.¹

2. The excretion of the mercury through the mucous membrane causes a poisoning and necrosis of the tissues (Schmeideberg, Fränkel, Falkenberg, Marchand, Kraus, Kokert, Paulson and Priebatsch).²

3. There is a disturbed secretion—the mercury is precipitated before it is excreted and therefore it cannot be eliminated (Meyer and Steinfeld).³

4. Cramps in the muscular tunic force the dilated veins against the intestinal content, rupturing them, producing submucous hemorrhages, with resulting slough; hence, the intestinal ulcerations. This theory is supported by Grawitz.⁴

5. Fall of blood pressure acts as the predominant factor, or at least as a supporting causative factor (Kunkel, Grawitz, Eckmann).⁵

6. As a result of coagulation in the capillaries, a nutritional disturbance of local nature presents (Kaufmann, Kunkel).⁶

7. A specific bacterium, present normally in the mouth, is stimulated or allowed to multiply without check by the administration of the mercury (Rona, Loblowitz).⁷

8. Mercuric sulphid is formed by the hydrogen sulphid thrown off by the bacteria in the mouth and colon, and by the mercury in the blood which deposits in the capillary endothelial cells and causes disturbance of nutrition and resulting necrosis and slough (Almkvist).⁸

9. Mercury is more active in the absence of salts and albumins; hence, the localization of the lesions (Sabattani).⁹


⁶ Almkvist: Footnote 1, second reference.

⁷ Sabattani: Footnote 1, first reference.
Clinical Appearance in Mercurial Poisoning

Characteristic Symptoms

There are certain characteristic symptoms of mercury poisoning which are not dependent entirely on the amount taken, but vary according to the patient, influenced, of course, somewhat by the quantity of drug administered.

Karvonen classified these symptoms as follows.8

Severe Cases: There is a fall of blood pressure and heart activity; a small, often frequent, pulse; cool, sweaty, cyanotic skin; dyspnea; often psychic alterations—usually unrest and sleeplessness; often, also, later, deep apathy and comatose condition, paresthesias, paralysis and subnormal temperature.

Less Severe Cases: Gingival paleness, fatigue, lassitude, oliguria with cylindruria, and albuminuria.

Mild Cases: Simultaneously with or earlier than polyuria, the intestinal lesions attract attention. There are anorexia and cutaneous eruptions. There may be sudden death from cardiac failure. When the foregoing symptoms come on suddenly, life is in danger. Usually death occurs after progressive prostration.

Subacute Poisoning.—There occur anorexia, emaciation, albuminuria, cylindruria, diarrhea and cachexia. In men, stomatitis is the commonest symptom and intestinal destruction; more rarely, there are kidney lesions.

Chronic Poisoning.—In these cases, we find cachexia, anorexia, parenchymatous degeneration of organs: fatty heart, liver and kidney; changes in bone marrow; even interstitial changes in organs. In men, stomatitis, dysentery, kidney lesions, cachexia and nerve lesions—as tremor, irritability, rarely paralysis or psychic destruction—are the rule. Variations occur which make for difficulty in diagnosis.

In the final stages there occur loss of heart muscle force, inanition, uremia and primary alterations of the central nervous system.

Blood Changes

J. Von Mering9 (1880) finds that there soon occur a high grade anemia, emaciation and loss of appetite with muscle weakness.

Bockhart10 (1885) thought the whole trouble was that the insufficiently oxidized mercury in the tissues increased the reduction processes

already present. This injures and weakens the structures and gives favorable conditions to the micro-organisms.

Edward Kaufmann 11 (1888) reports that the red blood cells diminish and the white blood cells increase in mercury poisoning. The red cells diminish with each dose as if there is a cumulative action. If the dose is increased, the paucity is increased. Shortly after the injection, the red cells are pale and granulated. Peptonates and albuminates of mercury are soluble in serum and exercise a destructive action on hemoglobin. Kaufmann refers to Dolen and Butte, who assert that the oxygen absorbing power of the blood is not altered by mercury; that there is a fall of the red cell count from 4,500,000 to 2,700,000, and varying; also, that the urinary substances in the blood increase five or six times the normal amount. Kaufmann and Heilborn find the gallbladder tightly filled, with an increase in bile production.

Kunkel 12 (1889) says that mercury poisoning is a blood poisoning; it leads to changes, dissolution and destruction of blood cells. Injections into healthy animals of the blood of mercurialized animals will cause similar changes. He used varying percentages of mercury compounds to disprove any laking action, and made blood counts whose results coincide with those which Koll made eight years later.

Koll 13 (1897) found a constant depletion of red cells following mercury injections. Typical examples of his results are as follows:

First day, 12 m., 6,084,000; second day, 1:30 p. m., 5,700,000; second day, 6:00 p. m., 5,232,000; second day, 12 m., 5,156,000; second day, 6:00 p. m., 4,800,000; third day, 5:00 p. m., 3,984,000.

First day, 11 a. m., 5,592,000; first day, 1:00 p. m., 6,180,000; first day, 5:00 p. m., 5,196,000; second day, 11:00 a. m., 4,200,000; third day, 7:00 p. m., 4,080,000; fourth day, 10:00 a. m., 3,644,000.

Karvonen 8 (1898) states that the destruction of blood cells in the vessels causes hemoglobinuria, and refers to Kobert to the effect that mercury with hemoglobin forms a stable compound (as stable as carbon monoxid hemoglobin).

Elbe 14 (1905) claims that the mercury circulates in the lymph and blood as albuminate and acts as an irritant on the nerves of the renal and iliocolic areas, causing a narrowing of the “second order,” with a resulting backflow in the vessels of the colon and intestine.

It is also of interest, because of its general bearing on the subject, that Almquist (1903-1919), in referring to the literature, ascertained that mercury has been found in the blood and bile. Von Overbeck and Zeller found mercury in the blood and bile of animals; Buchner, in the blood of persons; Pavy, in the blood and liver; Welander, much in the blood and also in pus and ascitic fluid, but most in blood. Ludwig, Zilner and Kullman showed that blood contained mercury in mercury poisoning. Almquist further asserts: "Chemical analysis has given no foundation to the conception that the mercury is localized in the solid tissues, but shows that in mercury poisoning, most of the mercury exists in the blood, lymph and tissue plasm. After thoroughly washing through an organ, approximately one third of the total quantity of mercury remains in the organ."

Another indication of the effect of mercury on the blood is its effect on the blood-forming organs. There is hyperemia of the marrow of the long bones (Heilborn, Raimond, König, Prevost). This fact is of importance in demonstrating the hyperactivity of the blood-forming tissue.

These reports indicate that apparently all who have investigated the subjects of blood and blood-forming tissue in mercury poisoning find some change, such as depletion of red cells, an increase in white cells, a content of mercury and hyperemia of bone marrow. No contrary observations were found in the literature.

What kind of compound the mercury makes with the blood, or at least what the action of the mercury is on the blood, is a problem for physiologic chemists. It is my impression that there is a constant and early action of mercury on the blood, probably a combination of the mercury with the hemoglobin. The hyperemia of the bone marrow is added proof of the destruction of blood with the resulting stimulation of the blood-forming organs.

THE SYMPATHETIC SYSTEM

Vascular Changes.—Heilborn reports a general vascular dilatation; the vena cava is much dilated; the liver and spleen are large and solid, and the lungs hyperemic (this last is not constant).

J. Von Mering (1880), in all cases, observed a fall of blood pressure. Experiments on frogs and dogs demonstrated a gradual fall of pulse rate. The two go down together. Neither administration of atropin nor section of both vagi alters this. Also a stimulation of the medulla oblongata, while it raised the pressure for a while, did not do

16. Heilborn, Max: Experimentelle Beiträge zur Wirkung subcutaner Sublimat Injectionen, Arch. f. exper. Path. und Pharmakol. 8:361, 1878.
so for long. This would indicate a lesion of the heart muscle and also of the vascular muscle or vascular nerves. The diarrhea, hyperemia of intestinal organs and injections of the cheeks are due to vascular changes.

Kanfmann 11 (1888) found a changed blood distribution in the whole abdominal cavity—a general vascular dilatation.

Kunkel 12 (1889) believed that a sulphur compound, together with intestinal contractions on dilated vessels, caused the lesions in the colon.

Marchand 17 (1891) described dilated vessels in mercury poisoning.

From Eduard Koll’s work, 13 in 1897, the following passage is taken: “It is conceivable that the primary alterations of the vessel walls under the influence of the mercury circulating in them play the mediate role. That certain changes, during mercury poisoning, occur in the vessels of other organs, has been earlier ascribed. Von Mering found hyperemia of the vessels of the diaphragm and heart, accompanied by marked hyperemia of the sharply looped vessels of isolated long medul-lated bones; in the region of the latter, he observed cloddy, reddish brown masses, which he considered as degenerated passing red cells. There is little probability that these changes are of primary nature. Much more likely they are the consequences of either a primary or secondary circulatory disturbance.”

Karvonen 8 (1898) found vascular filling an early effect in mercury poisoning—strong vascular dilatation.

Elbe 14 (1905) sees an irritant to the vasomotor nerves to the renal and ileocolic vessels, with narrowing of the arteries, which results in a necrosis of the kidney cortex and colon, presenting anemic infarcts in the former, hemorrhagic in the latter.

Weiler 15 (1913) explains a fall of blood pressure due to a weaken-ing of the heart or the vessels or both. According to him, Kolb found a rise of blood pressure on the third day in animals; Geisbock, a rise for six days, and then a fall, in human beings. Weiler felt that the fall of blood pressure alone was not sufficient to cause the localized lesions, and he furnished from the literature the further suggestions offered by Kolb: 18 injury of capillary endothelium by hypertension; and Grawitz: the tearing of the capillaries as a result of forceful contrac-tions of the intestinal folds on dilated vessels against the contents of the colon.

Almkvist 6 (1903-1919) observed that changes in the tongue resulted from extreme dilatation of the vessels, which may or may not occur before the “orchestra chair” ulceration, causing a swelling, with cupped

crypts for the teeth. The lip and cheek changes are similar to the
tongue changes. Then he asks what causes this vascular dilatation.
He proceeds to explain; it is present in the stomach and small intestine
as well as in the colon, and yet there is no mercuric sulphid precipitate
in the two former; the dog shows no deposit of the sulphid precipitate,
yet it demonstrates vascular dilatation and hemorrhages. Thus, he
concludes that vascular dilatation is due to the effect of mercury on
the vasomotor nerves.

To summarize the observations on vascular changes, it is evident
that the foregoing list of authorities report as facts more or less constant
vascular changes: a rise of blood pressure, first, a fall of blood pressure,
later, in some cases not much dilatation; in other cases marked dilatation
of all vessels; in still other cases a venous dilatation with arterial
constriction. Along with this are many suggestions implicating the
vasoneural element as the acting factor in producing these changes,
which is altogether probable when the physiology of the nerve control
of the blood vascular system is recalled.

Thus, the following passages from Starling 19 suggest that the same
picture which we observe in mercury poisoning might possibly be pro-
duced by a combination of sympathetic stimulation and gradual
asphyxiation.

With both vagi sectioned, "on leaving off the respiration, the blood
pressure may remain at the same height for some seconds, the only
change noticed being the absence of respiratory oscillations; sooner or
later the blood pressure rapidly rises, and in another ten seconds, may
reach a height twice as great as it was previously. The heart beats
a little more forcibly in consequence of the increased cardiac tension,
but its frequency is unaltered. The blood pressure remains at this
height for about a minute and then gradually falls, the heart beat
becoming smaller and smaller, until the pressure has sunk to a point
very little above the abscissa line (level of no pressure). This fall
is due to failure of the heart. The heart, badly supplied with oxygen,
cannot overcome the resistance presented by the contracted arterioles
and hence gets overfilled and gradually loses the power of expelling
any of its contents.

"If partial oxygen lack or abnormally increased tension of carbon
dioxid be continued for some time, a state of narcosis or paralysis
ensues which affects not only the higher centers, but also those of the
medulla, so that death may ensue without convulsions or excessive rise
of blood pressure. . . . . Oxygen lack may be regarded as synonymous
with the production of lactic acid."  

1915.
Karvonen^ reports that Köster, Senger, Lepine, Feitelberg and H. Meyer have all found lactic acid in large quantities in the blood in cases of mercury poisoning.

With the vagi intact, to quote Starling^ again, "at the point of the tracing corresponding to the rapid rise in the pressure, there is in this case only a slight rise in blood pressure, but the heart begins to beat very slowly. At each beat it necessarily sends out a greater volume of blood than when it is beating more frequently, and hence the oscillations on the blood pressure curve become very large. This slow beat is due to the action of the vagus center and is at once abolished by section of the two vagi."

These references to asphyxiation present in themselves almost sufficient explanation for all the variations of the vascular changes in all the stages and moderations of acute and chronic mercury poisoning in the presence or absence of vagus action. The depletion of red cells, the reduction of hemoglobin in the blood by its combination with mercury, and the presence in the blood of increased lactic acid are certainly sufficient to account for gradual asphyxiation.

When there is added to asphyxiation the probable excitation of the sympathetic system, still further variations of pulse rate, blood pressure and vascular dilatation may be expected.

In many ways, the action of nicotin on the sympathetic ganglions corresponds to the changes we observe in mercury poisoning. On this point, we may also quote Starling: "If the drug be injected, there is an enormous rise of blood pressure, owing to the universal vasoconstriction that is produced. The stimulation gives place to a condition of paralysis; the blood pressure falls below normal, owing to the cutting off of the peripheral vascular nerves from the vasomotor center." This is essentially the same vascular picture we get in mercury poisoning and it suggests that mercury acts similarly on the sympathetic system.

Salivation.—There are other features in mercury poisoning, aside from vascular alterations, which would suggest sympathetic stimulation, such as salivation and glycosuria.

Kaufmann^ (1888) finds that salivation may or may not be present. Von Mering's dictum, "Stomatitis occurs without ptyalism, and ptyalism occurs without inflammation of the mouth." (Stomatitis ohne Ptyalismus und Ptyalismus ohne Mundentzündung vorkommt) would indicate that necrosis is independent of ptyalism. The salivation does

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not occur to excrete the mercury since it occurs so shortly after the introduction of the mercury—five or six minutes in some cases.

Oppenheim 21 (1901) reports the presence of mercury in the saliva. The men, he states, who agree with his results are Lehrmann, Kletzinsky, Kussmaul, Heller, Mosler, Salkowsky, Herrman and Wiess; 22 those who negate his findings, Wright, Rostock, Devergie, Warneke, Schneider, Vajda, and Paschkis.

Almkvist 23 refers to Kussmaul to the effect that in a chronic mercury stomatitis there is a direct effect on the nerves of the salivary glands and of the colon.

In connection with the nerves to the salivary glands, Starling 19 has this to say: "Thus if the chorda tympani nerve going to the submaxillary gland be cut, no change is evident in the blood vessels of the gland. But if its peripheral end be stimulated, there is instantly free secretion of saliva from the gland, and all the blood vessels are largely dilated. In consequence of this dilatation, the blood rushes through the capillaries so quickly that it has no time to lose much of its oxygen; the blood flowing from the vein is therefore bright arterial in color, and is increased to six or eight times the previous amount. If atropin be injected into the animal, the action of the chorda tympani on the blood vessels is unaffected although the secretion on stimulation is abolished. . . . Other vasodilators are the small petrosal nerve to the parotid gland and the lingual nerve to the blood vessels of the tongue."

Here, too, the suggestion is that mercury acts on the nerves. In every case, we have vasodilatation of the vessels of the salivary glands, but there may be some action which inhibits the secretion in some cases longer than in others. Going back to the ancient history of mercury, we find that salivation was considered the therapeutic dose of mercury, and physicians continued its administration until salivation resulted. So we know that salivation will result in every case if a sufficient amount of the drug is administered. Its doubtful content of mercury and its sudden appearance in some cases suggest a disturbance of the autonomic element.

Glycosuria.—On this subject we can do no better than review briefly the classic study of Karvonon 8 (1898), from whom the following summary of the related literature was obtained.

Glycosuria is a constant finding in mercury poisoning (Saikowsky, Rosenheim, Schröder, Graf); is never present (Balogh, Prevost, Jolles); seldom present (Lazarrevi); is irregularly present (Heilborn, Rosenbach). In view of this, Karvonen concludes: (a) in severe cases, it always occurs; (b) in milder cases, it may not be present; (c) in light cases, it is never present.

Graf found sugar, albumin, and quantity changes in the urine to correlate fairly accurately. The excretion of sugar begins a few hours after poisoning, reaches a maximum on the second day, and diminishes to minimal in from four or five to seven days. Schröder reports a maximum in twelve to sixteen hours after poisoning, the maximum being not more than 1 per cent.

Lazarrevic investigated hemorrhage in the floor of the fourth ventricle as the cause of this; such was never found, however. Koch’s findings speak for a liver diabetes. Glycogen disappears from the liver twenty-four hours after acute poisoning. In a light case, he found glycogen in the liver after three days. The duration of the glycosuria appears to speak for the emptying of the liver as the cause. However, there is no hyperglycemia during the glycosuria (Graf).

It remains to compare mercury glycosuria to phlorizin glycosuria. In every severe poisoning, there is a change in the glomeruli and tubules of the kidneys. Since, however, the sugar content of the blood is not decreased, but insignificantly increased (Karvonen), no dependence can be placed on the liver or nervous system as the source of mercury diabetes.

Although it appears to him, from the recorded observations, that there is no relation of the glycosuria to the nervous system, yet the facts may be interpreted differently. The fact that the liver is completely emptied in severe cases, partially emptied in milder cases and not affected in very mild cases suggests that we have another instance of the action of mercury on the sympathetic system.

It is my impression that the vascular changes, the salivation and the glycosuria are evidences of sympathetic stimulation.

The amount of vascular change depends not so much on the amount of mercury administered as on the individual patient. The vasoconstrictors, due to overexcitation followed by partial paralysis of nerve centers, cause a rise, then a fall, of blood pressure. The tongue and mouth regions are markedly hyperemic because of stimulation of vasodilator nerves. In addition the lack of oxygen creates a tendency toward lack of tonus of vascular musculature, and hence enables any variation or stage of vascular dilatation and weakness to arise.

The salivation, its independence of the ulceration, its questionable function of mercury excretion, its variation in quantity, all point to
the involvement of the sympathetic system, with its variable excitability in different persons.

It is well known that a very severe shock or excitement will cause the liver to lose its glycogen content as a result of stimulation of those nerve centers controlling the liver function. For these reasons, I believe that the entire sympathetic system is activated in mercury poisoning according to the strength of the arousing stimulus and the sensitiveness of the patient.

**MOUTH LESIONS**

*Description of Gross Lesions.*—Von Mering and Friedenberg give the following clear, terse, description of the gross lesions: First, there is an appearance of inflammation of the mouth. The mucous membrane of the mouth as well as the gums is swollen. The tongue, swollen, flabby and indented, shows the impress of the teeth; the gums are tender, softened and reddened, and are reeded from the roots of the loosened teeth. Edematous pillars of the fauces cause dysphagia, dribbling of viscid saliva and fetid breath. The inferior maxillary and cervical regions are sensitive to the touch. The teeth are grayish black and tend to caries. On the cheek and the edges of the tongue, there appear grayish-yellow ulcers, marked at the back of the teeth. Ulcers which are irregular, broad rather than deep, show the character of the necrosis.

*Causes.*—Bockhard (1885) has found a certain order in the appearance of the lesions in which he considered those lesions of the gum and cheek as primary. His table of occurrence is herewith given (Table 1).

<table>
<thead>
<tr>
<th>Patients</th>
<th>Occurrence of Cheek Lesion</th>
<th>Occurrence of Gum Lesion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Per Cent.</td>
</tr>
<tr>
<td>Men</td>
<td>200</td>
<td>32.5</td>
</tr>
<tr>
<td>Women</td>
<td>100</td>
<td>44.0</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>30.8</td>
</tr>
</tbody>
</table>

Bockhard believes that the saliva contains mercury and its constant flow kills the bacteria. The act of mastication robs certain parts of the gum of epithelium.

Ricord and Bockhard (1885) attributed to the wisdom tooth and its difficult eruption much of the ease with which that portion of the gum is involved in mercury ulceration; as did also Fournier.

Fournier 25 (1891) classifies the causes of the mercury stomatitis as follows:

1. Of the various forms of mercury administration, rubs of mercury salve cause most stomatitis.

2. Auxiliary causes: (a) idiosyncrasy; (b) in the mouth itself, the presence of (a) infection and carries; (b) teeth; in old toothless patients, little stomatitis occurs.

3. Predisposing causes: (a) sex; more stomatitis occurs in females than in males; (b) application of mercury to the genitals or to an open lesion on the skin is inductive to stomatitis.

Lanz 26 (1897) placed no stress on the chemical action of mercury, but he believed that it destroyed nutrition and that the tongue changes were due to the rubbing of the teeth on the tongue. It seems that the teeth make depressions in the tongue, where the ulcers form and from which they spread.

Sklarek 27 (1907) agreed with Bockhard and Lanz that the mechanical injuries of mastication and tongue friction on the teeth are a prime factor in the origin of ulceration following definite tissue change or lack of nutrition (Lanz). The second factor is irritation, in which the action of the mouth and teeth is important. Every stomatitis begins in the socket. An empty socket is not affected. Toothless children and the aged do not have stomatitis. Caries are a big aid and, through the thereby increased pressure on the mucous membrane, increase the local reaction to the stomatitis. The third factor is parasites.

Siebert 28 (1907) noticed also a certain diminished resistance of tissue, which exposes it more to the bacterial action. It is unknown whether there is a specific or mixed infection. Rona’s Miller fusiform bacillus answers, especially in the ulcerative forms. Rona found this in pure or almost pure culture in thirty-six cases. While the Miller bacillus is not the first cause, it plays a large rôle in the destructive processes.

Almkvist 29 (1903-1919) attributes to certain bacteria an important rôle under certain conditions. There must be present: (1) albumins broken down by bacteria, thus forming hydrogen sulphid; (2) blood containing mercury.

Mercury sulphid is formed and deposited in the capillary endothelial cells. Without these two conditions, no ulcerating stomatitis occurs.

A precipitate of questionable composition has long been known. M. Heilborn, in 1878, applied his attention to it. He observed that it was very resistant to ordinary tests and suggested mercuric sulphid. Ten years later, Kaufmann called attention to the same precipitate and attributed to it a large influence on the necrosis. The same year, 1888, Koeniger had found an increase in the black precipitate along lines corresponding to the vessels. The following year, 1889, Falkenberg describes a deposit of black granules in vessel walls and concluded, as Heilborn had previously, that it was probably mercuric sulphid. Marchand wrote a followup on one of Falkenberg’s cases and described accurately the necrotic changes and the black pigment precipitate. He believed that the disease of the mucous membrane in place and position is conditioned by the excretion of the mercury.

As for chemistry of the precipitate as claimed by Almkvist it is soluble in tincture of iodd, iodin and potassium iodd solution, and sodium sulphid solution containing sodium hydroxid; insoluble in potassium iodd solution and nitric acid. The precipitate (Almkvist says) always appears before the necrosis. Then, when the karyolysis and phagocytosis begin, the precipitate is carried off with the other débris, so that in late stages one may not see as much of the precipitate as in the early stages. Any localization of mercury poisoning is in a position where there occurs decomposition of albumins. There are certain places attacked primarily and other places secondarily. Unquestionably, the primary attack is in the gum. This is pointed out by most authors. Of all places, the lower gum is most susceptible. The more open the gum cavity, the greater the accumulation and the susceptibility to ulceration.

Leukocytes are present and the epidermis is swollen. Through this swollen tissue, the products are more easily absorbed. The bacteria cannot affect the living tissue; only dead albumin is affected. The hydrogen sulphid is taken up and mercury given off nearest the surface where the capillaries are the smallest. The union of the hydrogen sulphid and the mercury is then a primary step. The precipitation of mercury sulphid which is deposited in the capillary endothelial cells, is harmful from a physical and chemical point of view.

Other sulphids injected into the tissue will lie dormant like carbon, but mercuric sulphid causes inflammation and may even kill the cells. The second step then is the necrosis of the nuclei and cells. Leukocytic infiltration increases. This offers more surface for bacterial action. Bacteria could not attack the living epithelium, but the dead albumin is a wonderful culture medium.

The third step and final result is a mass of decaying debris, rich in putrefactive bacteria. This spreads laterally and deeply and usually develops quite a large ulcer or slough. One place of special importance is the alveolar socket, where the inflammation dissects down to the periosteum and even extends to the root of the tooth, raising it in its socket, loosening the tooth or even permitting it to fall out. After the process has once started, the mercury does not play such a large rôle: the bacteria do the work.

In some people with dirty mouths, we see changes similar to mercurial stomatitis, but ulceration is not so extensive and it heals more easily. The reason that it heals more easily is that the circulation is not involved and there is not the large mass of epithelium necrosis.

In the tongue, ulceration starts at the depressions. Early, only the periphery of the cup is involved; but Almkvist reasons that, if the tooth pressure causes it, then that part most pressed should ulcerate first; but the brim of the cuplike depression is the first to ulcerate. In some, the whole periphery of the depression is affected. In others, only a part of the periphery is affected. Between the teeth are elevated spicules of gum tissue. The tongue changes are secondary and due to an extension from the gum. Lesions rarely occur on the tongue where no teeth exist.

Almkvist believes that the pterygomandibular fold conceals dead albumin where the lesions can start as already described, spreading from there.

In the tonsils, changes similar to those resulting from administration of mercury may be present without the mercury's having been administered. One of these is the Plaut-Vincent angina. Sometimes these other forms, like the mercury type, show a marked tendency to spread around. Changes may occur in the tonsils without any changes in the gums. Crypts of the lacunae of the tonsils act as the gum

crypts, and a deposit of foul odor can be picked out as in the gum crypts, with the same bacteria present: B. fusiformis, spirilla and cocci.

When the soft and hard palate show changes, there is no primary source except the pterygomandibular folds or the tonsils. After the change has once started, it continues.

Comment.—Gum: I should like to call attention to the important rôle of vasodilatation in causing the gum to become swollen and hence susceptible to the bacteria which are normally present in the mouth, and which take advantage of any débris in the gum crypts to multiply and form hydrogen sulphid with the probable results described. It is, of course, also reasonable to expect that the weakening of the tissue, due to slow metabolism and reduced oxidation (caused by the effect of mercury on the blood and vascular system), exposes the gum more than ever to those influences to which even normal gums succumb. Thus, if infections (pyorrhea, gingivitis or caries) are already present, the organisms have much more favorable circumstances. If infection is not already present, the ulceration and sloughing can be delayed for a time, but eventually a mechanical injury to the vitiated tissues gives rise to an opening infection, which soon spreads rapidly.

Tongue: In the tongue, the importance of vascular changes is still more emphasized: for the dilatation of the vessels is even more marked than in the gums, and no deposit of mercuric sulphid has been reported by those who have studied that fact. However, the swelling of the tongue forces its tissues into the teeth, forming cup-like depressions. It is then conceivable that, as the tongue is moved in the mouth, the ridges of these cups are rubbed against the gums and teeth and the infection already, probably, present in the gums, is transferred to the abrasions thus formed. Probably, Lanz meant that it was the friction of the tongue against the teeth, not the pressure of the tongue on the teeth, which first started the ulceration, since it is the periphery or ridge, not the bowl of the depression, which is first affected. Later, sometimes quite rapidly, the ulceration covers the entire edge and lateral lower surfaces of the tongue.

Cheek: Since the cheek presents its first lesion on a line adjacent to the cutting edges of the teeth, the suggestion is strong that the swollen character of the tissue is an initial factor, for the cheeks would then be pressed closer to the teeth than normally. Even without any change in the structure of the cheek, the mucous membrane may be caught between the teeth and crushed. How much more probable is it, then, that this will occur when the oral mucous membrane and sub-mucous tissues are edematous, infiltrated and hyperemic. The forcing of food between the buccal and alveolar surfaces is an added destructive
agency. Bockhart 30 gives this place as a primary center, while Almkvist 32 takes it to be secondary. According to Almkvist, there is less mercury precipitate here than in the tongue.

Palate: In the palate the same factors hold sway; if infection already is present, this infection will be likely to progress rapidly. If not already present, a longer time will elapse before ulceration begins, and it may not begin at all. Over the palate, we find an extension from the fauces or posterior gum crypts. A palatine ulceration is generally agreed to be secondary.

Specific Organism: It appears to be unknown whether or not there is involved a specific organism. It is more probable that some organism present normally in the oral cavity is permitted by the vitiation of the tissues produced by mercury poisoning to proliferate and thrive at the expense of the body, and the most virulent organism present is likely to be the predominant bacteria.

THE GASTRO-INTESTINAL TRACT

General Clinical Picture.—In a few hours or after a few days, diarrhea occurs. The stools are first watery and are accompanied by active tenesmus; soon, the stools become bloody and extraordinarily abundant; later, almost continual and involuntary. The feces are very fetid. There is violent pain in the rectum and colon. The abdomen is painful and tympanic. There is vertigo and vomiting, with thirst. In some cases, immediately after injection there is severe pain in the abdomen and loins. Later, the diarrhea may stop; as a rule, however, it continues. Sometimes, in severe cases, with the bloody feces is discharged intestinal mucous membrane. If the poison is acquired by mouth, choking and vomiting occur, and pain in the mouth and stomach regions. After one to two hours, there is violent diarrhea with tenesmus.

Gross Lesions.—Ascites: On section, ascites is quite commonly found. The abdominal vessels are constantly filled. Grawitz cut open an experimental animal and observed the action of the mercury at the time of administration. The intestines become congested and the extravasations take place under the mucous membrane, which he attributes to the strong muscular action stimulated by the injected veins.

Stomach: Constantly, in the acute form are found alterations of the stomach and intestines. There is intensive hyperemia, and frequently there are hemorrhagic erosions, most marked in the lower section of the small intestine and upper part of the large, often containing blood-colored content.

In chronic form, the mucous membrane of the stomach and intestine is swelled and is brownish-red to deep gray. Frequently, ulcers occur

on the stomach and small intestines. The colon is most affected, and on its folds smaller and larger diphtheritic ulcers occur, which penetrate to the muscle. The stomach contains a greenish content, its folds are edematous with small hemorrhages at their crests. In the cardia and extending toward the duodenum are areas of sprinklings of finely grained, whitish-yellow, of what appears to be exudate but cannot be removed. The stomach at the cardia and pyloris shows multiple punctate hemorrhages, which serve as beginning points for smaller and larger ulcers.

Small Intestine: The jejunum has many folds, greenish-brown and of glassy appearance. The ileum has a very marked hyperemia and numerous tiny hemorrhages.

Colon: The colon in mild poisoning shows a pale mucosa with a few hemorrhages on the crests. Later, there are streaks of superficial necrosis, with scant cloudy gray deposit covering it, firmly attached. The mucous membrane is grayish yellow and strongly swollen, with occasional ulcers with sharply defined borders.

In more severe poisoning, the mucous membrane on the heights of the folds is brownish green and the folds present a polyposes comb. The submucosa of the folds is injected with purulent infiltration in patches. Between the folds, the mucous membrane is dark red.

There is a dilating of veins, leading to edema and infiltration of red cells into the tissue—a bloody infarct; and blood in the lumen of the intestine and destruction under the influence of the intestine content. Usually, these changes are very prominent in the beginning of the ascending colon, but not so marked in the appendix or small intestines. The ulceration spreads, infiltrated with leukocytes.

_Microscopic Description of Colon._—Marchand has given a very good microscopic description (1891), which is summarized here:

The free edge of the spiral valves of the large intestines is much thickened and dark, and in other places submucous hemorrhages and beginning necrosis occur. The spiral folds consist of a duplicature of the mucous membrane, with an inner muscle. The free edge of the folds are most markedly thickened and hemorrhagic. The swelling consists chiefly of mucous membrane set through with extravasations. Herein one recognizes the remains of the superficial structure. Between the glands are rounded projections which, in the most markedly changed places, are covered and joined by the fibrinous exudate. The superficial tissue takes a poor stain, and the deep tissue is set through with leukocytes whose nuclei stain intensely. The mucous membrane is strongly set off from the submucosa, between the muscularis mucosa and the mucous membrane at the apexes of the strongly changed folds. The submucosa is swollen and, in the areas most affected, infiltrated with
round cells. Between these are the fibrinous and tissue reticulum with enlarged spindle-shaped tissue cells filled with brownish granules. The lymph spaces are obviously dilated and their content contains some cells, the remains of red blood cells. In other places, there are similar lumina filled with red blood cells. Other vessels are dilated. The larger arteries and veins at the border of the musculature are filled with red blood cells. Under the mucous membrane in the walls of the smaller arteries, arterioles, venules and capillaries, can be seen brownish granules which stand out clearly as a regular or irregular network of precipitate. These vessels show stiffness. When cut longitudinally, they present perfectly regular passages which stand out sharply, especially in the center of the necrotic mass. Here and there, between the glands, are spots of clearly traced degeneration and necrosis. The cells are clouded at the height of these crests. The nuclei are pale and indistinct. Here and there, in and between the cells, are darkly stained nuclei—possibly the remains of leukocytes. In other places, the epithelium is entirely brushed away, pushed laterally, jammed together or entirely lacking in streaks. The necrosis and deposit do not necessarily go hand in hand.

In staining for bacteria, many were found in the extensive ulcers, in the exudate and in the lumina of the gland remains. Most of them were the same short bacteria. What the nature of the precipitate is remains unknown, though, beyond doubt, it has to do with the appearance of the mercury in the mucous membrane. The granules exist not only in the necrotic but also in the living tissue where the hydrogen sulphid and the mercury cannot take action.

Marchand thinks that the presence of the mercury in the tissues, as indicated by the granular precipitate, has much to do with the condition. This injurious agent (mercury independent of the precipitate) causes necrosis of the epithelium and superficial vascular membrane. The hemorrhagic and vascular changes are secondary, as is also the precipitate. The tenesmus, as in other dysenteries, is a direct or indirect irritation action through the intestinal nerve endings.

Many other good descriptions have also been made, particularly by Elbe and Weiler, but they have added nothing to that given previously.

Discussion.—From the foregoing description it appears that the intestinal content is delayed longer in the cecum than in any other portion of the intestine. This is interesting in connection with the fact that there is in the cecum a large formation of hydrogen sulphid with a resulting massive deposit of mercuric sulphid, which probably adds to the enervation already initiated by the vasodilatation. Ulceration may, however, occur without the presence of mercuric sulphid, and
certainly marked vasodilatation and submucous hemorrhages can occur without its agency, for mercuric sulphid is not a constant factor. Thus, in the dog's colon and in rabbits fed with oats it does not occur, and yet the lesions appear in each of these. Some more general cause must be involved.

The intestinal muscle contracts violently, crushing tightly filled vessels between muscle and intestinal content. Where bacteria are present, tiny centers of inflammation form on the crests of the folds, which spread in the progress of the lesion to cover large areas of the intestinal wall. Where abrasion of the mucous membrane is absent, large ecchymotic extravasations occur, which may lead to a slough of mucous membrane.

**RENAL LESIONS**

*General Historical Review.*—The study of the kidney pathology in mercury poisoning was thoroughly summarized by Karvonen in 1898. Probably no better article has been written since that time. A brief review of his work follows.

Ulrich von Hutten is perhaps the first to have written about anuria as results of mercury. It was undoubtedly a bold advance at his time; and this freethinker had frequent opportunity to observe this condition. The genial Theophrastus Paracelsus observed that the kidney was injured by external application of mercury. The dropsy and cachexia of mercury were also noticed by Paracelsus and other syphilologists of the sixteenth and seventeenth centuries; also the diuretic reaction in cases which lacked salivation (Boerhave, Schlichting, Peter Frank). These views did not prevent the prehunterian physicians from considering syphilis the cause of many dropsy and kidney lesions.

In the first experiment, a monograph by Mathias in 1810, he strongly lays down the hunterian principles. Wells and Blackall, who recognized the relation of albumin and dropsy to kidney disease before Bright, attributed the kidney lesion to mercury. Blackall misconstrued the relation of dropsy and salivation, which he thought occurred simultaneously.

Kletzinski stated that he always found albumin in mercury containing urine, and also often sugar; but his methods were so crude that, of 167 patients to whom mercury had been given, he found mercury in the urine of forty-seven. No wonder he found albumin in the very severe mercury lesions. Overbeck and Kussmahl (1861) say that albumin does not always occur. Frequently, a simple "catarrh" of the urinary organ is produced. Overbeck, in salve cures, produced anuria and found the kidneys enlarged with yellowish fatty cortex. Kussmahl already recognized classic investigation of Pavy (1860), who administered white precipitate by mouth to dogs and cats and produced acute and subacute mercury poisoning. He found the kidneys large and very
much changed, with calcification in the urinary tubules. "The surface was highly speckled. The capsule peeled off, leaving a hard roughened surface underneath in the more advanced specimens. On section, the cortical part was highly striated, consisting, when examined closely, of a number of white columns embedded in the fleshy texture of the organ and running from the medullated part toward the surface. These white columns reaching the surface occasioned the speckled aspect that has been referred to. The uriniferous tubules were displayed, filled with a dark granular matter, the white deposit is of an early character and composed principally of the phosphate of lime. The Malpighian bodies seem to have entirely escaped implication.

"The kidneys are the chief receptacle of the poison (namely, white precipitate), the liver containing a trace, the heart none."

Pavy’s beautiful results were repeated in 1866 by Saikowsky. Although animal experiments were often made, yet the kidney was not discussed until after Saikowsky’s publication. The next following experimenters discussed chiefly the calcium deposit: Rosenbach, 1868; Balogh, 1875; Heilborn, 1878; Lazarevic, 1879. Prevost, 1879, made investigations from which he concluded that there was decalcification of the bones with the resulting calcification of the urinary tubules. This hypothesis appeared to be strengthened by investigations of Heilborn (1878) and Königer (1888), who found irritation of the bone marrow with increase of the marrow canals. Jablonowsky (1884) and Doleris and Butte (1886) saw increased excretion of calcium and magnesium in urine. This latter finding was negated by Klemperer (1888), who found that the calcium content was certainly often relatively increased, but absolutely always diminished, because oliguria exists. In the blood, then, the calcium content is increased because the calcium excretion through the kidney decreases. Königer’s findings were approximately the same.

Kaufmann (1888) established an entirely different theory. He believed that there was coagulation in the capillaries. In this condition, there occurred an anemic (coagulation) necrosis of the kidney epithelium, which attracted calcium from the blood whose calcium content is not increased. Yet no one described later the thromboses described by Kaufmann. Most authors attributed the epithelial degeneration to the circulation or excretion of mercury, as Pavy had done. Leutert (1895) discussed in detail the calcium question, clinically and experimentally. Bergmann (1878), Schide (1884) and Stadfeldt (1884) described cases of poisoning and death in the use of mercuric chlorid as antiseptic at operation. Internal medicine also offered abundant material for study. Jendrassik (1886) had found the diuretic action of mild mercurous chlorid. Investigations were started, in which Welander, Fürbringer and Karvonen figured largely on kidney investigation.
Heilborn,\textsuperscript{10} Kaufmann,\textsuperscript{11} Weiler\textsuperscript{12} and others have given descriptions of the gross character of the lesion, but their descriptions present nothing which does not appear in that of Karvonen.

Mercury is excreted mostly through the urine.\textsuperscript{8} It begins to be secreted a few hours after administration, reaches a maximum at the end of the mercury administration and continues, gradually diminishing, for half a year after. Pavy found, on the basis of his experiments, that the kidney takes up more than the liver and the blood.

Ludwig, Zilner and Uhlmann established that the kidney has relatively and absolutely the most mercury of all organs in the body, after which comes the liver, colon, small intestine, stomach, spleen, lungs, heart, etc. This would tend to show that the kidney must have some considerable damage.

The variations of polyuria and salivation are easily explained when one realizes that variations in dispositions of the organs are met with just as are variations in individuals. The kidney and liver are more affected. This is not strange since the kidney is essentially the excretory organ for mercury. Those tissues more susceptible suffer most. Any condition which can add to the already easy susceptibility of the kidney breaks it down that much sooner.

\textit{Urine}.—Quantity: At first there is an increase (polyuria\textsuperscript{33}), later, oliguria.\textsuperscript{34} Oliguria or anuria may appear from the start.

Specific Gravity: The specific gravity usually decreases with a rise of quantity and increases with a fall in quantity.

Color: The color is clear, bloody, or cloudy; clear, if the animal is hungry.

Reaction: As a rule, the total acidity diminishes, yet the urine is never so strongly acid that it accounts for the simple precipitation of calcium phosphate, as Kunkel believes.

Albuminuria: This is almost constant, but usually small in amount. Usually, a few hours go by before albumin appears in the urine. During these few hours, polyuria has occurred. If the polyuria continues or passes into oliguria, albumin appears. When healing takes place, the albuminuria gradually disappears. Traces remain for a long time. In severe cases, the urine may never be free again. In men, oliguria is usually accompanied by albumin which quickly disappears in favorable cases. Strikingly, in industrial mercury poisoning, only exceptionally is albumin found (Overbeck, Kußmahl, Streffer, Merget), although cachexia may develop; in medicinal mercury poisoning, albuminuria is


\textsuperscript{34} Schläyer and Hedinger: Experimentellen Studien über toxische Nephritis, Deutsch. Arch. f. klin. Med. 1:51, 1907.
often seen. Nevertheless, many syphilologists deny mercury kidney lesions (Fournier, Mauriac, Neumann). In 1892 Lanz said that albumin content in the urine is just as important a symptom of intoxication as infection of the mouth or the intestines. Albumin quantity seldom appears above from 0.5 to 1 per cent.

The manner of origin of the albumin depends not on the arising of the kidney lesion but on the primary alterations of albumin substances in the blood, which becomes more easily dialyzable (Gubler). In acute poisoning, one sees that at least a part of the albumin in the early stages passes through the injured glomerular loops. The presence of nucleoalbumin in the early stages, when the tubular epithelium is just beginning to suffer, speaks for the extraction of the albumin from the cells.

Glycosuria: This has already been discussed under the sympathetic system.

Hematuria: Only in severe poisoning does hematuria occur. The number of blood cells is small, being a simple diapedesis through the glomerular loops. Large hemorrhages are rare. Also the destruction of blood cells in the vessels causes hemoglobinuria.

Gross Lesions.—Vascular filling is an early effect in poisoning; the kidney shows many red points over its surface. Others have also seen intercanalicular extravasations. The veins in the border zone between the cortex and medulla are especially dilated. In a few days, the cortex is swollen and cloudy, pale, gray yellow, or it shows fine white striations and dilated vessels. The medulla is dark reddish brown. After weeks, the kidney appears more normal; but still the cortex is slightly pale and cloudy. Chronic cases show atrophy.

One must examine slides of equal thickness in order to obtain a comparative idea of the amount of precipitate. If one stains with a little picric acid, so that the slide is quite diffusely stained, the granules become yellowish. The convoluted tubules are most affected. The small cells of the loop of Henle are but little affected; the larger cells have some deposit; the collecting tubules show little deposit in the smaller elements, but more in the larger portions.

Microscopic Lesions.—There is strong vascular dilatation of the small veins and glomeruli, beginning changes in the cells of the convoluted tubules. Altmann's granules no longer follow the beautiful arrangement of normality. The affected tubules form in groups from three to six, with faded nuclei and coagulation necrosis; the less affected tubules have, alternately, pyknotic and autolyzed nuclei. The granules, staining black with osmic acid, become larger toward the pyramid. First, there occurs a scattered coagulation of the cytoplasm, with an early cloudy swelling. This undergoes atrophy, with absorption to the bottom. The cells regenerate, therefore, in cases of mild poisoning;
one sees mitoses in some places; in other places diminished, atrophic cells, clear and granule free. In still other places, no atrophic propria and epithelium cells. If the poisoning is more severe, more tubules are involved, until scarcely any remain normal. Repeated small doses leave large or small portions of the kidney normal. This selective island-like necrosis cannot be explained, and leads one to think that all the tubules do not act simultaneously. In acute poisoning, glomeruli are selected.

Calcification: Virchow and Klemperer claim that calcium appears first in the lumen and then in the kidney cells. Others think that calcium appears first in the epithelial cells: 1. Prevost: Calcium deposits inclouded cells whose secretory function is altered. 2. Kaufmann: The coagulation necrotic cell attracts calcium. 3. Virchow: There is calcium metastasis—the calcium content of the blood is too great.

Leutert and Kaufmann agree that calcium originates from the blood or overcalcified urine. These may present a calcium tubule without evidence of protoplasm. Calcification is rare in dogs (Hepp, Grawitz, Heilborn, Aganasiew, Jablonosky). In men, calcification occurs in the convoluted tubules; in rabbits, in the collecting tubules.

Prevost, Koster, Koniger, Jablonosky, Kunkel, Virchow, Kobert and von Noorden believe it is a product of decalcification of bone due to mercury. As proof of this, they offer the following facts:

1. There is hyperemia of the bone marrow (Heilborn, Raimond, Koniger and Prevost).

2. There is from 4 to 10 per cent, loss of bone weight with increased fragility (Heilborn, Prevost and assistants).

3. The blood contains increased lactic acid which is a decalcifying agent (Feitelberg, H. Meyer, Koster, Senger and Lepine).

4. Calcium and magnesium excretion is increased in the urine (Jablonosky, Bruck and G. Hoppe-Seyler).

In contradiction to this, Heiss says that lactic acid is not decalcifying. Also Koniger and Klemperer found no increase of calcium or magnesium in the urine or feces, and they claim that the colon is the excretory organ for these elements.

Finally, Karvonen states that the bones decalcify with hunger. This alone could explain the bone changes in mercury poisoning. G. Hoppe-Seyler found that by absolute rest there is absorption of the bone and the excretion of calcium is increased in the urine. All this shows that the bone atrophy need be no direct result of the mercury.

Fat: Fat is an irregular and variable constituent of the cell.

Pigment: Heinecke found yellow pigment in the kidney. Karvonen found it in a few cases and Leutert found it in one case. It may be blood pigment, but it gives no iron reaction; it gives, however, a little
reaction to Berlin blue. If the kidney is treated with ammonium sulphid, the convoluted tubules present green black granules, which give only in small part the Berlin blue reaction. Others appear black. If the kidney is treated with potassium ferrocyanid and acetic acid, one sees that it is set through with hemoglobin; not only the red cells, but also the hyaline cells, cylinders and granular exudate and many times the necrotic epithelium. In milder cases, only the cylinders and perhaps a few convoluted tubules give this color.

Kobert and Eckmann treated the kidney with ammonium sulphid and other parts with hydrogen sulphid and acetic acid. They could then tell which parts of the precipitate were iron and which mercury. Under the microscope, chemical tests were applied. In the case of mercuric sulphid, there is a fine brown black precipitate lying in the straight tubules of the pyramid. Many tubules show brownish lumina from the mercury secretion.

Cylinders: The homogeneous, finely granular and hyaline are constant. Albumin can be made out on the slide at times. In light cases, when healing is in vogue, desquamation is massive. In chronic cases, the hyalin is more colloidal.

Glomeruli: In the first stages, glomeruli show only blood filling. The loops have become penetrable for blood and albumin. Desquamation and occasional leukocytes occur. Chronic cases show an increase in connective tissue. The vessels are more penetrable, as indicated by dropsy conditions as found by Heilborn, Leutert, Lazarevic and Karvonen. The vessel walls are never thickened. The thrombus formation is not constant and perhaps develops postmortem.

Interstitial Tissue: Provost, von Huber, Steffreck, Weichselbaum, Klein, Leutert and Karvonen noticed interstitial changes. There is an infiltration around the glomeruli, periglomerular small round cell infiltration—only a few polymorphonuclear cells being present. This infiltration leads to an increase of young connective tissue by either mitosis or amitosis. There is a jamming together of squared cells containing nuclei of younger type, which still later gives way to adult connective tissue and finally may wall in the glomeruli and other parenchyma. The vessels show an occasional polymorphonuclear infiltration, but the vascular changes are less marked, with the exception of the glomeruli, which are the same as described in the foregoing.

Comment: Most authors agree with Pavy’s explanation of the lesions in the kidney: that the mercury circulating in the blood and being thrown off by the kidney cells injures the cells and renders them partially or totally incapacitated. The presence of mercuric sulphid is an added factor, though not the most important, since there is more
mercury present in the body or any portion of the body than exists as
mercuric sulphid. It is probably an indication more of the presence
and location of mercury in the kidney than of the injurious element.
The larger injury comes from the formation of mercury albuminate
with the protoplasm of the cells affected. The peculiar distribution of
the lesions has been difficult of explanation, though a significant sug-
gestion has been made by Weiler that the distribution is due to the
blood supply. The vessels of the cortex radiate outward from their
source in the border zone between the cortex and medulla. This dis-
tribution corresponds fairly accurately with that of the lesions, alter-
nating a group of from three to six healthy tubules with a group of
from three to six degenerated tubules, showing stages of variation where
the one group shades into the other.

In severe cases, all the elements are damaged.

The clogging of the tubules with calcium is the result of the loss of
function of the tubules and the natural calcifying processes which the
body pursues in an endeavor to heal. The calcium may well be con-
sidered a product of the decalcification of the bones, because of inanition
due to lack of absorption by the hypermotile alimentary tract and the
passivity of the sick animal as Karvonen has suggested.

CONCLUSIONS

From the foregoing literature one would seem justified in drawing
the following conclusions:

1. The mercury probably forms a compound with the blood, as
indicated by a decreased blood count and by hyperemia of bone marrow.

2. Reduction of oxygen, as a result of the decrease in red cells
mentioned in the foregoing and increase in lactic acid in the blood,
together with the mercury compound formed, act on the sympathetic
system as an irritant, and gradual asphyxiation results, as indicated
by vascular changes, salivation and liver glycosuria.

3. Bacteria form hydrogen sulphid in the mouth and colon. This
sulphid unites with the mercury in the blood, the mercuric sulphid
precipitate being deposited in the capillary endothelial cells, and thus
further reduces the vitality of the tissues already injured, independently
of the vasodilatation.

4. Bacteria then act on the abraded surfaces of the mouth and colon
and form diphtheritic ulcers at those points.

5. The kidney, in an effort to throw off the mercury compounds,
probably forms an albuminate from the mercury and the protein of
its own functioning cells, which renders these cells less active, the
whole process being aided by the disturbed circulation.

6. The idleness enforced by sickness and the inanition produced by
poor absorption cause a loss of weight of the bones, with decalcification.
GENERAL COMMENT

It is quite possible, then, from the facts observed by others that the mercury forms a compound with the hemoglobin of the blood, causing a reduction of hemoglobin and a reduction of red blood cells. Vascular changes are produced by the chemical irritation of mercury, and the gradual asphyxiatiom brought about by the reduced hemoglobin, reduced red cell count, and reduced circulation, and the increase in the lactic acid in the blood presents a stimulus to vasodilators and a stimulus, with later paralysis, to the vasoconstrictors. The result is an initial rise in blood pressure, with later a fall, salivation and glycosuria, which varies according to the excitability of the patient, occurring more frequently in the female. The damming up of the blood in the veins, due to hypotension, permits the arteries to contract about their diminished content.

The pulse rate is usually rapid in severe acute cases and in terminal stages of chronic cases. Otherwise, the pulse rate is slow, probably regulated by the direct or indirect action of the mercury on the vagus or its centers.

Having, then, by all these factors, produced a marked reduction and devitalizing of the tissues, we must take into consideration the action of the bacteria at those points in the body where they most exist. Though, after thorough examination, I failed to observe the mercuric sulphid precipitate described by Almkvist, yet so many competent men have investigated this point that the precipitate is undoubtedly present in some cases and in certain places. Also, it is well known that hydrogen sulphid is very soluble and that mercury and hydrogen sulphid are chemically very active in forming mercuric sulphid, and as we undoubtedly have the two present at the points designated by these authors (the mouth and colon), that precipitate must be an important added factor in the further chemical and mechanical destruction and reduction of those tissues.

The lesions that occur in the mouth can thus be explained by both a general and a specific local action. The findings in the mouth and also other parts of the body, as shown by investigation of the literature, when examined as a whole suggest that mercury has a widespread general systemic effect. These factors having started the process, the mechanical abrasion of the food against the gum and the tongue friction against the teeth, the mucous membrane of the cheek being compressed between the teeth, offer openings for bacteria to make their point of attack.

Similarly, injuries in the intestine (where the hydrogen sulphid is more prominent, and especially in the cecum, where the food is detained for a longer period and where, consequently, mercuric sulphid must be a much more important factor) caused by forcible contractions on the congested veins, as described by Grawitz, give grounds for more bacterial ulceration and proliferation.

One must consider the kidney lesion as being due to the function of that organ in its effort to throw off the toxins in the body. In doing so, the mercury undoubtedly forms an active chemical compound with the protoplasm of kidney cells, thus forming a coagulation necrosis. The selection of the particular cells which we see affected must depend on a number of factors, such as the function of the cell, the chemical activity of the mercurial toxin which a particular cell endeavors to throw off, the vague factors which make up the vitality of the cell and, most important, the blood circulation.

Original Work
Material and Methods

This work was carried on with the research funds of the National Dental Association, under the supervision of Dr. A. T. Henrici, assistant professor of bacteriology at the University of Minnesota, and at the suggestion of Dr. E. T. Bell, professor of pathology, University of Minnesota.

The necropsies and technical work were performed by John Breuer, special technician at the University of Minnesota. To these men, I am, therefore, indebted for the opportunity of obtaining and examining an abundance of material.

In all, thirty-five cats and six ferrets were used. These animals were purchased from an animal supply house; therefore, their history and ages are unknown. They were fed daily from 250 to 500 c.c. of milk, containing from 1 to 5 grains (0.06 to 0.3 cm.) of calomel. At first, the cats were fed milk only, but the last eight or ten animals were fed ground meat once a week. The duration of the poisoning continued from two to ten weeks, producing varying degrees of acute and chronic poisoning. The weight of the animals was tabulated, with few exceptions, once a week, as seen in Table 1. Oral examinations were made every other day and observations noted. Those animals which did not die as a direct result of the mercury action were killed by chloroform. The animals in which lesions appeared portrayed the usual ulcerations around the molar teeth, posterior fauces and cheeks and gums.

The tissues sectioned included practically every organ of the body in some of the animals. The mouth, intestinal and kidney structures

were used in almost all the animals. Tissues were fixed in formaldehyde and Zenker's solution, dehydrated, embedded, sectioned in thicknesses of from 15 to 20 microns, and stained with hematoxylin and eosin. The structures containing bone or teeth were decalcified with hydrochloric acid before being dehydrated. Some special mercury stains were used, as advised by C. Lombardo.37

RESULTS

General Clinical Features.—The clinical pictures presented by these animals corresponded in every way to those given in the literature. The gross lesions with their usual variations have been so frequently recorded that an extended description here would add nothing new and would be mere repetition. Only a brief summary of the mouth conditions is, therefore, necessary.

The first thing noted was a paling of the mucous membrane. This color would be changed to a pale bluish or cyanotic appearance, associated with a swelling of the gum, in from one to three weeks. Sometimes this pale discoloration would not disappear until a rather late stage in the poisoning, from five to six weeks. In these cases, the discoloration and collection of tartar and débris around the teeth would assemble before further gum change took place, from two to four weeks after poisoning began, when the teeth would present a heavily coated discoloration. Later, ulceration would occur around the molars, pterygomandibular folds and posterior fauces. The cheeks opposite the alinement of the cutting edges of the teeth displayed a line of ulceration, especially when the gums were ulcerated. The tongue also showed ulceration opposite the teeth, though this did not occur except when the gums opposite were ulcerated. Ulceration of the throat and palate was not observed in any of the cases.

Microscopic Examination.—Internal Organs: Slides of the intestine, kidney, liver and spleen were studied. Changes in these organs corresponded with those recorded in the literature and seemed to vary in no particular from other descriptions as fully reviewed in the foregoing.

Gum: Microscopically, the peridental membrane and the ligamentum circulare dentis are early broken through and destroyed, usually near the tooth. The gum tissue is forced away from the neck, widening the gum crypt, and depressed away from the crown to a considerable extent beyond the normal, sometimes clear to the maxillae, even exposing the bone.

At the point where it should attach, there is necrosis and leukocytic infiltration. The peridental membrane down the sides of the root of the tooth is necrosed to a varying extent, sometimes to the extreme

# TABLE 2.—GROSS BODY WEIGHT OF CATS AT VARIOUS INTERVALS*

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<th>Weight at Beginning, Gm.</th>
<th>One Week</th>
<th>Two Weeks</th>
<th>Three Weeks</th>
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* The last weight listed is the weight taken preceding death.
lower limit, or under the root of the tooth. The resulting space is filled with a collection of leukocytes comprising polymorphonuclears and small lymphocytes. The proportions of these types of cells vary.

The necrotic bone spaces in the upper part of the alveolar socket are filled with a similar infiltration. There is perhaps a slight loss of connective tissue also in these places. The gum becomes infiltrated with leukocytes around the ulcers at the apexes of the margins of the gum crypts and on the gum between the teeth. It is here that the lesions first appear. From here, the lesions spread downward, loosening the ligamentum circulare dentis. As the lesions extend deeper and deeper, the peridental membrane finally becomes necrotic throughout its entirety, causing an osteitis even before the entire peridental membrane shows changes. Almkvist also reports the initial lesion to be at the margin of the gum crypt. At times, the entire gum sloughs off to the bone. At other times, the sagging of the gum due to loosening of the ligamentum circulare dentis and the peridental membrane exposes the bone. In these cases, the amount of infiltration is in proportion to the extent of the slough and sometimes becomes very marked.

Tongue: On the tongue, one finds normal mucosa, except for ulcers of different sizes at the junction of the papillary mucous membrane with the lower surface of the tongue and extending under the tongue. The tongue tissue and stroma becomes infiltrated with polymorphonuclear leukocytes and lymphocytes for a short distance around each ulcer. At times, this infiltration becomes extensive. In mild cases, there is no necrosis; there develops a large slough in the more severe cases. As a rule, the vessels are markedly dilated, although in some slides the arterioles are constricted. Many bacteria are found on Gram stain.

Interpretation of Results.—These personal observations, not only on mouth lesions but also on the lesions of other organs, agreeing as they do with the observations reviewed in the foregoing, are not contrary to the idea of the existence of a general systematic effect produced by the mercury. Indeed, as shown in the analysis of the literature, they are best explained as being due to local effects superimposed on more general or widespread changes (in the vascular system, etc.), which make the local lesions possible.

There seems to be no necessity of further enlarging on this idea nor of giving illustrations of the observations, since other authors have fully pictured the lesions, and an extended analysis of their findings has occupied the greater part of this thesis.

Summary

1. In looking up the literature on mercurial stomatitis, I was surprised to find that the explanations advanced for the mouth lesions
were apparently too narrow when all known lesions are taken into consideration.

2. The nine principal theories of the action of mercury on the body are briefly summarized.

3. The essential literature on the pathology of mercury poisoning is analyzed under the system of organs affected, in order to see whether the known facts indicate any general underlying effects which might be involved in local lesions, such as those that occur in the mouth.

4. From the foregoing analysis, it is evident that there are distinct indications of blood and circulatory changes which must be taken into consideration in discussing any local lesion.

5. The results of examining a large number of sections from tissue taken from cats and ferrets with mercury lesions are recorded. These results and their interpretations are fully in harmony with those deducted from an extensive review of the literature.

6. Finally, in connection with the pathogenesis of mercurial stomatitis, I believe that the general systemic action is answerable for the lesions in the same degree as the local changes.
CONCERNING THE SPECIFICITY OF CHOLESTERINIZED ANTIGENS IN THE SEROLOGIC DIAGNOSIS OF SYPHILIS

FOURTH COMMUNICATION *

ROBERT A. KILDUFFE, A.M., M.D.
Director, Laboratories Pittsburgh and McKeesport Hospitals; Serologist, Providence Hospital

PITTSBURGH

Like all other procedures concerned with the treatment or diagnosis of disease, the complement-fixation reaction as applied to the diagnosis of syphilis has been studied extensively, as a result of which the method has experienced decided modifications as compared to the technic originally described by Wassermann, Neisser, Bruck and Detre.

In spite of the large amount of work which has been done, however, we are still in ignorance as to the exact nature of the substance or substances reacting in the test and the mechanism of their production; in fact, as has been summed up by Kolmer, all that is definitely known of the reaction is that while lipoidal extracts (antigens), as well as normal and syphilitic serums, may separately absorb or fix small amounts of complement, a mixture of a suitable extract and a syphilitic serum is capable of fixing large amounts of complement.

If little advance has been made in the attempts to solve the mechanism or modus operandi of the test, great advance has been made in the perfecting of the technical details in order to increase the delicacy of the reaction while maintaining its specificity; and from the investigations which have been made, much information of value has arisen.

COMPLEMENT-FIXATION IN SYPHILIS

The more salient features of the present-day conception of the complement-fixation reaction in syphilis may be thus briefly summed up:

1. The test is not biologically specific and does not represent a true inter-reaction between an antibody and an antigen in a strictly immunologic sense.

2. While the substance or substances reacting may not be true antibodies, at least they are analogous substances, which, until their exact nature is known, are best denominated by the term "reagin."

* From the Laboratories of The Pittsburgh Hospital.
ARCHIVES OF DERMATOLOGY AND SYPHILIOLOGY

3. The reagin present in syphilitic serums is, in all probability, of a lipoidal nature; whether this results from the biologic or metabolie activities of the spirochetes or from tissue changes or cellular transformations induced by the organisms, is unknown.

4. The "antigens" utilized in the test are not antigens in an immunologic sense, but tissue extracts whose activity and sensitivity depend entirely on the amount and character of their contained lipoids. From this it follows that it is unnecessary that extracts used as antigens be made from spirochete-containing tissues, and, indeed, such extracts are the least delicate of any in use.

5. Because of the nonbiologic character of the test, extracts or suspensions of spirochete cultures are not suitable antigens; and experience has shown that such antigens have feeble and unreliable fixing powers, the fixation that occurs probably being due to the lipoid content of the organism rather than to any combination with a true antibody, though this may perhaps occur.

6. While not a biologically specific reaction, the Wassermann test is relatively specific in a high degree in that the conditions in which nonspecific reactions are usually obtained, such as leprosy, yaws, pneumonia in the febrile stage, and pregnancy when the test is made on the cord blood, are readily differentiated from syphilis.

As far as an actual understanding or explanation of the mechanism of the test is concerned, it must be admitted that the information so far acquired consists mainly of negative knowledge; in the matter of refinement and improvement of technic, in the establishment of more definite knowledge as to its relative specificity, and in the increase of delicacy attained by technical refinements, great advances have been made.

There is still room for improvement, however, particularly in the matter of standardization of technic, so that the test may be performed in a uniform manner, which shall be delicate, specific and reliable in its results. This would permit an impartial and fair comparison of the results obtained by different workers in different laboratories and consequently the accumulation of statistical data in large volume, thus leading to accurate information on many phases of syphilis, such as its incidence, the relative efficiency of various methods of treatment, and the like.

Much study has been given to the matter of standardization, and, a careful trial of a method recently proposed by Kolmer 2 for standard

adoption, the results of which will be published, leads to the conclusion that this phase of the problem has probably been solved.

**CORRELATED EFFORTS OF SEROLOGIST AND CLINICIAN NECESSARY TO MAKE DIAGNOSIS OF SYPHILIS**

It is regrettable that, to a great extent, the study and investigation of various factors related to and influencing the Wassermann reaction has been more or less relegated to the laboratory, and that it has been mainly on the serologist that the burden of investigating and estimating the value of various modifications of technic has been thrown.

The clinician, in far too many instances, has not interested himself in the matter by coincident clinical or historical investigations, and he has too often been concerned chiefly with critical or even hypercritical censure.

It is in many ways peculiar that while a perceptible proportion of the profession at large are willing to hazard definite and dogmatic statements of diagnostic and prognostic import on the results of Wassermann reactions reported to them, only a relatively small proportion interest themselves sufficiently to acquire at first hand a working knowledge of the theory, principles and technic of the test; of the competence of the worker by whom they permit the test to be made; or of the various factors influencing or modifying the reaction obtained—in a word, to acquire the familiarity with the minutiae of the test necessary to an intelligent interpretation of the results obtained.

There are those who, tacitly at least, seem to assume that it is entirely the duty of the laboratory to make the diagnosis of syphilis; at least, there can be no other assumption tenable when one considers the frequency with which the clinical examination consists of a few perfunctory questions, an equally perfunctory history, and the taking of a specimen of blood, the diagnosis being too often held in abeyance until the report is returned. Far too many persons are being treated for syphilis or dismissed from treatment on the basis of just such a reprehensible procedure. The true number of cases in which the examination for syphilis consists mainly or even solely of a Wassermann test will never be known, but there are grounds for believing that the total would be astounding.

Again, there are others who indignantly refuse to allow the serologist to participate in the diagnosis.

Neither of these attitudes is correct.

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The diagnosis of syphilis, or the determination of the safety and wisdom of the dismissal of a patient from observation and treatment, are matters of great moment not to be hastily decided. In either case the situation is gravid with potentialities of far-reaching importance: mental anguish and distress, physical and mental well-being or destruction, domestic peace or unhappiness; and, often the fate of unborn generations lies in the balance. It is not a question to be influenced by petty maneuverings concerned with "professional dignity"; it is rather a question demanding the greatest exercise of professional acumen, experience, judgment and the ability to recognize and evaluate the sum total that alone can make a diagnosis or determine treatment: the history and the physical and laboratory findings, by whomsoever made.

There are certain types of syphilis, such as the latent and hereditary, in which information leading to a diagnosis can be elicited only by the laboratory and the serologist; again, a false or misleading history may be honestly given and the symptoms and clinical findings be so indefinite as to make a clinical diagnosis impossible—such are the borderline cases in which the chance of error is great indeed. In such cases, above all, is it necessary for the clinician and serologist to meet on the neutral ground of consultation, and by a cooperative pooling of their special knowledge to arrive at a proper and intelligent interpretation of their joint findings.

This is just as true of the Wassermann test as a guide to treatment as in the matter of diagnosis—the clinician and serologist should focus their knowledge on the patient together and not separately, as is often the case.

Likewise, in the investigation of matters of technic and the establishment of their true value as affecting the delicacy and specificity of the test, it is not by the efforts of the serologist or clinician alone that the final determination will be achieved; the correlated investigations of both are required.

SPECIFICITY OF CHOLESTERIN-PLUS REACTIONS

Such a question of moment and importance is the determination of the exact status to be accorded to cholesterinized antigens in the serologic diagnosis of syphilis. Because such antigens constitute a permanent part of complement-fixation technic; because they are prominent features in technics proposed for standard adoption, and because there is no uniform agreement as to the frequency with which false and nonspecific fixations may be obtained with them, it is apparently imperative to endeavor to gather sufficient data to decide the degree of specificity to be accorded to cholesterin-plus reactions.
An attempt to arouse interest in this subject and to present data bearing on it has been made in previous communications.  

The purpose of the present communication is to summarize the data already presented, with the hope of stimulating a discussion leading to a crystallization of opinion with regard to this question. That this question is of great practical importance is obvious from a consideration of these premises:

If, as has been said, cholesterinized antigens will give nonspecific fixation in a high percentage of normal, nonsyphilitic sera, it is obvious that these antigens should not be used alone in performing the Wassermann test.

Nevertheless, this is the case in numerous laboratories, as has been noted before, and therefore it must be assumed that a certain proportion of normal persons are being classified as syphilitic on the basis of fixations by cholesterinized antigens.

Moreover, two methods of performing the Wassermann test proposed for universal adoption utilize cholesterinized antigens alone, although a new antigen utilized in one technic (Kolmer) is a cholesterinized extract with which is incorporated acetone-insoluble lipoids.

The questions to be investigated, therefore, are:

1. To what extent do cholesterinized antigens react with normal, nonsyphilitic sera?

2. What degree of fixation with a cholesterinized antigen is indicative of the presence of syphilitic reagin?

3. When is a cholesterin-plus reaction indicative of syphilis?

To answer these problems the collection and careful analytic study of a large number of such reactions and their correlation with the clinical findings in the cases concerned is required.

As almost all laboratories include a cholesterinized antigen in their tests and not a few rely on them exclusively, the gathering of such data presents no great difficulty when once started.

As to the superior delicacy of cholesterinized antigens, there is agreement and accord; it is on the question of their specificity that opinion is divided.


The formation of this doubt as to the specificity of cholesterin-plus reactions began shortly after their introduction; and many of the cholesterin-plus reactions then obtained were due largely to a failure to recognize their high antihemolytic power per se and the consequent mal-adjustment of the amboceptor and complement in the system. Also, it must not be overlooked that a certain number of such reactions were undoubtedly due to the presence of syphilitic reagin unrecognized because of the absence of clinical or symptomatic findings.

The lack of clinical evidence played no small part in labeling such reactions as nonspecific.

The points in accord may be thus summarized:

1. Cholesterinized antigens are highly delicate and superior to plain extracts.

2. They will give positive reactions earlier and remain positive longer than plain extracts.

3. The treatment of syphilis should, therefore, be continued until persistent negative reactions are obtained to cholesterinized antigens.

4. Cholesterinized antigens should always be included in complement-fixation technics for the serodiagnosis of syphilis.

In the matter of specificity there is much room for discussion.

It may be admitted at the start that in a certain proportion of normal, nonsyphilitic serums, excluding conditions known to give nonspecific fixation with all antigens, faint (10 per cent.) positive, nonspecific reactions may be obtained with cholesterinized extracts. It is certain, however, that distinct, strong 50 to 100 per cent. fixation occurs much more infrequently than has hitherto been supposed, and there is ample evidence for believing that the phenomenon is, indeed, relatively rare.

That such nonspecific fixation ever occurs in plus four degree is a debatable question and one requiring investigation.

Confusing figures have been published concerning the frequency with which these nonspecific reactions occur, and while in only a few instances the technical details of the tests have been given, it is certain that many of these figures cannot be accepted without question, for several reasons.

Among these may be noted the failure of earlier investigators particularly to appreciate to the full the consequence of a too close adjustment of complement dosage to these antigens of relatively high anticomplementary activities: the failure to use cholesterinized extracts under rigid supervision as to their antigenic or specific inhibitory value; the failure to subject them to extensive and rigorous trial extending over comparatively large numbers of known negatives and positives before placing them in use, and to check constantly their activities by
frequent retitrations. Furthermore, there has been little endeavor to ascertain the exact degree of fixation to be looked on as a frankly positive, specific fixation.

That nonspecific fixation with cholesterinized antigens occurs in 10 per cent. or more of normal cases as a general thing is certainly open to debate; that it ever occurs in plus four degree requires investigation.

The necessity of care in the preparation and standardization of these extracts has been well emphasized by Hinton, who says, after an analysis of 3,701 tests, that: "The percentage of false positive Wassermann reactions must be very small when carefully tested antigens are used."

It may be emphatically disputed that there are justifiable grounds for the attitude not infrequently assumed, which implies or attaches the label of nonspecificity to all cholesterin-plus reactions in general or which necessitates for their specificity a coincident positive history or demonstrable lesion. It is in the doubtful, borderline case without history and without evident, or at most, with indefinite symptoms, that the reaction is often of vital importance, and it is in just such circumstances that its cavalier dismissal as of no significance or value is to be condemned as untenable and unwarranted.

As the problem has been previously stated: Given a serum from a patient with a chancre of five to ten days' standing, a reaction with a cholesterinized extract may frequently be obtained which there is no hesitancy in reporting as a true positive. What is to be the interpretation of such a reaction when the knowledge of the chancre is not at hand?

There is no doubt as to the significance of a cholesterin-plus reaction in a syphilitic patient under treatment; what is to be its significance if the history of treatment is withheld?

Are cholesterin-plus reactions unsupported by historical evidence to be dismissed as without significance, or should they form the starting point of a thorough and exhaustive clinical, historical, and laboratory investigation without which the possibility of syphilis cannot be dismissed? The latter is my contention.

A basis for this contention is found in the work and opinion of numerous other workers, among whom may be noted Graves, who, requiring a plus two fixation for specificity, says: "Cholesterinized antigens did not give false reactions as far as could be ascertained from the clinical data"; Owens, who had 1.5 per cent. of cholesterin-

plus reactions in 2,241 tests," all of which were in old, treated cases, some patients having gone as long as fifteen to twenty years without treatment"; McIntyre, North, and McIntyre,9 who state: "We have never, except in one instance, obtained a reaction using cholesterinized antigens, on any patient on whom the diagnosis of syphilis could not be made, either from the clinical history, the physical findings, or both." And they add that the single exception presents a grave possibility that the patient had had syphilis.

In support of the contention noted in the foregoing, the following summary of cholesterin-plus reactions encountered in over 5,000 Wassermann tests is presented herewith. These cases have been made the subject of previous reports, but they are here gathered into one group.

It must be realized that it was not possible to conduct the investigation systematically, that clinical and historical data were often unobtainable, and that the tests were not made for the purpose of proving or disproving any preformed conception.

The cases reported were simply those occurring in the course of routine examinations. The technic used has been detailed in previous communications, the salient features being the use of a triple antigen battery (cholesterinized extract (0.4 per cent.) human heart, acetone-insoluble lipoids human heart, and alcoholic extract of syphilitic fetal liver), with titrated complement (two units used in the test), two units of amboceptor, an antigallic hemolytic system, and incubation at 37 C. in approximately half the tests, and at 2 to 4 C. in the remainder.

In all, a total of 286 serums reacting to the cholesterinized antigen in plus two to plus four degree—the other antigens being negative—was collected, fixations below plus two being regarded as nonspecific and excluded.

The series presents several points of interest:

First, although a majority of the serums were from a variety of nonsyphilitic conditions, both medical and surgical, cholesterin-plus reactions occurred in only 5.7 per cent. of the total serums examined, thus evidencing that this type of reaction does not occur with undue frequency.

Of the total number of cholesterin-plus reactions, in 127, or 44.4 per cent., a definite history of syphilis was elicited, many being cases of patients under treatment, the extreme interval of infection being thirty-two years previous to the test, this patient having also a plus four spinal fluid reaction and later developing paretic symptoms.

In seven cases a suggestive history was obtained (the wife was a

cohabited with a prostitute; the husband or wife had syphilis, etc.). If these were considered as syphilitic, the total of cholesterin-plus reactions shown to indicate syphilis rises to 46 per cent.

These figures, however, include fifty-nine cases in which no historical or clinical data was obtainable, and ninety-three serums of prostitutes in whom, of course, the history was negative, an exhaustive physical examination not being made or, at least, not being reported to the laboratory. In these the possibility of syphilis cannot be dismissed.

In 44 per cent. of 286 cholesterin-plus reactions, therefore, the reaction was shown to be indicative of syphilitic infection beyond cavil or doubt, many being cases in which the serologic finding was the first indication. Had the reaction been looked on as meaningless, 127 syphilitic patients would have been prematurely dismissed from treatment or not treated at all.

In seven cases, syphilis was a strong probability, and in ninety-three it could not be dismissed as a possibility.

Now, however, if we consider the reaction in the 134 cases in which additional data was obtained, we find that in 127, or 94 per cent., syphilis was shown to be present, and the reaction was indicative of the presence of syphilitic reagin. In the remaining seven cases, if syphilis could not be proved, neither could it be denied, the balance of probability being in favor of its presence.

In the face of these findings in conjunction with other evidence heretofore presented, the unqualified dismissal of cholesterin-plus reactions in general is without significance does not seem warranted.

Are we to consider a cholesterin-plus reaction as specific and indicative of syphilis if the patient tells us he has had syphilis—which, after all, may have been pityriasis or ringworm: such things have been made the basis for a diagnosis of syphilis in the past and will be again in the future—or if he tells us that he has never had the disease—truthfully or otherwise—are we to consider the reaction as of no significance?

If the history is to be the sole criterion, the diagnosis rests on a weak prop, indeed.

Or is it to be the clinical evidence that shall decide? What, then, of latent syphilis, of asymptomatic cases, of cases in which the evidence is vague, indefinite, misleading or indecisive?

It is my firm belief that the collection of a sufficiently large series to which can be added complete clinical and historical data, will undoubtedly demonstrate that, with careful and reliable technic, cholesterin-plus reactions in plus two to plus four degree rarely occur in nonsyphilitic serums, if at all, and that such reactions are reliable to a high degree and certainly warrant further investigation before the absence of syphilis can be confidently asserted.
SUMMARY AND CONCLUSIONS

1. Cholesterinized extracts are much more sensitive than alcoholic extracts or acetone-insoluble lipoids as antigens in the performance of complement-fixation reactions in syphilis.

2. Without the use of cholesterinized antigens, either a diagnosis will be missed or treatment prematurely interrupted in a definite and relatively high number of cases.

3. Nonspecific fixation with a carefully titrated cholesterinized antigen is much less frequent than has hitherto been supposed and may be looked on as relatively rare.

4. No syphilitic person should be dismissed from treatment while fixation in any degree can be secured with a cholesterinized antigen.

5. Plus two to plus four fixations with such antigens may be looked on as strongly presumptive evidence of the presence of syphilitic reagin.

6. Cholesterin-plus reactions should not be dismissed in a routine manner as nonspecific, but should form the starting point of an exhaustive clinical and laboratory survey without which the possibility of syphilis cannot be summarily dismissed.

7. A thorough, exhaustive and extensive study of cholesterin-plus reactions is indicated in order that there may be a concerted clinical and laboratory opinion as to their exact status in the serologic diagnosis of syphilis.
CALCIFICATION OF THE SKIN, WITH UNUSUAL FINDINGS

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A review of the literature on calcification and osteoma of the skin suggests two divisions: the first, presenting localized formations such as the case reported by Heidingsfeld, wherein an osteoma, surrounded by a sandy mass, was imbedded in a pigmented nevus. Pusey, in his "Principles and Practice of Dermatology," notes an instance in which an osteoma was found in a keloidal cicatrix, following a laparotomy. Calcification in conjunction with cutaneous neoplasms, such as carcinomas, may be included as examples.

Equally interesting is the second type, characterized by a general distribution of lesions and associated with other pathologic processes of the skin, such as scleroderma and Raynaud's disease, as reported by Hunter, Thibierge, and Haldin Davis; or, the concretions may be formed apparently without being preceded or accompanied by other cutaneous manifestations. It is because of the observations made in a study of the latter, or what may be termed primary, calcification, that the following case is reported.

REPORT OF CASE

History.—Mrs. S., seamstress, aged 50 years, had been subject to so-called "bilious attacks" for the last fifteen years. During this period she had two unusually severe attacks, accompanied by marked epigastric pain and vomiting. There was no jaundice. In July, 1920, following an attack of "asthma" of six months' duration, a concretion the size of a large pea was expelled from the lungs. A similar three weeks' attack in September, 1921, was terminated by the expelling of a concretion approximately one half the size of the first one.

Cutaneous Examination.—This revealed the presence of a hard substance within the skin, assuming a whitish, and at times, a slightly yellowish hue. Single lesions were noted varying in size from that of a pinhead to that of a pea; but the lesions were usually aggregated forming variously sized tumors, the largest having a diameter of 3.5 cm. They were located especially on the

extensor surfaces of the left knee, on the left and right elbows and on the proximal phalanx of the left little finger. An unusual site was the extreme tip of the middle finger of the right hand. This accentuated the rôle played by trauma as a thimble was worn continuously on this finger.

Evolution.—The initial lesion had been present for six years. Neither pain nor inflammation was noted preceding or accompanying the appearance of any of the lesions, although once formed, they were naturally subject to pain on pressure. At varying periods, inflammatory reactions supervened accompanied by a softening of the mass and an extrusion of a white paste through sinuses, which, on closing, were followed by scarring. Infection was not demonstrated in association with this process.

Roentgen-ray examination of the chest showed bronchial thickening throughout both lungs, and "calcified" areas were noted at the main stem branches of the upper, middle and lower lobes on the right side, suggesting the origin of the concretions expectorated.

Cholesterol.—Dr. D. A. Tucker of the University of Cincinnati was then asked to investigate the cholesterol content of the blood, by a variation in the fat content of the diet. He found abnormal amounts of cholesterol under all diets, less in the fat-free, more in the normal and still more in a diet rich in fats. At the same time, there was a slight increase in urea with a normal uric acid. His analysis of both the concretions from the skin and lung determined the presence of cholesterol as well as lime.

A later analysis of the blood of the patient by Dr. D. S. Hachen, also of the University of Cincinnati, found the sugar, nonprotein nitrogen, urea, uric acid, creatinin, chlorid (as sodium chlorid) and alkali reserve normal.

Dr. Shiro Tashiro, associate professor of biochemistry of the University of Cincinnati, confirmed the presence of a large amount of cholesterol, plus the lime in the concretions, and made a further analysis of the blood. The results showed that 100 c.c. of the whole blood contained 10.2 mg. of calcium and 0.27 per cent. of cholesterol. A normal calcium content and a slight hypercholesterolemia was thus evident.

From studies on physicochemical conditions accompanying the general process of calcification and on the bile salt, Dr. Tashiro is of the opinion that calcification need not necessarily be preceded or accompanied by an abnormal amount of calcium in the blood, the essential factor for pathologic and normal processes of calcification being the local production of ammonia, or any other base-forming compound, with the normal supply of calcium. This may follow infection, mechanical irritation, or changes in physiologic protein metabolism at the same point.

Similarly, an accumulation of cholesterol in the blood does not in itself necessarily result in a cholesterol deposit in any part of the body. It is Tashiro's opinion that deposition of cholesterol can be occasioned by destruction or removal of the bile salts alone. Such a condition is easily conceivable of production by certain types of infection, since it has been found by Dr. S. Oliver that bile salts are readily destroyed by

certain bacteria. His conclusion was, therefore, that the condition, or conditions, necessary for forming such gallstone-like concretions in the skin is analogous to gallstone formation, namely, ammonia production and destruction of bile salts.

In the absence of bacteria, such a condition is highly probable if a local accumulation is such that ammonia production is abnormally high, and cholesterol gradually accumulates to such a point independent of bile salts. In either event, ammonia is generally converted to urea, either in the blood or liver.

ETIOLOGY

A discussion of the various causal theories is not within the scope of this article, but it does not seem presumptuous to state that, in the type of calcification under consideration, a disturbance of metabolism is the essential factor. A particularly pertinent statement was made by J. Bayle\(^7\) as long as eighteen years ago.

Whatever the cause (irritation, trauma, infection), the vitality of the tissues is altered, and its cells, disturbed in their nitrative functions, perhaps produce substances capable either of precipitating the mineral salts dissolved in the organic fluids which bathes them, or of themselves combining with these same salts to form insoluble compositions.

TREATMENT

Treatment has been and is highly unsatisfactory in the majority of cases, consisting chiefly of surgical intervention. In this case, because of the observation of the decrease of the cholesterol content following the limited consumption of fats, such a regimen has been adhered to. It has been noted that the local accumulation is curtailed by liquefaction and expelling of the contents of the lesions, and this has been artificially duplicated by the application of radium, the smaller lesions being absolutely eradicated and the larger ones materially improved. With these measures, local as well as general improvement has been noted.

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INSTITUTIONAL EPIDEMICS OF BULLOUS IMPETIGO CONTAGIOSA IN INFANTS*

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Impetigo contagiosa is one of the common skin diseases and, probably because of its usual benign course, the possibility of its occasional virulence is often forgotten. This disease may be divided into four types: (1) the common variety, in which the lesions dry up into a yellowish crust and are readily cured with the proper medica-
ment; (2) the pustular type, in close association with the hair follicle: Bockhart's impetigo; (3) the outbreak of dime-sized lesions, with yellowish brown or brownish crusts and an inflammatory areola: ecthyma, and (4) the bullous type. In the past, the bullous type of impetigo contagiosa has usually been classified as pemphigus neonatorum.

The usual type of impetigo is preeminently a disease of childhood. In a series of 400 cases of this affection seen by Startin (quoted by Crocker1), three quarters were in children less than 7 years of age, and only twenty-seven were in adults.

The bullous form of impetigo contagiosa occurs in most instances in infants, and because of its contagiousness is liable to spread through institutions caring for infants. An institutional epidemic of the bullous type of impetigo contagiosa is a serious proposition, as in certain recorded outbreaks the disease has spread like wildfire and has shown a mortality rate as high as 50 per cent.

A review of some of these epidemics will prove instructive. Biddle2 recorded two epidemics at the Women's Hospital and Infants' Home in Detroit. In one outbreak, his attention was drawn to the occurrence of bleb formations on the bodies of three babies each less than a week old. Within from twenty-four to forty-eight hours, nine other babies in this hospital, three nurses, and two nursing mothers of affected babies were afflicted with the disease. The lesions occurred on the exposed parts of the body in the case of the nurses, the fingers, the ears and the face; and on the nipples and buttocks of the nursing mothers. The eruption in the adult cases was mild, resembling the ordinary type of impetigo contagiosa, and it yielded in the usual course

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* From the Dermatological Department of the Jefferson Medical College.
of time to treatment; but the lesions on the bodies of the babies were extensive, covering in some cases almost the entire surface, and were large, especially over the trunk and buttocks. The constitutional symptoms, high fever, etc., were severe in some of the babies, but no deaths occurred. According to Biddle, the result was not so favorable in an epidemic occurring three years previously in the same institution, in which the mortality rate was 30 per cent., the fatalities occurring within a week or ten days after the onset of the disease.

Schwartz reported an epidemic of this disease in which there were twenty-seven cases in all. Twenty-two developed between the fourth and seventh day after birth and seven patients died, most of them on the fourth to the tenth day of the disease. Cole and Ruh reported an epidemic which occurred in a maternity hospital; there were nine cases with one death.

Hartzell reported a small epidemic in a maternity hospital in Philadelphia, with a mortality of 50 per cent. Knowles recorded an epidemic of thirty cases, with 33 per cent. of deaths, in a public institution in Philadelphia. Pusey reported the occurrence of an epidemic in a maternity ward of one of the hospitals of Chicago, with a mortality rate of 30 per cent. Emma L. Call published an account of an epidemic in the New England Hospital for Women and Children, affecting nineteen infants and three mothers, with a loss of only one infant; this death probably was not traceable to the disease.

Two small epidemics of bullous impetigo contagiosa have recently been observed in the babies' ward in the maternity department of the Presbyterian Hospital and in Dr. Edwin Graham's children's ward at the Jefferson Hospital. Six cases were observed in the first institution and four in the latter.

The cases under our care at the Presbyterian Hospital developed in each baby a few days after birth and the lesions were scattered over the body and the face. Fortunately, there was no mucous membrane involvement or constitutional symptoms of any description, except in one baby who also had multiple abscesses. No deaths resulted.

The four cases observed in infants a few weeks of age, at the Jefferson Hospital, ran a very different course from the series just recorded, as two of the four died. The two patients who succumbed had been operated on by Dr. Warren Davis for hairlip, and unfortunately the operative wound became contaminated with the coccus from one of the other bullous impetigo cases. All four of these cases showed

5. Quoted by Biddle, Footnote 2.
the bullous lesions predominating on the face; the mucous membranes were involved in two of the cases and these terminated fatally.

As to the etiology of impetigo contagiosa, it has long been a mooted question whether the streptococcus or staphylococcus or a combination of the two organisms is causal. Highman \(^6\) states that the cause of the affection is the streptococcus. Such has also been the conclusion of Farley and Knowles \(^7\) in an extensive bacteriologic study of the common type of this affection.

Bacteriologic study of the bullous type of this disease gives a considerably different conclusion. The cases observed by us at the Presbyterian Hospital gave a pure culture of *Staphylococcus pyogenes-aureus*, the material having been obtained from unruptured blebs.

Schwartz studied an epidemic of bullous impetigo contagiosa and found only staphylococci in all cultures made from the blebs, both before and after death. Cole and Ruh isolated *Staphylococcus pyogenes-aureus* in pure culture in all cases in which the fluid from unbroken blebs was obtainable. Pusey believes that the lesions may be produced by different kinds of pus organisms.

It seems logical to us that the different types of lesions of impetigo contagiosa are caused by the different strains or varieties of cocci.

Schwartz thinks "the cause of death may be looked upon as that which has been suggested in cases of burns, namely, as due to induced changes in the red corpuscles or to the formation and absorption of toxic material from the local lesion."

We believe that in those cases in which lesions develop on the lips and extend to the mucous membrane, a fatality usually results from the inability of the infant to take nourishment. In the other cases ending fatally, absorption of the toxic substance from large areas of involvement has apparently been responsible.

Schwartz found nothing especially characteristic beyond slight congestion of the digestive and respiratory tracts and the nervous system in postmortem examinations of cases of bullous impetigo contagiosa.

**CONCLUSIONS**

Impetigo contagiosa of a bullous type developing in an infant ward is a serious disease and may lead to a high death rate.

It is essential, therefore, immediately to isolate cases of this description developing in an institution containing babies or young children. Every care should be exercised by nurses or attendants handling these cases to avoid further spread of the disease.

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THE HISTOPATHOLOGY OF CUTANEOUS TESTS*

SECOND COMMUNICATION

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The clinical significance of a cutaneous test depends on a number of factors, namely: (1) clinical specificity; (2) the employment of a specific irritant, and (3) the production of a specific pathology. Irritants are responsible for histologic changes in tissues and these, in turn, call forth the invasion of certain cellular elements in the tissues affected. In the main, the type of the invading cell determines the general character of the lesion, i.e., polymorphonuclear cells characterize an acute inflammatory process; lymphocytes, mononuclears and endothelial cells, a subacute inflammatory process; and fibroblasts, a chronic process. The phenomena of degeneration, necrosis, etc., are, in the main, associated pathologic occurrences. It is, however, the multiplicity of these various pathologic phenomena and their peculiar localization, together with the presence of definite secondary pathologic changes, that give to a histologic picture a specific character.

While this paper concerns itself primarily with a histologic study of the tuberculin and leutin tests, a brief discussion of both the clinical and anaphylactic status of these reactions would not be amiss. Both tuberculin and leutin tests are considered true anaphylactic phenomena. Roseau and Anderson, as well as others, have observed anaphylactic reactions with various bacteria, such as colon bacillus, typhoid bacillus, anthrax and tubercule bacilli. Indeed, at times, anaphylactic reactions occur during the administration of tuberculin and bacterial vaccines. It is not our purpose to discuss whether or not bacterial toxins are true anaphylactogens, or whether they act by the hypersensitiveness of the body cells for the toxins.

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From the point of view of clinical medicine, the tuberculin (Pirquet) test has an established value; and, subject to certain modifications, some reliance is placed on the luetin test, particularly in the latent, inherited and some obscure phases of syphilis. In view of the status of the tuberculin and luetin tests from the point of view of immunology, and also in view of their clinical significance, we felt that a further contribution to the histopathology of these reactions would be in place.

In a previous contribution 1 relative to the histopathology of positive cutaneous tests, it was stated that the lesion of a positive tuberculin test shows, histologically, a mononuclear cell infiltration in the superficial connective tissue; while the lesion of a positive luetin reaction is characterized by a polymorphonuclear cell infiltration in the deeper connective tissue, together with congestion of the blood vessels and necrosis.

In our present contribution, which embraced seven luetin and two tuberculin reactions, the histopathologic picture was as follows: In the luetin reactions, the predominating features were edema, hemorrhage, congestion and diffuse infiltration with polymorphonuclear leukocytes, particularly involving the deeper layers of the connective tissue; while, in the tuberculin cases, the general character of the cellular reaction was represented by lymphocytic infiltration.

Two factors must be emphasized in this communication: 1. There is a unanimous agreement between the findings in our first contribution and this one, so far as our tuberculin and luetin cases are concerned. 2. In this communication, we have a larger number of luetin reactions to report, namely, seven, and also reactions of various degrees of positiveness. In this paper, the sections were studied by another pathologist (Asnis), who had an open mind on this subject. We can, therefore, present a summary of the histopathology of tuberculin and luetin tests based on the examination of the two pathologists.

Following is a brief summary of the luetin reactions:

REPORT OF TESTS

Test 1.—The clinical observation was positive. The lesion on the arm consisted of a marked papule about two thirds the size of a bean, with marked surrounding erythema. The lesion was removed for histologic study, with the following report: The superficial connective tissue strata appeared edematous and hemorrhagic. The hemorrhages were rather prominent in the outermost superficial layers of the corium immediately adjoining the stratum Malpighii. The edematous areas were diffusely infiltrated with considerable numbers of polymorphonuclear cells. Lymphocytes were present, but were comparatively few in number. The deeper connective tissue strata presented, in general, the same pathologic process as in the superficial layers, but more intensely accen-

tuated. The edema was more intense; polymorphonuclear cells appeared in greater number, and in a few areas there were evidences of necrosis.

Test 2.—There was a positive reaction after forty-eight hours. The lesion was papular, about one half the size of a bean, with erythema. It was removed for histologic study, with the following report: The prominent features of the histologic changes consisted of edema, most intense in the deeper connective tissue structures, and widespread infiltration of polymorphonuclear cells. A moderate number of lymphocytes and an occasional endothelial cell were observed. Small hemorrhages, congestion and degeneration of the polymorphonuclear cells were most evident in the deeper connective tissue layers.

Test 3.—The clinical result after forty-eight hours was a papule with some beginning pustulation; and very slight erythema (positive). The lesion was removed, and histologically there were noted: considerable hemorrhage and edema throughout the section, and diffuse infiltration of polymorphonuclear leukocytes. In the superficial portion of the corium these cells appeared histologically well preserved; while those present in the deeper layers seemed to have undergone degenerative and necrotic changes.

Test 4.—The clinical result after forty-eight hours was a papule slightly larger than a pea, with some erythema (weakly positive). The lesion was removed, and histologically there was noted superficial connective tissue infiltrated with a few polymorphonuclears and lymphocytes. The deeper layers appeared edematous and contained a considerable number of polymorphonuclears, not a few of which had apparently undergone disintegration.

Test 5.—The clinical result was a papule about one half the size of a bean, with surrounding erythema (positive). The lesion was removed; histologically, there were noted: moderate edema and considerable infiltration of cells, the majority of which were polymorphonuclears. There was slight hemorrhage and very little, if any, degeneration of the polymorphonuclears.

Test 6.—Clinically, after forty-eight hours, there was a papule about two thirds the size of a bean, with marked erythema limited almost entirely to the lesion (positive), which was removed for histologic study, with the following result: The outstanding changes were edema and diffuse infiltration of polymorphonuclears, most evident in the deeper connective tissue layers.

Test 7.—Clinically, after forty-eight hours, there was a papular lesion surmounted by a pustule with marked erythema (strongly positive). The lesion was removed and histologically there were noted changes occurring largely in the deeper layers of the connective tissue. The pathologic process consisted of considerable hemorrhage, edema, many polymorphonuclear cells, a moderate number of lymphocytes and a few plasma cells.

We can report only two tuberculin reactions:

Test 8.—Clinically, after twenty-four hours, there was noted an erythematous elevation about one half the size of a finger-nail. The control showed nothing; the tuberculin reaction was positive. The lesion was removed and histologically it was noted that the stratum Malpighii appeared intact. Immediately beneath this layer and extending to the structures of the connective tissue, there were numerous lymphocytes. Some of these cells were diffusely scattered, while others appeared in focal aggregations. In addition, the tissue appeared edematous and the blood vessels were slightly congested.
Test 9.—Clinically, after twenty-four hours, there was noted at the site of the tuberculin test, a circumscribed elevated papular lesion, with marked surrounding erythema. The control was negative; the tuberculin reaction strongly positive. The lesion was removed for study and histologically there were noted cellular reaction and tissue changes essentially the same as in Test 8, but somewhat greater in intensity. Edema was more marked and was accompanied by small hemorrhages. Lymphocytes were diffusely scattered throughout the section.

With regard to the histopathology of the endermic food reactions studied by us, nothing definite can be stated except that these were not in accord with those obtained in our previous communication and that our present findings were not uniform. We may offer only one possible explanation, and that is that some of our products may have been infected. We hope to repeat this work with fresh material and report in a future communication.

SUMMARY

1. The histopathology of a luetin test based on the study of nine positive results shows a definite and uniform histologic picture which is characterized by polymorphonuclear cell infiltration, the general distribution of these cells being particularly marked in the deeper connective tissues of the skin.

2. The histopathologic picture of a positive tuberculin (Pirquet) test based on four observations of various degrees of positiveness also shows a definite picture; namely, a lymphocytic preponderance in the more superficial connective tissue.

3. We are in no position to offer any explanation for this difference, for in actual diseased states, of both tuberculosis and syphilis, the predominating histologic cell is the lymphocyte.

4. We are doing some research with animals relative to this problem, by means of which we hope to throw some light on the subject of cutaneous tests, which we hope to report in a future communication.

327 South Sixteenth Street.
TWO CASES OF RETINITIS PROLIFERANS OF SYPHILITIC AND DIABETIC ORIGIN. V. L. Raia, Am. J. Ophth. 5:946 (Dec.) 1922.

These cases were presented to advance the claim that this condition is the result of irritation produced by chemical or toxic substances in the vitreous and not by hemorrhages. The latter is the more commonly accepted view.

OCULAR MANIFESTATIONS IN A CASE OF HYPOPITSEAL SYphiLIS. F. P. Calhoun, Am. J. Ophth. 5:952 (Dec.) 1922.

A case of hypopituitarism is reported, with abnormal sugar tolerance, marked choking of the disks and contraction of visual fields, which was unaffected by cranial decompression and by administration of thyroid and pituitary extracts, but responded quickly to antisyphilitic treatment.

HYPOPITSEAL DISEASE PROBABLY OF SYPHILITIC ORIGIN. B. W. Key, Am. J. Ophth. 5:956 (Dec.) 1922.

A case is presented with negative syphilitic history, repeatedly negative Wassermann tests, negative spinal fluid, progressive contraction of visual fields, roentgen-ray findings of progressive enlargement of the sella, acromegalic gigantism, external rectus palsy and retinochoroiditis, markedly improved by antisyphilitic treatment, with complete subsidence of marked bilateral choked disk.

H. R. Foerster, Milwaukee.


Four cases of this disease are reported, with a discussion of the symptomatology. The first symptom is usually a rash, which commonly resembles miliaria. The hands and feet are swollen, dusky red and icy cold to the touch. Irritability, anorexia and leukocytosis are additional features.

THE RELIEF OF PAIN IN HERPES ZOSTER BY PARAFFIN. H. Fox, J. A. M. A. 79:1979 (Dec. 9) 1922.

Spraying all the cutaneous lesions with paraffin and then covering these areas with a generous layer of absorbent cotton is the method recommended by Fox. The application should be renewed daily after removing the previously applied layer of paraffin.

In three cases of neuralgia following zoster, this treatment failed to give relief.


Scrapings from the lesion revealed spores, and a culture of small spore ringworm was obtained. The Wassermann reaction was strongly positive, and the lesion completely cleared up under specific treatment.

These investigators employed three products in cutaneous sensitization tests: (1) ascites agar luetin; (2) ascites agar culture medium, and (3) a saline suspension of washed Spirocheta pallida. The results indicate that either true specific cutaneous allergy does not exist in syphilis, or that the cultured spirochetes employed have practically lost their antigenic properties. In syphilis, there is an enhanced nonspecific cutaneous sensitiveness, the origin of which is unknown but which is probably an antiferment adsorption phenomenon.


This study is summarized as follows: "Mercury is highly toxic to the heart, causing various cardiac irregularities, such as heart block, delirium cordis and, finally, paralysis. It is also toxic to the respiration, but the effect in this case is not nearly so pronounced as the effect on the circulation. Furthermore, the action of mercuric salts may be greatly increased by citrate or by epinephrin, suggesting that under certain conditions, associated with disturbances of metabolism, the toxicity of mercury may be still more increased."


A negative Wassermann reaction is of value only when intelligently interpreted in conjunction with the other findings; a single negative reaction is of little value in the presence of suggestive clinical findings; and as evidence of cure, a single negative reaction is worthless.

Michael, Houston, Texas.

APPOSITIONAL GROWTH IN CROWN-GALL TUMORS AND IN CANCERS. Erwin F. Smith, J. Cancer Res. 7:1 (Jan.) 1922.

An excellent and comprehensive article is presented, reviewing the theories and present knowledge of mode of cancer growth and reporting experimental studies by the author on tumor and cancer production in the tobacco plant by inoculation with Bacterium tumefaciens. The high point in the experiments is the demonstration of conversion of normal cells into tumor cells by contact of the diseased with the normal, that is, by apposition, as against the generally accepted view that cancer grows only by invasion. This altered growth of normal plant tissue is considered due to the irritant action of bacterial infection.

H. R. Foerster, Milwaukee.


This peculiar epithelioma, which presents a mixture of the characteristics of the prickle-cell and basal-cell types, clinically as well as histologically, is not
considered rare, having constituted 15 per cent. of the authors' group of pricklec

FATAL MERCURIAL ERYTHRODERMA FOLLOWING THE INJECTION OF ONE CENTIGRAM OF RED MERCURIC IODID.  
Although this patient, a woman of 22 years, had also received small amounts of sulpharsphenamin and the bismuth salts, the author feels that the generalized erythroderma and subsequent death were due to an idiosyncrasy to mercury, a small dose of which had been injected intramuscularly. At necropsy, kidney and liver defects were found, of doubtful origin, whose presence may have determined the fatal outcome.

CONSIDERATION OF A CASE OF RECKLINGHAUSEN'S DISEASE.  
An illustrated description of this disease occurring in a patient apparently the subject of congenital syphilis is presented. The author hopes to stimulate investigation as to the possible relationship between the two conditions.

According to the authors, the presence of increased albumin in the otherwise normal cerebrospinal fluid of syphilitic patients is usually the "scar" from a previous syphilitic meningitis rather than a sign of ill omen. In some of these cases, a "provocative" spinal fluid Wassermann reaction shows a temporary positivity. In certain instances, under treatment, the Wassermann reaction may become negative and the cell count normal, while the hyperalbuminosis persists; and, especially in the "secondary" period, it may also eventually disappear. Illustrative cases are cited.

Because of the apparent success of this form of treatment in various forms of tuberculosis, the author has tried its effects, identically administered, in African lepers of various ages, two presenting the macular type and five the tubercular. No simultaneous treatment or hygienic measures were employed. After seven or eight months of this treatment, two cases, one, a tubercular leprosy of nine years' duration, the other of the macular type and present twenty years, showed distinct improvement, with the disappearance of many lesions. The remaining five were not benefited. In view of its apparent occasional success, this form of treatment is suggested as a possible supplement to other measures.

Parkhurst, Toledo, Ohio.

An extensive area of gangrene followed a burn. Cultures were made, and rabbits developed similar lesions at the sites of inoculation. The causative organism, however, was not found.


In a child of 3½ years with syringocystoma there was an unusual confluence of the lesions on the right shoulder.


These plaques, on a level with the surrounding normal skin, gave the characteristic buttonhole sensation on palpation and were typical of the disease histologically. They are considered as deeper lesions than the usual tumors.


The terminals were so placed that the current lines traversed the affected parts, and by never exceeding a current strength of from 10 to 15 milliamperes and limiting the treatments to fifteen in a series, favorable results were obtained in severe cases, two of which are cited at length.


Spurred by their success in the treatment of scars by this means, the authors used the same technic in treating scleroderma in plaques, scleroderma in bands and sclerodactyly, and obtained good results. One case of each type is reported. The discussion is interesting; Darier advises against over-enthusiasm, since spontaneous improvement may be seen in this condition.


The melanoderma, involving the trunk and upper thighs, apparently followed the disappearance of lesions of scleroderma. Little is known about spinal fluid findings in scleroderma. In this case the lymphocytes numbered 16.4 per cubic millimeter, syphilis apparently being absent.


As a drying agent this application is excellent, and it is recommended for use in localized eczemas.

This apparatus for work with solid carbon dioxide is described in detail. It differs slightly from that described by Lortat-Jacob (see abstract, Archives Dermatology and Syphilology 6:497, 1922).


Plans are presented for the arrangement and operation of these dispensaries throughout France, the staffs to be appointed after examination. That the patients who come for prophylaxis may not be stigmatized, general medical and surgical cases are also to be handled.


The author cites cases in which the use of the brands "neo-arsphenamin," "sulphasphenamin" and "eparseno" (Ehrlich's "132," for intramuscular injection), as well as the oral administration of oxyaminophenylarsenic acid, has failed, and he comments on the observation that arsenammin itself seems to be the most reliable, after all.


The patient was a native African, aged 22 years, whose skin was free from lesions. It is held that this condition may be peculiar to these natives, possibly being due to their habits of buccal irritation.


In a man, aged 40, who had lately received antisypilitic treatment, a generalized erythoderma with "eczematoid" patches appeared. At necropsy six months later there was found tuberculous involvement of the lungs, pleura, pericardium and abdominal organs, confirmed histologically, with a microscopic picture of a chronic dermatitis with epidermal and dermal atrophy.


Surveying twenty cases, the authors conclude that endocrine disorders are frequent in the subjects of nitritoid crises.


Three cases are cited in which the wife, though repeatedly exposed to lesions of the husband, failed to show any clinical sign of syphilis. No mention of serologic examinations is made. It is contended that the women did
not have congenital syphilis. Granted that they were not syphilitic and escaped infection when thus thoroughly exposed, how may we judge the value of the so-called prophylactic treatment of syphilis?


The patient was first seen with a syphilitic chancre of twenty-five days' duration, and the title describes the treatment. This observation emphasizes the fact that the appearance of arsenical erythemas is not a sign of attenuation of syphilitic infection; that in certain cases there is absolute intolerance of arsenical drugs; that mercury, even in high dosage, is too often ineffective: that insufficient treatment merely retards and does not prevent the appearance of secondary syphilitic lesions; that in such cases of intolerance the tartrobismuthate is certainly indicated.


In a patient, aged 26 years, there was a lesion 2 cm. in diameter behind the right ear. After two treatments of forty-five seconds each, the lesion disappeared. There had been no biopsy examination.


In an attempt to check up on the recent experimental controversy, the authors withdrew the contents of vesicles in two cases and inoculated the cornea, conjunctivae and anterior chamber of rabbits, sheep and a pigeon, the skin of rabbits, a monkey and a pigeon, the dura mater of rabbits and the spinal canal of rabbits, a monkey and a dog, with negative or highly questionable results. Further investigations are thought necessary.


In the author's opinion, roentgen-ray effects may so modify the tissues as to favor bacterial invasion. Two cases are cited, in one of which there was an unusual amount of necrosis.


In a man, aged 48 years, who had noticed the first lesion twenty years previously, there were many large and small indolent, nonpruritic plaques on the trunk and extremities, including the fingers and the sole of one foot. About fourteen years previously he had been seen by Jadassohn, who had
advised excision of the lesions after a biopsy examination had been made. Pautrier had not yet secured a biopsy specimen, but offered the clinical diagnosis of Bowen's precancerous dermatosis, with possible malignant changes of the lesions of one arm, in which epitrochlear and axillary lymph nodes were palpable. A further report is promised.


Mother and daughter presented this condition, and in the latter injections of neo-arsphenamin seemed to diminish the pruritus and to cause the disappearance of some of the nodules. In view of the fact that the mother's eruption had appeared during pregnancy while the daughter's had first been seen at puberty, the author suspects endocrine changes as being causative.


In a young man with skeletal deformities, presenting lesions of Recklinghausen's disease, there was plexiform neuroma and a large tumor of the neck, which, after removal, was diagnosed as arising from the sheath of Schwann (Schwannoma). The epidermis covering this peculiar tumor was deeply pigmented, but no nevus cells were found.


In a girl, aged 19 years, the condition had been present for five years, accompanied by thyroid hypoplasia and insufficiency with pituitary involvement, while menstrual irregularities suggested ovarian dysfunction. There may also have been suprarenal involvement.


This condition, recently described by Nicolas (see abstracts, Archives Dermatology and Syphilology 6:499 and 631, 1922), was present in a girl of 10 years. Following the advice of Nicolas, no surgical intervention was made, and antisyphilitic treatment was instituted; sequestra separated and healing ensued.


In a man, aged 47, the chancro was of seven weeks' duration, the probable source of contagion having been a wig and mask worn at a fête. The lesion was palm-sized, and a generalized papulosquamous eruption was present.


An example of this affection, recently described by Nicolas, appeared in a man, aged 31 years, who had been admitted to the hospital for icterus. One
of his inguinal lymph nodes, at first palpable, soon became enlarged to the size of an orange; it was firm and not very tender. Two small superficial ulcerations then appeared on the penis, and other lymph nodes became palpable. There was some fever. Cultures made from material taken from the large node presented diphtheroid bacilli, probably such as have been previously described. Excision of six of the hypertrophied lymph nodes was followed by apparent cure.


A man, aged 49, presented lesions of forty-four years' duration. He had been shown before the sixth congress of the German Dermatological Society in May, 1898, by Wolff, and his case has been cited by Darier in La pratique dermatologique as an instance of the so-called juvenile type of acanthosis nigricans. A detailed description of the lesions is given, illustrated by six excellent photographs, including "close-ups." A histologic report is to follow.


A man, aged 29 years, had noticed the first small nodule on the nose two months previously. The involvement soon became extensive. The histologic picture recalled that of hypodermal sarcoid.


In a man, aged 20, many of the plaques presented an eczematous appearance, so that the identity of the individual lesions was lost.


In a farmer, aged 46, with no family history of skin disease, localized bulla formation following trauma was first noticed in 1914, the site being the dorsa of the hands. This eruption soon disappeared spontaneously, to reappear in 1921 in the same locations. Nikolsky's sign had been demonstrated, and the characteristic epidermal cysts were present.


Twelve weeks after exposure, a woman, aged 48, noticed rather severe vaginal hemorrhage and lumbar pains. Spirochaeta pallida was found, and proper treatment instituted.

AN EPIDEMIC OF ONE HUNDRED CASES OF GENERALIZED DERMATOPHYTOSIS DUE TO TRICHOPHYTON GRANULOSUM. PAUTRIER and RIETMAN, Bull. Soc. franç. de dermat. et syph. 29: R. S. 98, 1922.

Although this organism does not often attack man, the recent German literature contains accounts of similar smaller epidemics (see Dermat. Wchnschr.,
1917 and 1919). Two hospitals for the insane and one psychiatric clinic were the foci in the present case, and the authors describe the lesions carefully with the aid of six very good photographs. There were eruptions of three types: (1) generalized and tending to confluence, (2) generalized and consisting of discrete elements, either psoriasiform or vesiculopustular, and (3) simulating ordinary tinea cruris.

SEVEN CASES OF NONSUPPURATING CUTANEOUS PHYTOSES DUE TO TRICHO PHYTON GRANULOSUM. PAU TRIER and RIETMAN, Bull. Soc. franç. de dermat. et syph. 29:R.S. 109, 1922.

Four of these cases occurred independently of the above-mentioned epidemic.


This eruption occurred in a man, aged 64, and it was apparently precipitated by two days' exposure to the summer sun and by the application of a tar ointment. A weak chrysarobin ointment was used successfully.

ANTI-SHOCK TREATMENT BY CONCENTRATED GLUCOSE SERUM.
R. DUHOR, Rev. belge d'urol. et de dermat.-syph. 5:1 (Jan.-March) 1922.

A 50 per cent. solution of chemically pure glucose, added to arsphenamin, is said to establish about the arsenical molecule a barrier against the attack of acid mediums, which the author considers to be the cause of nitritoid reactions. He has injected maximum doses of arsphenamin mixed with the glucose solution, in high concentration with no untoward symptoms, and he has even used the acid solution of arsphenamin in doses not exceeding 0.2 gm. Ordinary glucose cannot be used, for it produces toxic symptoms.

MIXING ARSPHENAMIN WITH BLOOD AS A MEANS OF PREVENTING SHOCK: REVINDICATION OF PRIORITY. R. DUHOR, Rev. belge d'urol. et de dermat.-syph. 5:6 (Jan.-March) 1922.

In May, 1920, the author, at the French Congress in Brussels, announced that reactions could be avoided by aspirating blood into the syringe, where it was allowed to mix with the arsphenamin to be injected. At the Strasbourg Congress, reported in the Presse médicale of Oct. 19, 1921, Gastou presented the same suggestion. The author claims priority.

APROPOS AN ARTICLE BY DRS. LESPINNE, LEFEVRE AND POIRIER, ON THE ANTISYPHILITIC DRUGS WHICH CAN BE USED IN THE FIGHT AGAINST VENEREAL DISEASES. R. DUHOR, Rev. belge d'urol. et de dermat.-syph. 5:9 (Jan.-March) 1922.

The article referred to was read before the Belgian Dermatological Society at the meeting of February, 1922, with a view to the selection of dependable remedies for general use. The author advises against the overevaluation of mercury, stresses the inferiority of sulfarsphenamin, and favors the intramuscular use of amino-arseno-phenol (Ehrlich's "132," called "Eparseno"). He maintains that silver arsphenamin is safe for the use of the general practitioner.
THE TREATMENT OF SYphilIS BY BISMUTH SALTS. R. Duhot, Rev. belge d'urolo. et de dermat.-syph. 5:14 (Jan.-March) 1922.

In his recent work, the author has used the tartro-bismuthate of potassium and sodium in oily suspension, given intramuscularly in doses of 0.2 to 0.3 gm. at intervals of four days for as many as six injections in a series. He found that animals tolerated it well, with the exception of some visceral congestion, especially of the kidneys, which followed prolonged treatment. Its intravenous injection is strongly contraindicated. After trying it in all stages of syphilis, Duhot concludes that it is an active drug, second only to the arsphenamins. During its administration the kidneys must be watched, and it is not to be used in cases of nephritis or tuberculosis, nor in ocular syphilis.

THE CHOICE OF ANTISYPHILITIC MEASURES AND THEIR MODE OF ACTION AND APPLICATION; THE PREVENTION OF POST-ARSENeAL REACTIONS. R. Duhot, Rev. belge d'urolo. et de dermat.-syph. 5:33 (April-June) 1922.

The greater part of this article is devoted to a description of the theory and practice of the author's new method of preventing arsphenamin reactions by injecting the drug mixed with glucose solution. In the author's opinion, the icterus which sometimes appears is usually of infectious origin. The undertreatment of syphilis is condemned, the persistence of foci in the central nervous system being especially cited.

PARKHURST, Toledo, Ohio.

CASE FOR DIAGNOSIS: KERATOSIS FOLLICULARIS SCLEROTISANS. Iwanow and Tischenko, Arch. f. Dermat. u. Syph. 139:1, 1922.

This article contains the description of a dark oval lesion dotted with brownish red spots which corresponded to corneous plugs in the follicles of the skin. Histologically, there was dilatation and hyperkeratosis of the follicles, and thickening and hardening of the perifollicular connective tissue, with rarefaction of the elastic fibrils. There were no hair or sebaceous glands, while the coil glands were atrophic. The authors suggest the name "keratosis follicularis sclerotisans."


The author attempted active immunization with material taken from the tuberculous lesions of the patient himself or of another patient. In fifteen of twenty-two cases distinct improvement was seen; in some, surprising benefit


Roentgenograms of congelation reveal all degrees of decalcification of the bones, from a hardly visible to a complete decalcification. Decalcification of the phalanges of the third toe and finger are most frequent.

ICHTHYOSIS AS AN HEREDITARY DISEASE. Leven, Arch. f. Dermat. u. Syph. 139:117, 1922.

Ichthyosis vulgaris is essentially different from ichthyosis foetalis. The pedigree of the patients shows that ichthyosis is not limited to either sex.
ABSTRACTS FROM CURRENT LITERATURE


Gravagna reports a case in which gummatous infiltration beyond doubt caused the beginning and development of elephantiasis of the vulva. No micro-organisms but spirochetes were found. The case proves that in spite of the long duration of the disease the syphilitic infection developed a latent local activity causing an elephantiasis which had so far withstood all arsphenamin medication.


Itching represents a weak protopathic pain sensation. If increased, the itching sensation develops into a pronounced protopathic sensation of pain. Scratching displaces the protopathic pain by the epicritic pain.


In all cases of symptomatic loss of hair, the author found lymphocytosis, frequently with atypical forms of nuclei. He believes that this lymphocytosis is due to an endocrine disturbance. A typical alteration of the nails was also observed in most patients.


Sebaceous cysts of the hairy scalp histologically resemble epidermoids. Development of carcinoma from a follicular cyst has not yet been described. The author reports a case of sebaceous acne over the whole body, which led to tumor formation on the ear and buttocks. Histologic investigation showed that the tumor had originated from a follicular cyst and had developed into a spinous cell epithelioma with metastases in the neighboring lymph glands.


The author reports a case with concomitant xanthoma and fibroxanthosarcoma of the skin without cholesterinemia. Of eight cases examined with the roentgen rays, six showed more or less pronounced atrophy of some of the bones of the acrodermatitic extremities. There were no scleroderma-like alterations. The author believes that a disturbance of the endocrine glands partly accounts for the atrophy.


Careful experiments confirm the fact that connective tissue cells possess the capacity to absorb soluble and insoluble substances from the tissue fluid and to store them. This refers both to chemically indifferent substances, such
as india ink and cinnabar, and to such substances as melanin. Furthermore, as it was possible to create chromatophores in the corium by injecting melanin, the author is convinced that the pigment cells found in the corium represent chromatophores which have taken up the pigment they derived from the epidermis. The cells of the epidermis cannot retain pigment probably on account of some damaging factor or degenerative alteration. Whether the pigment leaves the cell in a soluble form or as a grain of pigment is not known. Even the normal epidermis shows a certain degree of incapacity. Some skins, however, in spite of deep pigmentation, do not possess any chromatophores, or hardly any. The author believes that the transference of pigment to the cutis is a pathologic process.


The author believes that a colloidal chemical reaction is essential for a reliable spinal fluid diagnosis. The colloidal gold reaction is the most important and is superior to the mastic reaction.


This is a report of four cases showing a mosaic-like picture of polygonal nodular eruptions on the trunk, which histologically had the character of a connective tissue nevus.


The author calls attention to the danger of overlooking an aortitis, as even the best roentgen-ray technic cannot always assure one of a correct diagnosis. A hidden syphilitic involvement of the aorta is frequent. The author treats syphilitic aortitis with a total dose of 4.5 to 6 gm. of neo-arsphenamin combined with inunction treatment; he also recommends the permanent treatment method of Schottmüller.


The number of leukocytes in the capillaries of the skin is a little larger than the number in the larger vessels.

A PRACTICAL METHOD OF DETERMINING DOSAGE OF ALPINE SUN LIGHT. Keller, Deutsch. med. Wchnschr. 48:346, 1922.

The following method is useful for measuring an Alpine sun erythema dose (A. S. E.) also for testing the efficiency of old and new lamps: A tumbler, 5 c.c. in diameter with 100 c.c. capacity is filled with 2.5 c.c. of a 1 per cent. potassium iodid solution, 25 c.c. of 5.3 per cent. sulphuric acid, from 6 to 8 drops of a 1 per cent. starch solution and 1 c.c. of 400th-normal sodium thiosulphate solution. This solution is placed within half the therapeutic exposing distance and left until it turns bluish. The time required is the Alpine sun unit.

Contrary to Lesser, the author believes that mercury is not only a symptomatic agent, but that it has a decidedly beneficial influence on the course of the disease. Statistics gathered in Russia, Bosnia, Herzegovina and Anatolia on a large number of patients who had been treated with mercury only prove that mercury prevents the development of tertiary symptoms.


The author believes that anaphylaxis, allergy and inflammation are identical biologic processes. For example, he believes that an attack of gout is an angioneurotic inflammation and considers it analogous to anaphylaxis.


Auto-inoculation enables one to make the safest diagnosis. The author recommends nonsyphilitic parenteral protein treatment of buboes. Immunization with a streptobacilli vaccine gave good results, although the preparation of the vaccine was difficult.


Myxedema is generally combined with disturbance of the genital system. The author discusses a case of pronounced infantile myxedema which, in spite of all typical symptoms, showed perfectly normal genital functions.


The aqueous 1:1,000 congorubin stain solution resembles the colloidal gold solution. The authors add 75th-normal hydrochlorid acid to change the color from red to blue. Dilutions of spinal fluid of 1:20 prevent change of color. In the thirty-eight spinal fluids examined this way, fifteen reactions corresponded to the colloidal gold reaction. The technic needs improvement. As yet this method has no practical value.


The author observed a distinct Herxheimer reaction on pityriasis rosea lesions in a case of secondary and also in a case of tertiary syphilis following mercury or arsphenamin injections. The Herxheimer reaction is not specific, though a definite explanation has not yet been given.


Syphilitic serums cause a flocculation of the lipoid extracts. While hitherto attention has generally been directed to the final stage of this process, Dold assumes that syphilitic serum precipitates the extract lipoids at the very
moment serum and extract make a contact, the process thus passing an early preliminary colloidal, finely dispersed stage before forming the large flocculae in the Sachs-Georgi and Meinicke reactions. Dold's method tends to render macroscopically visible the early colloidal stage of this process.


The rays between 302 and 297 microns cause erythema and pigmentation. It is therefore of fundamental importance to increase this sphere in the lamps (Alpine sun, etc.) used, and not to lengthen the spectrum.


The administration of 100 gm. of a solution of potassium arsenite (Fowler's solution) within six months caused polyneuritis in a psoriatic patient in the form of paresthesia in the legs, while the skin lesions regressed. Four months later, the patient developed extensive erythrokeratoderma, also melanosis and hypertrophy of the skin of the feet and hands. The disturbances were due to chronic arsenic poisoning.


The author describes experiments with stains to render flocculae more clearly visible in flocculation reactions. Sudan, gentian violet and methyl green pyronin proved useful in the Hecht and Sachs-Georgi reactions. Similar experiments with the Wassermann reaction gave no results.


This is the report of a case which was cured by one intramuscular injection of a milk protein.

SKIN AND MUCOSA HEMORRHAGE WITH BONE MARROW DAMAGE AND DEATH FOLLOWING ARS PHENAMIN-MERCURY-COLLARGOL TREATMENT IN SECONDARY SYPHILIS. VILL, München med. Wehnschr. 68: 52, 1921.

The author warns against administration of collargol intravenously during or shortly after mercury-arsphenamin treatment.

CONTRIBUTION TO THE CLINIC OF MERCURIAL ERUPTIONS. WOLF, München. med. Wehnschr. 68: 52, 1921.

A description is given of a rash caused by an amalgam filling in a tooth.

ARTIFICIAL LIGHT THERAPY. AN “IRRADIATION-CHAMBER” FOR SOURCES OF ARTIFICIAL LIGHT. PICARB, München. med. Wehnschr. 68: 1142, 1921.

The therapeutic effect of artificial light can be considerably increased by using a chamber the walls of which are covered with a reflecting layer of
aluminum. Theoretically, the author believes that the effect of rays of light on the body are due to the hemoglobin of the blood, which contains metal, and which thereby transforms the energy of the rays.


Activation of the protoplasm does not always cause stimulation. There are circumstances under which activation does not result in stimulation but in the paralyzing of the body cell.


The author distinguishes three groups (1) psychogenic pruritus without skin alterations; (2) psychogenic pruritus with skin alterations, and (3) pruriginous dermatoses with psychogenically increased irritability. Therapeutically suggestive measures (hypnosis) gave satisfactory results.


The therapeutic effect is said to be due to the influence on the damaged vessels. The effect was not reliable clinically.

**PARENTERAL TREATMENT WITH NONSPECIFIC ALBUMIN BODIES.** Stintzing, München. med. Wehnschr. *69:* 229, 1922.

We still lack definite knowledge of nonspecific protein treatment. No hard and fast rules can yet be laid down as to dosage, indication and choice of protein in a particular case.


Report is made of 5,000 injections. The effect is not quite so strong as that of the same dose of silver arsphenamin. However, it is stronger than the arsphenamin preparations which are not combined with silver. Neo-arsphenamin is very stable in the air, showing no signs of decomposition after exposure for from one to six hours. This is one of its main advantages.


Report is made of a case which induced the author to believe venereal warts to be contagious.


In tuberculosis of the skin the author exposes the skin to one erythema dose of roentgen rays under 0.5 mm. of zinc per field and repeats this treat-
ment two or three times every six weeks. In superficial lupus only the lesions were exposed to an erythema dose under 3 mm. of aluminum; the dose was repeated after six weeks. Excellent results were obtained.


The author reports 242 cases treated with a mixture of arsphenamin and mercuric chlorid in one syringe. The author believes that this mixture is therapeutically less efficacious than the administration of each drug separately.


The author advises prolonged quinin medication in the treatment of tabes. However, as the spirocheticide effect in vitro does not correspond to the chemotherapeutic effect in the system, and as the inefficiency of quinin medication in syphilis has long been proved, the author's suggestions are of little value.


Richter traces the beginning of a tabetic process to Nageotte's point. He discovered a curious granulation tissue at this point, with Spiroactae pallidae.

NECROSES OF SUBCUTANEOUS FAT-TISSUE IN NEW-BORN CHILDREN. BERXHEIM-KARRER, Schweiz. med. Wchnschr., 52:12, 1922.

This is a report of five cases of so-called scleroderma neonatorum. All cases showed infiltrations in the deep skin layers. The nodules generally developed from the seventh to twentieth day. There was no scar formation, as the resorption was rapid. This disorder has received little attention. The author believes that the lesions are due to trauma (pressure of forceps) during labor. Histologically, the condition is characterized by a circumscribed involvement of the subcutaneous fat-tissue causing necrosis. Hence the scleroderma of the new-born clinically and histologically differs from genuine scleroderma.


From one fifth to two fifths of an erythema dose decidedly hastened development, growth and metabolism of frog larvae, while doses larger than two fifths inhibited growth.

AHLSWEDE, Hamburg, Germany.
CHRONIC URTICARIA. Presented by Dr. Munson.

A woman, aged 30, had had the disease for two years. Food tests as well as bacterial protein tests were negative.

DISCUSSION

Dr. Knowles said that the symptoms in this case were controlled by the administration of thyroid extract.

Dr. Schamberg cited a case of his that had been caused by shock.

LUPUS ERYTHEMATOSUS DISSEMINATUS. Presented by Dr. Schamberg.

The two cases presented showed a parallelism of symptoms. Both patients were women, about 20 years of age, and showed characteristic lesions located on the dorsa of the hands, on the chest, face and scalp. One patient had had a sinus infection for four years. This was followed by an acute and then a chronic nephritis. Treatment consisted of rest, forced feeding and the administration of 1 grain iodoform pills, three times a day. One patient showed a marked increase in weight, and convalescence was correspondingly more advanced.

DISCUSSION

Dr. Stokes discussed the cases. He said that during the last two years he had seen nine cases paralleling these; three of these came to necropsy, and two showed mesenteric tuberculosis. He suggested deep roentgen-ray therapy directed to the lymphatic system. He cited the case of one patient treated over a period of two years who was now free from symptoms. He regarded it as possibly a toxic erythema incident on a staphylococccic invader on a tuberculous allergic base. Discoid and disseminate types represent different phases of the same phenomena.

LUPUS VULGARIS. Presented by Dr. Schamberg.

A colored youth, aged 17, had had lupus vulgaris for thirteen years, and the parts involved were the nose, upper lip, right side of the face and the right eyelid. The patient was being treated with a 25 per cent pyrogallie acid cerate. Dr. Schamberg said that the ulcerative type gave good results with roentgen-ray therapy, but that the nonulcerative type gave negative results. He said, further, that if the patients did not show prompt improvement under roentgen-ray treatment, it was to be discontinued.
DISCUSSION

Dr. Knowles spoke of the great number of patients being treated in Darier's clinic, St. Louis Hospital, Paris. The method of treatment consisted of the boring of the lesion with a stick of metallic zinc and following this immediately with a silver nitrate stick. When he did not employ this treatment, he resorted to the Paquelin cautery.

Dr. Greenbaum said that in Brocq's clinic scarification followed by the Finsen light was largely employed.

NEO-ARSPHENAMIN DERMATITIS. Dr. Greenbaum.

F. W., a white boy, aged 10, developed a follicular eruption over the entire body after the fifth injection of neo-arsphenamin (dose 0.3 gm.). The face, as a result of scratching, had become eczematized. The itching was severe. The case was shown because of the rarity of this type of eruption complicating the administration of neo-arsphenamin.

PARAPSORIASIS. Presented by Dr. Sidlick.

A negro, aged 32, had had the disease for an indefinite time. The lesions were papular and limited to the anterior and posterior aspects of the trunk. The itching was severe. The patient also had a four plus Wassermann reaction.

DISCUSSION

Dr. Schamberg concurred in the diagnosis, but expressed the opinion that it might be a case of mycosis fungoides in its incipiency. Dr. Weidman suggested that it might be a lymphatic leukemia. Dr. Schamberg advised ultraviolet light therapy pushed to the point of producing desquamation.

ROENTGEN-RAY DERMATITIS. Presented by Dr. Dengler.

A white woman, aged 35, in 1914, received six treatments with the roentgen rays at weekly intervals, for the removal of superfluous hair on the back of both arms. The duration of each treatment was ten minutes, and the tube was about 20 inches (50.8 cm.) from the arm. About five days after the last treatment the skin became purple and the tissues speedily broke down, the arm presenting the appearance of raw meat. At the present time, both arms present ulcerative areas and scars. The arms are painful when exposed to air.

DISCUSSION

Dr. Schamberg suggested surgical removal of the involved skin and later skin grafting.

CASE FOR DIAGNOSIS. Presented by Dr. Weidman.

Sara W., colored, aged 25, said that the disease began eleven years ago, with a distribution over the shoulders. Three years ago she had a typical annular syphiloderm of the face and nodules elsewhere over the body. The Wassermann reaction was negative; however, she received thirteen injections of arsphenamin. The annular lesions disappeared, but the others remained in spite of the fact that the last nine Wassermann tests, made over a period of two years, have been negative. At present she has widely scattered pig-
mented nodules up to 1 cm. in diameter, with flat topped, translucent elevated centers; most of them are on the shoulders and the lateral aspect of the thighs. The face and arms are free. The itching is intense.

DISCUSSION

DR. SCHAMBERG suggested prurigo nodularis as the diagnosis.

Regular Meeting, Dec. 11, 1922

F. D. WEIDMAN, Presiding

LARVAE MIGRANS. Presented by DR. WARREN WALKER.

A boy, aged 3 years, had, on the left buttock, a narrow irregular line about 14 inches (35.56 cm.) in length and 2 mm. in width, slightly elevated and light to dark red in color. The terminals of the line showed activity, and its length was increased 2 inches (5.08 cm.) during the week it was under observation. The child had been at the seashore, and the mother thought the condition was of three months' duration.

DISCUSSION

DR. WEIDMAN said that the parasite was probably the larvae of the bot-fly. He thought it could be obtained and grown on meat.

DR. STRAUSS said that he had a case showing two narrow lines on the soles of the feet and another on the lower part of the leg. He said the cases he studied showed no eosinophilia.

RECKLINGHAUSEN'S DISEASE. Presented by DR. F. D. WEIDMAN.

Thomas C., white, 57 years old, had had the disease for twenty-seven years. This was a classical case with hundreds of cutaneous tumors and numerous freckle-like macules. The mental state was good. The patient was shown on account of associated bone changes of such a grade that Paget's disease of the bones was suspected until roentgenograms disproved any osseous thickening. They brought out marked "atheroma" of the posterior-tibial arteries, however. The legs were strongly bowed (congenital according to the patient), and the head was very large. The patient said that the changes in the skin and head had occurred after an attack of typhoid fever twenty-seven years before. The Wassermann reaction was negative; the blood counts and urinalysis were negative (eosinophils 3 per cent.); the blood urea nitrogen, 20 mg.; and chlorids, 520 mg. Sections showed a vascular fibroma containing numerous nerve trunks with medullated fibers.

EXTENSIVE TELANGIECTASIA AND PIGMENTATION (MAJOCCHI'S DISEASE). Presented by DR. JOHN H. ARNETT.

Elinor C. K., aged 25 years, white, married, said that the disease began eight years before over the right ankle, and then spread upward over the whole of the lower extremities and finally over the upper extremities. There were a few scattered points on the face and the neck. The most conspicuous
lesion was a deep, diffuse hyperpigmentation which was studded by dark freckle-like pigmented macules. This was most marked on the ankles and legs, where the skin was also thickened and coarsely scaly. At the upper parts of the eruption only freckle-like macules were present. There were bright red punctae (some of which were comprised of several cayenne pepper-like points) both at the uppermost margins of the disease and irregularly scattered through the older parts. The condition did not quite coincide with angioma serpiginosum, Schamberg's disease, or Majocchi's disease: for an annular, serpiginous or follicular feature had not been seen. It was probably one of the many variants of the three, related more closely to Majocchi's disease. Sections showed a definite subacute to acute inflammatory process around overdistended, thrombotic capillaries, and minor hemorrhages. The following special examinations were negative: coagulation time, blood count, blood platelet count, Wassermann reaction, bacterial and protozoal stains on tissue, urinalysis. The blood pressure on two occasions was: systolic, 98, and diastolic, 74. Forcible rubbing or congestion induced by the tourniquet yielded fresh lesions, and the latter also appeared in the biopsy scar. Basal metabolism was normal.

LINGUAL TUBERCULOSIS. Presented by Dr. A. Strauss.

F. N., a man, aged 39, born in Russia, a machinist, had a soft and hard palate almost completely covered with an elevated reddish papillomatous growth consisting of pinhead sized inflammatory papular-like lesions. Numerous minute depressions were observed in the patch, resembling the military abscess-like openings of the verrucous form of tuberculosis. There were various fissures, irregular in outline, over the diseased area. A few pea-sized and larger ulcers and scars from former loss of tissue were also present. There is apparently no discharge of pus or any other secretion. Cervical glands of both sides are markedly enlarged. Roentgen-ray examination of the chest showed extensive fibrocaseous tuberculosis of most of the entire right lung and the upper lobe of the left lung. Histopathologic examination of a section of the growth revealed areas of tuberculosis, although no tubercle bacilli were demonstrable. The duration of the lesion was eighteen months.

ENDOTHELIOMA CAPITIS. Presented by Dr. J. B. Ludy.

Samuel D. F., aged 19 years, white, of Italian parents, about 18 months before noticed a small tumor on the right side on the supraperiocular region. Three months later another tumor appeared on the forehead above the right eye. During the following fifteen months a dozen more tumors appeared limited to the anterior portion of the scalp and to the right of the median line. The tumors range in size from that of a pea to that of a walnut. They were varied in shade from red to violet and were resistant though not hard as stone. During this period a small aneurysm of the artery of the right temple developed. The patient was a boxer and said that he frequently received blows on the right side of the face. The tumors bled profusely on being struck. There were no subjective symptoms.

DISCUSSION

Dr. Weidman concurred in the diagnosis. He said that the section was characteristic of an endothelial tumor.
CHRONIC ECZEMA. Presented by Dr. E. F. Corson.

M. G., an undersized white girl, aged 11, exhibited a generalized eczematous eruption consisting of vesicular patches with crusting and oozing, together with dry areas where marked lichenification existed. As a background there was an ichthyotic condition which had been present since the age of 18 months. The child was poorly nourished, subnormal mentally and had dry, scanty hair. With thyroid extract therapy, marked improvement had been noted during the month she had been under treatment.

John B. Ludy, Secretary.

CHICAGO DERMATOLOGICAL SOCIETY

Regular Meeting, Dec. 20, 1922.

E. A. Oliver, M.D., Presiding

A CASE FOR DIAGNOSIS. Presented by Dr. Stillians.

An American woman, aged 40 years, about March 1, 1922, noticed a pink, pimple-like mass in the center of her forehead. This lesion was movable, but firm in consistency; when opened it seemed to be a solid mass. The incision did not heal, but exuberant granulations grew out of it. These were removed, and the ulcer was cauterized. Large doses of roentgen ray were then employed, with only slight effect. Hemoglobin was 65 per cent.; the white blood cells numbered 10,000.

Examination revealed a rounded nodule 1 cm. in diameter, about the color of the surrounding skin, with a central shallow ulcer 0.3 cm. in diameter. The nodule was movable with the skin and not tender.

(NoTE: Since then a positive Wassermann reaction has been obtained. Roentgen-ray examination showed no pathologic bone condition, and no sinus could be found by probing.)

DISCUSSION

Dr. Zeisler said he thought it was a fibromatous nodule with surrounding atrophy, probably caused by roentgenotherapy.

Dr. Pusey said he thought that there was a sinus extending down to a necrotic focus, and that the only treatment was to make an incision and clean it out.

Dr. Stillians said that when the patient was first seen the lesion looked like granuloma pyogenicum, but it did not clear up under roentgenotherapy, although he gave her as much roentgen-ray treatment as he thought advisable. The lesion had been cauterized before he saw the patient. He said that he would investigate the sinus.

A CASE FOR DIAGNOSIS. Presented by Dr. Stillians.

An American, 20 years old, first noticed an eruption of large, scaly, itching patches on his chest in February, 1922. Under treatment, this condition cleared up. About October 1, another eruption appeared and had persisted since that time, fading when the patient was cold and erupting when he was warm. There was no subjective sensation. The Wassermann reaction was negative.
At presentation an eruption was seen on the chest, shoulders and abdomen, less on the neck, arms and back. The eruption consisted of small macules 1 to 3 mm. in diameter, pink, sharply defined and chiefly follicular. The lesions faded almost entirely on pressure. No scaling was present.

**DISCUSSION**

Dr. Pusey said that he thought it was one of the nebulous cases which it was impossible on hasty or first inspection to define.

Dr. Foerster said he could throw no light on the case. He thought the eruption was perhaps due to vasomotor instability, autotoxic in origin.

Dr. Zeisler agreed with Dr. Pusey that it was impossible to make a diagnosis on a fading eruption of this type.

Dr. Stillians said he would try to make a biopsy.

**SUBCUTANEOUS SARCOID.** Presented by Dr. Stillians.

A Jew, aged 21 years, a printer, in April, 1922, first noticed nodules on the left side of the chest and on the left forearm, and late in September he noticed one on the right wrist. There were no subjective symptoms, and the nodules were neither painful nor tender. The white blood count was 8,000; differential: 63 per cent. polymorphonuclears, 37 per cent. small mononuclears, 9 per cent. large mononuclears and 2 per cent. eosinophils. The Wassermann reaction was negative.

Examination revealed a rounded nodule, 15 by 0.75 cm. in diameter, over the lower rib in the left anterior axillary line, and about 2 cm. medial to this was a pea-sized, round mass, subcutaneous and not attached to the skin. On the internal surface of the upper one third of the left forearm was a similar nodule 1.5 by 1 cm., with a shot-sized mass close to it and connected with it. On the other side of the right wrist was another nodule about the size of a navy bean. The skin over these nodules was unchanged in appearance.

**DISCUSSION**

Dr. S. Ear said that he was not willing to offer a clinical diagnosis; but he thought the lesions might be lipomas rather than sarcoids.

Dr. Pusey said he thought they were benign lesions which had been present for a long time before the patient noticed them. Some were probably fibromas and some lipomas.

**UXEA'S CARDLIKE SCLERODERMA.** Presented by Dr. Zeisler.

A woman, aged 21 years, presented an eruption on the anterior and posterior surfaces of the neck which had been present for six months. The areas were dead white, and varied in size from that of a pin-point to that of a half dollar; they were cuboidal in shape, showing in the center some evidence of atrophy and follicular plugs.

**DISCUSSION**

Dr. Pusey said he believed it was a case of atrophic scleroderma occurring in patches.

Dr. Foerster concurred in the diagnosis and asked whether there was any history of injury. He said they recently had seen a patient in whom sclero-
derma followed trauma produced by a snowball being thrown against the back. The lesion appeared within a few days at about the point of trauma.

Dr. Zeisler, replying to Dr. Foerster, said there was no history of trauma, so far as he knew. He asked how frequently the small follicular plugs were present in scleroderma.

Dr. Pusey said that he believed they showed quite often when the lesions became sclerotic and flattened.

Dr. Senear said that in the earlier literature they had formerly contended that the presence of plugs was indicative of lichen planus, but it had later been shown that they were present in both conditions.

A CASE FOR DIAGNOSIS. Presented by Dr. Senear.

A woman, aged 18 years, in August, 1922, first noticed a scar on her right cheek. Since that time numerous other scars had developed on the cheeks and forehead. The patient said that there were no inflammatory lesions preceding the development of the scars. A moderate acne was present, but this did not involve the areas affected by the scarring. No subjective sensations were complained of. The condition corresponded closely to atrophia maculosa varioliformis cutis described by Heidingsfeld as a new disease.

DISCUSSION

Dr. Stillians said that he had seen a similar case in a young Jewish medical student who had lesions on the left cheek, some of which were linear and much smaller than these. He thought it improbable that the girl should not know whether she had inflammatory lesions which produced the scarring, and he believed the history she gave was correct.

Dr. Senear said he was interested in the case because he recalled that when Dr. Heidingsfeld showed his case the question was raised as to whether or not the lesions had followed acne. There was no history of acne in that case. In this girl, the acne was not in the area involved in the atrophy. The girl and her brother were both intelligent, and he was sure they were honest in their statement that there were no preliminary lesions and that she did not touch them. He had an open mind on the case but thought they could rule out any acne-like lesions preceding the atrophic areas. Heidingsfeld described a little erythema and scaling preceding his lesions, but this was not present in this case.

BROMODERMA? Presented by Dr. Stillians.

An American youth, aged 17 years, had been run over by an automobile in August, 1922, which produced a fracture of the left foot. On the dorsum of the left foot was an area which had been excoriated and which had refused to heal, becoming raised and oozing. The area had recently decreased somewhat in size. The patient was an epileptic and had received phenobarbital (luminal), but no history of bromid medication could be obtained.

DISCUSSION

Dr. Pusey said he would not accept this as a case of bromoderma. The lesions had occurred along the site of the old injury, presumably an ulcer with granulations. He thought a more likely diagnosis was a vegetating
dermatitis. He had seen this following eczema and ulcers of the leg when there was stasis. The location and distribution were unusual for bromoderma.

Dr. Zeisler said he thought the case was a dermatitis vegetans.

Dr. Foerster said he thought it was difficult to make a differential diagnosis between bromoderma and dermatitis vegetans, as the case had the elements of both. He believed an examination of the urine to be of importance.

Dr. Senear said he was impressed with the case as a dermatitis vegetans rather than as a bromoderma.

Dr. Stillians said he had thought of dermatitis vegetans first as the lesions were crusted at that time, but there was no pus. When he heard that the patient was epileptic, he was inclined to call the condition a bromoderma, as the lesion had persisted for six months. Tests for brom in the urine were negative.

Dr. Ravitch said he thought the condition was fungoid in origin.

A CASE FOR DIAGNOSIS. Presented by Dr. Stillians.

A man, aged 29 years, presented inflammatory lesions of the legs which had been present for a year. On healing, pigmentation and scaling occurred. There was a history of urethritis occurring after practically every intercourse and lasting for a week or two. Following these attacks, there was some joint involvement, and the lesions appeared on the legs. Several of the lesions had ulcerated, leaving scars. At presentation there was an indistinct, dark red node about the middle of the inner side of the right leg.

DISCUSSION

Dr. Foerster said he thought the condition was closely connected as to causation with vascular changes, more particularly in the veins. The patient said that he frequently had cramps in the legs at night, which together with the history of cold and clammy feet and congested, moist finger-tips, indicated a disorder of the peripheral, terminal circulation. This condition was not infrequently seen in the early stages of varicose ulcer. There was marked infiltration of the middle third of one leg, and the inner side of the left leg at its lower third showed an atrophic scarred condition due to small healed ulcerations. The picture was that of an early stage in the development of varicose ulcer.

Dr. Senear agreed with Dr. Foerster and said he thought the infiltrated leg was so much like the ones seen in varicose ulcer that he believed this was the proper explanation.

Dr. Ravitch said the patient complained first of cold feet and then of burning feet, and he said that when he was on his feet he had to stop and rest frequently. In his opinion it was a case of thrombo-angiitis obliterans.

Dr. Stillians said that he had seen the patient for the first time that day. With the history of urethritis that lasted only a short time, he thought it might be a tuberculous process, such as erythema nodosum or atypical erythema induratum which sometimes ulcerates and sometimes does not. The patient had been at the Mayo Clinic where they suspected tuberculosis of the abdomen, but operation revealed that it was normal.

GRANULOMA PYOGENICUM. Presented by Dr. Zeisler.

A boy, aged 8 years, about 1 inch below the hairline, in the middle of the posterior surface of the neck, had a flat, round, bluish-red papule about
0.75 cm. in diameter, which was apparently covered by a thin skin, which was slightly scaly. The lesion had been excised twice but recurred. There was no tenderness or itching.

**DISCUSSION**

Dr. Senear said that he believed, from the extreme firmness of the lesion, that it was a vascular keloid.

Dr. Foerster said that he agreed with Dr. Senear.

**ST. LOUIS DERMATOLOGICAL SOCIETY**

*Regular Meeting, Jan. 10, 1923*

M. F. Engman, M.D., Presiding

A CASE FOR DIAGNOSIS. Presented by Dr. R. S. Weiss.

An Italian woman, aged 38, had had a lesion on the left thigh, which she said, began at the age of 16. There was considerable itching. She presented an oval granulomatous plaque about 4 by 6 inches (10.16 by 15.24 cm.) in size and seemingly about one-fourth inch (0.63 cm.) in thickness, apparently in the corium and situated on the left thigh just above the knee and posteriorly. At her first visit it was thought that a few satellite lesions could be made out at the periphery of the large plaque, but this feature was not so apparent at the second visit. The skin over the lesion was inflamed and somewhat lichenified.

**DISCUSSION**

Dr. Weiss said that he was of the opinion that it was a case of chronic dermatitis with lichenification. He brought the patient to this meeting on account of the unusual depth of the thickening and its long duration.

Dr. McIntosh and Engman said that they thought unquestionably it was a case of lichenification.

Dr. R. H. Davis said that he thought it a case of lichenification, although judging from the sharp limitations of the lesion, one might be led to suspect that originally the trouble was a phytosis.

A CASE OF YAWS. Presented by Dr. M. F. Engman.

H. L. O., a colored man, aged 27, was admitted to the Barnes Hospital on Jan. 5, 1922, complaining of lesions on the face, neck, back, arms, legs, chest and abdomen, with considerable itching. The mother and father were living and well. There were six brothers, living and well; one brother was dead, cause unknown; three sisters were living and well. The patient had had measles, mumps, smallpox and whooping cough during childhood. He has been healthy since then up to the time of the present illness. He denies all venereal infections (he admits having had promiscuous sexual intercourse). He was born in Hollow Rock, Tenn., and never left that place until two years ago, at which time he moved to St. Louis. During the war, the patient was stationed at Camp Meade, Md., for two weeks. After being discharged from the army, he visited Cairo, Ill., for three months. Since his arrival in St. Louis he had worked for a packing company. His present illness began three
months ago with a small nodular lesion in front of the left ear which, the patient said, looked like a wart. This gradually increased in size, becoming harder and being covered with white scales. A physician treated him with a plaster, and the lesion became raw and bloody. He then came to the out-patient department, two months ago, for treatment, at which time the lesion was about the size of a twenty-five cent piece; it was fungating and ulcerating, and was the only lesion present. The patient also used a proprietary blood medicine, which he purchased at a drug store. Two weeks ago he noticed "pimples" on the neck, face, arms, abdomen, back and legs. These were hard, smooth and slightly elevated. They gradually increased in size and became covered with a white scale, and caused much pruritus. A lesion also developed on the roof of the hard palate. The laboratory examination revealed: 5,200,000 red blood cells, 6,600 white blood cells, and 85 per cent. of hemoglobin. The differential count was: polymorphonuclears, 62.5 per cent.; polymorphonuclear eosinophils, 1 per cent.; polymorphonuclear basophils, 1 per cent.; lymphocytes, 33 per cent.; large mononuclears and transitionalis, 2.5 per cent.

Prostatic Secretion: There were a few clumps of pus; the examination otherwise was negative. Urinalysis: The urine was turbid and straw-colored; the specific gravity was 1.032; acid reaction: There was a trace of albumin, no sugar was present. Microscopic Examination: A few white blood cells and epithelial cells were present and occasional hyaline casts; there were no red blood cells. The total excretion of phenolsulphonephthalein was 35 per cent. in two hours. The temperature was 37 C.; pulse rate, 84; respiration, 20. The blood pressure was: systolic, 105; diastolic, 65. The Wassermann test with cholesterol antigen was —; with noncholesterol antigen, 0. There were 30 mg. of nonprotein nitrogen per hundred cubic centimeters of blood. There were 4.2 mg. of uric acid. Dark-field examinations of serum from the lesions revealed motile spirochetes in enormous numbers, differing slightly from Spirocheta pallida.

Skin Lesions: The patient had a generalized eruption. The primary lesion was a nodule varying in size from 0.25 to 2 cm. These nodules occurred in groups and in circinate arrangement. When the circles of nodules contained a great many individual lesions, a plaque of granulomatous tissue was formed. The circinate lesions and the plaques were distinctly grouped. They occurred thickest over the scapular and subscapular regions, the posterior surface of the shoulders and upper arm; the lower half of the buttocks; on the external surfaces of the knee joints; on the anterior surfaces of the elbow joints; on the anterior axillary folds; on the chin, and on the forehead and neck, both anteriorly and posteriorly. The primary nodule above described was practically the same color as the skin. There was some infiltration, but not the amount found in syphilis; in fact, the lesions were somewhat elastic. The surface of many of the plaques and groups was covered with a grayish, somewhat tenacious scale. Behind the right ear and also in front and above the left ear were granulomatous, nonulcerating, healing plaques, about 3 cm. in diameter. These plaques, when the patient was first seen (two months ago), were fungating and ulcerating, and were the only lesions present. On the hard palate, just posterior to the teeth, was an ulcerated area, 2.5 cm. in diameter.

DISCUSSION

Dr. Engman said that this is the first case of yaws that has occurred in our clinics. It is particularly interesting in that, according to the literature on the subject, it is the only case of yaws encountered in which the patient
had not been out of the United States. This patient was born in this country and has never been away from the United States. The only suspicious source of contact was probably his stay at Camp Meade in Maryland, although he has traveled somewhat in this country.

Dr. Grindon called attention to the site of the lesion, "maman pian," as it was called in the French West Indies, that is, in front of the left ear—the next lesion, behind the right ear, occurring three weeks after the primary lesion (if the patient was not mistaken).

Dr. Conrad observed that the movement of the Spirochaeta pertenues is an entirely different one from that of Spirochaeta pallida, being a conical movement, undulating and snakelike in character. This spirochete seemed to him thicker, and the curves somewhat deeper.

Dr. Engman said that one did not expect to find a spirochete (of syphilis) by dark-field examination so easily in that type of lesion, in syphilis, or so numerous, as they were in the lesions of the patient. He said that this case of yaws had been examined by Drs. Bell and Opie of Washington University, and they thought it was undoubtedly the spirochete of yaws, because of its differential points.

Dr. Mook said that he had seen a case at l'Hôpital St. Louis in Paris, exactly like the case presented, with just about as many lesions. He said that the first impression one receives is of a case of syphilis, and yet it does not look like syphilis.

Dr. Grindon remarked that the lesion at first glance resembled those of hypertrophic lichen planus.

Dr. Mook said that the condition looked somewhat like mycosis fungoides.

Dr. W. D. Davis said that he had seen a case of yaws in Paris similar to that Dr. Mook described, and that he had also seen a case, which was undoubtedly yaws, in a negro at one of the Southern camps, Camp Beauregard, 39th Division. The patient had come into the United States from some of our island possessions, after which the lesions had spread over his body. He had fungating lesions, similar to the type that appeared on the chin of the man presented.

A CASE FOR DIAGNOSIS. Presented by Dr. W. E. Netherton for Dr. W. W. Duncan, Sorento, Ill.

H. B., aged 14, an American boy, had consulted Dr. Duncan because of the appearance of brown spots on the right shoulder, following exposure to sunlight when swimming. The boy had had pneumonia at the age of 7; he had had no other illnesses in childhood. The present trouble was of one year's duration. The brown spots on the shoulder gradually enlarged peripherally. He presented a large, irregular, hyperpigmented area involving the lower part of the right side of the back. This was spreading gradually peripherally. The spreading border was irregular, and near the periphery there were a few areas of normal skin which had been surrounded by the advancing borders. The surface of the lesion was smooth; there was no scaling. There was marked dermatographia.

DISCUSSION

Dr. Duncan said that he thought the lesion looked like tinea versicolor.

Dr. Mook said that he preferred to see the case several times before expressing an opinion. At first glance it looked like tinea versicolor, although
on closer inspection of the pigment in the skin, it had the appearance of lupus vulgaris; but no lupus nodules were present. He said that he thought it was very much like a nevus.

Dr. Weiss said that he thought this was merely a pigmented patch in the skin of the nevus type. If we saw such a lesion on the face of a woman, we would unhesitatingly call it chloasma.

A CASE FOR DIAGNOSIS. Presented by Dr. Conrad from Dr. Engman’s clinic at Washington University.

H. F., a white boy, aged 10, presented a generalized papular eruption over the body, excluding the scalp. He had had measles, whooping cough and diphtheria at the age of 3½ years; he had had several attacks of croup and colds. His tonsils and adenoids were removed at the age of 6, after an acute purulent otitis media had cleared up. He had worn glasses during the last year. His general health had been good for the last four years. The present trouble began in June, 1922, at which time he noticed that the eyelids were reddened and tender (vernal catarrh). Four weeks before radium treatment was instituted, he had received three treatments at intervals of one week. About December 15, a red, papular eruption appeared on the neck and rapidly spread over the body. There was no itching and no constitutional symptoms. The patient said that the condition was diagnosed as “varicella” at that time. Physical examination revealed a generalized papular eruption, with here and there flat lesions and fine scales, suggestive of pityriasis rosacea. On the arms and legs were crusted, pustular lesions which were thought to be suggestive of a drug eruption. They were not typical of involuting varicella lesions. A few of the papular lesions were somewhat umbilicated, but by far the majority of them were copper-hued, slightly indurated, deep-seated papules, arranged in indefinite circinate groups. The inguinal lymph nodes were enlarged, as were some of the posterior and anterior cervical nodes. The spleen was not palpable.

DISCUSSION

Dr. Engman said that he thought some of the lesions rather characteristic of pityriasis rosea with a cigaret-paper center, with a red periphery, the lesions being the size of a five-cent piece, whereas the entire body was studded with distinct papular lesions of a copper tint, which were rather infiltrated, but not as hard as those of syphilis. The skin had also a swollen, red appearance, which may accompany any acute eruption. Some of the lesions were crusted from scratching and quite papular, while others had the appearance of pityriasis rosea.

Dr. Grindon said that he thought the wide flat papules in circumscribed patches at first gave the appearance of an acute lichen planus; but otherwise they did not resemble this condition.

Dr. W. D. Davis said that in his opinion the case was a papular type of pityriasis rosea, and that the lesions on the back in the lumbar region and along the flank were more or less suggestive of the plaque type of pityriasis rosea. The fact that some of the lesions were crusted and papular indicated that the eruption was pruritic. The fact also that the lesions were on the face made this an unusual and most interesting type of the disease.

Dr. R. H. Davis said he thought it looked like pityriasis rosea.

Dr. Mook said that he saw the patient when the condition began several weeks ago. The boy came to his office for treatment of vernal conjunctivitis.
Radium was applied to the eyelids. Shortly after, the mother said: "He has 'skin spots.'" The chest and neck were examined, revealing six or eight vesicopapules scattered over the neck, chest and back. The mother was told that the boy had chickenpox; this was three weeks ago. That was the last time the boy was observed until today. Dr. Mook said that from certain characteristics not previously noted, he thought the lesions looked like pityriasis rosea, atypical pityriasis rosea of the papular type with vesiculation.

Dr. Tobias inquired whether this patient had any constitutional symptoms.

Dr. Mook replied that he had not.

Dr. Weiss said that he had seen the patient several times since he first came to the clinic. The boy had a number of plaques varying in size from 0.25 to 2 cm., which were typical of pityriasis rosea. In addition, scattered over the arms was a large number of papular lesions that appeared to be more like a drug rash than pityriasis rosea. At the time of the third visit, some of the plaques had involuted to such an extent that they did not appear to be quite so much like the plaques of typical pityriasis rosea. We have seen vesicles in pityriasis rosea before, and for this reason we did not exclude the diagnosis. The occurrence of other lesions is suggestive of a drug eruption. A few of the lesions were pustular and appeared like those of iodd. However, Dr. Weiss said that he believed this case to be that unusual type of pityriasis rosea which we see occasionally, especially in children.

Dr. Engman said that he thought the case was most interesting. When he first saw it (two days before) he thought it was varicella. Now, however, some of the lesions looked more characteristic of pityriasis rosea. Some on the chest were typical of pityriasis rosea with a cigaret-paper center, spreading peripherally and clearing up somewhat in the center. From observations made in St. Louis on cases of pityriasis rosea, Dr. Engman said he felt that the dermatologist should be careful to differentiate between the various types mentioned in this discussion. Several days ago he had a patient who in the first few days showed a large number of papules with lesions distributed over the face and neck which in a few days showed characteristics of typical pityriasis rosea. The case under discussion, Dr. Engman observed, looked more like pityriasis rosea than any other lesion mentioned.

Dr. Conrad said he thought at first that it was a case of pityriasis rosea, but on further inspection, owing to the color and circinate character of the lesions, with some infiltration of those lesions on the limbs, he thought it looked almost like typical secondary lesions. A Wassermann test gave negative results, however, and he decided that it was a pityriasis rosea of a papular type.

A CASE FOR DIAGNOSIS. Presented by Dr. Tobias.

Mrs. E. T., aged 45, a waitress, presented herself at the Dermatological Clinic of the Barnard Free Skin and Cancer Hospital, with a lesion on the right leg of six months' duration. She now presented a large, chronic, moderately infiltrated, scaly patch, involving the lower third of the leg, extending upward from the ankle and involving the entire anterior and lateral aspects of the limb. The upper border of the lesions was peculiar in that it was serpiginous and the seat of inflammatory activity. The condition was gradually spreading upward. There were no subjective symptoms. The Wasserman test was positive.
DISCUSSION

Dr. Engman said that this case was a type of chronic eczematoid dermatitis, one of the types that he had described in 1902, a dermatitis characterized by similar lesions on the leg. He said that many years ago he had seen good results following the use of 5 per cent. pulverized rhubarb in petrolatum for such conditions on the leg. Rhubarb contains a small percentage of chrysarobin, which is sometimes used for such conditions.

A CASE FOR DIAGNOSIS. Presented by Dr. Tobias.

Mrs. R. W., aged 58, a domestic, entered the dermatologic clinic of the Barnard Free Skin and Cancer Hospital, presenting an oval, well-defined, chronic, moderately infiltrated scaly plaque on the scalp in the right parietal region, of one year's duration, beginning as a pruritic erythematosus area, which the patient scratched. On removal of the thick scales, a red, weeping surface was disclosed. The hairs were not involved. The Wassermann report was not available.

DISCUSSION

Dr. Grindon said that occasionally this condition is seen on the temple, and sometimes just within the hairline of the forehead; again, on the chin. In his opinion it is quite the same thing as Paget's disease. He had seen the condition about the scrotum, also extending over the thorax.

Dr. Engman said that he concurred in this opinion of Dr. Grindon. He thought it a valuable observation to keep in mind in the dermatologic clinics, where there are a large number of so-called malignant conditions of the skin to deal with. He said that he had insisted in the Barnard Free Skin and Cancer Hospital clinic that these peculiar conditions, such as presented by Dr. Netherton, be called "malignant papillary dermatitis," after Fordyce, or "extramammary Paget's disease." Extramammary Paget's disease is overlooked and is classified under various names, such as Bowen's disease, which is, he believes, a type of Paget's disease and should be classified as extramammary Paget's disease. Many cases have been observed; in the course of time all develop markedly malignant symptoms, and their characteristics as such are indistinguishable from that type discussed by Bowen.

Dr. Grindon asked Dr. Engman whether he believed any stage of this disease could be called precancerous.

Dr. Engman replied that it could not be called precancerous, that always, from the beginning, it was cancer.

Dr. Engman replied that it could not be called precancerous; that always or chronic dermatitis, and is followed later by a true tumor in the gland tissue. The histology of the tumor is distinctly different from that of the skin condition, which shows hyperplasia with vacuolation of the cells. The tumor itself shows true carcinoma, which is entirely different from the histologic appearance of the skin. This case might be mentioned under the classification of mammary rodent ulcer type, which is a distinctly different kind of tumor from that which occurs in carcinoma of the breast itself. In other words, Paget's disease skin histology is distinctly different from tumor histology. There was a case in the Barnard Free Skin and Cancer Hospital of a woman who had numerous patches of eczematoid lesions, in the center of which grew large carcinomas, true carcinomatous tumors, as large as a walnut, while this is a flattened lesion that grows more like a rodent ulcer type.
Dr. Engman remarked that he thought this whole question could be likened to that of mycosis fungoides. It is mycosis fungoides from the beginning, and not eczema. The histopathology of so-called Paget’s disease and Bowen’s precancerous glands is entirely different from that of rodent ulcer pathology in the appearance and arrangement of the chromatin about the nucleus, a chromatin arrangement which marks them as malignant cells. They are malignant from the beginning, and the difference in histology is due to the difference in location. Premammary Paget’s disease occurs on the vulva or the penis. True carcinoma-like lesions of the glands appear later. We have seen malignant papular dermatitis of the penis which in the course of some months would develop true characteristic carcinoma with metastasis in other portions of the body. The lesions in the beginning are eczema-like in appearance. Yet they are carcinomatous from the very beginning, as shown in pathologic study. Most authors agree today that so-called Paget’s disease is cancer from the very first symptoms of the dermatitis, and it is not a dermatitis but a dermatitis-like lesion containing malignant cells which metastasize into the breast and cause the obvious characteristics of carcinoma.

Dr. Grindon said that it was his belief that the discussions in the textbooks to the effect that this condition begins in an eczema or eczema-like dermatitis were written by surgeons, not by trained dermatologists; he had never seen a case of Paget’s disease which looked like an eczema on close inspection. He suggested that the term eczema-like lesions should be corrected.

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**VIENNA DERMATOLOGICAL SOCIETY**

*Session of Feb. 9, 1922*

Dr. Nohl, Presiding

**ULCUS PHAGEDENICUM CRURIS.** Presented by Dr. Brünnauer.

In the case presented, that of a woman, there was an ulcer on the leg, the size of a dollar. The edges of the lesion were undermined, soot and slightly suppurating. The Wassermann reaction and luetin test were negative. Application of hydrogen peroxid quickly flattened the lesions and improved the condition. In the discussion, Fischel stated that, in two cases of phagedenic ulcer, he had found tetanus-like bacilli. These were also found in the case presented. Histologic details could not yet be given.

**LUPUS VULGARIS LIMITED TO THE HAIRY SCALP.** Presented by Dr. Kumer.

A man had suffered trauma of the head twenty years previous to the development of the present disorder.

**ERYTHEMA EXUDATIVUM MULTIFORME.** Presented by Dr. Arzt.

In a woman of 47, fever and pains in the joints were followed by development of polymorphic exanthes on the back of the hands, arms and cheeks. There were numerous disseminated, light red and partly bluish eruptions all over the body. Some lesions were hemorrhagic.
PSORIASIS ON A SEBORRHEIC BASIS. Presented by Dr. Reiner.

There was a bluish red exanthem covering the trunk and extremities, forming irregularly defined patches with a slight, pityriasisform scaling. The extremities also showed hemispheric nodules, rising above the skin surface and carrying a tender whitish scale on their summit. Diagnosis was difficult, as sites of predilection were not affected. Parapsoriasis was a possibility.

SENILE KERATOMA WITH TRANSITION INTO EPITHELIOMA. Presented by Dr. Brunauer.

The skin of the face of a patient, aged 84, was tough, dry and wrinkled, with symptoms of a senile degeneration. The seborrheic skin of parts of the face carried flat wartlike formations (verrucae seborrhoeicae seniles). One of these developed into an epithelioma, causing destruction of tissue around the right ear. Senile keratoma is rather frequent in peasants who are exposed to the sun, degeneration into epithelioma, however, being relatively rare.

STOMATITIS ULCEROSA MERCURIALIS FOLLOWING AMMONIATED MERCURY OINTMENT. Presented by Dr. Riehl.

A patient with psoriasis had been treated with ammoniated mercury and then lenigallol. In a test tube, an alkaline solution of lenigallol mixed with ammoniated mercury caused a gray-green deposit of finely distributed (colloidal) mercury.

Session of March 9, 1922

ERYTHEMA TOXICUM IN WIDESPREAD SCABIES PUSTULOSA AND IMPETIGO CORPORIS. Presented by Dr. Krüger.

A girl of 5, in addition to serious scabies pustulosa developed toxic erythema consisting of numerous pea-sized sharply defined eruptions, which disappeared on pressure.

SECONDARY SYPHILIS WITH SYPHILITIC PHLEBITIS. Presented by Dr. Un terkircher.

Phlebitic nodules developed on the leg of a woman, aged 29, with disappearing secondary symptoms.

LIVE DO RACEMOSA IN SYPHILIS. Presented by Dr. Ehrmann.

A patient with a positive Wassermann reaction developed on the skin of the back, breast and upper and lower extremities the typical branched drawings with an hyperemic, more elevated main-branch with thinner side branches.

TUBERCULOSIS ULCERO SAS ANI. Presented by Dr. Arzt.

A case was presented in which there were typical nodules, yielding tubercle bacilli.
PURPURA. Presented by Dr. Randak.

A woman, aged 62, suffered from nasal hemorrhages followed by hemorrhages into the skin of the extremities. The mucosa of the mouth and of the bladder was also affected. The blood picture revealed: 5,000,000 erythrocytes and 6,800 white cells, of which 50 per cent. were neutrophils, 2 per cent. eosinophils, 5 per cent. mast cells and 43 per cent. lymphocytes, with scarcely any blood platelets.

SECONDARY SYPHILIS WITH TOPHI, ARTHRITIS, OSTEOPERI-OSTITIS AND TENDOVAGINITIS. Presented by Dr. Unterkirchler.

A woman, aged 22, with secondary syphilis developed tophi and osteoperiostitis on the right os carpale. There was also hygroma, which pointed to a syphilitic tendovaginitis simplex.

ICHTHYOSIS IN AN UNUSUAL LOCATION. Dr. Riehl.

The lesions were sharply defined and limited to the sole of the foot.

TUBERCULOSIS ULCEROSA LINGUAe. Dr. Arzt.

There were extensive ulcerations under the left side of the tongue in a man with apical tuberculosis. Histologically, there were epithelioid cell tubercles and giant cells. Tests for tubercle bacilli were positive.

FAVUS CORPORIS. Dr. Fuhs.

A dollar sized lesion with several sulphur-yellow scutula developed on the leg of a girl. The source of infection was unknown.

Session of March 23, 1922

ERYTHEMA MULTIFORME WITH INVOLVEMENT OF THE BUCCAL MUCOSA AND CONJUNCTIVA. Presented by Dr. Arzt.

The patient had had a relapse every spring during the last six years. There were macular, papular and vesicular eruptions on the inner side of the left cheek and on the conjunctiva of the left eye.

ERYTHEMA MULTIFORME WITH LARGE NODULES. Dr. Arzt.

Histologic investigation showed that the inflammation was not syphilitic.

SCLEROSES. Dr. Hofmann.

The patient had an initial sore on the lower lip and swelling of the sub-maxillary glands concomitant with a typical initial sore of the glans penis and swelling of the inguinal glands.

UNUSUAL EPITHELIAL DERMATOsis WITH EXTENSIVE ABSCESS FORMATION. Drs. Planer and Strassberg.

Clinically, this disorder showed an exanthem of small superficial nodules with a yellowish brown central scale. There were also extensive furuncle-like
abscesses almost palm size. Histologically, the disorder begins with a broad proliferation of the epidermis into the corium and a subsequent central parakeratotic cornification. Secondarily, Staphylococcus pyogenes-aureus invades the cornification, destroying the epithelial basis of the proliferation and penetrating to the collagenous tissue. This disorder, therefore, represents an epitheliosis which is secondarily infected with staphylococci, and which clinically resembles acne and its complications.

ASPHALT DERMATITIS. Dr. Fischl.

Three workmen handling asphalt developed a serious dermatitis of the face, with scaling, deep pigmentation and hyperkeratosis. Clinically and etiologically, the disorder resembled the petrolatum dermatitis described by Oppenheim.

ERYTHRODERMA EXFOLIATIVA RECIDIVANS FOLLOWING ADMINISTRATION OF NEO-ARSPHENAMIN. Dr. Oppenheim.

This case belongs to that group of cases of arsenic intoxication which are marked by relapsing erythemas and exfoliation, loss of hair and nails, presence of arsenic in the urine and the corneous substances and involvement of the mucosa and kidneys. This disorder must be differentiated from the erythema which develops immediately after an injection and which constitutes an idiosyncrasy to arsphenamin; it must also be differentiated from the "fixed" arsphenamin erythemas, as well as from the urticarial and eczema-like eruptions.

BERLIN DERMATOLOGICAL SOCIETY

Session of Feb. 14, 1922

CARCINOMA DUE TO ROENTGEN RAYS FOLLOWING IRRADIATION OF PSORIASIS LESIONS ON THE HANDS. Presented by Dr. Halberstädtter.

Carcinoma developed four years after several series of exposures to the roentgen ray. Radium was tried. In the discussion Dr. Blumenthal warned against repeatedly irradiating in relapses of psoriasis.

CONGENITAL SYMMETRICAL PROGRESSIVE ERYTHROKERATODERMA. Presented by Dr. Gottron.

The patient presented had sharply defined hyperkeratotic lesions on the ears, chin, elbows, hands, etc. The lesions had a brownish red outline. Diagnostically, psoriasis vulgaris and pityriasis rubra pilaris must be excluded. The picture presented is rare. In the discussion, Dr. Pulvermacher stated that a case of erythrodermic ichthyosiforme congenitale presented in 1919 showed all the symptoms of the foregoing disorder. These cases belong to the neviform group (the genodermatoses Meirowsky and genoderma Bettmann).
PEMPHIGUS SERPIGINOSUS. Presented by Dr. Gottron.

In the discussion of this case, which was held to be a dermatitis herpetiformis, it was proposed to apply Jadassohn's provocation method with potassium iodid, to secure a definite diagnosis.

Session of May 9, 1922

EXPERIMENTAL THALLIUM ALOPECIA. Dr. Buschke.

Injections of thallium into rats caused complete alopecia. An endocrine disturbance is assumed. Thallium is considered an endocrine poison par excellence. Buschke's experiments confirm the assumption that the whole endocrine system is one uniform organ.

SYMPHILIS OF THE PAROTID. Dr. Sklarz.

Swelling of left parotid gland, syphilitic alopecia, leukoderma and a positive Wassermann reaction were present. Inunction treatment and iodin effected regression of the parotitis.

LUPUS AND TERTIARY SYMPHILIS. Dr. Ledermann.

In a patient who had suffered from lupus since childhood, there developed warty, crusty lesions, which were held to be lupus tumidus. A four plus Wassermann test, however, and regression of nodules, as well as cessation of suppuration after inunction treatment, pointed to tertiary syphilis.

A CASE FOR DIAGNOSIS. Dr. W. Fischer.

The patient had an exanthem which consisted of urticaria-like wheals and also of obstinate hard eruptions, shiny and of a yellowish shade. Histologically, there were only superficial inflammatory changes. The disorder probably belongs to the group of urticaria perstans.

FAVUS ON THE BACK OF THE HAND CAUSED BY INFECTION FROM A CANARY. Dr. Fischer.

The diseased animal showed distinct scutula formation on the head. In the discussion, Heller stated that he had found favus in the nightingale and the lark.

Session of June 20, 1922

WHAT IS THE SPECIFIC EFFECT OF MERCURY IN THE TREATMENT OF SYMPHILIS? Dr. Schumacher.

The effect of mercury is due to a catalytic hastening of the oxidating and metabolizing processes in the cell by the free mercury ions. Mercury has no spirillicidal effect. Schumacher believes that the comparatively good dissociation of the mercury-serum compound, the lack of nucleic acid in Spirochaeta pallida, as well as the abundance of nucleic acid cells in a syphilitic tissue, account for the specific effect of mercury. Therapeutically, inunction treatment is most effective. Syphilitic patients treated with mercury tend to lose
weight, owing to the increased oxidation process, while patients treated with arsenic gain weight, as arsenic which is a catalyzator poison impedes oxidation processes. Arsenphenamin medication should be followed by treatment with mercury.

**PIGMENTATION FOLLOWING DERMATITIS EXFOLIATIVA.** Dr. Buschke.

A case of dermatitis exfoliativa with rise in temperature and serious constitutional involvement was followed by extensive development of dark brown pigmentation. A disturbance in the vegetative nervous system was assumed to be the causative factor.

**AN UNUSUAL EXANTHEM FOLLOWING ENERGETIC ARSOPHENAMIN MEDICATION.** Dr. Buschke.

Eruptions resembling monorecurrences occurred in a patient with syphilis who had received sixty-five injections of arsphenamin within three years. Buschke believes that the spirochetes had become arsphenamin-fast and that their virulence had thus been increased.

**AN UNUSUAL CASE OF DARIER'S DISEASE.** Dr. Arndt.

The lesions were located unilaterally within the second to seventh intercostal space.

**ACQUIRED ESSENTIAL MULTIPLE TELANGIECTASIS.** Dr. Arndt.

Telangiectasis symmetrically located on the lower extremities developed within three years in a patient aged 35. The patient had a goiter, but it was not exophthalmic.

**DERMATITIS FOLLOWING ORAL ADMINISTRATION OF CALOMEL.** Dr. Gottron.

A patient was given two 0.2 gm. tablets of calomel a week, for five consecutive weeks, for constipation. Erythema and stomatitis developed followed by a serious exfoliative erythroderma, which has now persisted for months.

**ARSPHENAMIN RESISTANT CASES OF SYPHILIS.** Dr. Henn.

A patient with seropositive primary syphilis developed an unusual exanthem and serious constitutional disturbances in spite of energetic arsphenamin and mercuric salicylate treatment. Inunction treatment caused rapid improvement. In another case of primary syphilis, combined treatment with mercury and arsphenamin was followed by the development of palm-sized infiltrations and pustular eruptions. These lesions also quickly cleared up under inunction treatment. These arsphenamin resistant cases are comparatively frequent. While the Wassermann reaction is often negative, the general constitutional involvement may be serious.

**KERATOSIS FOLLICULARIS FOLLOWING ARSENIC MEDICATION.** Dr. Bruhns.

A typical keratosis follicularis developed in an arsenic dermatosis. The lesions developed on areas which had not been affected previously. The condition was considered as an arsenic keratosis.
A CASE OF ACRODERMATITIS CHRONICA ATROPHICANS IN A LABORER, AGED 62. Presented by Dr. Thieme.

The patient had a case of untreated syphilis without symptoms, and with acrodermatitis lesions on the backs of the hands, on the forearms and on both legs. Prolonged exposure to cold and damp air was assumed to be cause of disorder.

A NEW TYPE OF SKIN DISEASE RESEMBLING THE KERATOSIS FOLLICULARIS OF BROOKE. Dr. Siemens.

Dr. Siemens observed a cornification anomaly in mother and son. The lesions represented a comedo-like, acneform follicular keratosis of varying intensity along the extensor sides. The disorder differs from Brooke's keratosis in that it is of congenital nature, prefers the extensor surfaces, particularly the knees and elbows, and is combined with alterations of the nails, keratosis of the mucosa and plantar keratosis. The disorder could not be influenced therapeutically.

Session of March 24, 1922

ACRODERMATITIS ATROPHICANS WITH ERYTHROMELIA (PICK'S SYNDROME). Presented by Dr. Tiefenbrunner.

The patient had edematous swelling of both legs and extensive atrophy of the skin on the elbows, knees and backs of the feet. The skin on these sites was a violet red. Prolonged exposure to cold air was assumed as a possible etiologic factor.

HISTOLOGIC EXAMINATION OF ACRODERMATITIS CHRONICA ATROPHICANS. Dr. Poehlmann.

Sections were demonstrated showing the various stages of acrodermatitis. The microscopic picture of the inflammatory swelling stage of acrodermatitis showed great dilatation of the vessels, small-cell infiltration of the collagenous tissue, lack of elastin in the papillary body. Proliferation of the endothelium in the capillaries was pronounced. The etiology of acrodermatitis is unknown. In the discussion, the chronic inflammation was considered the primary and important characteristic of this disorder, as the atrophy develops secondarily sooner or later. Hence it follows that an idiopathic atrophy of the skin—strictly speaking—does not exist.

Session of May 26, 1922

TECHNICAL IMPROVEMENTS IN PROPHYLAXIS. Dr. Lenz.

A 0.3 per cent. mercuric chloride ointment is advised as a prophylactic for gonorrheal and syphilitic infections. This ointment should not be kept in
metal tubes, as mercuric chloride (corrosive sublimate) is reduced to mild mercurous chloride (calomel). The product of Dr. Lenz is hydrous wool fat containing 0.3 per cent. mercuric chloride in a water and airproof parchment bag.

A CASE OF URTICARIA PERSTANS WITH PIGMENTATION. Dr. Siemens.

The patient had a wheal on the elbow and on the neck. There was a spot of pigment with localized urticaria factitia on the left thigh.

TENTH SESSION OF THE NORTHWEST GERMAN DERMATOLOGICAL SOCIETY

Session of March 26, 1922

Dr. Stümpke, in the Chair

A CASE OF UNEVEN THINNING OF THE HAIR. Presented by Dr. Riecke.

The long hair of the scalp of a girl, aged 8, appeared to be twisted at regular intervals, thus appearing thinner in these parts. It was not a case of pili monileformes. Dr. Riecke suggested the name "trichokinesis" for this disorder.

NEURINOMATOSIS. Dr. Schmitt.

In his most recent investigations concerning neurinomatosis, Meirowsky traces the "vitium primae formationis" of this disorder back to the germ-plasm.

MACROCHEILIA. Dr. Schütz.

Diagnostically, Dr. Schütz differentiates this condition from scrofulosis, hemangioma and lymphangioma. Histologic investigation revealed, besides thickening of the epithelium, a distinct dilatation of the blood and lymph spaces, as well as destructive alterations and degeneration of the elastic fibrils. Therapeutic measures were ineffective.

INITIAL SORE ON THE LEFT SIDE OF OCCIPUT. Dr. Stümpke.

A man, aged 32, had a sharply defined lesion, the size of a fist. The patient said that he had been bitten during a wrestling match.

ROENTGEN-RAY ULCER. Dr. Stümpke.

The ulcer was healed by exposure to the Alpine sun lamp (10 cm.) and irrigation with potassium permanganate.

LUPUS ERYTHEMATOSUS. Dr. Stümpke.

This disease was present in a woman, aged 30. Compression treatment with the Kromayer quarz lamp caused rapid improvement.
SOCIETY TRANSACTIONS

SILESIAN DERMATOLOGICAL SOCIETY

Session of May 6, 1922

MERCURIC CHLORID NECROSIS OF THE URETHRAL MUCOSA. Dr. Vogel.

Injection of a 5 per cent. mercuric chlorid solution into the urethra caused necrosis of the mucosa, colic, diarrhea with hemorrhage, anemia and foul breath.

ERYTHEMA INDURATUM (BAZIN) AND PAPULONECROTIC TUBERCULID. Dr. Wiener.

The patient had typical acnitis nodules on the knees and elbows; there were also erythema induratum lesions. The Pirquet reaction was positive. In the discussion, Jadassohn said that this form of erythema induratum represents an intermediate stage of development into a subcutaneous sarcoid.

A TYPICAL TUBERCULOSIS OF THE SKIN. Dr. Hoffmann.

A man, aged 73, developed palm-sized, sharply defined lesions on both sides of the neck. The lesions consisted chiefly of dark gray, wartlike elevations covered with hard corneous material. The Pirquet reaction was positive. Histologic investigation revealed inflamed tuberculous tissue and giant cells. Tubercle bacilli were found in the granulation tissue. In the discussion, Jadassohn pointed to the typical course of some cases of senile tuberculosis cutis which resemble the serpiginous-fungus forms previously described by him.

KELOID. Dr. Martenstein.

The patient had extensive keloid resulting from a burn. This was successfully treated with deep roentgen-ray irradiation. In the discussion, it was advised to irradiate only fresh keloids. Old thick scars yield better to mesothorium. This is best applied to that part of scar which is thickest and causes most tension. The cosmetic result will be better than by exposing the whole scar in its entire length.

LUPUS VULGARIS PAPILLOMATOSUS AURICULI. Dr. Martenstein.

The patient had small papillomatous lesions on the ear. These proliferations were not secondary symptoms, but microscopically were found to consist of tuberculous tissue. Lesions of this kind have seldom been seen on the ear.

A CASE OF SECONDARY AND TERTIARY SYPHILIS. Dr. Freudenthal.

A woman who had received a strenuous course of treatment with mercury and arsenic shortly after infection two years ago, within a few days developed an exanthem which was remarkable for its symmetrical location along both extremities, the papular character of the eruptions and their serpiginous spreading.
LICHEN SCROFULOSUS WITH TRANSITION INTO PAPULONECROTIC TUBERCULIDS. DR. FREUDENTHAL.

A child, aged 8, showed scars of lichen scrofulosus on the knees and papulo-pustular tuberculids on the arms. The Pirquet reaction was positive as was also the reaction to 25 per cent. Moro ointment. Histologically, a pustule showed inflammatory symptoms on the surface and had a pronounced tuberculoid structure.

CULTIVATION OF FUNGI FROM THE BLOOD IN DEEP TRICHO PHYTINA WITHOUT LICHEN TRICHO PHYTICUS. DR. JESSNER.

The following experiment shows that in deep trichophytina fungi may be found to circulate in the blood which carries them into the skin. In a case of deep trichophytina of the beard, injections of trichophytin vaccine were made into the lesions as well as intravenously, in order to cause lichen trichophyticus. This was not possible, yet a gypseum fungus was obtained from both the blood and the beard. A lichen disease did not develop because either fungi do not locate in the skin but pass the capillaries and perish in the blood, or the degree of skin allergy is not suitable for a reaction with the fungi.
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A STUDY OF EROSI\-VE AND GANGRENOUS BALANITIS
WITH SPECIAL REFERENCE TO THE RÔLE OF FUSIFORM
BACILLI AND SPIROCHETES *

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The following cases of gangrenous and erosive balanitis are reported because the comparative bacteriologic study of the secretions in these diseases and the normal preputial secretion suggested the etiology of the infection in our patients. Specific balanitis is not an uncommon disease, yet practically the only reference made to it is the statement that it is caused by the symbiosis of a spirochete and a vibrio. This fact was first brought out by Bataille and Berdal 1 in 1889, who demonstrated the specific nature of erosive balanitis. In 1905, Muller and Scherber 2 described gangrenous balanitis as a more destructive type of the erosive form, due to the same organisms. Corbus and Harris 3 reported three cases of gangrenous balanitis, and pointed out that the essential predisposing factor was a long, tight foreskin, emphasizing saliva contamination by wetting the labia or penis with saliva and by unnatural sexual relations. Again, in 1913, Corbus, in a more extensive report, states that the disease is fairly common in dispensary patients coming largely from the lower walks of life, and that some form of "saliva contact" is necessary for the introduction of the vibrio before the disease can be produced.

The cases which we have had an opportunity to study are of interest because they did not present a history of any unnatural sexual acts or saliva contact of any kind. The patients were in the genito-urinary ward of the Cook County Hospital under the care of Dr. F. Phifer, to whom we are indebted for these clinical studies.

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REPORT OF CASES

CASE 1.—History.—A. K., single, aged 19, laborer, entered the hospital complaining of pain and swelling of the penis, foul discharge from the penis, inability to retract the foreskin, painful and difficult urination, fever, headache and cough, and pain in the chest. He stated that his illness began about three days previous to admission, with swelling and itching of the penis. The onset of the pulmonary symptoms occurred three days prior to the development of the genital symptoms. The swelling had rapidly progressed, and on the day of admission he noticed a small black area on the dorsum of the penis, about 2 cm. in diameter, associated with a foul smelling discharge from the preputial sac. Pain and burning on urination as well as the constitutional symptoms had become very marked during the preceding forty-eight hours. The last exposure occurred six weeks previously and he was sure that there was no "saliva contact." He denied venereal infection at any time. The past history was entirely negative.

Physical Examination.—The patient appeared acutely ill. The pulse was 104, temperature, 103 F., and respiration, 24. The regional examination was negative except for the condition of the genitalia. There were great swelling and edema of the foreskin and a brown seropurulent discharge from the preputial sac. There was marked phimosis, and the foreskin could not be retracted over the glans. On the dorsum of the penis was an area of black, foul-smelling necrotic tissue about 4 cm. in diameter. A direct smear of the secretion stained with dilute carbol-fuchsin revealed many fusiform bacilli, spirochetes and cocci. From anaerobic cultures, Staphylococcus albus and short and long thread forms of B. fusiformis were obtained. The leukocyte count was 14,300, of which 83 per cent. were polymorphonuclears and 17 per cent. lymphocytes. The Wassermann reaction was negative. The urine was negative for sugar or albumin. The blood pressure was: systolic, 132; diastolic, 64. Blood cultures were sterile both aerobically and anaerobically.

Course.—Under gas anesthesia, a dorsal slit was made, revealing a large amount of foul, brownish purulent secretion in the preputial sac. The glans was deeply ulcerated; the prepuce and part of the shaft were gangrenous. The patient became irrational and expectorated bloody mucus. There were neither physical signs nor roentgenologic evidences of chest involvement. Neoarsphenamin, 0.6 gm., was given intravenously. In about five days, the pulmonary symptoms subsided; the process was arrested, and the general condition of the patient rapidly improved. The gangrenous tissue sloughed away, and recovery was uneventful (Figs. 1, 2 and 3).

CASE 2.—History.—E. B., aged 27, white, laborer, entered the hospital suffering from pleurisy with effusion. During the course of his illness, he developed a swelling of the penis. He stated that he always had had trouble with the penis on account of the long phimotic foreskin, and that whenever he did not keep the prepuce particularly clean, he developed an edema of the foreskin, associated with itching.

Physical Examination.—The foreskin was red, edematous and phimotic. The preputial sac contained considerable foul-smelling, yellowish material. The foreskin could be only partially retracted, and the glans was red, swollen and superficially eroded. A direct smear from the secretion revealed many spirochetes, fusiform bacilli and cocci. In cultures, the cocci grew as Staphylococcus
Fig. 1.—Gangrenous balanitis.

Fig. 2.—Gangrenous balanitis.
albus. The leukocyte count was 8,200, of which 79 per cent were polymorphonuclears, 19 per cent lymphocytes and 2 per cent basophilic polymorphonuclears. The urine was negative for albumin and sugar.

Course.—Some time after the initial examination, the patient forcibly retracted the foreskin, with a resultant paraphimosis. The glans became swollen and the constriction marked. The paraphimosis was reduced and treatment instituted, followed by a rapid recovery.

Case 3.—History.—A. J., single, aged 20, an electrician, was admitted to the hospital complaining of headache and fever, and swelling and pain in the penis. These symptoms had been present for two weeks. He had been exposed about two months previous to admittance. He first noticed a burning and itching sensation around the foreskin and considerable secretion in the preputial sac. About two or three days later, he found that his foreskin was becoming swollen. This swelling increased rapidly, so that, in about a

![Fig. 3.—Gangrenous balanitis.](image-url)

week, he was unable to retract the foreskin. The secretion in the preputial sac became profuse and foul smelling, and there was bilateral inguinal adenitis. During the last few days before admittance, the swelling of the penis had increased, phimosis was complete, and constitutional symptoms of headache, nausea and fever became marked. Urination became rather difficult. The patient denied “saliva contact.” The past history was essentially negative.

Physical Examination.—The patient appeared quite ill, the pulse being 78, temperature, 99 F., and respiration, 20. Regional examination was essentially negative. There was swelling of the penis, involving the distal 2 inches (5 cm.). The foreskin was very edematous and bluish, and could not be retracted. There was a large amount of greenish, serous, foul-smelling secretion which, on direct smear, was found to contain many spirochetes and fusiform bacilli and cocci. Anaerobic cultures showed filamentous forms of B. fusiformis, aerobic, Staphylococcus albus and B. coli. After a dorsal slit, the right half of the glans was found to be entirely eroded, with the formation of a ragged, dirty ulceration on the inside of the foreskin, covered with a foul-smelling, purulent
secretion. The leukocyte count was 8,400, of which 76 per cent. were polymorphonuclears and 24 per cent. lymphocytes. The Wassermann reaction was negative. The urine was negative for sugar and albumin.

Course.—Treatment was instituted immediately, followed by a rapid recovery, except for the chronic edema of the flaps, following the dorsal slit.

Case 4.—History.—A. V., single, aged 24, laborer, was admitted to the hospital suffering with swelling and redness of the foreskin and inability to retract it, associated with discharge from the preputial sac, of ten days' duration. The patient stated that, about ten days before admission, the foreskin began to swell, but the swelling subsided in three or four days, to recur four days later, accompanied by a foul, white discharge coming from under the foreskin. The swelling had been increasing progressively. There was some pain, but more of a burn-

Fig. 4 (Case 4).—Erosive balanitis.

ing sensation, especially on urinating. The patient could not retract the foreskin. He gave a history of no exposure of any kind for the past five months. The past history was essentially negative.

Physical Examination.—The patient was not acutely ill, the pulse being 88, temperature, 98.4 F., and respiration, 20. Regional examination was negative. The essential pathologic condition consisted of a marked swelling and redness of the foreskin, which was about the size of the patient's wrist. The foreskin could not be retracted, and the glans was entirely buried (Fig. 4). Following a dorsal slit, an erosive ulcer 1 cm. in diameter was seen on the dorsum of the glans, and a large amount of foul-smelling secretion was found in the preputial sac, which, on direct smear, was found to contain many spirochetes, fusiform bacilli and cocci. Aerobic cultures revealed Staphylococcus albus and aureus, Streptococcus viridans, and anaerobic, thread forms of B. fusiformis. The Wassermann reaction was negative. The urine was negative for sugar and albumin. No blood count was made.
The absence of any history of unnatural sexual acts or "saliva contact" in our patients led us to a study of the secretions in the normal preputial sac, in order to determine whether both the fusiform bacillus and the spirochete could not be demonstrated in the smegma under normal conditions. The full details of this bacteriologic investigation will soon be published.

Smears and cultures were made from the preputial secretion of 100 normal men entering the examining room of the hospital and the surgical wards. The smears were stained with dilute carbol fuchsin.

Fig. 5.—Fusiform bacilli, spirochetes and cocci in normal male smegma; X 1,200.

In 51 per cent. of the patients examined, the smears contained both spirochetes and fusiform bacilli (Fig. 5). The spirochetes appeared often in large numbers, varying in size from 3 to 12 microns in length and from 0.2 to 0.5 microns in width. The fusiform bacilli were usually found in fewer numbers and appeared as straight or slightly curved rods tapering into sharp or blunt ends. In men with long foreskins, especially if phimotic, the number of organisms was high. In all of the specimens, cocci, and often short bacilli, also occurred. Cultures were made aerobically and anaerobically. In the former, Staphylococcus albus, and occasionally, aureus occurred in 90 per cent., streptococci in 17 per cent., diphtheroids in 50 per cent., and B. coli in 3 per cent. The constant occurrence of some pyogen together with fusiform bacilli and
spirochetes in the preputial sac, just as they are constantly associated normally about the teeth and in the actinomyces-like granules of the tonsils, is noteworthy.

In the anaerobic cultures, the fusiform bacilli were identified either as typical forms or as threadlike organisms.

A comparison of the smears and cultures of the pus from the purulent secretions in cases of balanitis and those from the normal preputial sac revealed striking similarities. In all spirochetes, fusiform bacilli and cocci were present, the fusiform bacilli appearing in greater numbers in the pathologic secretions (Fig. 6).

![Image](image_url)

**Fig. 6.**—Fusiform bacilli, spirochetes and cocci in secretions in erosive balanitis; $\times 1,000$.

In women, we have observed that fusiform bacilli and spirochetes occur in the smegma about the clitoris normally in 58 per cent. The organisms appear to be identical with those of the male preputial sac. In one case of erosive vulvitis and gangrene of the pedunculated cervical fibroid, we have found these organisms in large numbers. In the female as in the male, these organisms evidently play an important rôle in the production of ulcerative and gangrenous lesions.

Experimental inoculations of smegma secretion into the pleural cavity of rabbits caused exactly the same putrid lesions as those pro-

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duced by the injection of the purulent secretion from cases of specific balanitis, and from the lesions the spirochetes and fusiform bacilli were recovered along with associated organisms.

Our work would seem to indicate that "saliva contact" is not an essential predisposing factor, but that the infection may be due to organisms which are present as saprophytes under normal conditions and which have the power of becoming pathogenic when suitable conditions arise.

A few cases of erosive and gangrenous balanitis have been reported in which exposure and salivary contamination were not factors. Owen and Martin, in a review of six cases, obtained a history of saliva wetting in only two, no such contact in three and no exposure of any kind in one. Sutton also described an instance of gangrenous balanitis with no history of exposure. In our series of cases, the patients gave no history of "saliva contact," but all had long, phimotic, dirty foreskins.

SYMPTOMS

The symptoms of both forms of balanitis are practically the same, except that in the gangrenous type they are more severe, with greater constitutional reaction. Swelling and discoloration of the penis and a purulent foul discharge from the preputial sac occur in all cases. Headache, fever and nausea are seen in the more advanced cases. There is little involvement of the regional lymph glands. The course of the disease depends on the amount of destruction present when the patient seeks medical advice.

Patients seen early respond very promptly to treatment, and recovery is usually complete in a few days. "When edema and discoloration are present and a dorsal slit becomes necessary, the course is much prolonged, on account of the chronic edema of the flaps. Response to treatment is slow, and with circumcision impossible the deformity produced by the slit remains for weeks. In the gangrenous cases, the process spreads rapidly over the penis, involving the entire shaft in the course of about seventy-two hours. The process is rather superficial, however, and usually causes no extreme deformity of the shaft, although the glans may be greatly altered in shape. The results depend on the early recognition and proper treatment of each case. The prognosis as to life is excellent, and, except in the advanced gangrenous types, function of the penis is preserved.

DIAGNOSIS

The diagnosis of specific balanitis is usually simple and only rarely difficult. The differential diagnosis of this condition involves a consideration of the nonspecific forms of balanitis caused by irritating urine, as seen in diabetic patients or in those with highly concentrated urine. Often, a chancroid or chancre under a long foreskin will simulate erosive or gangrenous balanitis. A case in our ward presenting a destructive process involving the entire distal half of the penis was first diagnosed carcinoma, later, gangrenous balanitis, and finally, gumma. The results of the bacteriologic examination were here strikingly similar to those in balanitis, fusiform bacilli and spirochetes appearing in the smears, and staphylococci and fusiform bacilli in the cultures. In this case, we had an example of a gummatous lesion becoming secondarily infected with the organisms of the preputial sac, with a resulting process simulating gangrene.

Many cases of extravasation of urine are diagnosed gangrenous balanitis. These two conditions may closely simulate each other, but a careful history and examination will always make diagnosis easy. Strong medicines applied to the penis may produce edema, discoloration and pain simulating specific balanitis. Carcinoma usually is not confused when one considers the nature of the growth and involvement of the regional lymph glands. Finally, one must not be confused by the edema of the penis seen in cardiorenal diseases.

PROPHYLAXIS

From our bacteriologic studies, it is evident that the prevention of balanitis, especially in patients with other illnesses, depends on a proper hygiene of the preputial sac which will reduce the number of the pyogenic and anaerobic organisms. Patients with long foreskins, with a tendency to rapid accumulation of secretions about the prepuce, should be circumcised.

TREATMENT

A consideration of the fact that the causative organisms are anaerobic makes the principles of treatment obviously simple. We believe that whenever possible a dorsal slit should be avoided because of the deformity and chronic edema which persists for so long a time. Palliative measures, such as soaking the penis in hot water or hot sitz baths, irrigating the preputial sac with potassium permanganate and hydrogen peroxid, usually suffice in early cases. In the more advanced cases of erosive balanitis and in gangrenous balanitis, it is perhaps best to make a dorsal slit in the usual way, or by cautery, and thoroughly cleanse the glans and prepuce so as to expose as much surface as possible to the air, or, better, to sunlight. Oxidizing solutions are valuable, but
ointments are contraindicated, because air is excluded from the wound by their use. Neo-arsphenamin in glycerin may be applied locally, although its value is doubtful. As the disease progresses, the gangrenous tissue may be cut away. New epithelium grows rapidly to cover the denuded area. Constitutional symptoms are treated by the use of alkalies and cathartics, and by encouraging the patient to take large quantities of fluids. If indicated, silver nitrate or the copper sulphate stick may be applied to the granulating tissue.

SUMMARY

1. Erosive and gangrenous balanitis is not uncommon, particularly in men with long, phimotic, dirty foreskins. Fusiform bacilli, spirochetes and pyogens, especially staphylococci, are constantly found in the purulent secretions.

2. In our cases, sexual exposure was remote or absent, and no history of saliva wetting was obtainable. It is obvious that balanitis is neither dependent on "saliva contact" nor always venereal in origin.

3. Normal preputial secretion often harbor fusiform bacilli, spirochetes and pyogens. Under suitable local conditions, often associated with diminished lowered general resistance, balanitis may result from the organisms normally present as saprophytes.

4. To prevent balanitis, proper hygiene of the sac should be carried out, particularly in patients with long foreskins.

5. Early recognition and proper treatment of the disease is imperative, as the process spreads with great rapidity.
HERPES ZOSTER GENERALISATUS

REPORT OF A CASE WITH A REVIEW OF THE LITERATURE *

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Under the term "vesicules aberrantes," French authors have included herpes zoster associated with isolated lesions distant from the site of the zona. Tenneson,1 as early as 1893, was able to locate aberrant vesicles in nine out of ten patients with herpes zoster. The isolated lesions were not so characteristic or so persistent as the herpetic eruption of the zona. This association has since been confirmed by many observers. Cases of herpes zoster associated with a well distributed eruption of vesicles have been reported less often. These cases appear as a well defined zona with a varicella-like, unusual, eruption. Recently, we had the opportunity of observing a case of this disease, herpes zoster generalisatus, which we believe to be worthy of reporting.

REPORT OF A CASE

History.—A. McE., aged 64, a Scotchman, unmarried, was seen at the hospital on Oct. 7, 1920. He was a much fatigued, structurally old man, who would have been regarded as many years older than he was. His appearance was cadaveric. He was a resident of a Bowery lodging house, and said that he was employed as a "houseman." He presented a well marked eruption of herpes zoster, right abdominalis. The vesicles were large, grouped and saggy. Some of them had been ruptured, and crusts had formed. The patient said that this eruption had been present a week. In addition to the well marked zone, there were numerous scattered vesicles and small, though ill defined, papules. These scattered vesicles were present on the trunk, more posteriorly than anteriorly, on both sides, on both flanks, axillae, thighs, shoulders and arms. The lower part of the legs and forearms contained hardly any lesions; the face and the buccal mucosa were free from lesions. The scattered lesions were of one stage of vesiculation; umbilation was not a feature. The first impression was that we were dealing with a combination of herpes zoster and varicella, as this subject had been extensively discussed in the medical journals at the time. Indeed, the impression of this association was sufficiently marked to warrant a diagnosis of herpes zoster abdominalis on the right, with probable varicella. However, after more deliberate discussion, and despite lack of cooperation on

* Each of the references has been reviewed in the original. Many others have been seen, but held no subject related to the present study. The growing bibliography of cross infection or contagion of varicella and herpes has not been included in this list.

the part of the patient (he made but two visits), it has seemed that the diagnosis of herpes zoster generalisatus better fitted the circumstances of this particular eruption.

**LITERATURE**

The earliest case of herpes zoster generalisatus was that reported by Haslund.\(^2\) His patient was 59 years old and presented a left dorso-abdominal zona with additional vesicles on the trunk and extremities, left border of the tongue and mucous membrane of the gums. His temperature was 39.9 C. (102.02 F.), and he suffered much pain. The disease had run its course in about nineteen days after admission, and he left the hospital completely cured.

Mackay \(^2\) described the appearance of a man aged 57, who had a well-marked herpes of the left side of the scalp, and numerous papules like those of varicella. The discrete rash passed through the stages of papules, vesicles with clear and opaque contents, and crust formation. This was observed on the trunk and limbs, vesicles being present as late as two weeks to a month later. In addition, there was paralysis of the left side of the face.

Jeanselme and Leredde,\(^3\) in a report of cases of “aberrant vesicles,” described a case of zoster of the right shoulder in a woman, aged 46. The most unusual characteristic of the case was the great number of vesicles on the right side of the chest, dorsal region, abdomen, lumbar regions and over the trochanters. Inoculation of serum from the vesicles led to no reaction.

The second of Arkwright’s\(^4\) two cases was that of a man, aged 60, who had an extensive zoster of the ophthalmic division of the fifth nerve on the right side. About four days later, a generalized eruption appeared. The spots were very much like those of varicella. The vesicles were on the chest, neck, abdomen and lower part of the limbs; there were a few on other parts of the body.

Corlett\(^5\) had a series of four cases. A woman, aged 48 years, presented a herpes zoster with lesions on the neck, shoulder, arm and part of the trunk. A diffuse eruption over the trunk, and to a lesser extent on the extremities, was noted. The eruption was most abundant on the back. Half a dozen lesions on the back showed a

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2. Haslund: Om Zona i anledning af et Tilfælde med generaliseret Eruption, Nord. med. Ark. 8, Festschrift No. 6, 1897.
striking similarity to those of varicella. The second patient was a man aged 44. He presented a herpes zoster frontalis. An eruption was noted, which was diagnosed as varicella. It consisted of slightly elevated rosy macules, surmounted in some instances by superficial vesicles. The vesicles were most abundant on the back. A notable feature, if the eruption was to be interpreted as varicella, was the slowness of the successive crops of eruption, although the active eruptive process lasted less than a week. A third case of herpes zoster accompanied by vesicular eruption was seen in a man aged 40. The last patient was a man aged 70. He showed a herpes zoster of the second lumbar segment. In addition, there was a papular vesicular

Fig. 1.—Front view of patient with herpes zoster generalisatus.
eruption on the trunk, which had the appearance of a chickenpox eruption. In the summary, Corlett mentions that the patients described had a varicella-like eruption.

Beyer,\(^7\) in 1906, described the case of a man, 45 years old, with intercostal herpes zoster with innumerable vesicles, which were distributed irregularly over the entire body. The interesting feature of this case was the gangrenous character of the vesicles and the formation of scars.

Ullmann,\(^8\) at a meeting of the Vienna Dermatological Association, presented a patient with an exanthematos generalization of a typical zoster of the right dorsopectoral region which developed into gangrene.

Fasal’s\(^9\) patient, a woman aged 37, presented a left herpes zoster frontalis accompanied by a generalized eruption with vesicles over the right side of the forehead, the left side of the clavicle, both breasts, parasternal line, right shoulder, abdomen, both legs and soles, flexor surface of the toes, right labium majus and hard palate. The contents of the vesicles were clear. The eruption looked like varicella. The lesions were not in the same stages of eruption, and new ones continued to appear. While in the hospital, from September 12 to November 5, the patient lost 5 kg. (11.02 pounds).

Lipschütz\(^10\) presented a woman, aged 56, with an unusual bilateral herpes zoster frontalis and a papulovesicular efflorescence all over the body.

Schamberg\(^11\) had two cases in elderly men, the eruption in each instance being primarily suspected of being smallpox, although it bore a greater resemblance to that of chickenpox. The case reported in full was that of a man 66 years of age. He had a severe herpes zoster on the left side of the chest posteriorly in the region of the third dorsal nerve, and anteriorly, on the left pectoral region and on the inside of the left arm and hand. The lesions were large vesicles, some of which had hemorrhagic contents and looked as if they might ultimately become necrotic. In addition to these lesions, there were scattered vesicles and ill defined papules on the right side of the chest, on both sides of the abdomen, on the back, forearms and legs. The lesions numbered about 500 or more in all, and varied in size from that

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of a pin point to that of a pea, or were larger. Most of the scattered eruptive elements were papular, but here and there distinct herpetic vesicles were seen with clear and occasionally hemorrhagic fluid. A transparent fluid flowed from the vesicular lesions when punctured. Some of the lesions were characteristically umbilicated. There were some papules and a number of abortive vesicles on the palmar surface of the left hand. On the forehead, scalp and cheeks, were papular lesions. The greater part of the eruption on the lower extremities was made up of scattered, slightly elevated, papules. The patient's temperature was practically normal; the pain subsided, and there was little itching. The sequence of events in this case was as follows: pain
in the left scapular region on November 25, eruption in this region on November 28, and a scattered eruption on November 29.

Steuer 12 studied a woman aged 76 years. She presented a typical zoster (ophthalmic), which later became hemorrhagic and then necrotic. During a week, over 100 vesicles appeared over the entire body, equally distributed on both sides. At first the contents of these were yellow, but later they also became hemorrhagic.

Minet and Leclercq 13 collected twenty-one cases of zona with a generalized eruption, but they made no distinction between aberrant vesicles and a generalized eruption. They reported the case of one patient, aged 47 years, with a zona covering the region innervated by the third, fourth and fifth lumbar and of the first sacral nerves, with typical vesicles. About a day after the appearance of this eruption, a disseminated eruption of the face, thorax, legs and arms was noted. New elements of the generalized eruption continued to appear for about a week. The spinal fluid was clear, with 9 to 12 lymphocytes to the field (after centrifugulation). Various other tests, including inoculation of the blood and spinal fluid into a guinea-pig, were negative.

Nobl 14 reported the case of a man, aged 74, who presented a zoster of the left side with a generalized eruption of the back, chest, penis and upper part of the legs. The lesions developed into gangrene. The zoster was described also as a third left dorsal herpes zoster gangrenosus. The blood contained 6 per cent. of eosinophils.

Coleman 15 wrote that a man, aged 70, developed an eruption of vesicles characteristic of herpes zoster, after exposure while on a train. He also presented the eruption of a typical attack of varicella. The chickenpox vesicles went through the regular stages; there were scores of lesions on the scalp and back especially.

Fischl 16 reported a case which he characterized as a symptomatic, not an idopathic, herpes zoster, which is well worth abstracting. A man aged 61, presented a hemorrhagic zoster of the right side of the neck and vesicles, and papules were disseminated over the entire body. He had a lymphatic leukemia, enlarged tonsils and trachea stenosis, and despite all measures, he died. Necropsy revealed enlarged glands in

the neck, axillae and abdominal cavities and retroperitoneally. There was a leukemic infiltration of the internal organs. The gasserian ganglions were studied and a leukemic infiltration found, which was thought possibly to account for the unilateral herpes. It was suggested that there was a possibility of an overflow of the same process to the spinal ganglions, which might account for the generalized eruption. The possibility of leukemic infiltration of the skin presenting a locus minoris resistentiae for the generalization of the zoster process was also suggested, as was the possibility that the zoster appeared first and the leukemic infiltration later.

Fig. 3.—Herpes zoster generalisatus.

Zumbusch made a study of a case which also is worthy of abstracting. A man, 74 years of age, presented a herpes zoster of the sixth and seventh ribs. The entire body was covered with individual vesicles. Only the face, forehead and region of the trigeminus were free from the eruption. The chest and body were most involved. Individual lesions were also present on the scalp, neck, shoulders, arms and upper part of the legs. In regions with many vesicles, the grouping was typical. There were about 200 vesicles in all. The patient died. The cord was removed for experimental purposes, but the monkey on

which the experiments were made met with accidental death. Other portions of the cord were not available for the study due to the carelessness of a "diener." Those portions of the cord examined revealed an infiltration of all the ganglions, as described by Head and Campbell, Marburg, and others. The condition was, then, a zoster on the basis of inflammation of the spinal ganglions, or an actual posterior poliomyelitis.

Tryb described the case of a man of 60, who was rather cachetic and had tuberculosis, with a left dorsal zoster, which was gangrenous and painful. A week later, the entire face, head, extremities and trunk were covered with several hundred isolated lesions. The lesions were not of the same vesicular stage. The outcome was necrosis and scar formation.

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Fig. 4.—Herpes zoster generalisatus, after Fasal.

Pernet described a man 80 years of age, who presented a herpes zoster of the third, fourth and fifth left dorsal segments. In addition, there was a large number of discrete vesicles scattered all over the trunk and limbs. There were few below the knees, a few appeared on the face and scalp, but none in the mouth. The generalized vesicular rash looked like a severe attack of varicella. The temperature was 100 F., and the man looked ill. He had given a history of zoster following a burn of the thumb with a match.

Parkes Weber \textsuperscript{21} has reported a number of cases of the association of zoster with a generalized eruption. One of his patients was a widow of 60. She presented a zoster of the forehead, and at the end of the first week showed a generalized vesicular eruption of small varicella-like spots on the trunk and extremities. The zoster dried up in about two months, but the varicella-like lesions dried up in two weeks. Another of the patients was a man, aged 59, who presented a typical zoster of the right shoulder two weeks after being on arsenic treatment. About five days later, a generalized though scanty eruption of varicella-like spots occurred. These spots were scattered about the trunk. They gradually disappeared without causing any trouble, whereas the patch of herpes zoster proper dried up leaving distinct scars. (A child aged 4, who had been in the same ward, developed varicella, eleven days after leaving the hospital). Another patient, a boy, aged 8, who had been on arsenic for some time, developed pneumonia of the left lung. He also had a typical zoster of the right side of the chest and a generalized eruption of minute vesicles on the trunk. It was thought possible that these were the results of the ingestion of arsenic. The lesions were followed by a good deal of desquamation, especially of the palms (arsenical?).

Barber \textsuperscript{22} outlines the case of a man, 45 years of age, who presented a rash indistinguishable from varicella, on the fourth day after the

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\textsuperscript{22} Barber: Chickenpox and Shingles, Guy's Hosp. Gaz. 30:302, 1916.
appearance of a typical zoster. The generalized eruption was a typical chickenpox, with papules and vesicles on the trunk, limbs, face and scalp.

Le Feuvre, a keen exponent of the identity of herpes zoster and varicella, relates the following case history: A naval officer, 54 years of age, presented a dorsal herpes zoster after ingestion of arsenic for some months. Generalized vesicles appeared on the face, body and limbs, and the eyelids became swollen. The patient was discharged eight days after admission. No cases of varicella appeared as a result of this case.

Goldberg and Francis reported that during January, 1918, there were admitted to Cook County Hospital, three patients; one had herpes zoster with simultaneous varicella, and the other two had a varicelliform eruption.

Downes reported this instance: A woman, aged 40, developed a zoster of the twelfth dorsal and first lumbar segments after the delivery of her fourth child. A week later, several vesicles appeared on the left side of the neck, and a day later a generalized eruption indistinguishable from varicella. The spots were discrete and flattened, and some were umbilicated. The eruption followed the usual course of varicella and disappeared before the original herpes zoster.

In the literature consulted, several cases which we give, are mentioned, although we have not been able to confirm them by reference to the originals. Lipp is said to have presented a patient before the Deutsche dermatologische Gesellschaft with a zoster exanthem on the trunk and extremities after a severe pectoral zona as an initial lesion. Waselenski (Leyden Clinic) had a patient with generalized herpes associated with zoster pectoralis and a high temperature. Pennetti and Pogliesi reported the case of a patient who had a double zona as the forerunner of zoster exanthematus.

**COMMENT**

The series of cases given, taken from the literature, covers the group of herpes zoster generalisatus, as this can be conceived from the material at hand. As may be noted, not a few were thought by reporters to be a combination of herpes zoster and varicella. It is hardly possible, from the present state of our knowledge (or ignorance), to deny the presence of varicella in these cases. We cannot but believe,
however, that the authors wereunknowingly describing herpes zoster
generalisatus. We have, on the other hand, only our clinical obser-
vations as a basis for maintaining that in the group, our own case included,
varicella was not present. The evidence, entirely circumstantial as it
is, regarding the relation between the etiology of zona and varicella,
especially in children, must be accepted for the time being. This
acceptance in no way invalidates the contention that herpes zoster
generalisatus is a disease entity.

The cases of associated herpes zoster and generalized vesicular
eruption may be placed in four classes: herpes zoster in one patient
followed by varicella in others exposed. Bokay 26 reported, for example,
that as early as July, 1888, he made the observation that a child
developed typical varicella ten days after an eruption of thoracic herpes
zoster in another child in the same family. Up to 1909, he had observed
eight other similar cases, and in each of them typical varicella broke
out in a patient (in one instance an adult patient) from eight to twenty
days after exposure to typical herpes zoster. In three cases, the herpes
zoster was followed by two, three and four cases of varicella, respec-
tively. In none was there any evidence of exposure to ordinary
varicella. Bokay also quotes Henwich and Thomas that in varicella
"confluence of adjacent vesicles occurs very rarely. The vesicles are
sometimes congregated into small groups making the eruption resemble
zoster."

The second group comprises herpes zoster followed by varicella or
varicella-like eruptions in the same patient, not followed by varicella in
others exposed, includes herpes zoster generalisatus as considered in the
literature quoted in the foregoing.

The third group includes herpes zoster followed by varicella in the
same patient followed by varicella in those exposed. McEwen 27 reports
an instance of this. A generalized eruption showed itself five days
after the appearance of a zoster in a man who had never had varicella,
and was clinically in every detail a typical varicella. The child who,
following exposure to this patient with zoster, developed varicella after
ten days' incubation, had not been exposed to that disease elsewhere.

The last group of associated herpes zoster is that of varicella in
one patient followed by herpes zoster in others who were exposed.
Dando, 28 for example, wrote that a week previously he had called to

Compt. rend. du XVI congrés international de méd. Budapest, 1909, Sect. 10
see a patient who was suffering from shingles; four weeks earlier he had been attending a son of the patient who was suffering from chickenpox. In 1904, in the same home, he had attended the wife of the man, who was then suffering from shingles; five weeks preceding this, he had attended the daughter, who was suffering from an attack of chickenpox.

On the assumption that typical herpes zoster is due to changes in the posterior root ganglion of the spinal nerves, or in the ganglia connected with the sensory cranial nerves, one is tempted to believe, with Parkes Weber and others, that when the herpetic eruption is accompanied by much local disturbance of sensation (especially pain and anesthesia) the inflammation has extended, spread or "overflowed" along the sensory roots into the gray substance of the posterior horns or into the corresponding substance of the mesencephalon. Such an overflow, if one is permitted further speculation, may conceivably be registered on the skin by the discrete yet widespread eruption of herpes zoster generalisatus. Colombini's 29 unique case of universal herpes zoster, or rather multiple herpes zoster, would be a fullfledged case of this overflowing. In Colombini's case, the eruption of zona was complete at each segment. In the ordinary cases of herpes zoster generalisatus, the eruption is meager in comparison with the primary segmental cutaneous outburst. De Amicis' 30 had a case analogous to that of Colombini, although not so extensive. The patient was 27 years old, and had the disease postpartum. The eruption of herpes corresponded to herpes zoster of the cervical, cervicobrachial dorsopectoral, dorso-abdominal, lumbo-inguinal, sacro-ischiatic and lumbo-femoral segment of both sides.

Seeking some common ground in these cases in a careful survey of every vaunted case of generalized herpes zoster, the fact has appealed to us that most of the patients were elderly persons, who were not very robust. Our own case occurred in such a man. Despite the fact that age alone is no barrier to ordinary varicella, the generalized eruptions associated with herpes zoster in advanced adult life have universally been described as different from varicella as ordinarily encountered. However, until the work on the bacterial etiology of herpes zoster is complete 31 and verified, we shall remain in comparative ignorance.

Lacking bacterial bases for contentions of identity or nonidentity of herpes zoster, the generalized eruption sometimes accompanying herpes zoster and varicella, the conclusion to which we must arrive is that there is a clinical group of cases best identified as herpes zoster generalisatus, and that as far as we know now, this is separate and distinct from the fortuitous association of herpes zoster and varicella.

LICHEN NITIDUS

WITH A REPORT OF TWO CASES *

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AND

EDWARD R. MALONEY, M.D.

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The name lichen nitidus was first applied by Pinkus,1 in 1901, to a peculiar eruption which somewhat resembled lichen planus, but differed mainly in that it gave rise to no subjective symptoms and was not at all prominent.

Pinkus reported nine cases of this condition, seven of which he described quite fully. In only one of these cases was the patient aware of the presence of the eruption. All were found in men suffering from some venereal affection, and in all but one the genitals were the seat of lichen nitidus lesions. Examination for the venereal condition revealing the presence of an eruption, which, giving no symptoms, had not been noticed.

This eruption consisted of small flat shiny polygonal or round papules, of the color of the surrounding skin or, in some instances, of a slightly dusky hue, varying from pinpoint to pinhead size.

They were closely packed together, but were always discrete, never becoming confluent and never causing itching.

These papules resembled, to some extent, tiny flat warts, but instead of standing out above the epidermis they extended down into the cutis. Many had a slight depression in the center and were too small, smooth and multiple to be verrucae.

Pinkus found that the disease was most common in men who had been circumcised and that the papules showed a preference for the sulcus coronarium and upper surface of the glans, spreading as far as the meatus. The papules on the glans showed a distinct absence of color and looked not unlike small sago grains.

The penis was involved in all but one of the nine cases reported, the exception presenting lesions on the abdomen, chest and shoulders, the penis being quite free. In two cases, the penis and abdomen were the affected regions, and in one the penis, scrotum and bend of the elbows.

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One patient remained under observation for some years without the papular eruption becoming larger, spreading or undergoing any change whatever. He then disappeared for a considerable time, and when again seen the lesions had almost entirely disappeared, although no treatment had been applied.

Another case in a syphilitic patient, under observation for two years, showed decided changes in the size and number of papules, increasing and decreasing from time to time, clearing up entirely after mercurial inunction only to reappear later. In one patient, also suffering from syphilis, the condition cleared up entirely after treatment with mercury; while in another syphilitic case the eruption first made its appearance after some mercurial treatment had been given.

Pinkus found that, histologically, the lesions presented the picture of a granuloma. The histologic examination of lesions from individual cases differed somewhat in results, though in general the changes found were more or less similar. A description of a few cases will suffice to show the changes in structure found.

REPORT OF CASES

Case 1.—The portion of the epidermis corresponding to the papule was raised and shut in on either side by dipping down processes of normal epithelium.
In the center, there was an epithelial downgrowth, the cells of which were large, clearer than normal and, toward the middle third, undergoing cornification. Around this process, which dipped right down into the cutis, was a collection of polymorphonuclear leukocytes, giving the appearance of a small abscess.

This cellular infiltration had also invaded the epithelial cells. Directly below was a sharply defined granuloma consisting of endothelial and giant cells. The vessels running into the granuloma showed a proliferation of endothelial cells and had a mantle of leukocytes. Around the granuloma was a slight, small round cell infiltration.

**CASE 2.**—The epithelium corresponding to the papule was thin and dipped down on either side of the infiltration; lying directly under and invading the rete cells was a long process of normal stratum malpighii. This infiltration consisted of endothelial and giant cells; in short, it was a typical picture of a granuloma. Owing to the close proximity of the granuloma to the epidermis, many of the cells of the latter had become separated, wandered into the center and showed signs of degeneration. In this case, there was no horny downgrowth and no subepithelial leukocytic infiltration such as characterized Case 1. Pinkus regarded this as an early case and the abscess formation a later or further stage of the disease.

**CASE 3.**—This case was histologically interesting because of the great number of epithelioid and giant cells present, also in the more marked round cell infiltration in the neighborhood. This was to be expected in an acute case appearing while the patient was under treatment for another complaint.

Histologic examination further proved that the papules in these cases had no connection with the hair follicles. In no case could tubercle bacilli or a cause for the eruption be found.

**CASES IN THE LITERATURE**

Kyrle and McDonagh in 1909 published a paper in which they reviewed the cases described by Pinkus and reported a case of lichen nitidus occurring in a girl 18 years old.

This patient was admitted with a diagnosis of bartholinitis with edema of the labia majora and minora. She also had a noninflammatory papular eruption disseminated more or less over the entire body.

This eruption was present on the flexor surfaces of the joints, especially of the wrists and elbows, axillae and anterior axillary folds, inguinal region, genitocrural folds, popliteal spaces and both malleolar regions. In all of these locations, the papules were quite thickly distributed. Apart from these points the eruption also occurred, to a lesser degree, on the neck, thorax and whole abdomen, except for a small zone around the umbilicus, and the labia majora. The head, palms and soles were quite free.

The single papule was pinhead in size, of the color of the skin, only very slightly raised above the surface and had a waxy, glazed appearance. Some of the papules gave the impression of being slightly depressed in the center; the majority, however, were flat, a few conical, and to the touch gave a feeling of moderate consistence.

Where the eruption was thickest, the normal skin could scarcely be seen, and the color in these places was reddish brown, with a violet zone. On the

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flexor surfaces of the joints, the papules seemed to be somewhat confluent, amounting to plaques, often quite sharply circumscribed. There were no scales nor crusts.

The patient stated that she had had the eruption as long as she could remember, that it had not altered in appearance and that no periodical changes ever occurred. A test made by the injection of 1 mg. of Koch's old tuberculin resulted in a rise of temperature to 100.9 F., with no local skin reaction.

Histologic examination showed the basal cell epithelium to be more pigmented than usual, with a few round cells of the type of mononuclear leukocytes and some giant cells of the Langhans type present. There were no signs of caseation. The nodule was right against the epidermis, and the vessels had thickened walls, the lumen being practically obliterated. Perivascular infiltration in the course of the capillaries was not found.

Histologically, the structure of the growth was that of a granuloma. Tubercle bacilli were not found and animal experimentation was negative; yet, because of the appearance of the nodule and the presence of epithelioid and giant cells, they believed the condition to be a tuberculous process.

Arndt a in 1910 reported thirteen cases of lichen nitidus, with a complete clinical and histologic description of each.

He believed that the condition was probably not so rare, though it was seldom seen because of the lack of subjective symptoms, the cases coming under observation while being treated for some other complaint. He found the most striking feature of the histology of the eruption to be the frequent occurrence of giant cells, naturally suggesting a tuberculous etiology. However, investigation along this line failed to substantiate this explanation of the cause.

In none of the nodules that Arndt examined (and serial sections of 148 were cut) was he successful in finding tubercle bacilli.

In addition to giant cells, he found epithelioid and mononuclear round cells in the infiltration. The epithelioid cells were often pigmented. Only in long existing nodules was the tubercle-like structure marked, and in these, unlike true tubercles, there were a fair number of blood vessels. In recent nodules, there was merely a round cell infiltration. There was often a gap of some size between the epithelium of the skin and the infiltration in the cutis. Thinning of the epithelium over the nodule and some degree of parakeratosis was not unusual.

Arndt states that the condition is most closely allied to lichen planus and also resembles multiple flat warts, folliculitis of the penile skin, the flat form of lichen scrofulosorum and lichenoid syphilis. The most vital points in diagnosis were color, uniformity of the lesions, absence of grouping and absence of subjective symptoms. Histologically, the lichen nitidus nodule very much resembled a tubercle, with the distinction that the nodule is comparatively rich in blood vessels.

Arndt's cases all occurred in males, varying in age from 12 to 45 years. In every case, the shaft of the penis was affected; in four instances other regions were also involved, and in one case lesions were found on the buccal mucous membrane. He also discussed a case reported by Lewandowsky, in a man, aged 51, in the third stage of syphilis, with lichen nitidus lesions on the arms, back and penis; and a case of Jadassohn's, in a man, aged 28, with lesions on the chest, back, legs and penis.

Sutton, in an article published in 1910, reviewed the cases reported by Pinkus, Arndt, Kyrle and McDonagh and reported a case occurring in a man, aged 35.

One brother had died of tuberculosis, and two brothers and two sisters were living and in good health. The patient himself was a strong, healthy, well nourished man. He had had two attacks of gonorrhea and had had an operation in 1906 for a tuberculous gland in the left cervical region. Examination of the internal organs was negative; but he gave a decided reaction to tuberculin (Pirquet). The Wassermann reaction was negative. The condition was discovered accidentally. The lesions exhibited were flat topped shiny pinhead size papules of the color of the skin. They were present on the chest below the axillary folds, on the groin, around the umbilicus and on each forearm. There were none on the penis or scrotum.

Microscopic examination revealed an oval shaped granuloma lying between the corium and epidermis having no connection with the pilosebaceous follicles. Within the lesion were epithelioid cells and small round cells with large deeply stained nuclei. There was no evidence of caseation. Elastic tissue fibers were seen at one end (these had not been reported by previous observers). Blood vessels were apparent in only a few of the serial sections, in those from the middle of the papule.

Civatte demonstrated a case before the Société Française de Dermatologie et de Syphiligraphie which showed the presence of both lichen planus and lichen nitidus. The lichen nitidus was superimposed on the lichen planus, and in certain regions it was practically impossible to distinguish one from the other. He also found grouping of the lesions in lichen nitidus, the condition differing in this respect from all the cases reported except that of Kyrle and McDonagh.

Pels in 1914 reported a case of what he called miliary lichen planus, which bore a striking resemblance to lichen nitidus. The lesions consisted of minute papules, discrete and shiny, and distributed practically over the entire body. These papules, however, were purplish brown to brown. There was no itching and the eruption disappeared completely two weeks after some medicine, probably arsenic, was given. A Pirquet test was made with a result called positive. Old tuberculin given hypodermically also gave a positive reaction. From a clinical standpoint, Pels considered the case one of lichen planus because of the

character of the primary lesions, the location of many of the papules around hair follicles and the response to medication.

On the other hand, uniformity in size of papules, lack of tendency to change, absence of confluence or of linear arrangement, absence of itching and the positive reaction to tuberculin favored lichen nitidus as the diagnosis.

Fig. 2.—Disseminated miliary papules along the whole shaft of the penis.

CASE OF THE AUTHOR'S

The following case was presented by one of us before the New York Dermatological Society, Dec. 16, 1919, and also to the section on Dermatology and Syphilology, New York Academy of Medicine, Feb. 3, 1920.
History.—A man, aged 28, a negro, born in the United States, whose family history was negative, gave a personal history of measles, mumps, chickenpox and frequent attacks of tonsillitis in early life, but no history of tuberculosis. He first noticed small lesions on his hands in May, 1919. Shortly afterward, he noticed similar lesions on the penis, back of legs and arms. There were no subjective symptoms, and he was not aware of the existence of the lesion previous to the date mentioned. He was first seen early in 1920. At this time, he presented pinpoint to pinhead size flat, more or less shiny, discrete papules, some with a depressed center, in color decidedly lighter than his normal skin (almost white in places), on both elbows, anterior surfaces of both wrists, backs of the hands, both popliteal spaces, posterior surfaces of all the toes and the dorsum of both feet immediately adjacent. The same lesions were present on the penis, covering the entire shaft, the glans and the sulcus. In this location, they were very numerous, packed closely together, though discrete; on the other surfaces, they were rather less numerous and not so close together. A Wassermann test taken at this time was negative.

Fig. 3.—High power photograph of a circumscribed mass of cells. There is a thinning of the epidermis above and a granulomatous process made up of lymphocytes, plasma cells, connective tissue cells and a few epithelioid cells. Pigment in the basal layer is prominent.
After a short time, the patient disappeared from observation, and he was not seen again until November, 1921. At this time, many of the lesions had cleared up. On the elbows, there were only a very few papules left; those on the backs of the hands had entirely vanished, and there were only a few isolated papules on the anterior surfaces of the wrists. The same was true of the popliteal spaces, the feet and the toes. The lesions on the penis had decreased somewhat in numbers, but not nearly so much so as on the other parts. He had had no treatment at any time.

Histologic Examination.—Section taken from a papule showed skin in which the principal pathologic change was a granulomatous process. This granulomatous area was a circumscribed, fairly large mass of cells, located in the corium and extending up into the epiderm, which, in the region above the mass, was decidedly thinned and atrophic.

The granulomatous process was made up mostly of lymphocytes, plasma cells and connective tissue cells, around one edge of which a few epithelioid cells were found. There were no definite areas of necrosis nor were any Langhans' giant cells found in this section. There was a moderate intracellular and extracellular edema.

In the remainder of the section, intense pigment in the basal layer of the epiderm was noted, and in the corium throughout the entire slide there was a moderate cellular infiltration, consisting chiefly of lymphocytes and plasma cells. This infiltration was perivascular in places and a suggestion of "cuff formation" was noted in a few places.

Through the courtesy of Dr. Howard Fox, we are permitted to report a second case of lichen nitidus, also occurring in a negro; a case which was presented at the April meeting of the Manhattan Dermatological Society.

E. S., aged 14 years, a full-blooded negress, born in the United States, had an eruption which had developed six months previously, consisting of groups of tiny discrete, flat, shiny rounded or polygonal papules of a lighter color than the normal skin. A few of the papules were umbilicated, and some were covered with fine scales. These groups of papules were located on the neck (about twenty groups in this location), below the right breast, in the right lumbar region and on the flexor surface of the elbow. The patient was a healthy, well-nourished girl, and the only subjective symptom was an occasional slight itching. Histologically, the individual papule showed a granuloma in the epiderm, with round cell infiltration, and epithelioid but not giant cells. In fact, the histopathology was about the same as in the first case described, except the stroma was perhaps a little more edematous.

CONCLUSIONS

1. Lichen nitidus is a distinct disease entity, characterized by multiple minute discrete skin-colored papules of widespread distribution, giving rise to no subjective symptoms.

2. Histologically, the lesion presents the picture of a granuloma.

3. From the histologic findings and from the positive reaction to tuberculin in several cases, it is probably due to a tuberculous toxin.
Fig. 4.—Low power photograph of a circumscribed, fairly large mass of cells located in the corium and extending up into the epiderm. The epiderm above the cells is markedly thinned and atrophic. There is moderate cellular infiltration in the remainder of the section.

Fig. 5 (Dr. Fox's patient).—Grouped miliary papules on the back of the neck
4. Treatment has very little, if any, effect on the condition in most cases, the lesions disappearing either entirely or in part without treatment, probably owing to the fact that the individual acquires an immunity to the toxin.6

DISCUSSION

Dr. William Allen Pusey, Chicago: I think we are indebted to Dr. Trimble for calling our attention to this rare disease which we have seen so seldom, many of us not at all. I should like to ask him whether the patient he described and showed photographs of did not show many more lesions than have heretofore been described? I have seen one case in which the lesions were largely on the skin of the penis, and my impression is that the lesions in the case of Dr. Pinkus were also much less numerous.

Dr. Howard Fox, New York: In addition to the study of my own case of lichen nitidus, I have had the opportunity of seeing two others. They all presented such striking similarities that, having seen one example of the disease, it was not difficult to make a clinical diagnosis in the others. The appearance of the eruption might be characterized as a sort of miniature lichen planus. I cannot agree that treatment is unsatisfactory, as the lesions in my own case are rapidly disappearing under fractional doses of roentgen ray.

6. In addition to the references given, the following will be found of interest:
   Farounagian, M. B.: Arch. Dermat. & Syph. 3: 89 (Jan.) 1921.
ACUTE PAPULAR AND DESQUAMATIVE EXANTHEM IN AN ORANG-UTAN

HERBERT FOX, M.D., AND FRED D. WEIDMAN, M.D.

PHILADELPHIA

We are restricted to the above title, because we cannot conclude within reason that the disease definitely conformed either to human measles or to scarlatina. As will appear later, the earlier phases resembled measles and the succeeding ones scarlatina, particularly in the extensive desquamation, which was the most picturesque feature of the case. The animal was tractable and easy to examine, and was the same animal in which scabies was described in a preceding paper. This is the chronology of the case:

July 3, 1922: The animal's appetite became poor and the stools were loose.

July 5: She became depressed, and the skin became warmer than normal. There were no rales in the chest, but noises indicating mucus in the nose could be heard—yet there was no discharge. There was no pharyngitis. A scattered, shotty, papular eruption was present over the more glabrous parts of the face, on the inside of the arms and thighs, and sparingly laterally on the abdomen. There were a few papules on the buccal mucosa, whose summits were abraded but not definitely ulcerated. The cutaneous papules were convex and ranged in size up to that of a split pea.

July 7: There was a slight nasal discharge.

July 8: The cutaneous papules developed scaly summits, and the hyperpyrexia had disappeared.

July 10: The papules began to regress.

July 13: The papules had quite disappeared, and a diffuse exfoliation, nonerythematous and coarsely scaly, had begun. It was most marked on the extensor surfaces of the extremities, the back, the scalp and the face. The temperature was slightly or not at all elevated. The animal was still languid, and slight diarrhea was still present; that is, the stools were not copious or frequent, but were fluid. This general state continued with little change for six weeks—that is, until desquamation had ceased. Desquamation of the palms and soles occurred last, and in large sheets as in scarlatina. There was a diffuse falling out of the hair.

August 28: All desquamation ceased, and the general symptoms abated, diarrhea had disappeared, etc. There was a definite turn for

LABORATORY FINDINGS

the better, and in another ten days recovery was complete. There were no cutaneous sequelae, such as scars, pigmentations, etc.

Laboratory examinations were not complete because we did not wish to disturb a critically ill and very valuable animal. At the height of desquamation, urinalysis revealed: specific gravity, 1.013, acidity, a trace of albumin, a few hyaline and coarsely granular casts, many leukocytes—some in clumps. We found swarms of streptococci in

Fig. 1.—Papular eruption in early stage of the disease.

Fig. 2.—Desquamation in later stage of the disease.

the feces (no culture), a few strongylus ova but no amebas—either cystic or vegetative. The latter examination was performed because there was an epizootic of amebic dysentery among the monkeys last year, and this possibility had to be excluded in view of the loose stools.

Some of the scales which were secured in the earliest days of desquamation, but which had been kept wrapped in paper for two or three months were rubbed into the nares of four rhesus macaque
monkeys—the only species available at the time for such a purpose. Results were quite negative so far as external observation was concerned.

Whatever the disease was, it is not common for any exanthem to occur on apes. Dr. W. L. Abbott, a traveling zoologist much interested in monkeys and a director of the Philadelphia Garden, has not seen any before on orang-utans. We note a recent report, however, of epizootic smallpox having affected monkeys in Uruguay contemporary with a mild epidemic among the natives and colonists.

An analysis of the whole course resolves it into an acute papular exanthem of only one week's duration, associated with definite constitutional symptoms, and followed by a frank and extensive desquamation lasting six weeks. Focal symptoms were indefinite—those in the nose being only suggestive, and those in the intestines somewhat more so in our search for a primary lesion; but taken all in all, in view of the streptococci in the feces, we feel that the latter is the primary focus to be more strongly suspected. None of the other contacts was affected, although the orang-utan's cage was only 20 or 30 feet away from numerous other monkeys and apes. The keepers were healthy both before and after the outbreak.

Compared to the human exanthem, it was unlike measles in that the type of the eruption was papular and in view of the prolonged and marked desquamation. It was unlike scarlatina in the absence of definite throat symptoms and in the character of the early eruption. We are not inclined to force the diagnosis of this orang-utan's case into a human category; among other reasons, in experimental measles and scarlatina of monkeys, the cutaneous eruption does not compare with the human. There was, however, a severe epidemic of scarlatina in Philadelphia at the time of this animal's illness. It may have been measles or scarlatina, the differing morbid anatomy of the orang-utan's skin being referable to a different normal anatomy or physiology, of which we know nothing. Or it may have been an entirely different disease of which we are ignorant.

SYPHILITIC MACULAR ATROPHY *

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Macular atrophy of the skin may be divided in two groups: (1) idiopathic macular atrophy, (2) secondary macular atrophy.

The first group is formed by a limited number of clinical entities of unknown etiology. The second group is more numerous and includes atrophic macular lesions following a dermatosis and those with a well defined cause.

In the first group are placed anetodermia erythematodes maculosa of Jadassohn, multiple benign tumor-like new-growths of Schweninger and Buzzi, idiopathic atrophic macules and the lesions that have been united under the name of white spot disease.

In the second group are included the macular atrophic lesions following lichen planus, leprosy, tuberculosis, syphilis, the cases reported by Pellizzari under the name of atrophic erythema, the case of Balzer and Reblaub of dissociated polymorphous erythema, the case of Posellew consecutive to purpura, the atrophic urticarial erythema following urticaria and several other conditions which are sequelae of lupus erythematosus and scleroderma.

Syphilis may produce cutaneous atrophy of different types. The well-known atrophic and pigmented scar left by the destructive syphilodermas is an example. These lesions are unimportant, as they are only the scars left by ulcerative or infiltrated lesions. Cases of diffuse cutaneous atrophy due to syphilis are rare. Fordyce, in 1904, Oppenheim, in 1906 and Wise, in 1915, reported cases of acrodermatitis chronica atrophicans. Fordyce's case seems to be of syphilitic origin, but Oppenheim's and Wise's cases appear to be coincident with syphilis, as the atrophy was present before the patient contracted syphilis.

Macular atrophy of syphilitic origin is not so rare. It occurs in two ways: either the atrophy is due to the reabsorption of secondary infiltrated papular lesions, leaving, so to speak, a subepidermic scar; or the atrophic spots appear without any previous apparent disturbance.

* Read before the Sixth Latin-American Medical Congress, Havana, Nov. 19-26, 1922.

of the skin. These lesions may be placed in the secondary stage of the disease, although indeed they may appear several months or years after the beginning of the infection. To the latter variety belongs the case reported.

REPORT OF A CASE

History.—A colored man, a Cuban, 29 years old, single, a clerk, with a negative family history, had always been strong and healthy. He was about 6 feet (182.88 cm.) tall and weighed 170 pounds (77.11 kg.). He did not remember any serious illness except those common in childhood. Two years ago, he noticed a small lesion on the prepuce, which was locally treated with antiseptics, healing without apparent scar. He did not consult a physician on that occasion, and he did not have any further manifestations. Eighteen months ago, six months after the initial lesion, he noticed the presence on the chest of several whitish elevated spots, spreading peripherally but causing no subjective sensations. These spots having increased in number, the patient was seeking medical advice for fear of extension to the face.

Examination.—This revealed a well built young man without any disturbance of his internal organs. The thorax from the clavicles to the pubis in front, and from the shoulders to the waistline in the back, appeared to be covered with innumerable spheric, oval or rounded lesions varying in size from a pinpoint to half an inch (1.27 cm.) in diameter, dirty white or ash color, elevated over the surrounding skin and with a wrinkled surface. These lesions felt elastic, that is, they yielded readily under slight pressure, sinking in the skin as if there were a hole in the corium. Around the lesions there might be felt a hard, well-defined ring, which formed the border of the atrophic spot. On removing the finger, the skin sprang back to its former spherical shape. The older lesions were less elevated and less elastic, but they were frankly atrophic; the epidermis showed the classical aspect of atrophic skin in cigarette paper, and the surrounding ring was more marked. The lesions observed as a whole presented a peculiar disposition, following the lines of cleavage of the skin. The smaller lesions appeared to be elevated points and were lighter than the normal skin. During the last year the patient had observed many new lesions, which spread peripherally, attaining the shape and size stated. Sensations of heat and pain and tactile sensation were preserved on the affected areas. There were no enlarged glands and no other manifestations of syphilis. The Wassermann blood test was strongly positive. Urinalysis was negative.

Pathology.—One of the medium sized lesions was excised for biopsy, fixed in alcohol, imbedded in paraffin, and the sections stained with hematoxylin-eosin and Weigert's elastic tissue stain.

The pathologic findings were: atrophy of the epidermis, which appeared to be greatly thinned; the papillary processes widened and shortened; the stratum basale contained the normal number of pigment granules characteristic of colored races. In the corium, there was an increase of the collagen, the papilli were widened, and the papillary vessels were atrophied or absent. In the reticular layer, the vessels were few and they were surrounded by a cellular infiltrate formed by numerous round cells and plasma cells. There were no chorioplaques and no giant cells. There was also a sebaceous gland surrounded by a cellular infiltrate made up of the same elements. The sections stained with Weigert's stain showed the absence of elastic fibers in many fields, and though a few fibers were present in some places, especially in the papillary layer, they were short, retracted, broken, poorly stained and irregular.
In brief, the pathologic changes were: atrophy of the epidermis, hyperplasia of the connective tissue, diminished vascularization, marked diminution or complete disappearance of the elastic tissue and moderate perivascular and periglandular infiltration of round cells and plasma cells.

DIFFERENTIAL DIAGNOSIS

In the diagnosis of a case such as the foregoing, it is necessary to consider and rule out the following dermatoses, which are very similar: anetoderma erythematodes maculosa of Jadassohn, multiple benign tumor-like new-growths of Schweninger and Buzzi, scleroderma circumscripturn or morphea guttata, white spot disease, maculae and striae atrophicae or vegetures and atrophic muscular syphiloderm.

Fig. 1.—Syphilitic macular atrophy in author's patient.

Anetoderma erythematodes maculosa  is formed by spots varying in size from that of a lentil to that of ten-cent piece, a bright pink or red, thin, wrinkled and sunken. These lesions usually occupy the extensor surfaces of the extremities. Pathologically, there are atrophy of the epidermis, disappearance of the elastic fibers and a slight inflammatory reaction characterized by moderate perivascular infiltration.

Multiple benign tumor-like new-growths of Schweninger and Buzzi  are very similar to the lesions in the present case. The lesions

5. Schweninger and Buzzi: International Atlas of Rare Skin Diseases, 1891, vol. 5.
in the case described by Schweninger and Buzzi are whitish or bluish, elevated, elastic, yielding easily to pressure and returning to their former position on removing the finger. Around the spots a hard ring is felt, which limits the diseased parts, the whole producing the sensation of the existence of an empty space in the corium. The sites of choice are the trunk and shoulders. Stelwagon, Pusey and Sweitzer have reported cases of this condition in the United States. The consensus

Fig. 2.—Syphilitic macular atrophy. Low magnification: hematoxylin-eosin stain.

of opinion is that these lesions should be classified with the atrophic conditions. Histologically, there are atrophy of the epidermis, atrophy

and absence in some places of the elastic tissue, hyperplasia of the connective tissue and slight inflammatory reaction with perivascular infiltration of the round cells.

Scleroderma circumspectum, or morphea guttata, appears as round pinkish macules of variable size, sometimes slightly elevated. They

are not elastic and do not sink into the skin when pressed with the finger. After some time the pinkish color disappears, and the lesions become whitish and surrounded by a violaceous ring formed by innumerable dilated capillaries. The center of the plaque is hard, lardaceous,
as if embedded in the skin. These lesions sometimes retrogress and appear as atrophic, thinned patches. Histologically, there are atrophy of the epidermis, marked increase of the collagen and of the elastic tissue and dermic infiltration of connective tissue cells. The vessels are thinned and atrophied.

White spot disease is generally considered as a form of scleroderma circumscriptum, or morphea punctata. The excellent studies of Mackee, Wise, and Rosen9 have established this conclusion, and they believe that some cases may be a form of lichen planus atrophicans. These authors have studied the pathologic anatomy of several cases of white spot disease and conclude that this name may be retained in the nomenclature only to designate a variety of morphea or of lichen planus. On the other hand, the lesions of white spot disease are clinically different from those in our case; they are atrophic macules or points, hard, shiny, depressed, imbedded in the skin like a mosaic and sometimes anesthetic.

Idiopathic macular atrophy described as a variety of estria atrophica or the "vergetures rondes" of the French, includes a number of conditions found especially in fat persons, after pregnancy and sometimes after typhoid fever or other prolonged infectious diseases. They are due to the mechanical rupture and retraction of the elastic fibers or to the degeneration of the elastic tissue in infectious diseases. Histologically, there is only a diminution of the elastic tissue without inflammatory changes.

Syphilitic macular atrophy may be the result of the reabsorption of syphilitic infiltrates. In primitive cases like that of my patient, the lesions appear without any previous manifestations of syphilis at the site of the atrophy. In these cases the atrophic lesions are undoubtedly the result of the direct action of the spirochete or its toxins which destroy the elastic tissue and provoke a hyperplasia of the collagen, with arteritis and cellular infiltration. This is a chronic process of moderate intensity, as is demonstrated by the limited cellular infiltration, the hypertrophy of the collagen and the lack of a marked granulomatous formation.

 Instances of this type of atrophy have been reported by Mibelli,10 Balzer,11 Balzer and Reblaub,12 Levin13 and others.14

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Darier,\textsuperscript{15} and Gougerot\textsuperscript{16} also refer to cases of this nature. Balzer's article in "La pratique dermatologique"\textsuperscript{17} is an excellent study of macular atrophies.

\textbf{SUMMARY AND CONCLUSIONS}

1. A case of cutaneous macular atrophy of syphilitic origin in a colored man, 29 years of age is reported. No other signs of syphilis could be found. The Wassermann reaction was strongly positive.

2. Pathologically, there was degeneration and atrophy of the elastic tissue, hyperplasia of the connective tissue, arteritis, moderate perivascular infiltration and atrophy of the epidermis.

3. This case resembles closely the condition described by Schweninger and Buzzi under the name of multiple benign tumor-like newgrowths. The condition first reported by these authors seems to be a form of macular atrophy of the skin due to different etiologic causes, one of which might be syphilis.

4. The diagnosis of syphilis in this case is based on the history of the patient, the pathologic findings, the strongly positive Wassermann test, and on the fact that after four months of intensive specific treatment no new lesions have appeared.

Prado 98, Havana.

\textsuperscript{15} Darier: Precis de dermatologie, Ed. 2, Paris, Masson et Cie, 1918, p. 376.
\textsuperscript{16} Gougerot: Traitement de la syphilis en clientele, Paris, Maloine et fils, 1918, p. 289.
\textsuperscript{17} Balzer: Vergetures rondes, la pratique dermatologique, Paris, Masson et Cie 6:798, 1904.
EPITHELIOMA OF THE AURICLE

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GENERALITIES

The pinna or auricle of the ear is one of about 100 vestigial organs which are of little use and which frequently cause trouble.

Its obvious function is to collect the sound waves, but the human earshell is now almost valueless in this respect, except occasionally when reinforced by placing the hand behind it. There is no doubt, however, about its beauty, or about the feeling of embarrassment occasioned by its deformity or absence. When diseased, therefore, it is important to remedy the trouble with the least disturbance.

The auricle is a simple organ composed of skin, elastic cartilage and a few rudimentary, voluntary muscles. Possibly because it is vestigial and also because it stands out on the side of the head exposed to wind and sun, heat and cold, it is frequently affected by keratotic patches, and by epitheliomas either developing from these patches or arising from the deeper situated cutaneous glands or hair follicles.

The skin is closely applied to the cartilage with little subcutaneous connective tissue, except at the lobule, which is rich in connective tissue and fat. On the rolled upper border of the rim or helix of the ear the application of the skin to the cartilage is particularly close, and it is often thin and dry; these conditions, together with exposure to the weather, make it a frequent seat of dry seborrheic patches. In addition to this, the underlying cartilage is often knobby, which is probably a symptom of vestigial retrogression. In fact, one of these knobs, Darwin's point, is generally regarded as the vestige of the pointed ear tip which was probably surmounted by a whorl or tuft of hair. It would not be surprising if there were a number of these tufts, adding to the decorative effect. In the cat's ear, for instance, there are a number of folds with hair whorls at the posterior edge of the shell of the ear. In those happy, far-off days it seems we could add to our decorations simply by wishing. It took a long time, but at length we arrived. Over these knobs, dry scaly patches may occur, which are frequently quite refractory to treatment, and often tender and troublesome, especially at night when coming in contact with the pillow. In some cases, indeed, it is necessary to slit the skin and clip off a portion of the underlying cartilage in order to secure a smooth, even surface.
It is from these keratotic patches that epitheliomas most frequently develop, and there is no borderline between the two conditions, either pathologically or clinically. What appears to be a seborrheic patch may be found on curettling to be quite deeply degenerated.

The sebaceous glands of the hollow of the ear are often well marked, so much so indeed that, as Colcott Fox once pointed out to one of us, it is the best place to demonstrate the presence of seborrhea, even better than the sternum and interscapular regions. Partly because of this, and partly because of the difficulty of cleaning the surface here and in the fossa triangularis, the skin may acquire a greasy coating, under which epitheliomatous degeneration may readily take place. The grooves between the helix and the antihelix, and between the back of the shell of the ear and the skull are also liable to seborrheic crusting, with the same eventuation.

A COMPARISON OF EPITHELIOMA OF THE LIPS AND OF THE EAR INCIDENT TO SEX, AGE AND RELATIVE FREQUENCY

During the sixteen years which have elapsed since the Great Fire in San Francisco we have had forty-six patients suffering from epithelioma of the auricle, forty-two of whom were males and four females, the average age being 60 years.

It is interesting to compare these figures with those obtained from our cases of epithelioma of the red surface of the lips. There were, during the same space of time, ninety of these patients, eight of whom were women. Four of our labial cancers were on the red surface of the upper lip, and of these four, three were in women. Of the eighty-six cases of cancer of the lower lip, five were in women.

In cancer of the ear, nearly 9 per cent. were in women, and in cancer of the lower lip, nearly 6 per cent. were in women.

There were, therefore, many more suffering from cancer of the lip than of the ear, forty-six of the latter and ninety of the former, which would quite agree with the greater exposure of the lower lip to injury and to the creosote of burning tobacco.

The average age of those having cancer of the lip was also considerably lower than of those having cancer of the ear; as before mentioned, it was 60 years in cancer of the ear, while in cancer of the lip it was 53 years. Seven years at this time of life makes quite a difference in the human being and in his tissues.

MALIGNANCY

Most of our patients with cancer of the auricle had the basal cell type; they were not very malignant, and not very refractory, except when they had become extensive and had invaded the comparatively
less attainable external auditory meatus. In one of our patients, however, a man 83 years of age, having an epithelioma of the posterior aspect of the edge of the right auricle, the growth showed great malignancy. The elimination of the growth with the curet, irradiation and cauterization left a deep notch, which was good evidence of the extent of our work. In two months, however, a recurrence took place in the scar, and in another month a number of hard particles like blood crusts were removed from deep within the right auricle, the real nature of which was never elucidated. By this time also a lymphatic nodule over the right mastoid process had enlarged, was excised and examined, and found to be malignantly infiltrated. At this point there was a most interesting occurrence. It was thought best to obtain another opinion on this condition, and slides were sent to a man of unquestioned ability in the examination of tissues. His report stated that he found only inflamed lymphatic gland tissue and supernumerary parotid gland structure, both of which were undoubtedly present. We then pasted a pointer on the slide indicating at which point we wished him to examine, and quickly the report was amended, as this small part of the field showed many narrow, irregular spaces filled with large, atypical epithelial cells of the stratified epithelial type, but with no horny
change. It was indeed a type of cancer both rapidly growing and therapeutically intractable, and its further course was in accordance with expectations.

We have now under treatment a cancer of the edge of the ear in a man of 80, which we fear may have unusual malignant possibilities. The ear is fat and rounded; the skin otherwise is smooth and in good condition, but the rolled edge is very large and the growth is papillomatous in the center. Previous to irradiation the lesion was very tender.

In another man, aged 78, there were epitheliomas in the hollow of both auricles, but the astonishing feature was the lobe of the right ear, which did not give the impression of being severely affected. It was determined, however, to clip it off. The scissors passed through a brittle grit, and the whole lobe was found permeated with epithelial infiltration.

**Peculiarities of Individual Cases**

The tendency to seborrhea in the hollow of the ear has already been mentioned; there is also a tendency in some cases for a dirty, greasy crust to form. Recently we had a man under our care with an epithelioma in the hollow of the left pinna, which extended into the triangular fossa as a partly granular, partly hyperkeratotic, growth. After the epithelioma was cleared up with radium there still remained this tendency for a greasy coating to form, and as the fossa in this patient was particularly deep, it constituted a threat that malignant epithelial degeneration might take place beneath it. He was admonished to keep it well wiped out with gasoline.

The fossa triangularis is that often very deep recess extending forward beneath the tip of the ear, and in elderly people is especially likely to be neglected; our mothers attend to it during our early youth.

In another man this dirty greasy coating persisted until the surface was cleaned off with liquor potassae, and then brushed over with trichloracetic acid.

Epithelioma of the ear, as in other situations, assumes a great variety of appearances, such as a small, dry ulcer with rolled borders, a crust with a degenerated base, a cutaneous horn or an advancing, cicatrizing growth. In one of our cases, that of a man aged 81, there was an immense, nodular, infiltrated epithelioma of the hollow of the right ear. Such a growth looks very formidable and seems too thick for successful irradiation, and possibly would be but for the fact that the ear is a flaplike organ, capable of being attacked on two sides, thus subjecting the growth to crossfire. The base of the growth, too, is not so far distant from the back of the ear, which, of course, renders it more susceptible to radiant energy.
Sutton mentions frostbite as a predisposing cause to epithelioma of the pinna. In only one of our cases was this mentioned as having occurred, and that twenty years previously. Frostbite, of course, seldom is encountered in California.

In some instances the epitheliomatous degeneration tends to spread out on the surface, and in one man the condition occupied the groove behind the auricle, the whole posterior aspect of the auricle and spread

Fig. 2.—Darwin’s point on the human ear (marked D. P.). It corresponds to the tip (T) of the ear of an ordinary mammal as shown in the hare’s ear below. In the young organ-utan, the part corresponding to Darwin’s point is still at the tip of the ear. (From “The Outline of Science,” volume 1, by J. Arthur Thompson. Courtesy of G. P. Putman’s Sons.)

out extensively over the cutaneous surface posterior to the auricle. The patient was only 45 years of age, and said that the disease had existed for only five months. It appeared, however, to have lasted much longer.
In another instance an extreme refractoriness of the trouble in the hollow of the ear seemed not to appertain to epitheliomatous tissue, which cleared up under irradiation, but to a chronic streptococcic infection.

An accompanying pigmentation is always a matter of interest in malignant growths, as it may indicate an especial malignancy. In one of our cases, that of a woman aged 72, with a large epithelioma perforating the right auricle, situated in the groove behind the ear and spreading both over the posterior surface of the ear and over the mastoid process, there was an inklike blueness in the skin beyond the tumor. This blueness was pigmented and must have been a connective tissue phenomenon, as it gave the impression of being situated deep in the skin, and the epithelium of the epithelioma was not darkened. Although this pigmentation necessarily caused us uneasiness, it fortunately did not seem to interfere with the excellent result achieved through the employment of roentgen rays.

**Pain and Tenderness**

Contrary to the usual experience in cutaneous epithelioma, those of the ear may be excessively painful and tender. In one of these cases the skin was red, thin and dry, and the edge of the auricle was beset with small, white knobs, evidently due to the knobbiness of the underlying cartilage; and the antihelix was bowed forward so as to be more prominent than the edge of the ear, was covered with seborrheic scales, and contributed to the discomfort experienced in lying on a pillow.

**Treatment**

Radiant energy, whether by the roentgen rays or radium, is the therapeutic measure of choice in the treatment of epithelioma of the auricle. As between these two sources of energy, we think that radium is by far the better, both in the quality and in the steadiness of the energy and ease of application. This ease of application is especially advantageous when the growth extends into a deep recess, as into the external auditory meatus, or into the fossa triangularis just below the tip of the ear. Here the small size of the radium tube especially fits it to be adapted to the diseased surface. Our success in the treatment of two cases in which the disease had advanced deeply into the meatus was undoubtedly due to this circumstance.

Another advantage of radium in a flaplike organ like the ear lies in the fact that it may be applied on both surfaces, thus securing a valuable and effective crossfire.

Whether to curet before applying radium is a serious question, as curetting may cause a noticeable deformity. In the majority of cases,
we prefer first to apply the radium, as the reagent acts especially powerfully on the succulent, actively growing, infiltrating cells, and so reduces in a remarkable manner the extent of the disease into the tissues, and therefore, the extent in which mechanical elimination would be necessary.

In employing radiant energy in cancer of the skin, one must always keep its action in mind. The more succulent, the more rapidly growing, the more embryonic a cell is, the more susceptible, as a rule, it is to radiant energy. Conversely, the more inanimate a cell is, the less it is affected by this force. Frequently, after treating and obtaining the retrogression of a malignant growth, there remain cells of a low grade of vitality, which only complete annihilation can eliminate. To insist on accomplishing this with such a reagent as radiant energy would be to make use of its caustic effect, and it is a very inefficient caustic.

It is far better to accomplish this purpose with trichloracetic acid or the acid nitrate of mercury, and, if necessary, also with the curet.
NEVUS PILARIS WITH HYPERPLASIA OF NONSTRIATED MUSCLE*  

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Leiomyoma is adequately discussed in the literature and in recent textbooks, so that there is no occasion for its routine description here. The nevoid hyperplasia of nonstriated muscle is perhaps less clearly defined, and the ease with which it is overlooked is well illustrated by the following case.

REPORT OF A CASE

A man, aged 26 years, presented himself for examination because of irregular alopecia of the neck and involvement of the hair follicles of that region amounting to a dermatitis pilaris capillitii. When he was stripped for examination, a papular acneform eruption was recognized over the back. On the lower left flank (Fig. 1) was a patch, 5 by 10 cm. in diameter, showing marked accentuation of the hair follicles, with minute papular elevations around the orifices. Over a considerable portion of the patch was a definite hypertrichosis; the hairs were markedly flattened and twisted. There was little or no hair elsewhere on the back or flank. A moderate brownish hyperpigmentation was present.

A tentative diagnosis of nevus pilaris et pigmentosus was made on sight. On palpation, however, a rather marked elastic resistance was encountered, and on close observation what appeared to be a slight vermicular "squirming" movement of the skin with erection of the hairs and accentuation of the follicle mouths was noted; this immediately aroused my suspicions.

On biopsy, the histologic picture shown in Figure 2 was found. The epidermis in the affected region was normal, except for a slight hyperpigmentation. The only anomaly presented by the cutis was the presence of numbers of strands and fascicles of what appeared to be nonstriated muscle. At one point there was apparently definite connection with the markedly hypertrophic arrectores pilorum. The individual fibers of the aberrant strands of nonstriated muscle showed a vacuolation which suggested a beginning degenerative process. Aberrant strands of muscle were present in close proximity to the sweat glands and were found as deep as the subcutaneous fat. Most of the muscle tissue, however, was distributed through the upper layers of the corium, below the subpapillary layer. There were no signs of collections of nevus cells and no perivascular infiltrations or vascular anomalies.

COMMENT

It is certainly conceivable that a nevus of this type is less rare than reported cases suggest, because pathologic examination constitutes the principal means of identification, and the clinical appearance may, as in this case, be confusing. Had it not been for the vermicular "squirming".

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Fig. 1.—Leiomyoma cutis in the left flank. The patient was not aware of the presence of the lesion.

Fig. 2.—Histopathology of the lesion shown in Figure 1. Note the aberrant bundles of smooth muscle fibers and the relation to the hair follicles.
and the unusual degree of palpatory resistance, I should not have hesitated at a clinical diagnosis of nevus pilaris et pigmentosus. The patient had no symptoms from the lesion and did not know of its existence; this is in contrast to the pain reported in a number of cases. Evidently this lesion belonged to the group of hyperplasias of the arrectores pilorum, associated with nevus pilaris, and suggests the propriety of designating these lesions as nevi in the literature.

No treatment was employed.
THE INABILITY OF SERUM WITH A HIGH CHOLESTEROL CONTENT TO INCREASE THE STRENGTH OF THE WASSERMANN REACTION *

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This investigation was undertaken for the purpose of discovering a possible relationship between cholesteremia and the Wassermann reaction. We believe that our results demonstrate conclusively that the strength of the Wassermann reaction is independent of the cholesterol content of a serum.

This problem is of special interest since the introduction of cholesterolized antigen in the Wassermann technic. For a long time it has been thought that the antibody-like substance occurring in serum and spinal fluid yielding positive Wassermann reactions was related to the lipoids of the blood, and results obtained with cholesterol fortified antigen have strengthened this impression. Nevertheless, there is no real evidence to justify this belief, and more and more data are accumulating to indicate that the complement-fixing bodies in the Wassermann reaction are related to serum globulin rather than to lipoids in the serum.

Henes 2 is the strongest advocate of the theory that there is a relationship between the degree of cholesterolemia and the Wassermann reaction. He thinks that a high cholesterolemia may cause nonspecific fixation and a falsely positive reaction. He also believes that a positive reaction when the blood cholesterol is increased is less significant than when the blood cholesterol is low or normal. This brings up the broad question of the specificity and nonspecificity of the Wassermann reaction, which is interesting and important but cannot be discussed here, although reference will have to be made to this question.

Two conditions, pregnancy and diabetes mellitus, are commonly accompanied by an increased blood cholesterol. Many serologists have presented data which they believe indicate that falsely positive Wassermann reactions not infrequently occur in both these conditions, and

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are dependent on concurrent high cholesteremia. Williams and Fordyce indicate that their clinical observations suggest that falsely positive Wassermann reactions may occur during pregnancy, usually are found only with the cholesterolized antigen, and become negative shortly after delivery.

The results regarding a falsely positive Wassermann reaction in diabetes are less clear cut, and if they do occur, analysis of the data shows that they are extremely rare. The problem of the nonspecific Wassermann reaction, especially its possible association with pregnancy and diabetes, needs further, accurate investigation.

A positive blood Wassermann reaction occurring in some cases of pneumonia and disappearing after recovery, may be demonstrated to be a falsely positive reaction. This furnishes striking evidence that there is no relationship between a positive (or falsely positive) Wassermann reaction and cholesteremia, since the blood cholesterol is always low in pneumonia, as it is in all severe infections.

McFarland and Knudson have found no increase in the blood cholesterol of patients with syphilis who have a positive Wassermann reaction. The total blood cholesterol is practically normal, but in some cases the proportion of cholesterol esters is slightly increased. Knudson found the average percentage of cholesterol combined as esters decreased in various syphilitic conditions.

Levinson, Landenberger, and Howell found "no appreciable amount of cholesterol in spinal fluids which showed positive Wassermann and Lange reactions."

Craig has demonstrated by feeding cholesterol to rabbits that a tremendous increase in blood cholesterol, much higher than is usual in diabetes or in pregnancy, does not cause the appearance of a positive Wassermann reaction. The importance of this work cannot be overestimated. Craig, however, studied only the effect of increasing the blood cholesterol in normal rabbits.

We believe that the problem is to be solved only by studying the
effect of increased cholesterol in the blood (or serum) of persons
infected with syphilis having positive blood Wassermann reactions. If
cholesterol affects the Wassermann reaction, then increasing the chole-
sterol in serum should increase the strength of the reaction. Fortunately,
Kolmer’s quantitative Wassermann method, which determines accur-
ately the strength of a positive Wassermann reaction, was available
for this study.

**THE METHOD OF INVESTIGATION**

Kolmer’s new quantitative method determines the degree of com-
plement fixation in syphilis by using five dilutions of a serum, in five
test tubes, adding to each the same amount of antigen and of comple-
ment. The control tube contains the largest amount of patient’s serum,
the same amount as in the first tube. Kolmer found that some four
plus reactions can be diluted out more easily than others. A very
strongly positive serum will give a reaction recorded 4, 4, 3, 1, 0, the
numerals indicating four plus, three plus, etc. A weak four plus serum
will give a reading 4, 0, 0, 0, 0. Treatment may change the fore-
going strong reaction to the weak one, and if only the routine or
qualitative method were used, both would be read as four plus, and the
effect of treatment would not be discovered.

If an increase of blood cholesterol would cause an increase in the
strength of the Wassermann reaction, it seems fair to suppose that the
addition of the same amount of a high cholesterol serum to each of
the five tubes would increase the strength of the quantitative reaction.

In this investigation the high cholesterol serums were negative, and
were obtained from patients who gave no history of syphilis and who
had no clinical symptoms of this disease.

It might help to visualize this procedure by conceiving the weaker
reactions in the gradually weaker dilutions of serum as diminishing
reactions gradually occurring during the course of treatment of a
syphilitic patient.

Since many investigations of the Wassermann reaction are difficult
to interpret because the exact method is not stated, we will give in
detail the exact method used in this investigation.

**METHOD OF PERFORMING WASSERMANN TEST**

The method used in performing the Wassermann test corresponds
essentially to that of the so-called classical Wassermann test, but
modern modifications have been incorporated in the technic, which, we
believe, give greater accuracy. Since it would seem that some changes

Upon the Results of Studies in the Standardization of Technique, Am. J.
Syphilis 6:1, 1922.
in the Wassermann technic have completely modified the original method, and in different laboratories give markedly divergent results, we have not utilized these radical changes. The classical Wassermann test is sound in principle and in results. Its underlying principles must form the basis today of the serologic investigation and diagnosis of syphilis. Since Wassermann’s original reports, many advances have been made in laboratory methods. Changes in technic must not alter the fundamental technic of the classical Wassermann test, must not so sensitize this reaction as to give falsely positive results, and yet must give the maximum sensitiveness, must be capable of standardization as are other biologic tests, and must be capable of being rigorously controlled.

In the technic we use, the content of the tubes is made up to 2.5 c.c.—one-half the amount in the original Wassermann test.

**Complement.**—Guinea-pig complement is used—the pooled serum from several animals obtained the afternoon before the tests are performed. We have found, as have others, that fresh guinea-pig complement, obtained immediately before being used, is not as readily fixed as that obtained the afternoon before. Complement preserved as follows is also used: Four parts of fresh guinea-pig serum is preserved with six parts of a sterile 10 per cent. solution of sodium acetate. This is diluted at the time the tests are performed (one part with three parts of normal saline solution), to make a 1:10 dilution of guinea-pig serum. We have tested this preserved complement many times against complement drawn the previous afternoon and have found that it is absolutely satisfactory, is just as easily fixed, gives the same results, does not yield falsely positive results, does not interfere with any of the other reagents, and remains active for about two weeks.

A 1:10 dilution of guinea-pig serum in physiologic sodium chlorid is used. This is accurately titrated with an excess of amboceptor and time before the tests are made. The complement unit is determined after the tubes have remained from ten to fifteen minutes in the warm water bath (37 C). The diluted guinea-pig serum in 0.4, 0.3, 0.25, 0.2 and 0.1 c.c. is used. Complete hemolysis must occur in the 0.2 c.c. tube, or the complement is discarded. Usually the hemolysis is about half complete in the 0.1 c.c. tube. The complement unit is calculated on the principle demonstrated by Bersredka, which we have repeatedly verified. If, under the foregoing conditions partial hemolysis occurs in the 0.1 c.c. tube in from ten to fifteen minutes in the warm water bath, complete or almost complete hemolysis occurs in one hour. Consequently, if in ten to fifteen minutes in the warm water bath, one obtains complete hemolysis in the tubes containing 0.4, 0.3, 0.25 and 0.2 c.c. and partial hemolysis in the 0.1 c.c. tube, then the complement unit is a little more than 0.1 c.c. and 0.25 c.c. (for two units) is used in the test. If
complete hemolysis occurs in the 0.1 c.c. tube, then 0.2 c.c. is used for two units. Kolmer's 9 titration enables him to use 0.6 of a 1 : 30 dilution of guinea-pig serum for two units, and it can be seen that the amounts we use of a 1 : 10 dilution correspond to from 0.6 to 0.75 c.c. of a 1 : 30 dilution.

In these titrations the amount in each tube is made up to 1.5 c.c. with normal saline.

A control tube containing only 0.25 c.c. of diluted guinea-pig serum and 0.5 c.c. of a 6 per cent. suspension of sheep cells is set up to test for hemolysin in the guinea-pig serum (complement).

Sheep Cells.—A 6 per cent. suspension of sheep blood cells in normal saline is used. The sheep blood is collected in a solution of 0.8 per cent. saline and 0.9 per cent. citrate, and washed six times in normal saline solution.

Amboceptor.—Rabbit antisheep amboceptor of a high titer is used. The amboceptor unit is determined in preliminary tests each time in the presence of an excess of complement. Two hemolytic amboceptor units are used in the Wassermann test.

Antigens.—Various kinds of alcoholic antigens have been used from time to time, prepared from beef, human and guinea-pig hearts and from the liver of stillborn, syphilitic fetuses. A preparation of the more recently described Noguchi antigen 10 was found extremely satisfactory, very sensitive, and was used entirely in this investigation. 11 The amount used is 0.2 c.c. of a 1 : 20 dilution in physiologic sodium chloride (immediately before it is used the saline is added to the antigen drop by drop, with continuous shaking). This is one fourth of the amount which is anticomplementary (0.8 c.c. of a 1 : 20 dilution) and is from four to five times the smallest amount (0.25 c.c. to 0.5 c.c. of a 1 : 20 dilution) which gives complete fixation with a known, four plus, syphilitic serum.

Cholesterolized antigen was prepared from the alcoholic antigen just described by adding 0.2 per cent. of chemically pure 12 cholesterol to make a 0.2 per cent. solution. The cholesterol is added to one half the necessary amount of alcoholic antigen, and placed in the thermostat for twenty-four hours. The remaining half of the alcoholic antigen is then added; this is placed in the icebox for several hours, and then filtered.


11. One hundred gm. of chopped and dried beef heart are extracted for five days at room temperature with 1,000 c.c. of acetone. The acetone is discarded, and the beef heart again extracted for five days at room temperature with 1,000 c.c. of absolute alcohol. The yellowish, alcoholic filtrate constitutes the antigen.

The resulting 0.2 per cent. cholesterolized antigen satisfies the same requirements for a minimum complement-fixing amount and anticomplementary amount as did the original alcoholic antigen.

Method of Procedure.—Our method of procedure was determined after trying various methods and controlling them carefully one against the other.\textsuperscript{13}

We have found ice water bath or icebox fixation just as satisfactory and accurate with cholesterolized antigen as with plain alcoholic antigen, and we believe the opinion that warm fixation must be used with cholesterolized antigen is erroneous.

Five tubes are used for the usual "qualitative" test—two antigens, plain alcoholic and 0.2 per cent. cholesterolized. Five hundredths cubic centimeters and 0.1 c.c. of the patient's serum are used with each antigen; and the fifth, or control tube, contains 0.1 c.c. of the patient's serum but no antigen.

The patient's serum is first placed in the tubes, then the antigen dose (0.2 c.c. of a 1:20 dilution in physiologic sodium chlorid) and then two units of complement (as described above). The amount in each tube is made up to 1.8 c.c. with physiologic sodium chlorid. The tubes are thoroughly shaken after each ingredient is added. Controls are always made with a known positive and a known negative serum and with a double antigen dose with a known negative serum.

The tubes are placed in the ice water bath for one hour. They are then warmed for about one minute in the warm water bath, and 0.5 c.c. of a 0 per cent. solution of sheep cells in physiologic sodium chlorid is added. The tubes are again placed in the warm water bath for not longer than five or ten minutes, to determine, by the method of Kaliski (quoted by Ottenberg),\textsuperscript{14} the presence of natural, antisheep hemolysin in the patient's serum. This is easily done

\textsuperscript{13} In the original Wassermann technic, fixation is accomplished by one hour's incubation in the thermostat at 37.7\textdegree C. This is equivalent to one-half hour in a warm water bath. We formerly placed the tubes for one-half hour in the warm water bath and then for from two to three hours in the icebox. For a while fixation for eighteen hours in the icebox was used. Control tests, repeatedly performed, demonstrated that a detectable deterioration of complement occurs in the short time of one-half hour in the warm water bath and in the long time of eighteen hours in the icebox. We have tested the method of one hour in the ice water bath recommended by Duke (Duke, W. W.: Ice-Water-Bath in Complement Fixation for the Wassermann Reaction, J. Lab. & Clin. Med. 6:392, 1921). This was done by using many dilutions of a four plus serum, employing different types of fixation methods, and observing which method gave the greatest fixation in the highest dilutions. The results, in every experiment, with one hour fixation in the ice water bath were as good as fixation for one-half hour in the warm water bath followed by three hours in the icebox, or for eighteen hours alone in the icebox. The results corresponded almost exactly with those obtained after eight hour's fixation in the icebox. Eight hours is probably the optimum for icebox fixation, giving the maximum fixation and the minimum deterioration of complement. The time interval in this method makes it impossible for practical use, as the tests cannot be completed in the ordinary working day. Ice water bath fixation for one hour we consider a marked advantage in method, giving absolutely reliable results and permitting tests to be finished in three hours.

and we believe is very important, for if natural hemolysin is present, when the full two unit dose of amboceptor is added, a slightly positive reaction may be converted into a negative one by the excess of hemolysin. Enough natural hemolysin is present in some serums so that the test, whether four plus or negative, can be read without further addition of hemolysin. If incomplete hemolysis has occurred in the control tubes, less than the usual two unit dose of amboceptor is added, an estimated amount (usually it is one unit of amboceptor).

The tubes which do not contain natural hemolysin receive the full dose, two units of amboceptor (contained in 0.2 c.c. of the dilution used). All tubes are then placed in the warm water bath and the first reading is made when each control tube shows complete hemolysis. This occurs usually in from ten to fifteen minutes. A final reading is made after the tubes have been in the warm water bath for from one-half to one hour. The first reading is important as otherwise some slightly positive reactions, from one to two plus, will be missed.

The usual manner of reading the tests is utilized: four plus, indicating complete fixation of complement, negative, indicating no fixation and complete hemolysis in the tube. Gradations of fixation in between are indicated by three, two or one plus.

The quantitative Wassermann test is performed exactly as that just described, except that the dilutions of the patient's serum recommended by Kolmer are used. Five tubes are used for the test containing in order 0.1, 0.02, 0.004, 0.002, and 0.001 c.c. of the patient's serum, and the sixth, which is the serum control tube, contains 0.1 c.c. of the patient's serum. The reaction in each tube is reported by numerals from 4 to 0, indicating the (positive) reading, as for example 4, 4, 3, 1, 0.

**METHOD OF DETERMINING THE POSSIBLE EFFECT ON THE WASSERMANN REACTION OF CHOLESTEROL IN SERUM**

The cholesterol determinations were made with the Bloor method,15 by Miss Margaret Perry, hospital chemist.

15. Two cubic centimeters of whole blood, or preferably serum, is pipetted, drop by drop, into 75 c.c. of a mixture of three parts absolute alcohol and one part of freshly distilled ether, placed in a water bath, brought to a boil, allowed to cool to room temperature, made up to 100 c.c. with the alcohol-ether mixture, and filtered. Ten cubic centimeters of the filtrate are evaporated to dryness on a water bath. The residue is extracted with three to four portions of hot chloroform, 10 c.c. in all, evaporating to about one half the original volume. The combined extracts are placed in a stoppered graduate, the volume made up to 5 c.c., 2 c.c. of acetic anhydrid and 0.1 c.c. of concentrated sulphuric acid are added, the mixture gently shaken, and placed in a dark closet for fifteen minutes, until the maximum color has developed. Five cubic centimeters of the standard are treated with the acetic anhydrid and concentrated sulphuric acid, and the color compared with that of the unknown. The colorimetric reading should be made as quickly as possible.

A standard containing 0.5 mg. of chemically pure cholesterol to 5 c.c. of chemically pure, freshly distilled chloroform is satisfactory for most bloods. Calculation: \[ X = \frac{Sx}{U} \] cholesterol equivalent of standard, where \( S \) = reading of standard; \( U \) = reading of unknown; cholesterol equivalent of standard is 250 when 0.5 mg. standard is used; \( X \) = milligrams of cholesterol per 100 c. c. of blood.
Effect of the Addition of High Cholesterol Serums,* Cholesterol Solution, etc., on the Kolmer Quantitative Wassermann Test

<table>
<thead>
<tr>
<th>Plain Antigen</th>
<th>Anti-compl. Controls</th>
<th>Cholesterolized Antigen</th>
<th>Anti-compl. Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 plus serum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 plus serum, 0.1 c.c. B. serum (pregnancy, 205 mg. cholesterol per 100 c.c.)</td>
<td>4 1</td>
<td>4 1</td>
<td>4 1</td>
</tr>
<tr>
<td>1 plus serum, 0.3 c.c. P. serum (pregnancy, 379 mg. cholesterol per 100 c.c.)</td>
<td>4 4</td>
<td>4 4</td>
<td>4 4</td>
</tr>
<tr>
<td>1 plus serum, 0.3 c.c. M. serum (diabetes and nephritis, 333 mg. cholesterol per 100 c.c.)</td>
<td>4 3</td>
<td>4 3</td>
<td>4 3</td>
</tr>
<tr>
<td>1 plus serum, 0.1 c.c. C. serum (jaundice, carcinoma of pancreas, 500 mg. cholesterol per 100 c.c.)</td>
<td>4 3</td>
<td>4 3</td>
<td>4 3</td>
</tr>
<tr>
<td>1 plus serum, 0.2 c.c. C. H. serum (191 mg. cholesterol per 100 c.c.)</td>
<td>4 1</td>
<td>4 1</td>
<td>4 1</td>
</tr>
<tr>
<td>1 plus serum, 0.2 c.c. C. H. serum (after dissolving cholesterol contained 189 mg. per 100 c.c.)</td>
<td>4 2</td>
<td>4 3</td>
<td>4 3</td>
</tr>
<tr>
<td>1 plus serum, 0.3 c.c. H. B. serum (from umbilical cord, 192 mg. cholesterol per 100 c.c.)</td>
<td>4 1</td>
<td>4 1</td>
<td>4 1</td>
</tr>
<tr>
<td>1 plus serum, 0.2 c.c. H. B. serum (from umbilical cord, after dissolving cholesterol contained 189 mg. cholesterol per 100 c.c.)</td>
<td>4 1</td>
<td>4 1</td>
<td>4 1</td>
</tr>
<tr>
<td>1 plus serum, 0.3 c.c. B. serum (pregnancy, 338 mg. cholesterol per 100 c.c. before absorption with sheep cells)</td>
<td>4 4</td>
<td>4 4</td>
<td>4 4</td>
</tr>
<tr>
<td>1 plus serum, 0.3 c.c. B. serum (pregnancy, 338 mg. cholesterol per 100 c.c. after absorption with sheep cells)</td>
<td>4 4</td>
<td>4 4</td>
<td>4 4</td>
</tr>
<tr>
<td>1 plus serum, 0.2 c.c. of 120 dilution of cholesterol solution in alcohol</td>
<td>4 4</td>
<td>4 4</td>
<td>4 4</td>
</tr>
<tr>
<td>1 plus serum, 0.3 c.c. M. P. serum (pregnancy, 379 mg. cholesterol per 100 c.c.)</td>
<td>4 3</td>
<td>4 3</td>
<td>4 3</td>
</tr>
<tr>
<td>1 plus serum, 0.3 c.c. M. P. serum, pregnancy, 370 mg. cholesterol per 100 c.c.; 0.2 c.c. of 1:20 dilution of 0.2 per cent. cholesterol solution in alcohol</td>
<td>4 4</td>
<td>4 4</td>
<td>4 4</td>
</tr>
<tr>
<td>1 plus serum, H. serum (jaundice, 321 mg. cholesterol per 100 c.c.)</td>
<td>4 4</td>
<td>4 4</td>
<td>4 4</td>
</tr>
<tr>
<td>1 plus serum, H. serum (slightly jaundiced, 392 mg. cholesterol per 100 c.c.)</td>
<td>4 4</td>
<td>4 4</td>
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</tbody>
</table>

* All of the serums added to the Kolmer quantitative Wassermann tests were Wassermann negative and were not anticomplementary in the amounts used.
Quantitative tests were set up using a positive serum with both plain alcoholic and cholesterolized antigens. To an exactly similar set of tests the same amount of a high cholesterol, Wassermann-negative serum was added. A routine Wassermann test was performed on this last serum, including anticomplementary controls of the largest amount of this serum used.

In a few instances slightly positive, high cholesterol serums were used.

A few experiments were performed with a 1:20 dilution of a 0.2 per cent, solution of cholesterol in absolute alcohol (the same amount of cholesterol which is used in preparing cholesterolized antigen). This was added to the sets of quantitative tests, both alone and with high cholesterol serum in other sets of tests.

Cholesterol determinations of the plain alcoholic antigen showed an insignificant trace of cholesterol, too small in amount to be read in the colorimeter. Similar determinations of the cholesterolized antigen yielded almost "theoretical" results. The high cholesterol serum was obtained from many full term pregnant women, from patients with diabetes, chronic nephritis, and common duct obstruction with intense jaundice. The cholesterol content of the serum from the pregnant women was definitely increased, varying from about 250 mg. to 375 mg. per 100 c.c. of serum (normal serum contains from 160 to 180 mg. per 100 c.c.). Three diabetic serums contained 205 mg. and 242 mg. of cholesterol per 100 c.c., and one serum from a case of diabetes complicated by nephritis contained 833 mg. per 100 c.c. Two jaundiced serums contained each about 500 mg. of cholesterol per 100 c.c.

We attempted to dissolve cholesterol in several serums, but only a small amount went into solution. It may be of interest to note that one serum which contained 191 mg. of cholesterol per 100 c.c., which is the upper limit of normal, increased to only 198 mg. per 100 c.c. One sample of serum from blood from the umbilical cord,\(^\text{16}\) which contained only 152 mg. of cholesterol per 100 c.c., after dissolving cholesterol, contained 189 mg. per 100 c.c., practically the same amount as the other serum originally contained.

RESULTS

Our results demonstrate that the Kolmer quantitative method gives consistently similar results when repeatedly performed on the same

\(^{16}\) We confirmed the results of Slemons and Curtis (Slemons, J. M., and Curtis, C. S.: Cholesterol in the Blood of Mother and Fetus, Am. J. Obst. 75: 569, 1917) that the cholesterol content of fetal (umbilical cord) blood is much less than that of mother's blood.
serum on the same day and on different days. We believe that this
is an accurate quantitative Wassermann method and an important one
for studying the course of cases of syphilis.

We found, as did Craig, that serums with a high cholesterol content
may give negative Wassermann reactions, and we can therefore verify
his conclusion that a positive reaction is not caused by cholesterol present
in a serum. Many serums from pregnant women, with between 300
and 400 mg. of cholesterol per 100 c.c. of serum, gave negative reactions.
An intensely jaundiced serum, obtained from a case of common duct
obstruction due to carcinoma of the head of the pancreas, containing
508 mg. of cholesterol per 100 c.c., gave a negative reaction. This
test was carefully controlled; no natural hemolysis was present, and
the bile present in twice the amount of serum used in the test had no
hemolytic action on sheep cells. The cholesterol content, 833 mg. per
100 c.c. of a negative serum (on another occasion the content was 820
mg. per 100 c.c.), obtained from a patient with diabetes and nephritis,
is quite comparable to the cholesterol content of the rabbit serums
reported by Craig, in which he caused hypercholesterolemia by feeding
cholesterol, all serums yielding negative reactions before and after
feeding.

We had the opportunity to study two samples of serum from a
patient with jaundice (probably due to calculi in the common duct) with
a definite history of syphilis. The first serum was markedly icteric, con-
tained 521 mg. cholesterol per 100 c.c., and gave a quantitative Wasserr-
mann reaction of 4, 0, 0, 0, 0 with plain antigen, and 4, 2, 0, 0, 0 with
cholesterolized antigen. One month later, the serum from this patient
was slightly icteric, contained much less cholesterol, 292 mg. per 100
c.c., and gave a definitely stronger reaction, 4, 4, 0, 0, 0 with both
antigens. This definitely indicates, if it does not absolutely prove, that
the cholesterol content of this icteric serum, obtained from a patient
with syphilis, has no influence on the strength of the Wassermann
reaction.

We did not make cholesterol determinations on all of the positive
serums used (hence will not report our few results), as McFarland
and others have shown in a large series of tests from cases of syphilis
that the cholesterol content of positive serums is no higher than that
of negative serums. Our results confirm this.

Serums from four patients with diabetes were examined. In two
cases there was neither a history nor symptoms of syphilis. The
serum containing the smallest amount of cholesterol, 205 mg. per 100
c.c., and that containing the largest amount, 833 mg. per 100 c.c.
cases complicated with nephritis), gave negative Wassermann reac-
tions. One serum containing 229 mg. cholesterol per 100 c.c. was
obtained from a patient with diabetes in whom syphilis was suspected,
and though there were no physical signs of this, it could not be ruled out. This serum was examined five times over an interval of two years, and each time showed a slightly positive reaction, one plus with plain antigen and three plus with cholesterolized antigen; and the quantitative tests performed recently gave 1,1,0,0,0 with plain antigen, and 3,1,1,0,0 with cholesterolized antigen. Serum from a diabetic patient with a definite history of syphilis and a cholesterol content of 242 mg. per 100 c.c. (less than the serum just reported) reacted 4,3,0,0,0 with plain antigen and 4,4,2,0,0 with cholesterolized antigen.

The most striking results of all, showing that even a tremendous increase in the cholesterol content of serum does not increase the strength of the Wassermann test, were obtained in the experiments in which high cholesterol content serum was added to all the tubes of Kolmer's quantitative tests. The tests were performed on sera showing all degrees of strength of reaction by this quantitative method.

The strength of the quantitative reaction was not increased in a single instance, even though in some of the experiments serum containing enormous amounts of cholesterol was added. The serum which contained the largest amount of cholesterol had 833 mg. per 100 c.c. in one sample and 820 mg. per 100 c.c. in another. Three tenths of a cubic centimeter of this serum was added to the tubes of the Kolmer quantitative test performed on several different positive sera. This can be considered as similar to performing the tests with 0.1 c.c. (the amount usually used) of a serum containing 2,500 mg. per 100 c.c., and at the same time gradually decreasing the amount of complement-fixing substance. This is equivalent to a serum containing 2.5 per cent. of cholesterol, which is more than has ever been found in human serum.

In these tests, diminishing amounts of the positive serum are present, and therefore diminishing amounts of complement-fixing bodies. If the amount of cholesterol present in serum increases the strength of complement fixation of the Wassermann reaction, then certainly, under the conditions of these experiments, the set of tubes containing the extra amount of serum rich in cholesterol should give more fixation than the control set. For example: If the quantitative test reads 4,3,0,0,0, then the addition of a high cholesterol serum ought to give a result something like 4,4,2,1,0. This did not occur, but the strength of the quantitative reaction always diminished, in this instance from 4,3,0,0,0 to 4,0,0,0,0.

Whereas this constantly occurring decrease in the strength of the reaction on addition of a high cholesterol serum is interesting, the most important result is that the strength of the reaction does not increase. The decrease was not caused by natural hemolysins in the added high cholesterol serum, as this was tested for by the routine
method described under "Methods." In addition, the possible presence of natural hemolysins was eliminated by following a suggestion Dr. Kolmer was kind enough to give us. In several experiments, the serum was first mixed with sheep cells and the mixture placed in the icebox for five hours. If natural hemolysins had been present, they would have been removed by absorption. The results with serum before and after absorption were the same.

A consideration of the amount of cholesterol in the 0.2 per cent. cholesterolized antigen used is important in relation to the foregoing. The plain antigen yielded so faint a color with the Bloor colorimetric method for determining cholesterol that it could not be read in the colorimeter. Therefore, the plain antigen contained an insignificant amount of cholesterol. The cholesterolized antigen was made by dissolving 200 mg. of cholesterol in 100 c.c. of the plain antigen. The 1:20 dilution of the cholesterolized antigen used in the tests contains only 10 mg. of cholesterol per 100 c.c. Since 0.2 c.c. of this is used in the tests, this amount can be considered as equivalent to 0.1 c.c. of the serum being tested, containing 20 mg. of cholesterol per 100 c.c. Since normal serum contains from 160 to 180 mg. of cholesterol per 100 c.c., it is evident that the quantity of cholesterol in the amount of diluted antigen used in the tests is very small compared with the quantity in all serums tested, and insignificant in comparison with the amounts used in our experiments. It would seem that the actual amount of cholesterol in an antigen cannot be the factor which causes cholesterolized antigen to react more strongly with serums than does plain antigens. Some other factors must cause this, possibly some essential physico-chemical change which the addition of 0.2 per cent. cholesterol causes in the antigen.

This was tested in another series of experiments. Kolmer's quantitative tests were again set up with positive serums. One set served as a control. To all the tubes of other sets the following materials were added, 0.2 c.c. of a 1:20 dilution of a 0.2 per cent. solution of pure cholesterol in absolute alcohol (the same quantity of cholesterol used in cholesterolized antigen), or 0.3 c.c. of a high cholesterol content serum, or 0.2 c.c. of the foregoing dilution of the cholesterol solution and 0.3 c.c. of the foregoing serum. Although this experiment was repeated a number of times, the strength of the Wassermann test was increased in only one experiment and then slightly, by cholesterol solution alone and never when in combination with high cholesterol content serum. In all of the other experiments the strength of the quantitative reaction either remained the same, or was decreased as in the type of experiment previously described. In most of our quantitative tests the reaction with 0.2 per cent. cholesterolized antigen was slightly stronger than with plain antigen. Nevertheless, when the
same amount of cholesterol solution was added to the plain antigen tests at the time they were performed, the strength of the reaction usually was not increased, and only once was it increased to the same degree as with cholesterolized antigen. These experiments seem to us very significant.

The 0.2 per cent. cholesterol solution was controlled in a routine manner and found to be anticomplementary in the presence of a negative serum in amounts above 0.6 c.c. of a 1:20 dilution (the same as with both antigens). It was also tested as an antigen and only once caused complement fixation, in this instance weak fixation as with a poor antigen.

SUMMARY

This investigation demonstrates that when relatively large amounts of a high cholesterol serum are added to the Kolmer quantitative test, no increase in the strength of the reaction occurs. We believe that this indicates that hypercholesterolemia does not increase the strength of the Wassermann reaction whether plain or cholesterolized antigens are used.

Our experiments also demonstrate that hypercholesterolemia does not cause a falsely positive (nonspecific) Wassermann reaction.
JAUNDECE IN SYPHILITIC PERSONS RECEIVING ARSENICAL MEDICATION

ITS EARLY DETECTION AND POSSIBLE PREVENTION *

LOUIS CHARGIN, M.D., AND SAMUEL Z. ORGEL, M.D.
NEW YORK

It is a well recognized fact that arsphenamin, or its analogues, is responsible for a certain number of cases of jaundice that occur in syphilitic patients. This is variously estimated as occurring in from 0.6 to 0.89 per cent. of cases. While jaundice of this origin, in the majority of instances, is not serious, in a certain percentage the process goes on to acute yellow atrophy of the liver with its invariably fatal termination. This fact renders it desirable to devise means for the detection of jaundice in its earliest stages.

It is known that the appearance of jaundice in the skin and mucous membranes and of bile in the urine depends on the concentration of bilirubin in the blood, and that jaundice never appears in the tissues or urine unless the bilirubin reaches and maintains a definite concentration in the blood. Therefore a study of the behavior of the bilirubin content of the blood of syphilitic patients that are receiving medication* with arsenic compounds should serve as an excellent guide to the relation of arsenic to jaundice in this class of cases.

In normal persons, bilirubin is not infrequently present in the blood, and the upper limit of the normal quantity is given as 0.028 gm. per liter of blood. A concentration of bilirubin not in excess of this amount is considered normal and is designated as physiologic cholemia.

With the foregoing facts in mind, observations were made as to the content of bilirubin in the blood serum of syphilitic patients while they were receiving arsphenamin or its analogues. As stated in the foregoing, the appearance of jaundice in the skin occurs only with an increase of the bilirubin concentration in the blood, and not until the tissues have had more or less prolonged contact with the bilirubin containing serum. It is evident that the detection of a progressive increase of bilirubin in the blood serum should serve as an index of a possible oncoming jaundice.

In this study we repeatedly examined specimens of blood serum and urine of eighty-two patients who were under arsenical medication, at stated intervals over an extended period of time. A total number of

* From the Department of Dermatology, Mt. Sinai Hospital and Dispensary and the Venereal Disease Service of the Department of Health, New York City.
992 tests were made, the smallest number of observations in any single case being six, the largest twenty. The specimens were obtained just prior to the administration of the arsenical preparation, and the study in every case was continued for several weeks after the medication was discontinued. This was done in order to observe what changes occurred in the blood serum when they were no longer receiving treatment. Care was taken to select only those patients who gave no prior history or evidence of jaundice. In addition, it should be noted that at the outset of the experiment none of the patients showed bilirubin in the blood in excess of the normal figure already quoted, and that the urine in each instance was negative for bile.

Both qualitative and quantitative determinations were made. The qualitative method employed was that of A. Sunde, who found that it is possible to estimate the intensity of an admixture of bilirubin and blood by the length of time required for the color reaction to take place when blood serum is treated with nitric acid. The reagent employed is made by adding to 300 parts of nitric acid, 0.06 parts of sodium nitrite. The test is performed as follows: Twenty to thirty drops of blood serum are placed in a test tube not over 10 mm. in diameter. A small quantity of the reagent mentioned in the foregoing is allowed to flow down the side of the tube. In the presence of bilirubin a bluish ring is observed at the junction of the two fluids. The time elapsing before the bluish ring becomes evident varies with the amount of bilirubin present, requiring from one-half to 30 minutes when there is a considerable amount of bilirubin present and from 45 to 65 minutes or longer in the presence of minute quantities. When bilirubin is absent, no ring is formed.

The quantitative method employed was the bilirubin colorimeter method of Meulengracht. The colorimeter solution that is employed as the standard is made by combining 0.06 parts of potassium bichromate with 500 parts of distilled water, to which 2 drops of sulphuric acid have been added. This is a light yellow solution. The quantitative bilirubin content of the blood serum is determined by the number of drops of physiologic sodium chlorid solution that have to be added to the blood serum to bring the tints (test tube serum and standard) to correspond. This test is considered very important, because it reveals the gradual passage of bile (bilirubin) into the blood.

On the basis of our experiments, the cases are divided into two groups: first, those that showed no increase of bilirubin in the blood serum or evidence of jaundice; second, those that showed an increase of bilirubin in the blood serum with or without jaundice.

Of a total of eighty-two patients, sixty-nine developed neither jaundice nor an increase in the bilirubin in the blood serum, despite the fact that the majority of this group had in the course of treatment received an amount of arsphenamin equal to or greater than that received by the group who showed an increase of bilirubin in the blood serum. This fact would seem to indicate a predisposition to the development of jaundice in the last-named group and may be interpreted as possibly indicating a damaged liver of syphilitic origin.

Fourteen of the patients developed a definite increase of bilirubin in the blood above normal. In some this appeared in about three weeks, while in others the increase made itself manifest in about five weeks. The increase was progressive with each added administration of arsphenamin. In eleven of these cases, on termination of arsphenamin treatment there was a gradual diminution of the bilirubin content of the blood, which in some of the cases disappeared entirely in a period of four weeks.

Three of the patients developed icterus of the conjunctiva, mucous membranes and skin. In this group, the administration of arsphenamin had been continued after an evident increase beyond the normal bilirubin in the blood. This was done to observe what influence, if any, further arsenical medication would have on the presence of bilirubin in the blood and the development of icterus. The conclusion seems justified that in patients in whom an increase in the bilirubin occurs in the blood serum under arsenical medication, the continued administration of arsenic will lead to the development of jaundice in a number

### TABLE 1.—INCREASE OF BILIRUBIN ONLY

<table>
<thead>
<tr>
<th>Patient</th>
<th>No. of Arsenamin Injections Received</th>
<th>Qualitative: Time Elapsing Before Appearance of Ring</th>
<th>Quantitative: No. of Drops Required for Tints to Correspond</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Q.</td>
<td>9</td>
<td>5 minutes</td>
<td>45 drops</td>
</tr>
<tr>
<td>I. S.</td>
<td>7</td>
<td>5 minutes</td>
<td>45 drops</td>
</tr>
<tr>
<td>M. W.</td>
<td>29</td>
<td>5 minutes</td>
<td>45 drops</td>
</tr>
<tr>
<td>P. Z.</td>
<td>5</td>
<td>5 minutes</td>
<td>45 drops</td>
</tr>
<tr>
<td>C. B.</td>
<td>14</td>
<td>6 minutes</td>
<td>45 drops</td>
</tr>
<tr>
<td>B. E.</td>
<td>27</td>
<td>10 minutes</td>
<td>35 drops</td>
</tr>
<tr>
<td>M. G.</td>
<td>32</td>
<td>5 minutes</td>
<td>45 drops</td>
</tr>
<tr>
<td>B. Y.</td>
<td>25</td>
<td>5 minutes</td>
<td>45 drops</td>
</tr>
<tr>
<td>J. B.</td>
<td>35</td>
<td>10 minutes</td>
<td>35 drops</td>
</tr>
<tr>
<td>M. R.</td>
<td>31</td>
<td>5 minutes</td>
<td>45 drops</td>
</tr>
<tr>
<td>J. W.</td>
<td>56</td>
<td>10 minutes</td>
<td>35 drops</td>
</tr>
</tbody>
</table>

### TABLE 2.—INCREASE OF BILIRUBIN WITH THE DEVELOPMENT OF JAUNDICE

<table>
<thead>
<tr>
<th>Patient</th>
<th>No. of Arsenamin Injections Received</th>
<th>Qualitative: Time Elapsing Before Appearance of Ring</th>
<th>Quantitative: No. of Drops Required for Tints to Correspond</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. B.</td>
<td>12</td>
<td>3 minutes</td>
<td>50 drops</td>
</tr>
<tr>
<td>E. M.</td>
<td>13</td>
<td>2 minutes</td>
<td>50 drops</td>
</tr>
<tr>
<td>H. P.</td>
<td>8</td>
<td>1 minute</td>
<td>50 drops</td>
</tr>
</tbody>
</table>
of the cases. As soon as jaundice in the skin was detected in this group, the arsenical medication was stopped, and within a period of from four to six weeks under sodium phosphate and suitable diet the jaundice disappeared in all of these patients.

CONCLUSIONS

1. A moderate percentage of syphilitic patients appear to have a predisposition to the development of icterus (damaged liver). In this group the administration of arsphenamin or of its analogues causes an increase of bilirubin in the blood.

2. It is possible by means of the foregoing tests to detect a rise in the bilirubin content in the blood and therefore of a tendency to jaundice.

3. An increase of bilirubin in the blood is a danger signal of a possible oncoming jaundice.

4. These tests serve as a guide to safeguard patients receiving medication with arsenical preparations from the development of jaundice.

166 W. Eighty-Seventh Street—9 W. One Hundred and Seventeenth Street.
COMMON ERRORS IN DERMATOLOGIC TERMINOLOGY

HOWARD FOX, M.D.

NEW YORK

The object of this communication is to call attention to the frequent mistakes that occur in the terminology of dermatologic literature in this country. Similar mistakes are rare in European medical literature.

There are a few simple rules that are helpful in remembering the gender of nouns used in dermatology. Those of the second declension ending in us, such as lupus (genitive singular ending in i), are masculine. Those of the third declension ending in us (genitive singular ending in “is” and containing an added syllable) are neuter. Such are corpus (genitive, corporis) and ulcus (genitive, ulceris.) Corpus luteum is such a well-known combination of words that it could hardly be misspelled, though ulcus durum is at times improperly written ulcus duros or even ulcus dura.

Nouns ending in is (such as dermatitis) are almost invariably feminine. Among the rare exceptions may be mentioned a few of dermatologic interest that are masculine. They are crinis (hair), unguis (nail) and ignis (fire). The word crinis is probably more familiar when used in the genitive plural, as in fragilitas crinium. Ignis is used in connection with the adjective sacer (sacred fire) as an old name for erysipelas. If ignis were not an exception to the rule that words ending in is are feminine, it would be proper to write ignis sacra instead of ignis sacer.

Perhaps the greatest source of error is furnished by the words ending in a. All of these are feminine, with the probable exception of hydroa¹ and of words ending in ma (such as sarcoma, erythema,

¹ The question of the gender of hydroa is one that cannot be definitely settled as there is so much difference of opinion among the best authorities. Of the following ten medical dictionaries in which the gender of nouns is mentioned, six state that hydroa is feminine and four that it is neuter. Those favoring the feminine gender are: Lippincott’s New Medical Dictionary, 1912; Appleton's Medical Dictionary, 1904; Littré’s dictionnaire de médecine, 1893; Foster’s Encyclopaedic Medical Dictionary, 1890; Handwörterbuch der gesamten Medizin (Villaret), 1888; Mayné’s Expository Lexicon, 1860. Those considering hydroa neuter are: Stedman’s Medical Dictionary, 1922; Appleton’s Medical Dictionary, 1915; Medizinische Terminologie (Guttman), 1911; The National Medical Dictionary (Billings), 1890. While the weight of dictionary authority favors the feminine gender, the large majority of the authors of textbooks on dermatology in English, French and German consider hydroa neuter. As there is a reasonable difference of opinion among the authors of dictionaries, it seems best to follow the majority of dermatologic writers and consider hydroa as a neuter noun. It might be added that hydroa is a modern word, not having been used by classical writers.
chloasma, etc.), which are neuter. A frequent mistake is to write xeroderma pigmentosa instead of xeroderma pigmentosum. On the other hand, it is not uncommon to hear the disease urticaria pigmentosa improperly spoken of as urticaria pigmentosum. An unnecessary source of confusion arises from the tendency of certain authors to change the ending ma to mia. This necessitates a change in gender from neuter to feminine. In the case of the disease above mentioned, the terminations would be xeroderma pigmentosa. Why any one, however, should take the ill advised liberty of changing a good Greek word like derma to dermia, I do not know.

The termination e (as in the Greek word acne) is feminine. All words ending in um, as molluscum (contagiosum); in u, as cornu (cutaneum); and in on, as epidermophytion (inguinale), are neuter.

A few terminations of dermatologic words occur in different genders. The ending es, for instance in herpes (circinatus), is masculine, while in lues (venerea) it is feminine; en in lichen is masculine, while in sudamen it is neuter; as in callositas is feminine but neuter in erysipelas; do is masculine in comedo and feminine in livedo. The terminations er (zoster) and io (pernio) are masculine, while go (impetigo) is feminine. Some words ending in x are feminine, such as cicatriz and pomphoiyx; varix may be either masculine or feminine, while anthrax is masculine.

There can be no doubt about the gender of anthrax as all authors of medical dictionaries and standard textbooks on Greek and Latin grammar (which I have been able to consult) agree that it is masculine. In spite of this fact, the word appears as feminine in a number of our best textbooks on dermatology. I think this mistake is due to the fact that one of the synonyms for anthrax is pustula maligna, which would suggest the incorrect combination of anthrax maligna instead of anthrax malignus.

The difficulties presented by these exceptions to the rule are more imaginary than real. A number of these nouns, such as callositas, erysipelas, pernio, comedo, etc., are rarely used with qualifying adjectives, and consequently grammatical errors are avoided. A glance at the appended table may be of help in learning the gender of the more important groups of nouns used in dermatology.

When the gender of a noun is known, it is not difficult to make the adjective correspond in gender, number and case. The terminations of adjectives used in dermatologic names are very simple. The largest number of adjectives are those of the first and second declensions, the terminations being: us (masculine), as in nevus pigmentosus; a (feminine), as in urticaria pigmentosa; um (neuter), as in xeroderma pigmentosum.
A list of the more important adjectives of this class would include:
Acquisitus, acuminatus, adnatus, aggregatus, agminatus, agrius, albidos, anaemicus, anaestheticus, angioneuroticus, annulatus, anserinus, apostematosis, araneus, areatus, atrophicus, benignus, blenorragicus, bullosus, caloricus, cavernosus, cellulosus, centrifugus, ceruleus, chronicus, cicatrizatus, circinatus, circumscriptus, congruentus, congestivus, conglobatus, contagious, corneus, crustosus, crystallinus, cysticus, desquamativus, diffusus, digitatus, discretus, disseminatus, diutius, dolorosus, eccentricus, elevatus, endemicus, erythematous, exanthematicus, exfoliativus, factitius, favosus, fibrosus, figuratus, fissus, flammeus, foliaceus, furfuraceus, gangrenosus, generalizatus, gonorrhoeicos, guttatus, gyratus, hemorrhaigicus, hereditarius, humidus, hyperaemicus, hyperplasticus, hypertrophicus, idiopathicus, imbricatus, impetiginosus, incarnatus, induratatus, infectiosus, inveteratus, laxus, lectarius, lividus, maculosus, malignantus, marginatus, medicamentosus, morphoeicus, necrogenicus, necroticus, neutricicus, neuropathicus, nigrous, nodosus, obtusus, oleosus, osteosus, parestheticus, parietarius, pendulus, phlegmonosus, pigmentosus, pilosus, planus, polonicus, pruriginosus, punctatus, putulosis, pyogenicus, reticulatus, rheumaticus, rosaceous, rosicus, sebaceous, seborrhoicus, serosus, serpiginous, siceus, solitarius, sparsus, spinulosus, striatus, suppurativus, symmetricus, symptomaticus, syphiliticus, toxicus, trichophyticus, trichophytinus, tropicalus, tuberosus, tumidos, ulerythematosus, urticatus, uterinus, variegatus, venenatus, ventricosus, verrucosus, verus.

A very limited number of adjectives of the first and second declension are declined as follows: ruber (masculine), as in lichen ruber; rubra (feminine), as in pityriasis rubra; rubrum (neuter), as in eczema rubrum.

Other adjectives similar to ruber are niger and sacer.

2. There is another small group of adjectives of the third declension, such as puter (rotten), in which the endings in the nominative singular are different for each gender. Thus the declension of such a word would be puter, putris, putre and not puter, putra, putrum. These adjectives may, however, be disregarded as they are not used in dermatology.
The largest group of adjectives of the third declension has the endings: is (masculine), as in herpes facialis; is (feminine), as in acne facialis; e (neuter), as in eczema faciale.

Adjectives of this class include:

Abdominalis, aestivalis, annularis, artificialis, autumnalis, brachialis, essentialis, facialis, febrilis, femoralis, filiformis, follicularis, gravis, herpetiformis, hiemalis, infantilis, inguinalis, labialis, lenticularis, mariaris, mitis, mollis, moniliiformis, multiformis, nodularis, nummularis, ocreaformis, orificialis, palmaris, papillaris, petechialis, pilaris, plantaris, plexiformis, preputialis, progenitalis, rhagadiformis, scutiformis, senilis, sycosiformis, symmetricalis, unifirmis, universalis, vacciniformis, varioliformis, vernalis, vulgaris.

There are other adjectives of the third declension which have the same ending (in the nominative singular) for all three genders. One group of this type ends in "x," such as simplex, ferox, fugax, hystrix and multiplex; for example, masculine gender, herpes simplex; feminine gender, ichthyosis simplex; neuter gender, erythema simplex.

The same lack of any change (in the nominative singular) is true of the adjectives versicolor and nostras and of those ending in ns, including:

Albicans, ambulans, atrophicans, confluens, decalvans, destruens, exuberans, exulcerans, flavescens, fulminans, maddens, migrans, necrotisans, nigricans, perforans, perstans, repens, rodens, sclerotisans, serpens, terebrans, tonsurans, urticans, vegetans. Similarly, there is no change in gender in the following adjectives derived from the Greek including: adenoides, asteroides, coccidioides, discooides, eczematodes, erythematodes, impetiginodes, ichthyoides, keloides, lichenoides, lipomatodes, lymphangiektodes, melanoides, myxoides, ophyrogeneus, pemphigoides, phlyctenodes, pityrodes, rupioides, sarcomatodes, scarlatinoides, staphylogenues, steatoides, telangiektodes.

In place of an adjective the genitive of a noun is sometimes used to qualify another noun, such as tinea capitis (nominative caput), tuberculosis cutis (nominative also cutis) or pediculosis pubis (nominative pubes.) In some cases the qualifying noun may be used in the genitive

3. Versicolor and nostras are adjectives of peculiar form derived respectively from versiclorus and noster, which are ordinary adjectives of the first and second declension.

4. These are all Latin adjectives which (with three exceptions) have been taken bodily from the Greek. The exceptions, impetiginodes, lymphangiektodes and scarlatinoides are hybrids. The first two are partly Latin and partly Greek, while scarlatinoides is a combination of Italian and Greek. The other adjectives in this list are formed by some Greek noun, such as ichickis or πιτυριον and the termination odes or oides derived from ειδος (resemblance). As to why the termination oides is used in some words and oides in others, I have not been able to determine. In the Greek declension of this class of words there is a difference of termination in the three genders, the masculine and feminine having the letters eta while the neuter has an epsilon. When written in English, however, these endings are alike.
plural, as elephantiasis graecorum (nominative graeci) or xanthoma diabeticorum (nominative diabetici). Other examples of genitive plurals include adulorum, arabum, cachecticorum, capillorum, crinium, folliculorum, gravidarum, insontium, neonatorum, palpebrarum, puerorum, unguum, vestimentorum. At times there may be a choice of an adjective or a qualifying noun, such as lichen scrophulosus or lichen scrophulosorum. In a few dermatologic names, a noun in the nominative case may take the place of an adjective, as in lupus pernio, eczema intertrigo and herpes iris.

In certain cases there are two adjectives which have the same meaning, such as papulosus and papulatus, pilosus and pilaris, etc. It would probably be correct to use one or the other of these words of similar meaning according to fancy. It seems customary, however, to use the adjective pilosus in connection with naevus and pilaris with such words as keratosi or pityriasis. When we have the choice of a pure Greek adjective, such as erythematodes, as opposed to a hybrid like erythematosus, the former would undoubtedly be the proper one to use. Words like erythematosus, melanosus, etc., are partly Latin and partly Greek, like our modern word automobile. Popular usage, however, would make it almost impossible to change the word automobile, and the same is true to a limited extent of the word erythematosus.

Mention should be made of the comparison of adjectives, calling special attention to the comparative form in which mistakes are frequently made. The three degrees of comparison, the positive, comparative and superlative are illustrated by the word magnus (large), major (larger) and maximus (largest). In the positive and superlative forms the ordinary terminations of us, a, um, are used. The comparative form, major, is, however, declined in the nominative singular as follows: major (masculine), major (feminine) and majus (neuter). In speaking of the larger lip of the vulva the correct Latin would be labium majus. The nominative plural is: maiores (masculine), majores (feminine) and majora (neuter). In speaking, therefore, of the two larger lips it would be proper to say labia majora.

Mistakes are made at times in speaking of an eruption which is unilateral. Either the adjective unilateralis may be used or the words unius lateris, unius being the genitive singular of the adjective unus, a and um, and lateris the genitive singular of the noun latus. "Unius-lateralis" is the incorrect combination that is used at times. Another common error is to confuse the gender of spirochaeta (feminine) and treponema (neuter). The correct use of these words with the adjective pallidus a and um and pertenius, is and e would be Spirochaeta pallida and Spirochaeta pertenius or Treponema pallidum and Treponema pertenue.
Finally, the tendency to use French or other foreign words in our nomenclature should be discouraged. Names of diseases should either be written in Latin or in English among English speaking peoples. There is no good reason for speaking of pityriasis rosée in place of pityriasis rosea or of substituting erythema induré for erythema indu- ratum. As a rare exception, however, the term eczema cracquelé may be allowed until a suitable Latin adjective is adopted in its place.

An extensive knowledge of Latin and Greek is not necessary to attain accuracy in dermatologic terminology. It requires only a small amount of study of an elementary Latin grammar to learn the correct endings of the great majority of dermatologic words.

If this communication helps to simplify the subject and to call attention to some of the common errors in terminology, its purpose will have been accomplished.

114 East Fifty-Fourth Street.
THE TREATMENT OF PRURITUS ANI WITH BACTERIAL INJECTIONS*

FRANK CROZER KNOWLES, M.D.
AND
EDWARD F. CORSON, M.D.

PHILADELPHIA

Itching of the skin excepting in cases of animal parasitic origin, is one of the most difficult conditions in dermatology to eradicate. Localized pruritus, particularly in the anogenital region, is extremely trying to the patient, and to the physician in his endeavor to relieve the condition. The means that have been employed have, in many instances, been most ineffective. Therefore, our thanks are due to anyone who offers a therapeutic measure for amelioration. Winfield and Murray have been pioneers in offering a new method for combating this trying situation. The idea occurred separately to Winfield and to Murray, in 1910, that because of the location of this trying pruritus certain bacteria might be found constantly present, and an autogenous vaccine might give a partial or complete relief. The colon bacillus was naturally the first organism considered, but on further study Streptococcus fecalis was found also to be almost constantly present.

Winfield found that forty of his fifty patients had an infection of the skin covering the affected parts, caused either by the colon bacillus or Streptococcus fecalis or by both. Thirty of his patients were male and ten were female. In twenty, the symptoms were severe and had lasted from three to five years. The remaining twenty cases were of moderate severity and had lasted from six months to two years.

In all forty of Winfield's cases, the colon bacillus was obtained on culture, and in thirty Streptococcus fecalis was demonstrated. Five of the patients in whom the colon bacillus alone was found were treated with a stock vaccine, and the results were as satisfactory as when the autogenous vaccine was used. According to Winfield, the number of injections necessary to cause an improvement in the condition averaged about five; permanent relief from itching and improvement in the condition of the skin were usually obtained after the patient had

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*From the Dermatological Department of the Jefferson Medical College.


received from twelve to fifteen injections. The number of organisms
given in each dose ranged from 500,000 to 100,000,000. Constitutional
reactions were produced in ten cases.

All except six of Winfield’s patients have remained well to date.
In four of the six, the pruritus recurred after three weeks but improved
again when the treatment was resumed. In two, recovery from itching
lasted for a year and then recurred, and it has persisted in a modified
degree up to the present time; that is, for three months.

Murray found that in every patient examined the coefficient of
extinction of opsonins for *Streptococcus fecalis* was low, while in
patients who had other rectal diseases, without pruritus, it was normal.
He found that when the phagocytic power was increased by the use
of an autogenous vaccine, the itching ceased proportionately. Murray
has now examined 181 cases of pruritus ani bacteriologically and has
found *Streptococcus fecalis* the common germ in 168 of them. Thirteen
of these patients received little or no benefit, but only four of the
thirteen received a sufficient number of treatments; so that they should
have had relief, according to his experience with the others. Nine
received only a few treatments each, became discouraged and dis-
continued treatment.

The standard strength of the vaccine used by Murray was two
billions of dead germs per cubic centimeter; the first dose was three
minims, the second dose was double the amount, and the third dose
three or four minims increase over the second. The dose was increased
until a strong reaction was produced. Doses were given every other
day for the first four or five doses until a reaction appeared. Murray
has given in some of his cases as many as seventy and in others as
few as seven injections.

During the last twelve months, eighteen cases of pruritus ani, from
the skin department of the Jefferson Hospital, have been selected for
our study. Cultures were made from six of these patients, and the
colon bacillus and *Streptococcus fecalis* were found in each of these.
The opsonic index was determined in several instances and in each it
was found to be considerably below the normal.

At first, it was determined to try the effect of a colon bacillus
vaccine irrespective of the culture obtained locally. In the first case,
after the third weekly injection of colon bacilli, which had then reached
the dosage of 400,000,000 killed organisms, the patient improved. At
the end of the treatment, he announced that he was free from symptoms
and for the first time in years had slept every night for a week. The
local signs disappeared without topical applications and he has remained
apparently cured for more than six months. Stock vaccine was
employed in the case.
Four other patients received injections of the colon bacteria; but as none of them responded favorably, its use was discontinued. Seventeen patients, including the four in whose cases the colon bacillus vaccine had proved unsuccessful, were treated with killed *Streptococcus fecalis* bacteria. Six patients of this series continued treatment a sufficient length of time to give positive deductions. Of the eleven patients who discontinued treatment, three had received but five injections, one had had four injections, three had been given three each, two had been treated twice, and two were lost sight of after one injection each. Injections were discontinued in three cases, as in one hemorrhoids developed, in another scales showed the presence of fungus, and in the third, the only female patient in the series, an operation proved necessary for a tear of the cervix.

Five of the six patients who were thoroughly treated with *Streptococcus fecalis* vaccine, receiving twelve to twenty injections each, were cured. Two of these five patients, however, had a relapse of the itching in a lesser degree after two and four months, respectively. In both of these, however, amelioration was again produced after another series of injections.

The doses used were large, running from 175,000,000 to 1,000,000,000 killed organisms of the fecalis strain of *Streptococcus*. Adherence to small doses (less than 100,000,000) seemed to produce little effect. Those benefited only improved when the number of bacteria was increased to several hundred millions. Injections were given at weekly intervals. The length of time the condition had existed varied from four months to ten years.

It is a source of keen disappointment that such a large number of patients in this series discontinued treatment.

**CONCLUSIONS AND SUMMARY**

1. Our results compare favorably with Winfield’s and Murray’s.
2. In Winfield’s forty cases, all but six patients were permanently cured with bacterial injections. Four of these six were improved by further injections.
3. Murray treated 168 patients with *Streptococcus fecalis* and had but thirteen failures.
4. Five of six of our patients were cured by using this method, further injections being required in two of these that relapsed.
5. Eleven patients received an insufficient number of injections to judge as to the final outcome with this method of treatment.
6. One patient was cured with injections of colon bacilli.
7. Injections of *Streptococcus fecalis* vaccine offer the best means for cure of pruritus ani.
8. Dosage should be large and continued over a considerable period.

9. All pathologic conditions should be excluded before this method is considered.

10. Injections of *Streptococcus fecalis* vaccine are given to raise the opsonic index, which is found to be below normal in this type of case.

**DISCUSSION**

**Dr. Charles J. White, Boston:** May I ask Dr. Knowles whether he examined any of his patients for any of the ringworms as a possible cause, and also for an explanation of the fact that we seldom see this disease in women?

**Dr. Marcus Haase, Memphis:** I should like to ask two questions: first, what does Dr. Knowles mean by killed bacteria, and, second, was any local application used in the case of the patient who recovered under bacterial vaccine?

**Dr. H. H. Hazen, Washington, D. C.:** I do not think the theory that bacteria are causative is absolutely proved. In the first place, we need a series of cultures taken from patients without itching to see how often the bacteria can be recovered in these cases as compared with cases in which there is itching. In the second place, if I understood the essayist correctly, he said that there was little result until a certain amount of reaction was present. We are finding out that if we employ vaccine intravenously we can help a good many itching dermatoses, and I wonder whether his results are not like those. In other words, is not a reaction to the proteins responsible for stopping the itching, rather than a specific form of therapy?

**Dr. Harry E. Alderson, San Francisco:** In the routine examination of these patients, I call in a urologist. Sometimes evidence is found pointing toward a pathologic condition in the deep urethra, prostate, seminal vesicles or other pelvic viscera. I believe that in most cases this is a “reflex” affair.

**Dr. Jay Frank Schamberg, Philadelphia:** I believe that Dr. Knowles has rendered a service to our Association by presenting a report which supplements the work of Dr. Winfield and that of the late Dr. Murray of Syracuse. If the members of the Association will employ this treatment, it will not be long before they will satisfy themselves of its value. Not every case of pruritus ani or vulvae is due to bacterial implantation, but a considerable number are. Some results are striking, as in the following case:

A widow, 60 years of age, accustomed to all comforts of life, had been invalidated for several years on account of a severe vaginal and vulval itching. She was under the care of an internist and under my care for a year or more, but we were able to give her only temporary relief. Some months ago, she consulted the late Dr. Murray of Syracuse, and the vaccine treatment employed by him has brought about a virtual cure. The result accomplished was achieved in a very short time. With this observation in mind, I have since treated a young woman of 20, of unimpeachable morality, who suffered a year or more from severe vaginal itching. No vulval itching was present. A culture made from the vaginal mucous membrane yielded, among other organisms, *Streptococcus fecalis*. Vaccines of this organism were made up and administered, but without much result. I then had added the colon bacillus, and after a number of injections of this combined vaccine, the patient has had an astonishing relief, amounting virtually to a cure. At infrequent inter-
vals, she develops a little itching, but this is nothing compared to the constant distress which she formerly suffered and which required her to use douches twice a day.

I have no doubt that if we made cultures from the perianal region we would secure from most persons growths not only of the colon bacillus but also of *Streptococcus fecalis*. So far as I know, the latter organism does not materially differ from other streptococci, save that it is present in the intestines. It is quite an easy matter for this organism to become implanted in the skin or in adjacent mucous membranes and produce itching. I would urge all our members to give this method a trial. It is not a panacea, but it is a very distinct addition to our therapeutics.

Dr. E. L. McEwen, Chicago: I wish to second heartily the statements of Dr. Schamberg. I recently saw a woman who has suffered from pruritus vulvae and ani since childhood; she has also had recurring attacks of pyelitis, in which the colon bacillus has been recovered a number of times. I have also observed a number of cases of pruritus vulvae in which the condition was more or less completely controlled by plugging the vaginal orifice to prevent secretions from above reaching the external parts. I believe, in studying these cases, that cultures should always be made of the cervical discharge for the purpose of determining the presence or absence of the colon bacillus.

Dr. Frank C. Knowles, Philadelphia: As I stated in this short paper, it has been a considerable source of disappointment to us that more cases were not comprised in the present series. If you analyze the number, there are only seven of the series of eighteen that we can positively base a conclusion on. One patient was cured by the colon bacillus vaccine and five of the remaining six by *Streptococcus fecalis* vaccine. Therefore, all of the deductions that are cited are almost entirely based on what Dr. Winfield and Dr. Murray have done in the past. Taking the series of 168 cases of one observer and forty of another, the therapy has gone beyond the experimental stage. We have all treated patients by these methods, or have tried to, and I believe that this treatment of patients has been as successful as the use of injections. Murray advocates tricresol rather than heat in the treatment of these organisms. It is a matter of interest that Dr. McCormick, in a large number of cases seen in the war in British soldiers, found that *Streptococcus fecalis* was the cause of this intractable and deep-seated type. In regard to the injection of foreign proteins, that might be considered; but I think as long as the organisms are found locally and as long as we find the results so satisfactory in a large series of cases, the method is beyond the experimental stage and is worthy of trial.
GERANIUM DERMATITIS

REPORT OF A CASE

JAMES W. ANDERSON, M.D.

NORFOLK, VA.

Reports of new substances capable of producing dermatitis by contact are constantly appearing. A review of the available literature, however, confirmed by a personal communication from W. W. Stockberger of the Bureau of Poisonous Plants at Washington, failed to reveal a case similar to the one reported.

REPORT OF A CASE

History.—C. C. G., a youth, aged 18, had been well until two years before he consulted me, at which time he had been in a tuberculosis sanatorium suffering from moderately advanced tuberculosis, being discharged after some months as having an arrested case. He had had no skin eruptions until the present illness.

The patient was first seen on July 18, 1921. About two months before, he had developed a vesicular eruption on the dorsal and lateral surfaces of the fingers of both hands. This was diagnosed by his physician as eczema and was treated with ointments and by bandaging. The attack subsided in about ten days, but recurred within two weeks. The same treatment caused the condition to disappear, to be followed by a third attack, during which I saw him.

Examination.—This revealed a vesicular eruption of the dorsal and lateral surfaces of the fingers, extending backward and partially involving the back of the hands, the palmar surface, with the exception of a few vesicles at the tips of the fingers, being free from involvement. The vesicles themselves were thick walled and difficult to rupture, varying in size from that of a match head to that of a large pea, some of them having coalesced to form bullae. The whole eruption had the appearance of pompholyx, except that the palmar involvement usually found in that condition was absent. There was some edema of the fingers, and on puncturing the vesicles there was a watery discharge.

Questioning as to habits and the possibility of contact with some irritant capable of causing the eruption brought out these facts: The patient was attending school and was not in contact with any trade irritant. He lived in an apartment around which there were no shrubbery or vines. The only plant with which he came in contact was a geranium. The patient said that he thought the attacks had followed the removal of dead leaves from the plant, and that the present attack had followed such a procedure.

The patient was directed to bring some of the leaves to my office. They were, as he had stated, those of a species of geranium commonly sold by the florists of this section.

Cutaneous Test.—A cutaneous test was then made. The leaves were thoroughly washed, and a piece of leaf about 1 inch (2.54 cm.) square was placed on the flexor surface of the left forearm and held in contact with the skin by a bandage. About 3 inches (7.62 cm.) lower an abrasion was made with a
scalpel, and the same procedure was carried out. As a control I placed a piece on my arm. The patient was told to return after twenty-four hours.

The following day the bandage was removed. The unabraded area on which the leaf was placed showed a distinct erythema extending about one-half inch (1.27 cm.) beyond the area covered. The abraded area displayed the same condition plus a beginning vesiculation surrounding the abrasion. The control was negative.

*Treatment.*—The patient was instructed to dispose of the plant, and under treatment with black mercurial lotion and a paste the eruption rapidly cleared up.

**COMMENT**

The possibility of the eruption being due to some arsenical or other parasiticide used on the plant was eliminated by the fact that none had been used since the plant had been in his possession; it had been exposed to the usual spring rains, and the leaves had been washed before the test had been made.

**SUMMARY**

A case of vesicular dermatitis caused by contact with the leaves of a geranium is reported. (No attempt was made to classify the plant, as there are several hundred varieties of it).

This condition was proved by a cutaneous test, arsenic and other parasiticides having been eliminated. The eruption has not recurred.

Tuberculosis may have been an accessory factor so far as it lowers the general resistance.
Abstracts from Current Literature


Of the two hundred patients, 140 had neurosyphilis, twenty had gastrointestinal lesions, nine had cardiac lesions and eight had gastric syphilis. Only 36 per cent. had had a previous diagnosis of syphilis, 10 per cent. had had spinal fluid examinations, although 59 per cent. of spinal fluids were positive after admission. There was a considerable discrepancy between the blood and spinal fluid Wassermann tests, 70 per cent. of negative blood reactions having positive spinal fluid tests. Even negative blood and spinal fluid tests did not exclude neurosyphilis, as twelve patients had definite gastric crises.

Many patients had had needless operations performed, as most of them had had definite symptoms and a history of syphilis before operation.

Emphasis is again laid on the greater value of the spinal fluid examination as compared with the blood test, and a plea is entered for a more widespread use of this procedure for diagnostic purposes.


Animals were injected with arsphenamin intravenously and intrathecally, and the spinal cords tested for the presence of arsenic. No arsenic was found in the central nerve tissues when administered intravenously, nor after therapeutic doses intrathecally.

The authors believe that any good effects from such administration must be explained in some way other than the presence of arsenic in the tissues.

Jamieson, Detroit


The author presents a device said to give the patient control of the high tension current, enables him to call the attention of the operator instantly, and gives him a great sense of security.


An instrument or marker is described for preparing the head for the landmarks of the Kienboeck-Adamson method of dividing the scalp. With the marker, not more than a few seconds are spent in the task which previously meant the waste of half an hour. A set of three rubber shields for the purpose of protecting the face, neck, and ears during treatment is accredited to Dr. A. Howard Pirie, and is described.
ABSTRACTS FROM CURRENT LITERATURE

A CASE OF TUBERCULOUS GINGIVITIS TREATED WITH APPARENT SUCCESS BY RADIUM. George E. Pfaehler and E. P. Widmann, Am. J. Roentgenol. 9:756, 1922.

A case of gum tuberculosis, confirmed by section, was treated with radium after all other forms of treatment had failed. The actual dose of radium given was between one third and one half of a skin erythema dose. Seven applications were made at intervals of three weeks. The results are reported as brilliant, with no recurrence since September, 1921.

GOODMAN, New York.


The roentgen ray may be regarded as consisting of a series of waves following each other at certain definite distances. The distance from one wave to another is the wave length of the roentgen ray. Compared with wireless rays, usually several hundred meters long, roentgen rays have lengths of only a small fraction of a centimeter. An illustration is given comparing the treatment of a tumor 10 cm. below the skin when radium and deep roentgen-ray therapy is used. Three factors are given: (1) the inverse square law, (2) the absorption of radiation by tissues, and (3) the effect of secondary radiation. The short wave length is very important in the problem of secondary radiation. Duane considers the method of measuring wave lengths. Curves are shown from which the following conclusions have been drawn: (a) A constant voltage applied to a roentgen-ray tube does not produce roentgen rays of a single length only; it produces a beam of rays having a great variety of wave lengths. (b) There is a certain minimum wave length of the roentgen rays produced—no roentgen rays come from a tube having wave lengths shorter than this minimum value. Minimum wave length depends only on the voltage used. The product of the voltage multiplied by the wave length equals 12,354. Doubling the voltage, halves the minimum wave length; tripling the voltage reduces the minimum wave length to one third, etc. (c) The effect produced by introducing absorbing materials in the path of the rays is to decrease the intensity of the longer waves to a greater extent than that of short waves. The filter does not change the value of the minimum wave length. It reduces the value of the average, or what is called the effective wave length of the beam. Spectrum curves show that the intensity of the roentgen-ray irradiation is much larger for the constant voltage than for the alternating voltage, and that there is a perceptible shift in the wave lengths toward the shorter values. If one desires to produce a beam of short wave lengths, copper is a better substance than aluminum to use as a filter. At high voltage, uranium and thorium tubes have shown advantages in experimental use.

PROTECTION IN RADIOLOGY. George E. Pfaehler, Am. J. Roentgenol. 9:803, 1922.

This article consists of a discussion of protection of the patient, against loss of radium, legal protection and organization of those who are radiologists. It is worthy of being read by every man practicing in the field.


The results of 50,000 tests are tabulated by the writer showing that with a sensitive test 98 per cent. of patients with demonstrable syphilis gave a four
plus reaction, 4 per cent. had one to three plus reaction, 1 per cent. were negative; 31 per cent. of all miscellaneous medical cases had a four plus reaction, and 32.7 per cent. of these had syphilis demonstrable by other means.

Using the least sensitive tube, 57 per cent. that had demonstrable syphilis had four plus reactions. A negative test with this tube was considered of far less value than a negative test with the sensitive tube. The use of other intermediate tubes gave results between the foregoing.

The presence of other diseases would often give false positives, especially in persons with goiter, extreme ptosis, active tuberculosis, chronic sepsis, hypertension, pernicious anemia, diabetes and atrophic arthritis.


An analysis of 5,410 syphilitic cases showed that men with neurosyphilis were three times more numerous than women, although the involvement of the nervous system in the early stages was about equal in both sexes.

While conceptional syphilis is altered by the concomitant pregnancy, the spinal fluid of sterile, late syphilitic persons is abnormal twice as frequently as in similar patients who have been pregnant since infection occurred.

Fifty per cent. of females who were clinically neurosyphilitic had not been pregnant since infection, multiparae apparently being less liable to late asymptomatic neurosyphilis.

The writer suggests that pregnancy may be a factor to account for the comparative freedom of women from neurosyphilis. Jamieson, Detroit.

OCCUPATIONAL DERMATITIS. Frederick Gardiner, Brit. J. Dermat. & Syph. 34:297, 1922.

In a lengthy article, Gardiner reviews his observations in 621 cases of occupational dermatitis seen during a ten-year period. He gives notes covering a number of cases illustrating the variety of irritants encountered, the effect of slight alteration in the work, and the development to sensitization to irritants not previously troublesome after some other irritant has produced a dermatitis.

This writer emphasizes the importance of preceding skin conditions or general illness, as he has found such factors in 77.4 per cent. of his cases. He finds that the majority of eruptions occur on the hands, next in frequency on the arms, face, neck and lower extremities. Attacks may commence in youth, due to the excessive glandular activity at this time; but if they do not begin then, they are more common after the age of 40.

With powerful irritants, dermatitis may ensue within a day or two; if hyperhidrosis is the contributing factor, it is likely to appear in a few weeks; while in the case of seborrhea, there is a gradual breakdown which may take months or years. The climacteric and old age are also important contributing factors, as is local injury.

He recommends that the condition of the skin should be a matter for close examination in all applicants for occupations which incur liability to dermatitis.


Mallam describes a case in which a number of warty growths appeared in the red part only of a figure tattooed on the forearm, these growths beginning
two years after the operation. Microscopic examination showed an epithelial papilloma of doubtful malignancy, and the pathologist suggested that the pigment (mercurial sulphid) was probably the exciting factor, producing a condition allied to chimney sweep's carcinoma, and the carcinoma of paraffin workers. Other observers suggested that the microscopic appearance was rather that of lupus verrucosus.


Grøn quotes various references showing that hypodermiasis was recognized earlier and is more common than Toomey's article (Brit. J. Dermat. & Syph., 1922) indicated.


In this paper, Whitfield touches on various experimental and clinical observations relating to sensitization to nonbacterial toxins and proteins. He mentions having seen four cases in which erythematous-urticarial reactions appeared some days (usually ten) after severe traumatic ecchymosis unaccompanied by breach of surface, and he says that the possibility of sensitization occurring in this fashion has recently been supported by some experimental work among the French. A similar eruption sometimes, but rarely, follows injections of the patient's own blood serum. The possibility of autosensitization to blister content is also mentioned. Various other cases suggesting a relationship between dermatoses and unusual sources of sensitization are also related.


In an interesting article which is too long to summarize satisfactorily, Lees discusses the various phases of the subject of postarsphenamin dermatitis. He agrees with Stokes that focal infection and previous dermatoses are of etiologic importance, seborrhea having been present to some degree in nearly all of his cases. A nervous temperament was also frequently present. He does not believe that the concurrent use of mercury is of great importance in producing dermatitis. Alcoholic patients, on the other hand, are especially likely to have this dermatitis. Exposure to cold and seasonal incidence have not been noted as factors in his cases. He feels that the arsphenamins are more likely to cause dermatitis than the neo-arsphenamins. The presence of an eruption of syphilis or the stage of the disease does not exercise any modifying influence.

As abortive treatment, he has found venipuncture with the withdrawal of from 10 to 20 ounces of blood a valuable aid, while intramin or sulphur in doses of 30 grains, three times daily, has also been valuable at this stage. Intramin has not been of such value in the established case.

Lees believes that great caution should be exercised in treating with arsphenamin patients who have recovered from an attack of exfoliative dermatitis. He advises the use of mercury alone for a period of a month after the skin has
become normal, following this with another arsphenamin derivative than the one originally employed. If the dermatitis has been severe, it is perhaps best to continue treatment with mercury and iodids alone.

A NOTE ON THE TREATMENT OF PSORIASIS VULGARIS BY INTRAVENOUS INJECTIONS OF SODIUM SALICYLATE. JULIO BRAVO, Brit. J. Dermat. & Syph. 34:353, 1922.

Bravo reports good results in the treatment of psoriasis with intravenous injections of sodium salicylate solution. He employs a 20 per cent. solution of the drug, the doses being given at two and three day intervals, increasing from an initial dose of 0.5 gm. to 1 gm., 1.5 gm., etc., on succeeding injections until a maximum dose of from 3 to 4 gm. is reached.

Acute cases prove most amenable, but inveterate and mixed cases have likewise been benefited. The action of the drug is ascribed to the keratolytic action of the salicylic radical.

SENAR, Chicago.


In addition to asthma, the patient had a mild eczema and recurrent attacks of urticaria. The source of the hypersensitiveness was traced to a silk vest occasionally worn. Investigation showed that the offending constituent in the silk was the natural glue which surrounds and permeates the fiber. An attempt to produce desensitization to this substance failed.


In a patient, 5 years old, with congenital syphilis, roentgenograms showed unerupted central incisors of typical Hutchinsonian conformation. It is suggested that roentgenographic evidence may clinch the diagnosis of congenital syphilis in children in whom loss of the first dentition incisors, with delayed eruption of those of the second dentition, makes a direct clinical identification of Hutchinson's teeth impossible for the time being.

MICHAEL, Houston, Texas.


The author reports the results of his experiments with molluscum, which extended over a period of twenty-eight years. Material received from numerous dermatologists was tested out in boiled tap water, a few drops of the emulsion being placed on the undersurface of a glass slide suspended in a petri dish partly filled with water, in other words, a hanging drop culture in water at room temperature. Corpuscular movements were demonstrated in all cases between the third and fourteenth days. The following vital changes were demonstrated to seven trained observers: (1) streaming of protoplasm with reproduction and budding, (2) formation of a supporting framework and of protective capsules, (3) formation of birds' eye bodies, (4) vacuolation with oscillation of granules, and (5) formation of active flagellate or spirillar bodies.
On these findings it is assumed that molluscum contagiosum is of demonstrated parasitic origin. The causal parasite is named "Plasmomyxineae."

GUY, Pittsburgh.


Only eleven cases of the association of Addison's disease complicating pregnancy or the puerperium have been reported (none American). A case is now described in a white woman, aged 28, admitted to the Hahnemann Hospital, Chicago. The association of the suprarenal glands to the sexual apparatus makes the association one of great interest. The cases may be divided into two groups: the first group comprises cases in which the pregnancy occurs in a woman already affected by the disease; the second group those cases in which Addison's disease appears only in the course of the pregnancy. The pregnancy adds to the bad prognosis of the Addison's disease, and the symptomatology is intensified. Experimentally, capsulectomy resulted in abortion. Clinically, few cases recorded abortions; the majority continued to term. No disturbances are recorded during birth. There was no inertia. There was little effect during the puerperium. In the new case recorded there was a diminution in the mental power to grasp ideas, drawling slow speech and decrease of mentality. The children born at term are usually normal.


The author's conclusions are: There is only one true species of micro-organism capable of producing actinomycosis in man and lower animals, and this is the one isolated by Wolff and Israel, and later more fully described by Wright. There is no convincing clinical evidence supporting the theory that this organism is a normal inhabitant of the oral cavity and gastro-intestinal tract of man. There is much clinical and biologic evidence that this micro-organism has its source outside the human body and is capable of a dual existence: first, as a saprophyte in old sod soil, from which it gains access to grains and grasses and through this medium or intermediary host, so to speak, it becomes capable of infecting man and the lower animals. In order for infection to take place, two things are necessary: first an abrasion of the tissues; second, the fungus must in some way be brought directly in contact with this abrasion. Animal to man infection is far more common than we have been led to believe it was by the earlier investigators. Human actinomycosis is not a rare disease, but a disease which is often overlooked or incorrectly diagnosed. Every inflammatory swelling of chronic or subacute nature with persistent and recurrent sinus formation should be carefully examined for this disease. A negative smear, on first examination, does not rule out infection, as the fungus in the presence of mixed infection is often difficult to find. The disease should be kept in mind in every case of atypical pulmonary tuberculosis and should be looked for in patients suffering with chronic purulent bronchitis or bronchiectasis. Early treatment of superficial lesions is highly successful. Internal infections are fatal. The initial dose of potas-
Sodium iodid should not be less than 75 drops of the saturated solution, three times daily, well diluted. The dosage may be increased to 150 drops.


On the basis of a clinical experience with about 1,500 cases of charity patients calling at a gynecologic hospital, the author has accumulated eighty-seven cases of syphilis of the uterus. The uterus comes in for its share of syphilitic changes by reason of its being a vascular organ. Following the initial lesion, regardless of location, toxic changes take place in the uterus: first, those of passive congestion; then, hyperplastic or wet; later, hypoplastic or dry uterus. Habitual abortion is also a symptom of syphilis of the uterus. So-called tertiary syphilitic affections of the uterus may be mistaken for carcinoma. Some of the remarkable recoveries after operation for apparently malignant growths may be thus accounted for. The author states that given a combination of uterine symptoms with other evidences of syphilis, it is wise to try antisyphilitic treatment before operative measures are instituted.


The dates for this study were chosen in order to permit a lapse of three years after the operation in the most recent patients. There were 170 cases in men and two in women; the upper lip was involved four times only and the lower lip 168 times. The age variation was from 24 to 93 years, with 54.75 years as the average. Smoking was given in the history of 100 patients. The Wassermann test on fifty-six patients was positive in twelve. In two cases, a primary lesion of syphilis developed at the site of the scar of excision of carcinoma. In a third case, a carcinoma developed at the site of a chancre of the lip acquired two years previously. The presence of palpable glands alone is not evidence of metastasis. A radical operation, including the removal of the glands of the neck, was performed 122 times, with an operative mortality of three, all in poor surgical risks. Local operation for recurrence was performed twice. Secondary neck resection was performed seven times. All of these patients died; two of the operation and five of the disease. Ninety-eight of the one hundred and twenty-two patients operated on have been followed up; sixty-eight are living and well or have died of some other disease more than three years after operation; while thirty are dead—twenty-seven of the disease, and three as the result of the operation. The results of the local excision operations are traced in thirty-five patients with only twenty three year cures (60.6 per cent.).

**GOODMAN, NEW YORK.**

**VARIOUS LAWS REGARDING THE TREATMENT AND PREVENTION OF SYphilis.** F. Balzer, Ann. de dermat. et syph. **6:**545 (Nov.) 1922.

The author favorably reviews German statements made with a view to increasing, by public regulations, the efficiency and diminishing the dangers of treatment of syphilis. He also reviews a scheme proposed by the Italian Dermatological Society for compulsory expert medical examination of every male candidate for marriage.
TOXIC PEMPHIGOID EXFOLIATING ERYTHRODERMA. E. PAILLET, Ann. de dermatt et syph. 6:550 (Nov.) 1922.

Twenty-six days after his admission for the treatment of psoriasis, during which time he had received 1.44 gm. of sulpharsphenamin subcutaneously and finally applications of a 30 per cent. oil of cade ointment, a boy of 8 years had a febrile reaction accompanied by the appearance of erythematous plaques where the ointment had been applied. A condition resembling pemphigus foliaceus soon developed, with an eosinophil count of 11 per cent. Uneventful recovery followed within two months. The oil of cade, which was found to contain a considerable amount of acetic acid, was subsequently applied to a small skin area, and localized dermatitis appeared. This case, representing a possible arsenical eruption precipitated by irritating local applications, is offered for consideration in connection with the possibility of a toxic origin of pemphigus, which it at least closely resembles.

NEURASTHENIA AND SYPHILIS. R. BEZON, Ann. de dermatt et syph. 6:559 (Nov.) 1922.

The author describes a condition distinct from hypochondria, syphilophobia or "engrafted psychoses," the signs being those of asthenia, muscular and mental. It is doubtless often confused in diagnosis with paresis. An illustrative case is cited in a neurasthenic man aged 42 years, whose syphilitic infection was of twenty-five years' duration; antisyphilitic treatment was of no avail.

PARKHURST, Toledo, Ohio.

THE FIRST CONGRESS OF FRENCH SPEAKING DERMATOLOGISTS AND SYPHILIOLOGISTS (Continued). Presse méd. 30:582 (July 8) 1922.

The Colloidal Reactions of the Cerebrospinal Fluid: Reaction of Lange, Reaction of Emanuel, Reaction of Colloidal Benzoin.—The reaction of Lange is based on the flocculation of the gold by the spinal fluid following a scale of dilution. A normal spinal fluid does not change the colloidal gold. Pathologic fluids flocculate it and provoke some changes of color from reddish purple to white. The fluid of general paresis precipitates strongly the colloidal gold to complete discoloration in most tubes. In tubes and cerebrospinal syphilis the reactions are less intense. The reaction is parallel to that of the Bordet-Wassermann reaction, but seems a little more sensitive.

In affections of the meningitic types (purulent meningitis, tuberculous meningitis), the flocculation produced is again intense, but it is reported toward the right of the curve. The zone of precipitation in meningitis is not then the same as that observed in syphilis of the central nervous system. This reaction requires a delicate technique. The preparation of a good utilizable colloidal gold for the reaction is extremely difficult. It is necessary to have Jena glass and water distilled many times in special apparatus.

The impossibility of preparing at once a good solution of colloidal gold makes the reaction difficult to standardize. Moreover, we have had some positive reactions in lethargic encephalitis, tuberculous meningitis, sclerosis in plaques, in certain cerebral tumors, in cases of grip and exanthematic typhus.

The reaction of the gum-mastic proposed by Emanuel is based on the flocculation of a colloidal suspension of gum-mastic by the cerebrospinal fluid.

Guillain, Laroche and Lechelle, in a study on the reaction of Emanuel, have concluded that these colloidal suspensions are easy to prepare, but irregu-
lar from the point of view of their physical properties. The reading of results is often delicate; the precipitation is irregular and difficult to judge in their intermediary degrees. Hence it has been abandoned.

The colloidal benzoin reaction was proposed in 1920 by Guillain, Laroche and Lechelle. It is based on the flocculation of a colloidal suspension of resin of benzoin of Sumatra by pathologic cerebrospinal fluids. It does not necessitate special material. The water should be simply bidistilled in glass apparel. The authors have given two technics for the reaction. The first, which is complete, consists of sixteen tubes. The second, six tubes, a simpler and more practical method of diagnosing syphilis of the nervous system.

The reaction is positive in general paralysis in which the flocculation extends from ten to thirteen tubes.

In tubes it is variable, being very positive, less positive and even negative, especially in the tubes which has ceased to advance.

The reaction is slightly positive in acute or subacute, progressing clinical forms of cerebrospinal syphilis.

In the course of secondary syphilis it is only positive in cases of intense meningitic reaction with a positive Bordet-Wassermann reaction of the spinal fluid.

The reaction is negative in syphilis other than that of the nervous system (with the exception of some cases of sclerotic plaques and tuberculous meningitis, but this is questionable as a latent nervous syphilis may also be present). It is useless in purulent, cloudy, bloody and xanthochromic liquids.

The reaction of colloidal benzoin is in direct proportion to the intensity of the syphilitic lesions. It is positive in general paresis, progressing tabes and intense meningeal reactions; it is negative in fixed tabes; it may regress in syphilis of the nervous system, when the patient has received intensive treatment. The authors believe it helps the clinician not only to diagnose but to prognosticate in syphilis of the nervous system.

Discussion.—Belmarino Rodriguez (of Barcelona) believes it advisable to use all the various methods in clinical cases, because the interpretation of one isolated method may be difficult.

The gold is delicate to prepare, but it is very sensitive. The gum-mastic and colloidal benzoin may also be a little difficult to prepare and are less sensitive. Positive results outside of syphilis have been observed frequently in the Lange reaction; they have also been observed with benzoin and gum-mastic.

Antonio Peyri (of Barcelona) is of the opinion that the benzoin reaction is simple and sure. It should be used with the others, however. Its prognostic value is important. In fixed tabes the author has obtained 50 per cent. positive results, when other symptoms gave but 35 per cent. There is a special specific curve in fixed tabes with initial ascension and a rapid decline.

Pomaret has substituted for the difficult gold and the variable benzoin a colloidal sulphur obtained by precipitating an acetone solution of sulphur in distilled water. The results are the same as with benzoin.

The solutions of colloidal metals and resinous emulsions in syphilis of the nervous system result from research undertaken on the reactions obtained in the cerebrospinal fluid from general paralysis with benzoin and colloidal gold.

L. Spillman, Aubry, Hamel and Lasseur believe that these reactions give results less sensitive and less trustworthy than the fixation reaction of alexin.
They obtained with the same sample of fluid and the same solution of benzoïn some curves which were not superposed. They believe the gold solution is less apt to err than the benzoïn solution.

G. Laroche disagreed with Spillman and his collaborators in regard to variability of the curve with the same solutions. Laroche places his tubes at 37 C. instead of leaving them at room temperature from twelve to twenty-four hours. He employs a different technic than Spillman. There does exist some different compositions of benzoïn but not enough to have any influence on their prognostic value.

Diverse Communications

Treatment of Syphilis by Bismuth.—Nicolas, Massia and Gâté (of Lyon) consider bismuth just as efficacious as arsenic, especially when the latter is poorly tolerated. Its action is rapid and powerful on syphilitic lesions; they prefer small doses and repetition as with mercury.

Milan has had some excellent results with bismuth preparations either insoluble or soluble (ether of bismuth of Mouneyrat); he believes a four day interval between injections is sufficient to escape intoxication.

Horta (of Rio de Janeiro) has employed tartrobismuthate of sodium and potassium in syphilis, either in intramuscular injections of 0.2 centigrams (twice a week) or in intravenous injections of 0.02 gm. The results have been very good.

Jeanselme believes that the real indication for bismuth is in syphilis of the nervous system; the passage of the drug into the cerebrospinal fluid; the awakening of lancinating pains in the tabetic patient indicates a certain action on the nervous tissue.

The author first employed the emetic of bismuth in glucose solution intramuscularly, but discontinued its use on account of pain and fever; he then used quinio-bismuth, which is painless, and during its course the patient gained in weight. The action on the various stages of syphilis is excellent; the Wassermann reaction commences to decline between the thirtieth and forty-fifth day.

The Danger of Intramuscular Injections of Arsphenamin.—Petges (of Bordeaux) states that the subcutaneous or intramuscular injection of arsenical preparations are becoming more popular with physicians because of the ease of technic. There is little danger as long as a dose of 0.45 gm. is not exceeded. The author has, however, seen some severe nitritoid reactions and one death from apoplexy. Intramuscular injections are especially dangerous because the reactions do not occur until after six hours, which is long after the patient has passed from under the eyes of the attending physician, whereas with intravenous treatment reactions usually occur at once and can be combated by the physician in charge.

Emery has observed nitritoid crises hours after subcutaneous injections.

Balzar, Marcel and Pinard share the same opinion. They believe that large doses intramuscularly give as many reactions as intravenously.

Duhot (of Brussels) favors intramuscular injections dissolved in concentrated glucose solution; these injections are well tolerated.

Syphilitic Reinfection.—Carle (of Lyon) states that the number of reinfec- tions are increasing daily. Allowing for chancriform tertiary lesions, chane- re redux and errors in diagnosis, the number is still quite large. It seems at first that reinfection occurred in those syphilitics who were treated early and vigorously with arsphenamin. Today one may generalize more. The author reports a case of syphilis in which the patient was scarcely treated in 1907, had
tertiary lesions in 1912, and reinfection in 1920. Carle had a second case, besides many other similar cases reported. He believes reinfection is quite common.

Two Attacks of Papulo-ulcerative Secondary Syphilis in the Same Patient in an Interval of Twenty Years.—E. Bodin (of Rennes) reports the case of a woman who had two attacks of papulo-ulcerative secondary syphilis in an interval of twenty years, confined to the trunk and extremities, accompanied by iritis and poor health. After the first attack mercury was taken for a short time. It is improbable that this was a reinfection.

Burnier believes that this is a case of recurrence and not of reinfection. The observation of late secondary syphilis is not unusual; the author with Balzer presented a patient who had mucous patches of the serotum thirty-five years after the chancre. The patches were full of spirochetes.

Neo-arsenical Stomatitis: Necrosis of the Superior Maxillary Bone; Septicemia; Death.—C. Simon and Ponpardin observed a syphilitic who had received no treatment for three years, who at the end of his fifth injection developed a generalized erythrodermia, gangrenous stomatitis with necrosis of the superior maxillary, septicemia and death.

Triple Mixed Treatment in Syphilis.—Goubeau has employed arsphenamin, mercury and potassium iodid during the last twelve years, during which time he has treated three thousand patients. The results are: 1. Primary Period: Rapid disappearance of initial lesion; no secondary lesions; Wassermann test remained negative, and if it were positive, it became negative quickly. One case of reinfection. 2. Secondary Period: Rapid disappearance of cutaneous or visceral lesions; five or six cases of recurrences in patients not having followed the treatment accurately; rapid negative Wassermann reaction, remaining so. There was one case of reinfection. 3. Tertiary Period: Penile, cutaneous, bony lesions quickly cured; same action on Wassermann with more delay.

Nervous Sensorial and Visceral Syphilis: The lesions were cured in many cases except when an irremediable sclerosis had occurred; arrest of development in cases nearly hopeless.

Reaction on the Cerebrospinal Fluid: Disappearance of the lymphocytosis; of the albuminuria, of the positive Wassermann reaction, more surely than with any other form of treatment.

There was not a single miscarriage among the women treated or the wives of the husbands treated; many of the children, today aged 7 and 9 years, appear healthy and are negative.

Indications for Examination of the Spinal Fluid in Different Stages of Syphilis.—Lerelle thinks that the examination of the spinal fluid is indispensable in all patients having recent syphilis, if one wants to obtain sterilization. It is indicated principally in persons with old or hereditary syphilis having nervous, mental or sensorial symptoms; and in some cases for social reasons.

When a patient remains in bed for forty-eight hours after puncture the cephalgia is decreased.

In certain cases, in which the future will tell the exact diagnosis, the prolongation of the symptoms due to the puncture explain themselves by a slight attack of syphilitic meningitis. It is necessary to make injections of neo-arsphenamin in small doses in order to suppress these symptoms immediately.

R. Burnier, Secretary.
SULPHUR IN EXTERNAL DERMATOLOGICAL THERAPEUTICS. R. Sabouraud, Presse méd. 30:1094 (Dec. 20) 1922.

Sabouraud takes up the question of the therapeutic action of sulphur, about which we know so little. He says that it acts first as a parasiticide, especially in scabies. He points out that the inferior cryptogamic vegetations are destroyed in its presence. Sulphur is most useful in diseases involving the follicle, such as acne vulgaris, syces of the face, syces capillitii, or, as Bockhardt unfortunately called it, "impetigo of Bockhardt," which according to Sabouraud is nothing more than a syces involving the hair follicles of the scalp, furunculosis, necrotic acne, pseudopelade of Brocq, and lastly true seborrhea confined only to the follicle and causing no inflammation on the scalp. It acts almost as a specific in most of these conditions, although it is not infallible.

Sabouraud is puzzled by the form in which the sulphur acts on the skin and in the follicles, both superficially and deeply. There is little difference in efficacy whether sulphur in powder, lotion or ointment is used. However, Sabouraud believes that sulphur dissolved in sulphid of carbon is superior to all in oily seborrhea of the scalp, but it is very disagreeable. He gives several valuable formulae which cannot be inserted in this abstract. He believes that much good work can be done to isolate a preparation of sulphur which will be pleasant to use and not irritating to the skin.

McCafferty, New York.


The author reports a case of lichen nitidus (Pinkus) in a patient with latent tuberculosis. He thinks the disease is of tuberculous nature. In the discussion on the etiology of this condition, he reviews forty-six cases reported in the literature and finds indications of tuberculosis in many of them. The study of the pathologic anatomy of his and other cases confirms this opinion. The author thinks that further studies are necessary to settle this question.


Two cases of multiple generalized sarcoma of the skin are reported. One was typical in its clinical evolution and symptomatology. The other case was unusual. The patient was a man, 37 years old, who presented circinate lesions on the legs resembling those of tertiary syphilis. Under asphenamin therapy there was marked improvement, but two months later the lesions reappeared, and the pathologic examination proved them to be round cell sarcoma. In view of the response of the lesions to arsenical treatment, the author thought it might be a case of Kaposi's sarcoma or of the fourth type of Darier's sarcoïd (Spiegler-Polland). The patient died a few months later from generalized sarcomatosis.

RESEARCHES ON MOLLUSCUM CONTAGIOSUM. C. Gargano, Gior. ital. d. mal. ven. 63:1141 (Dec.) 1922.

Clinically, molluscum contagiosum is an infective disease although positive experimental inoculations are doubtful. The evolution of the lesions is very similar to that of the same disease in amphibians and chickens. The lesions
commence in the layer of Malphighi, but may appear first in the epithelium of the hair follicles or of the glands. The molluscum bodies are the result of special changes in the protoplasm of the malpighian cells and not the transformation of the nuclei as has been asserted. At present it is impossible to ascertain that any of the corpuscles or granules found in the lesions are parasites.

TURPENTINE OIL BY ORAL ADMINISTRATION IN DERMATOLOGY.

Rectified oil of turpentine by oral administration has been beneficial in all cases of pyogenic infection of the skin and in venereal adenitis. This method is devoid of all pain and accidents connected with the intramuscular or intravenous injections of the same substance. Turpentine therapy is to be preferred to protein therapy, as it does not produce either general or local reactions.

Pardo-Castello, Havana.

HERPES GESTATIONIS. O. BITTMANN, Ceska dermat. 4:33, 1922.

A patient in the third month of her fifth pregnancy developed an extensive herpes gestationis accompanied by severe dyspeptic symptoms and stubborn constipation. Working on the theory that the cells of chorionic epithelium produce active ferments with a specific function and that their disintegration forms in the organism of the pregnant woman antiferments paralyzing their function—the author considered the case in question as one of disturbed balance in the production of ferments and antiferments. To supply the missing maternal antiferments, he injected five doses of 10 c.c. each of normal pregnant serum. The eruption, as well as the dyspeptic symptoms, disappeared. After a week's interval a recurrence took place, which again cleared up after two doses of serum. The third recurrence, sixteen days later, was very severe and resisted further injections of serum. Two doses of 14 c.c. of boiled milk, followed by a severe reaction, cleared up the skin lesions permanently, the nonspecific protein therapy proving much more efficient than the specific serum. The therapeutic effect was undoubtedly one of activation of the protoplasm in a pathologic organism.

PATHOGENESIS OF EPIDERMOLYSIS BULLOSA HEMORRHAGICA. LADISLAV-KUCERA, Ceska dermat. 4:65, 1922.

After extensive studies of the blood of a previously reported case of epidermolysis bullosa hemorrhagic, the author arrives at the following conclusions: 1. Epidermolysis bullosa hemorrhagic bears no relation to the group of the so-called hemorrhagic diatheses. 2. The composition of plasma, blood functions and the capillaries show no deviation from normal. 3. The morphologic blood picture shows an absolute and a relative lymphocytosis of a moderate degree; neutrophils and monocytes show a parallel decrease.


This is a technical article describing the author's modification of the reaction and his reasons for the same.
ABSTRACTS FROM CURRENT LITERATURE

ARSPHENAMIN. J. CRAH, Ceska dermat. 4:74, 1922.

In a review of clinical experiences with arsphenamin and neo-arsphenamin, the author favors intramuscular injections of neo-arsphenamin according to Balzer's formula. Intramuscular injections show the same effect on the clinical symptoms and Wassermann reaction as the intravenous medications. The technic is simple. The complications are less frequent. With a careful dosage the injections are well tolerated by the aged and by patients with internal complications.

SPINKA, St. Louis.

SYPHILIS AND SPINAL FLUID. NONNE, Arch. f. Dermat. u. Syph. 138:8, 1922.

Lymphocytosis points to an increased defensive action of the body. Globulin reactions indicate that the meninges are involved. Nonne believes that syphilitic persons with pronounced skin symptoms in the secondary stage are less inclined to develop tabs and progressive paralysis. An isolated positive blood Wassermann test should not be an indication for specific treatment.


In tertiary skin symptoms the spinal fluid is not, as used to be assumed, protected from infection, though in Kyrle's experience persons with tertiary syphilis incline to become seronegative either spontaneously or in response to weak treatment.


In the author's opinion, the Wassermann reaction traces a disease symptom, the question being whether decomposition products of spirochetes or the decay products of tissue are involved.


Turpentine injections are chiefly indicated in all staphylomycoses. Lichen ruber, lupus erythematoses, pemphigus and induratio plastica can also be influenced favorably.


The author generally administers three injections of 20 to 30 c.c. of serum. In exceptional cases, up to 150 and 200 c.c. are injected. The treatment is recommended in urticaria.


Eczema and trichophytina are the chief indications for nonspecific parenteral milk protein treatment.
POSSIBILITY OF INFECTION THROUGH PARALYTIC PATIENTS.

This article consists of the report of a nurse who had acquired syphilis via the finger (panaritium) while treating the pyodermic lesions of a paralytic patient. The author believes that such infection is possible, although definite proof could not be given in this case.

CLINICAL CHARACTERISTICS OF ENDEMIC SYPHILIS IN BOSNIA.

There is no initial sore. General early symptoms are rare, while the local symptoms of the early and late period are frequent. In the latter, the skin, mucosa and bones are most frequently affected. There are no leukoderma, syphilitic alopecia, tabs, progressive paralysis or neurorecurrences. The eyes or internal organs are rarely involved. Yet the Bosnians can develop initial sores, in fact, the same form of syphilis with all its symptoms that is common in Europe. Gluck believes there is a syphilis d'emblée which is due to a direct blood infection by bugs, fleas or lice. He explains the difference in the clinical course of this endemic syphilis by the difference in the method of infection (via the blood instead of via the skin). Attention should be given to the different strains of spirochetes in various races.


The author found that leukopenia occurs in erythema. While leukopenia first occurs in the eruptive stage of dermatitis with an increase of the eosinophils, at the most acute stage pronounced leukocytosis and an increase in the polymorphonuclear and eosinophil cells occur.

CLASSIFICATION OF DISEASES OF THE SKIN ACCORDING TO THEIR CAUSE. Rost, Arch. f. Dermat. u. Syph. 138:309, 1922.

This is a carefully written paper which should be read in the original as an abstract cannot do justice to Dr. Rost's suggestions.


Lupoid tumors developed in two cases following the injection of morphin. Histologically, the tumors had a typical lupoid character. As histologic and experimental investigation in some cases of lupus reveal no signs of tuberculosis, the disease must be etiologically differentiated from sarcoid of Boeck. In all cases there must be a tendency of tissue to respond to the invasion of foreign bodies by the formation of lupoid tissue.


The author discusses changes in the bones due to sarcoid of Boeck. Etio logically, the author assumes a special mode of reaction to damaging factors in persons suffering from a mild form of tuberculosis. He speaks of a sarcoid mode of reaction. Sarcoi d of Boeck is a constitutional disorder akin to tuberculosis.
ABSTRACTS FROM CURRENT LITERATURE


The author gives new proof to support his opinion that the atrophodermatoses are congenital. The cause of nearly all cases of idiopathic atrophy of the skin is a congenital weakness of the elastin. A severely harmful factor, however, can also harm a normal elastin. This develops primary atrophies.


In Ehrmann’s opinion, neurodermitis is essentially due to disturbance of the intestinal tract. The relation between the pancreas and neurodermitic skin alterations is particularly interesting. The author differentiates between two main groups of neurodermitis: (a) that caused exclusively by intestinal disturbances, and (b) that closely connected with endocrine disturbances.

DERMATITIS DUE TO SEALING-WAX. Kleeberg, Arch. f. Dermat. u. Syph. 138:360, 1922.

The author discusses extensive dermatitis caused by a wax consisting of tar and a coumarin resin.


Bacteriologic examination of 284 cases showed that a purely streptococcic impetigo can be differentiated from a purely staphylogenous impetigo. If both forms of cocci are found in a lesion (mixed infection cases) the streptococcic character of the disorder predominates clinically. The staphylococci seem to be secondary invaders. As to the nomenclature, the author suggests impetigo staphylogenous and impetigo streptogenes.


The author believes that this disorder develops only on a congenitally predisposed skin through some kind of irritation. The sweat glands are not involved.


The author describes a generalized sarcoid with involvement of the lungs, liver, spleen and kidneys. It was not believed probable that the condition was tuberculous.

CALCIUM DEPOSITS IN THE SKIN. Liesegang, Arch. f. Dermat. u. Syph. 139:73, 1922.

Only a pathologic cell accumulates calcium. A normal cell remains free of calcium as it permanently produces carbonic acid, which dissolves calcium phosphate and calcium carbonate.

One tenth c.c. of a solution of neo-arsphenamin, 0.15 in 50 c.c. of physiologic sodium chlorid, was injected around and into warts. Nine patients were cured after one injection within four weeks on an average.


The author found that organic arsenic compounds impede the coagulation of the blood in vitro. Neo-arsphenamin was most effective in this respect.

IMPETIGO CONTAGIOSA AND ECTHYMA. Fuchs, Arch. f. Dermat. u. Syph. 139:132, 1922.

Investigation proved that impetigo can be either of streptococcic or of staphylococcic origin. Both varieties can be distinguished clinically.


The authors agree with Unna that the wheal in urticaria is caused by the local effect of a damaging factor on the blood vessels. They do not believe, as Unna does, that it is caused mechanically by a venospasm but rather believe that it is the result of a transitory inflammation of the blood vessels of the skin.


This is a report of a hitherto undescribed dermatosis resembling pemphigus vegetans and the suppurating form of the latter described by Hallopeau as pyodermité végétante. The primary eruptions in Fischl's patient, a girl of 8 years, who subsequently died from tuberculosis, were pea-sized pustules covering various parts of the body, also the buccal mucosa, with a tendency to burst and become confluent, thus forming large suppurating areas on a vegetative basis. Staphylococcic vaccines had no effect, while resorcin dressings cleared up the condition. The disorder differs from pemphigus vegetans by its duration, as patients suffering from the latter seldom live longer than two years. The disease picture in the foregoing case, therefore, represents a small pustular, vegetative dermatosis, hitherto not described, resembling pemphigus vegetans.


In the sixty-three cases examined, no layer formation or deposit formation could be traced in the spinal fluid.

ARTIFICIAL PROVOCATION WITH TAR OF METASTASIZING CARCINOMA IN MICE. Dreifuss and Bloch, Arch. f. Dermat. u. Syph. 140:6, 1922.

The authors made a chemical investigation of the question: Which particular substances in tar possess the capacity of provoking a malign specific car-
cinomatous degeneration? In the first series of experiments, they succeeded in isolating a certain tar fraction which has a highly carcinomatus effect on the skin. A series of white mice painted with this tar fraction developed malignant skin carcinoma in 100 per cent. of the cases. In 80 per cent. there were metastases. The tar fraction consisted chiefly of a purified benzol extract (boiling point 370 to 440 C.).


Histologically, the mucous lesions showed a broadening of the stratum mucosum with mucous degeneration of the cells, while the cell nuclei were preserved. The superficial layers of the corium showed perivascular infiltration.

A CASE OF GRANULOMA ANNULARE. Kenedy, Arch. f. Dermat. u. Syph. 140:70, 1922.

The author classifies this disorder in the scale of tumors of the connective tissue near the idiopathic sarcoma of Kaposi.


Therapeutically, the author advises peeling and disinfection, preferably with Wilkinson’s ointment and diluted tincture of iodin. In chronic thrush mycosis of the nails the roentgen rays and radium were most beneficial.


The author describes a case of typical impetigo herpetiformis lesions combined with osteomalacia. The latter is due to changes in the calcium metabolism caused by a disturbance in the endocrine system. As Scharndorn and Tryb in their cases of impetigo herpetiformis had also assumed an endocrine disturbance as the etiologic factor, this case in which osteomalacia is combined with impetigo herpetiformis also supports the assumption that the latter is etiologically due to a disturbance in the endocrine system.


Two brothers synchronously developed a noninflammatory, comedolike brownish eruption on the forehead, which was believed to be due to a brilliantine used on the hair. The Kromayer lamp effected a cure. Histologically the cells of the infiltrations were lymphocytoid; there were also plasma cells, fibroblasts, numerous mast cells and irregular giant cells.


Subcutaneous injections of tuberculin caused a typical skin reaction with a subsequent development of papulonecrotic tuberculids. The location of these
tuberculids was influenced by the conglobate acne as the tuberculids generally developed on the scars left by the acne nodules. The disturbed circulation and comparatively weaker degree of immunity on these acne scars probably encouraged the development of tuberculids.


Nevus cells dispose to fibril tissue formation. This is no degenerative symptom, as nevi possess a pronounced capacity to form primary fibrils. This points to their mesenchymal character.

EXPERIMENTAL INVESTIGATION OF HYDROA VACCINIFORME. Martenstein, Arch. f. Dermat. u. Syph. 140:300, 1922.

Results obtained: 1. There is no particular susceptibility of the skin in hydroa to a superficial roentgen-ray irradiation. 2. Alpha rays (experiments with a thorium X ointment) do not provoke anaphylactic symptoms in hydroa, nor do the beta and gamma rays of mesothorium. 3. Prolonged exposure to ultraviolet rays causes two unusual forms of reaction: erythema without incubation and wheal formation without incubation.


Vaccination of animals toward the end of their pregnancy shortened the incubation period and the duration of the disease. Guinea-pigs do not inherit noticeable quantities of antibodies.


The author introduces an alcohol control. He uses only extract doses in which there is no hemolysis and in which the anticomplementary effect of extract and alcohol is identical. The extract is used in two different dilutions. Three test tubes are used for each patient's serum. Tube 1 for antigen A, Tube 2 for antigen B and Tube 3 for alcohol. Contrary to the original method and all other modifications, the author reads the results as soon as complete hemolysis has occurred in the third (alcohol) tube. Careful technic is essential.

A NOTE ON TAR MELANOSIS. Kissmeyer, Arch. f. Dermat. u. Syph. 140:357, 1922.

This is the report of a case which histologically showed inflammatory infiltration of the papillary body, slight pigmentation of the epidermis but considerable accumulation of chromatophores in the cutis. The author believes that tar melanosis is possibly caused by a preliminary stage of pigment formation due to invasion of the system by the tar. Chemically, this pigment is a dioxyphenylalanin. As to the pathogenesis, tar melanosis resembles Addison's disease, also ochronosis.

Clinical and histologic investigation induced the author to reject the name “acne urticata.” He suggests “urticaria papulosa necroticans recidiva.” Superficial roentgen-ray doses effected the regression of symptoms.


Kaup’s modification is more sensitive than the original method.

Ahlswede, Buffalo, N. Y.

OCCUPATIONAL DERMATITIDES AND ECZEMA DUE TO FORMALDEHYD. B. Chages, Dermat. Wchnschr. 74:417 (May 6) 1922.

Following the introduction of formaldehyde solution, 0.5 per cent., as a disinf ectant, seven of thirteen persons engaged in preparing plaster for the production of busts consulted the author for an erythematovesicular eruption of the exposed surfaces.


Rats and mice treated with thallium failed to develop normally, and this fact convinces the author that the alopecia due to this agent is in most cases probably due to endocrine changes. This view is strengthened by the observation of alopecia of the scalp following the application of thallium to the face, even when the beard was not affected. It cannot be used to reinforce the epilating action of the roentgen rays.


After reviewing the literature and statistics on the frequency of psoriasis in other countries, including America, the author analyzes 150 private cases of the disease seen by him in Moskow during the last seven years. It formed from 2.4 to 4 per cent. of all skin diseases, affected both sexes equally, was familial in 15 per cent. and showed a predilection for the Jewish race. “Nervous disturbances” are blamed, at least to some extent. The onset usually occurs between the eleventh and twentieth years, but it may occur at any age, and the patient first seeks medical advice some time between his eleventh and thirtieth year, as a general rule. Leukoderma psoriaticum is a rarity.

CREEPING DISEASE (LARVA MIGRANS); GASTROPHILOSIS CUTIS. S. L. Bogrow, Dermat. Wchnschr. 74:519 (June 3) 1922.

After a careful review of the literature regarding this condition, the author reports his latest case, encountered in Moskow. The patient was a man who had apparently been infected through a fly bite received while asleep on the ground. The gastrophilus larva was found at the end of its burrow.
NEW EXPERIENCES WITH NEO-SILVER ARSPHENAMIN. H. Weber, Dermat. Wchschr. 74:523 (June 3) 1922.

Since the appearance of his last report (Dermat. Wchschr. 73, No. 35, 1921), the author has used the drug in treating seventy patients, 540 injections having been administered. All stages of the disease were represented, and excellent results were obtained, both clinical and serologic, even in tabetic patients. Occasional reactions, which he terms mostly "angioneurotic," occurred, and there were two "fixed" arsenical eruptions, which leads him to conclude that the drug is extremely valuable if administered with caution. The dosage is considered.

CONCERNING THE RAPIDITY OF PRECIPITATION OF THE ERYTHROCYTES. W. Pewxy, Dermat. Wchschr. 74:537 (June 10) 1922.

Beginning with the initial work of Fahreus, in 1918, the author quotes the literature, and he gives the results of his trials in cases of syphilis, various dermatoses and gonorrhea, concluding that the determining factor in this test is the state of the colloidal dispersion capacity of the plasma, the corpuscles themselves also playing an important part. The test cannot be applied in the differential diagnosis of syphilis.

RECENT INVESTIGATIONS REGARDING CONGENITAL SYPHILIS OF THE BONES. L. Pick, Dermat. Wchschr. 74:540 (June 10) 1922.

The late progress in this subject is sketched by the author under three headings: histologic studies of the affected bones, the investigations of the relationship between the causative organism and the tissues, and finally the usefulness of roentgen-ray studies of morphology in diagnosis and treatment.

THRUSH OF THE SKIN. E. Rajka, Dermat. Wchschr. 74:561 (June 17)

The organism of thrush has already been recovered from cutaneous lesions, usually in the gluteal region, two types of which have been described: the "dry" variety, in which the lesions are erythematosquamous and form gyrate figures, and the "moist" type, characterized by the formation of vesicles. The author reports a case of the dry variety, in which the first lesion was said to have appeared in the axilla, the eruption having become almost generalized. The causative organism was found and cultivated. There was no sign of thrush in the mouth, nor was there any nutritional disturbance.

LICHEN RUBER PEMPHIGOIDES. A. Tryb, Dermat. Wchschr. 74:563 (June 17) 1922.

In a robust woman at the menopause, at the height of a severe attack of generalized lichen planus, a number of fingernail-sized vesicles, grouped and isolated, on erythematous bases, appeared on the extremities, accompanied by aggravated itching and constitutional disturbances. After two weeks the entire eruption subsided, leaving pigmentation. A histologic report is given in detail; and there are three good photographs of the gross lesions.

THE TREATMENT OF SCABIES BY MEANS OF FORMIC ACID VAPOR. S. Rothman, Dermat. Wchschr. 74:570 (June 17) 1922.

Endeavoring to shorten the treatment of scabies, the author has tried enclosing the patient’s entire body, excepting the head and neck, in a box con-
taining from 0.05 to 0.15 per cent. of formic acid vapor, kept in uniform sus-

tension by an air pump. From one to three thirty-minute exposures were given

to a patient during twelve hours, one day's treatment usually sufficing to
dispel itching and eradicate the infection. Higher percentages were too irritat-
ing, while lower percentages were ineffective. A preceding bath was not
needed. Recurrences, early and late, were frequent.

CONGENITAL OR FETAL ICHTHYOSIS. A. Jordan, Dermat. Wchnschr. 74:585 (June 24) 1922.

Two cases of ichthyosis are reported in detail with pictures and photo-
micrographs, the first being that of a syphilitic infant born at the seventh month
and dying a few moments after birth, while the second case was that of a
1 year old child whose ichthyosis had developed soon after birth. In the first
case the involvement was most severe, the skin resembling leather, while in
the second case great improvement followed the application of a salicylated
ointment. In agreement with Kaposi and others, the author feels that ichthyosis
fetalis and ichthyosis vulgaris are interrelated conditions, and not distinct
entities.

A CASE OF FOX-FORDYCE DISEASE. F. Walter, Dermat. Wchnschr. 74:592 (June 24) 1922.

The author describes an illustrative case and agrees with Brocq that the
condition is neurodermatitis, the follicular element predominating on account of
the peculiar anatomic features of the parts attacked.

WATER CONTENT AND ITS SIGNIFICANCE IN SKIN PATHOLOGY: I. THAT OF THE RED BLOOD CORPUSCLES. E. Pulay, Dermat.
Wchnschr. 74:609 (July 1) 1922.

The water content of the whole blood, serum and blood corpuscles was
measured in eleven cases representing various common dermatoses. Extensive
investigations may show it to vary according to disease present, which might
be of value in devising new methods of treatment.

THE RADIUM TREATMENT OF INDURATIO PENIS PLASTICA. L. Kumer, Dermat. Wchnschr. 75:673 (July 8) 1922.

In this rare condition, usually so difficult to treat effectively, the author
reports excellent results from radium cross-firing of ten cases.

THE TREATMENT OF LUPUS ERYTHEMATOSUS WITH NEO-
SILVER ARSPHENAMIN. E. Hachez, Dermat. Wchnschr. 75:678
(July 8) 1922.

A syphilitic patient with lupus erythematosus of twenty-six years' duration
received a short course of these injections with such benefit to the skin con-
dition that the same medication was used in other cases of lupus erythematosus,
including an acute lupus erythematosus disseminatus, with good results in all.
The author feels that this favorable action of the drug is probably due to its
silver content.
EPINEPHRIN (SUPRARENIN). P. G. Unna, Dermat. Wchnschr. 75:685 (July 8) 1922.

In reviewing a textbook on organotherapy by W. von Jauregg and G. Bayer, published in 1914, Unna emphasizes the value of the drug when taken by mouth in combination with a syrup which acts as a protector, being a reducing agent. Its physiologic action is thus secured a short time after administration. Its value is cited in various skin conditions, including urticaria, purpura, infantile eczema, pruritus cutaneus, dermatitis exfoliativa, elephantiasis and possibly pemphigus.


The reaction is considered to run roughly parallel in strength with the immunity reaction of the organism, but for its correct interpretation all the facts of the case, including treatment, must be known. The importance of the provocative Wassermann reaction is stressed.

CONCERNING NOURNEY'S IMMUNITY TREATMENT OF VENEREAL DISEASES. E. Delbanco, Dermat. Wchnschr. 75:705 (July 15) 1922.

One year previously in this publication Nourney recommended the subcutaneous injection of the patient's venous blood as a means of stimulating his natural resistance to the infection. There is a question as to whether the action of arsphenamin and mercury may not be chiefly the impairment of cellular substance, so that the organism of syphilis can attach itself with difficulty. Attention is called to the vast amount of work still to be done regarding the process of immunity in syphilis.

DISEASE AND ITS TRANSMISSION. Leven, Dermat. Wchnschr. 75:709 (July 15) 1922.

Skin diseases, as well as others, are divided into three classes: the idio-typical, arising from congenital anlagen, and purely endogenous; the idio-dispositional, in which a combination of inherent predisposition and external contamination appears; and the paratypical, or purely exogenous conditions. As an example of the first group we have the nevus, of the second, tuberculosis and dermatitis venenata, and of the third, a traumatic lesion. The internal factors require extensive investigation.

REGARDING FREYMANNS'S ARTICLE, "A CONTRIBUTION TO OUR KNOWLEDGE OF LEUKODERMA SYPHILITICUM." S. Ehrmann, Dermat. Wchnschr. 75:721 (July 22) 1922.

Freymann's article appeared in the Dermatologische Wochenschrift 74:33, 1922, and has been abstracted in the Archives 6:71 (July) 1922.

Unlike Freymann, the author feels that the lekodermic spots always arise at the sites of previous syphilitic lesions, the likelihood of their development being apparently proportional to the pigmentation of the part, the tanned neck in women and in field workers being a site of predilection. A variable interval
may elapse between the disappearance of the rash and the appearance of the leukoderma, and the author has caused leukoderma to form by tanning the skin at the site of fading syphilitic lesions with the quartz lamp.

THE TREATMENT OF PSORIASIS VULGARIS. HUBNER, Dermat. Wchnschr. 75:724 (July 22) 1922.

The method of Sachs consists in the intravenous injection, every two or three days, of from 2 to 4 gm. of pure sodium salicylate in distilled water (a 20 per cent. solution), until a total of from 21 to 28 gm. of the salt has been given. The author has used this treatment in fresh and old cases, often in combination with local applications of 0.25 to 0.5 per cent. of chrysarobin, with excellent results.

AN INFECTION OF THE SCALP WITH ACHORION VIOLACEUM. F. HARRY, Dermat. Wchnschr. 75:726 (July 22) 1922.

In 1911, Bloch described four cases of favus-like infection of the glabrous skin in which this organism was found, and the author now reports a case in which the scalp was the site of involvement, presenting an atrophy identical with that seen in favus. The organism was grown on mediums, and its characteristics are described.


The lesions appeared on the face and hands of a woman who had taken iodids. They disappeared within twelve days.

SHOULD THE FEVER FOLLOWING THE FIRST ARSPHENAMIN INJECTION BE CONSIDERED OF VALUE IN DIAGNOSING SYPHILIS? C. GUTMANN, Dermat. Wchnschr. 75:731 (July 22) 1922.

The author, in agreement with others, has found that nonsyphilitic patients often show this febrile reaction, more or less decided, after an injection of the drug, a fact which makes it useless as a diagnostic feature of syphilis. Three fourths of his series of syphilitic patients showed it.

LICHEN PLANUS AND ERUPTIONS RESEMBLING IT IN SYPHILIS AND DURING ARSPHENAMIN TREATMENT. F. WIRZ, Dermat. Wchnschr. 75:745 (July 29) 1922.

True lichen planus may occur in syphilitic patients just as does tuberculosis or psoriasis, as a mere coincidence, and there are few arsenical eruptions which resemble it. It probably does not appear either as the result of the infection or as a sign of arsenical poisoning. Two cases of true lichen planus are cited, one with its onset previous to the beginning of treatment, the other appearing after treatment had been started, disappearing and reappearing in the absence of treatment.

LICHEN PLANUS PAPULES IN SMALL NEVI. MARIE KAUFMANN-WOLF, Dermat. Wchnschr. 75:769 (Aug. 5) 1922.

In a man, aged 32 years, with brown nevi of general distribution, pruritic papules appeared within the birthmarks, also the typical lesions of lichen planus
in the buccal mucosa. A cutaneous biopsy examination verified the diagnosis of lichen planus, and photomicrographs are included showing sections of nevi with and without the complicating factor of lichen planus.


In a woman, aged 43 years, who had recently slept in stables, there were maggots inclosed in a tangled mass of hair, which were probably derived from manure with which the hair may have come in contact. There were also pediculosis capitis and pubis, pediculosis corporis and scabies.


In Rothman's opinion, when mercuric chloride is added to neo-arsphenamin, mercurous chloride and mercury are successively formed, the mercury entering into colloidal combination. By combining the mercury with insignificant doses of the arsenical drug, the author has treated eleven cases in an attempt to evaluate the effectiveness of the former; and he concludes that it is of value when given intravenously, apparently producing superior clinical and serologic results, although otherwise not differing essentially from other mercurial preparations.


The possible importance of proper sewage disposal and the apparent value of intestinal antiseptics in combating the disease at its onset are mentioned, and geographical factors are considered.


In Germany, these statistics are perhaps misleading, owing to the widespread ambulatory treatment through the various health insurance societies, but war conditions certainly increased the percentage of incidence.


One patient with lichen planus and two with neurodermatitis each received five injections of neo-arsphenamin, followed by complete and immediate recovery.


Having treated thirty-four patients with neosilver-arsphenamin, twenty of whom had syphilis of the central nervous system and eight of whom had irreducible Wassermann reactions, the author concludes that the drug is the equal of others of the same group, causing fewer reactions than silver arsphenamin, and being especially effective in the treatment of neurosyphilis.
A NEW DERMATOLOGIC PREPARATION OBTAINED FROM CRUDE OIL. E. Aihlswebe, Dermat. Wchnschr. 75:845 (Sept. 2) 1922.

A deodorized acid naphtha product, in 10 per cent. strength with yellow petrolatum as a base, was used as an application in 100 cases of proved scabies, the mite having been found in all; as a result itching ceased from six to ten hours after the first treatment, and all patients were cured in two or three days. The product is nonirritating, and no toxic absorption symptoms were seen. Its price is low. Sulphur-zinc paste is recommended for secondary infection.

THE ACID AND ESTER OF NAPHTHA, A NEW GROUP OF THERAPEUTIC AGENTS FOR TREATING SCABIES. W. Joseph, Dermat. Wchnschr. 75:846 (Sept. 2) 1922.

The chemical and bactericidal properties of these products are described in detail. As has been found in Unna's clinic and elsewhere, the addition of sulphur in combination with the ester forms a valuable medicament. 0.75 per cent. of sulphur being used.

A HITHERTO UNDESCRIBED SKIN DISEASE: CRICODERMA. Rille, Dermat. Wchnschr. 75:861 (Sept. 9) 1922.

With the aid of two excellent colored plates, the author describes a unique case seen by him in 1902 in a youth, aged 18 years, the lesions being of six years' duration and situated on the abdomen and left buttock. Extending along one side of the abdominal plaque (13 cm. long) and completely encircling the three smaller gluteal lesions, was a narrow dull red line of infiltration, continuous and not nodular, immediately within whose border was a zone of hyperpigmentation which diminished somewhat as the center of the gluteal lesions and the other side of the abdominal plaque was approached. In these hyperpigmented regions the normal skin markings were exaggerated, especially the follicles, and there was excessive growth of hair on the abdominal lesion. There seemed to be a deep fibrosis, but no atrophy. No biopsy examination could be made.


Two cases are described in which the eruption appeared at the end of the first course of treatment, and the manifestations are contrasted with those of lichen planus, clinically and histologically. According to the author, the points of similarity between the two conditions are scarcely numerous enough to warrant the use of the term "lichenoid" in preference to others, and he believes that its continued employment has probably been due to the peculiar point of view of the original describers.

GENERALIZED ERUPTION IN MICROSPORON INFECTIONS: MICROSPORID. L. Arzt, Dermat. Wchnschr. 75:1220 (Dec. 16) 1922.

These peculiar eruptions, as they have appeared in the past, have usually accompanied or followed the occurrence of kerion; but in the present Vienna epidemic the lesions all appear to be superficial and without kerion formation.
From studies in twelve cases presenting eruptions of this type, the author tentatively concludes that the toxic products of the organisms, or perhaps at times the organisms themselves, have entered the circulation and are in readiness to cause the eruption when it is precipitated by such an allergic shock as the injection of trichophytin. The theories of Jadassohn and Bloch are reviewed.

A CASE OF CUTANEOUS CALCIFICATION. A. Memmesheimer, Dermat. Wchnschr. 75:1223 (Dec. 16) 1922.

A miner, aged 18 years, two years previously had burned his left forefinger with a match, following which a pea-sized nodule had appeared within four weeks at the site of trauma. Subsequently others appeared on both thumbs and two other fingers. At times through injury one or more of these nodules would be opened and a peculiar mass extruded, following which a scar would persist. Roentgenologic and microscopic examinations showed the presence of cysts containing calcareous fragments, which may have been deposited following traumatic fragmentation of the elastic tissue. It is suspected that there may have been an endocrine factor of some importance. The literature is reviewed.

Parkhurst, Toledo, Ohio.

ACRIDIN DYE LYMPHS IN SMALLPOX VACCINATION. Illert, Deutsch. med. Wchnschr. 48:227, 1922.

Lymphs to which neutral acriflavine is added are as effective as others, and they guarantee a prophylactic disinfection of the wound.


Addition of balsams or resins to the lipoid extract increases the reaction considerably without rendering it nonspecific. The author prefers horse heart extracts to ox heart extracts.

ENCEPHALITIS AND MYELITIS DURING ARSOPHENAMIN TREATMENT IN THE EARLY STAGE OF SYPHILIS, CURED WITH MERCURY AND ARSOPHENAMIN. Werther, Deutsch. med. Wchnschr. 48:443, 1922.

This is a report of three cases in which myelitis and encephalitis developed after from three to five doses of neo-arsphenamin. Subsequent administration of a mercury compound and arsphenamin effected a cure. The variation of the cerebrum is probably caused by too small doses. The spirochetes recover and become more resistant. On the other hand, if the body is sterilized too suddenly, the natural immunizing processes are inhibited, allowing the spirochetes which are not reached in the brain to develop freely.


Surgical removal with a special instrument devised by Kromayer is considered the best therapy.

If blood serum is diluted with a mixture of alcohol and salt and exposed to a temperature of 60 C. for twenty minutes, the colloidal lability is increased. This becomes visible by the formation of flocculi after a certain time. Floculation is pronounced in deep-seated inflammatory processes, malign tumors and active tuberculosis.

CLINICAL EXPERIENCES WITH NEO-SILVER ARSPHENAMIN. Stuhmer, Deutsch. med. Wchnschr. 48:584, 1922.

This is a report of 500 cases, which proved the marked effect of this product on syphilitic symptoms, while it also caused less disturbances than, for example, silver arsphenamin.

ICTERIC DERMOGRAPHY. Schüer, Deutsch. med. Wchnschr. 48:593, 1922.

Dermography may be found combined with a beginning icterus. The dilated capillaries in dermographism allowed bilirubin and biliverdin to pass into the skin.


This reaction can take the place of Phase I and is even more sensitive. It is not specific for syphilis, however, as it occasionally gives positive results in nonsyphilitic meningitis.


The author advises from four to six "courses" of energetic arsphenamin over a period of from six to eight weeks. The spinal fluid was tested several years later. As a control Weigeldt's suggestion to substitute "arsphenamin provocation of neurosyphilis" for "neurorecurrence" is not endorsed by the author.

TREATMENT OF VARICES. Voeckler, Deutsch. med. Wchnschr. 48:837, 1922.

The author recommends the injection of 1 per cent. mercuric chlorid solution or Pregl's iodin solution into dilated veins. Unna's glycogelatin dressing should then be applied.


Preliminary treatment had no influence on the course of the superinfection with virulent strains.

Genuine albumins can in some cases cause anaphylactic symptoms in parenteral protein body treatment. The term "protoplasm activation," which was coined by author, should be substituted by the general word "activation."


The author discusses the antisepsis of the connective tissue by subcutaneous injection of disinfectants locally around the lesions.


The region of the ilio-inguinal nerve was affected on both sides in a girl aged 17.


This is the report of a case which clinically corresponded to the cases of eczematoid diphtheria described by Biberstein. Eczematoid diphtheria can cause nephritis. The author believes that the cases hitherto described as impetigo nephritis were probably cases of skin diphtheria.


The author does not believe with Wassermann and Lange that the syphilis reagins are formed in the lymphocytes.


Treatment consisted of epilation with the roentgen rays and application of a suspension of tar in turpentine.


This reaction is not reliable in spinal fluid tests. In retroplacental blood, 19 per cent. positive results were obtained in the absence of any form of syphilis.


The author recommends a 16 per cent. silver nitrate ointment.


Nonspecific milk protein treatment increases the resistance of the body against toxins but cannot be a substitute for specific antitoxic treatment.

In a patient suffering from painful paresthesia of the right hand and scleroderma of the finger, 5 cm. of the adventitia of the brachial artery were removed. The pains immediately subsided, and the scleroderma lesions healed rapidly.


Preliminary administration of potassium increases the toxicity of small arsphenamin doses in animal experiments. Vegetable food therefore accounts for increase of arsphenamin intoxications. Calcium as the antagonist of potassium diminishes the toxicity of arsphenamin. Arsphenamin intoxication is due to a disturbance of the ion equilibrium between calcium (sympathicus) and arsenic (group potassium vagus).


While 4 mg. of silver arsphenamin per 1,000 gm. bodyweight causes the rapid disappearance of Spirochaeta pallidae from initial sclerosis Spirochaeta cuniculi disappears only after 8 mg. have been administered. This great difference in the resistance to arsphenamin was observed in a large series of cases, and helps to differentiate the two kinds of spirochetes from one another.


Protein injections cause a slight leukopenia as a transitory anaphylactic reaction.


There is no superiority of the bovine tuberculin over the human, although the former generally gives a stronger reaction.


Careful investigation led the author to believe that a tumor of the spleen is a pathognomonic symptom of secondary importance only in early syphilis.


This is a report of 262 cases. Improvement of the symptoms in cerebral syphilis and tabes was remarkable. In progressive paralysis, no benefit was derived.

In four cases of early secondary syphilis, the roseolae disappeared after injections of peptone.

TYPHOID EXANTHEM IN CHILDREN. Kister, Monatschr. i. Kinderheilk. 23:193, 1922.

This is a report of two cases, in one of which the roseola developed into hemorrhages. In the other, there was a maculopapular urticarial exanthem over the whole body, probably due to the absorption of some intestinal substances.

TREATMENT OF TUMORS WITH ARSPHENAMIN, WITH SPECIAL REFERENCE TO TUMORS OF THE BRAIN. Matzdorff, München. med. Wchnschr. 69:42, 1922.

The author believes that many nonsurgical cerebral tumors, as well as diffuse carcinomatosis of the meninges, can be successfully influenced by arsphenamin injections.

EXPERIMENTS WITH PROTEIN BODIES AND STIMULATION BODIES. Döllken and Herzger, München. med. Wehnschr. 69:185, 1922.

Milk and casein have a sedative effect. Protein treatment changes the reactivity of the blood in such a way that alkaloids, for example, have a different effect than they would have without preliminary protein treatment.


In three cases of grip in sucklings, the buccal mucosa developed lesions which could not be distinguished from Koplik's spots in measles, though there were no signs of this disease.


The author used a tuberculin ointment to which a keratolytic substance is added in order to increase the penetrating power. Satisfactory results were obtained. Tubercle bacilli were traced down to the stratum granulosum.


The author uses an ointment consisting of hydrous wool fat, concentrated tuberculin and dead tubercle bacilli plus a keratolytic agent. An inflammatory hyperemia of the skin should be provoked before inunction. The ointment must be applied vigorously in order to carry the bacilli as deep as possible into the skin.


The authors conclude from their experiments that there must exist strains of spirochetes with varying virulence, which in some cases have an affinity for the nervous system while in others they do not.

Extensive changes were found in the cerebral pia. There were also signs of a subacute meningomyelitis in the dorsal spine. In the liver, small-cell infiltrations involved Glisson's capsule. The aorta showed a sclerosis of the media.


When an erythema dose is applied to the skin, the capillary microscope will show distinct dilatation of the capillaries and increased filling with blood, that is, symptoms of a strong reaction. If these capillaries have undergone changes previous to irradiation, as in cases of exophthalmic goiter, nephritis and vasomotor disturbances, a much stronger reaction than normal must be expected from an erythema dose. The capillary microscope thus enables us to detect, previous to irradiation, whether a patient should receive less than the normal dose.


Local administration of antigen is advised. A plaster is used which carries an extract of staphylococci.


Prophylactic treatment is advised when infection is suspected. Abortive cure with one course of treatment is not reliable; two to three courses are the obligatory minimum. Mercury is not necessary in the primary stage.


The author proved that after removal of the albumin and lipoid bodies from the spinal fluid, the substances which in a normal fluid protect mastic against salt are of an inorganic nature. The more alkaline these inorganic substances are, the stronger their protecting capacity.


In all cases of polyneuritis, polymyositis, dermatomyositis, trichinosis and miliary tuberculosis, a possible periarteritis nodosa must be considered.


The author emphasizes the value of mild local reactions with his liniment in preference to the Moro and Ponndorff methods.
THE PATHOLOGY OF LETHAL CASES DUE TO ARSPHENAMIN.

Arsphenamin damages the smaller vessels. Necrosis of the endothelium, hyaline thrombosis, accumulation of leukocytes and lymphocytes and degeneration of a part of the vessel are changes which do not become visible macroscopically.

DEEP ROENTGEN-RAY THERAPY IN THE TREATMENT OF MALIG-
NANT TUMORS AND EXTERNAL TUBERCULOSIS. Hol Felder,

The carcinoma dose lies within 90 to 125 per cent. of the skin erythema dose and should be administered under a filter of 0.5 to 0.7 mm. of zinc or copper, in one session. In cancroïds, epitheliomas of the skin and carcinomas of the lip, hard rays under heavy filters at a distance of 50 to 80 cm. are advised.

THE PATHOGENESIS OF PROGRESSIVE PARALYSIS. Kl arfeld,

The author believes that the parenteral digestion of spirochetes in progressive paralysis as assumed by Hauptmann is purely hypothetic. The characteristic changes in the nervous system in paralysis point to a pronounced affinity between a toxin and the individual parts of the nervous system.

THE EPITHELIAL GENESIS OF PIGMENTED NEVUS. St eden, Ztschr.
f. Pathol. 27:64, 1922.

The positive dioxypyphenylalanin reaction in nevus cells, as well as the histologic picture which in many respects points to a relation with the epithelium, induces the author to believe in an epithelial genesis of nevus cells.

THE COMPOSITION OF THE SCALES IN PSORIASIS. Abderhalden
and Zorn, Ztschr. f. physiol. Chem. 120:219, 1922.

The scales were hydrolized with sulphuric acid. The following quantities of amino acids were found in 100 gm. of dehydrated scales: alanin, 4.50 gm.; serin, 0.78 gm.; cystin, 1.85 gm.; valin, 3.25 gm.; leucin, 5.25 gm.; glutamic acid, 6.50 gm.; phenylalanin, 2.32 gm.; tyrosin, 3.25 gm. and pyrolin, 3.05 gm.

EPITHELIALIZATION BY INJECTION ACCORDING TO THE METHOD
OF PELS-LEUSDEN. A NEW METHOD FOR EPITHELIALIZING
GRANULATING SURFACES AND WOUNDS. Reschke, Zentralbl. f.
Chir. 49:730, 1922.

The author describes the injection—with a special syringe—of a mash of epithelium, which is easily prepared, direct under the wound surfaces. Varicose ulcers responded well to this method.

PHLEBITIS. HEPATICA SYPHILITICA. Hart, Virchows Arch. f. path.

In a lethal case of arspenamin intoxication the author describes an insulated involvement of the intima of the venules of the liver. Typical granuloma was found originating from the intima and almost filling the lumen of the vessel.

Ahlswede, Buffalo, N. Y.
Society Transactions

NEW ENGLAND DERMATOLOGICAL SOCIETY

Quarterly Meeting, Oct. 11, 1922

LorettA Joy Cummins, M.D., Presiding

DERMATITIS ON THE FACE FOLLOWING APPLICATION OF FACE CREAM POSSIBLY CONTAINING MERCURY. Presented by Dr. Casselberry.

A young woman had had brownish areas on the face for four months. She had numerous dark areas on the face, forehead, cheeks and neck. The skin was of normal consistency. The discolored areas were dry, with a slight bluish tinge, and through the glass seemed to be composed of little specks in the mouths of the glands, which it was impossible to wipe off or get out. The areas varied in diameter from one fourth to three fourths inch (6.35 to 19.05 mm.) in diameter. An unopened box of this cream was sent to the chemist, and while a full report from him is not available, preliminary tests would indicate that it contains no mercury.

DISCUSSION

Dr. Towle said that the indefiniteness of some of the lesions and irregularity of distribution made him wonder whether or not these might not be self-inflicted. They also appeared on the areas where the glands were not the largest—on the sides of the forehead and cheek rather than on the nose or cheek adjacent to the nose.

Dr. Oliver remarked that it seemed possible that it might have been due to arsenic taken at some previous time.

Dr. Casselberry said that the patient had received no internal medication since the influenza four years ago.

PROBABLE SYPHILITIC LESIONS ON THE FACE. Presented by Dr. Smith.

A young woman appeared two years ago with somewhat flattened papillary lesions on the chin, beginning eight months before. The Wassermann test of the blood was negative. She received two treatments of radium at that time, and the lesions gradually flattened out after three or four months. They remained away for practically a year and a half, when the present lesion recurred on the upper lip. About three weeks ago she appeared with a semi-lunar shaped crusted lesion, apparently resting on three nodules, and one other crusted lesion nearby. Her family history bears no stigma of congenital syphilis. She had had one child, after apparently difficult labor, who lived twenty-four hours. Nothing about the child excited the suspicion of anybody at the time. The woman’s Wassermann test was moderately positive. She had received one injection of arsphenamin, and she showed nearly 50 per cent. improvement in the local condition.

ACTINOMYCOSIS. Presented by Dr. Blaisdell.

A man, 50 years old, a farm laborer, had had his present condition for three or four months. It previously comprised one or two small lesions which became
boils, steadily progressing, and now showed a rather hard, infiltrated area, in front of the ear, fastened for the most part, including several purulent areas which exuded pus freely on pressure. The pus showed the small yellowish granules characteristic of actinomycosis, and the microscope confirmed the diagnosis.

**DISCUSSION**

Dr. Lane said that he was interested in looking up some of the literature on actinomycosis. In one case, methylene blue was given in at attempt to provide as complete saturation of the body as possible. The patient in this particular case had, however, received potassium iodid and deep roentgen-ray therapy so that the favorable outcome was not due to the methylene blue.

Dr. Lane said that the patient was to be given potassium iodid and roentgen-ray therapy, a filtered suberythema dose being given to the area once every three or four weeks.

**ARSENICAL KERATOSES AND EPITHELIOMA.** Presented by Dr. Greenwood.

A man, 39 years old, had had chorea as a child and had taken a good deal of solution of potassium arsenite (Fowler’s solution). He first noticed the lesion on the lower part of his back eight years ago, beginning as a small discolored patch, which had gradually increased to the present size. The second lesion was only three years old. He showed much degeneration in these spots and there were pigmented areas over his body and on his palms and soles.

**DISCUSSION**

Dr. Towle remarked that the man had received no arsenic for seven years before the first development, and this length of time since the arsenical medication rendered the relation of arsenic rather dubious. He was exposed to a great deal of trauma.

Dr. Smith said that the lesions on his palms occurred much sooner than seven years after the ingestion of arsenic. He personally did not feel that arsenic caused the lesions on the patient’s back, but he believed the keratoses on his palms were arsenical.

Dr. Lane said that he had recently seen a case in which the taking of arsenic for psoriasis went back to 1888 or 1890, and there had been a long period in which the patient had not taken any arsenic; and yet he had scattered keratoses similar to those this man had on his hands, as well as areas which were actually undergoing epithelial degeneration. He undoubtedly had some atrophy and degeneration from rather intensive roentgen-ray treatment some years before. He also had a distinct basal cell epithelioma. Dr. Lane felt that the arsenic was the cause of the whole condition in that case.

**PEMPHIGUS OR DERMATITIS HERPETIFORMIS.** Presented by Dr. Cummins.

A child, 22 months old, had been in the hospital for one month. The skin condition was present for two months before admission. The eruption had been a generalized succession of small and large vesicles which had developed from apparently normal skin. Preceding the eruption, the child had had some diarrhea which was accompanied by loss of weight. Urinalysis was negative. The blood contained 33,000 to 54,000 white cells and 2,400,000 red cells. There
was a bullous and crusted, fairly well generalized eruption, with pigmentation and slight scarring from crops of previous lesions. Cultures from bullae were sterile and blood cultures showed no growth. There had been some rise in temperature. Usually from twenty-four to forty-eight hours preceding the eruption, the temperature would rise to 101 or 102 F. When first seen, it was a question whether the eruption was a bullous impetigo or a pemphigus, but with the appearance of lesions in crops, the pigmentation and scarring from old lesions, and the fairly satisfactory general condition of the child, it seemed probable that this was a dermatitis herpetiformis.

DISCUSSION

Dr. Smith asked whether the child had been vaccinated. He said that Dr. Howe reported a group of cases following vaccination. As he saw this case for the first time, it seemed like a dermatitis of this form, but he would be unwilling to ascribe it to that.

A CASE FOR DIAGNOSIS (POIKILODERMA ATROPHICANS VASCULARE?) Presented by Dr. C. G. Lane.

A woman, 27 years old, white, single, Greek, formerly a spinner in a cotton mill for five or six years, had been bitten in the general region of her neck by a wasp four years before, after which there was marked itching and eruption about the neck and on the back of the neck. She had had continued irritation on the neck and in other areas since that time. She had had a generalized itching for a year and areas of severe itching for three months previous to coming to the hospital. She came into the hospital with severe scabies, for which she received the regular treatment. The skin was very much eczematized from previous treatment and also from present antiscabious treatment. As this quieted down, it was seen that she had peculiar bright red areas on the neck, about the waist and also on the buttocks, with a peculiar reticulated appearance. There were some infiltration, areas of atrophy and numerous small telangiectases. There was considerable itching in these areas. Her arms and the backs of the hands at a distance showed a brownish pigmentation which on close examination showed areas of brown pigmentation with accentuated follicles, interspersed with distinctly white, shiny, atrophic areas.

DISCUSSION

Dr. Towle remarked that the regions involved suggested those of pellagra.

Dr. Lane said that certain areas in this case coincided with the description of one in the group of cases recently presented by Dr. Lane of New Haven, and it seemed as if this case would be classed in the group of atrophies, preferably as a case of poikiloderma.

HODGKIN'S DISEASE. Presented by Dr. C. G. Lane.

A man, 47 years old, a laborer, had had itching for about eighteen months or two years, with an eruption which consisted of papulo-pustules. He now showed scattered excoriated papules, occasionally slightly infected and rather firm to the touch. There were also enlarged glands in the right side of his neck. He had had a cough, which was occasionally accompanied by vomiting. He had lost 20 pounds (9.07 kg.) in weight. The sputum was negative for tuberculosis. The Wassermann test had twice been negative. The basal metabolism was +20. A roentgenogram of the chest showed a substernal mass,
but there was some question as to whether it was an aneurysm or a group of glands. One of the glands removed for biopsy definitely showed Hodgkin's disease.

GENERAL EXFOLIATIVE DERMATITIS. Presented by Dr. C. G. Lane.

A man, 68 years old, with an eruption of eight months' duration, had been in the ward a little more than a month, and there had been a general exfoliation practically all that time. He had received the powder treatment, to which he had objected, and he was then given a mild salicylated oil.

Quarterly Meeting, Dec. 13, 1922

LORETTA JOY CUMMINS, M.D., Presiding

MORPHEA. Presented by Dr. Oliver.

A girl, 7 years old, American, born in Rhode Island, had had the condition for two and a half years, the first spot appearing over the hip and beginning as a "mosquito bite." Other areas appeared during the next year and had been gradually increasing in size until at present the largest lesion on the back measures 6 by 8 inches (15.24 by 20.32 cm.). All the lesions had always had a purplish color. The mother was quite sure that every lesion had started with a bruise.

DISCUSSION

Dr. Towle remarked that some years ago, he had had a patient, a child, 8 years old, with morphea, for whom he had prescribed thyroid medication, hot compresses and massage, which resulted in the slow disappearance of the lesions.

Dr. Boardman said that he had had a similar case just after the war. A girl, about the age of the present patient, had scleroderma in the hair and a spot over the eye which was of the morphea type. He used only thyroid medication. The morphea cleared up almost at once, and the lesion on the top of the head suddenly stopped growing. He followed the case about a year, and at that time the mother thought the lesion on the head had stopped growing.

A CASE FOR DIAGNOSIS. Presented by Dr. Cummins.

A girl, 14 years old, had had a lesion on the left cheek for three years, during which time it had gradually increased in size. At the time of presentation it was a dime-sized area of definite atrophy. There had never been any inflammatory reaction or scaling and no subjective symptoms, according to the history which was obtained. There were two younger sisters, 12 and 10 years old, respectively, with similar lesions, first noticed a year ago. These lesions were similar to those in the older sister but were smaller. The children were born in Massachusetts, and five other children apparently had no lesions. The father and mother were born in Italy.

DISCUSSION

Dr. Oliver said that it might be scleroderma, and that there was probably arsenic in the urine. He said that Dr. MacKee reported some cases a few years ago which might come under the same classification.
Dr. Casselberry said that he had a case of erythema that was rather similar, but the reticulated appearance of those scars was absolutely absent in the cases shown.

Dr. Lane said that he thought the cases Dr. MacKee reported were distinctly different from this type. His patients presented reticulated scarred areas on both cheeks. These cases apparently belong in the indefinite class described under the title of idiopathic atrophy. The absolute lack of any inflammatory reaction would make one at least consider placing them in this group of cases.

A CASE FOR DIAGNOSIS. Presented by Dr. Cummins.

A young woman, aged 28 years, had a lesion on the forehead, between the eyebrows, of five years' duration. It was distinctly elevated, firm, not adherent, and was covered with telangiectases. She had no subjective symptoms, and she had not received treatment.

DISCUSSION

Dr. Lane said that it seemed to him that there was almost a keloidal feel to the lesion. He believed that scleroderma was to be considered, but that there was a possibility that there might have been an injury and a later keloidal development.

Dr. Macdonald said that he thought the lesion might belong in the sarcoid group, and that it would be interesting to make a Wassermann test.

Dr. Towle said that he thought there was a sclerodermatous change, but he did not know whether one could call it a true scleroderma.

Dr. Cummins said that he thought she might possibly have received some injections of paraffin, but there was no history to confirm this, and she had not received treatment.

ICHTHYOSIS. Presented by Dr. Boardman.

An Irishman, 30 years old, single, with no history of skin trouble in the father, mother, brothers or sisters, since infancy had had a dry scaling condition of the skin, without itching, but with considerable thickening and fissures. There had been considerable pain and swelling in the feet, and they were badly fissured; otherwise he had had no symptoms. His metabolism was +8. Dr. Boardman said that he had had a metabolism test made in many of these cases, and all were about normal, although the average was just below, minus rather than plus. This possibly explains why thyroid medication does help in many cases. We should study these cases and find out whether the metabolism is really increased or decreased, and thus have a more definite reason for using thyroid medication than we have by just examining the cases clinically.

PELLAGRA. Presented by Dr. Boardman.

A man, 44 years old, Irish, single, who had no occupation, gave a long history of excessive alcoholism. His present trouble began seven weeks before entrance. The backs of his hands turned brown, with scaling, resembling ordinary sunburn. He also had pain in the legs and arms, with numbness, and he had had several attacks of diarrhea lasting a few days at a time. September 8, on entrance to the hospital, he showed an erythema, sharply marked off on the backs of the hands and wrists, with scaling and a few scattered excoriations and pustules. He also had a pediculosis corporis and pubis. He was delirious. Blood examination revealed 75 per cent. of hemoglobin and 13,000 white cells. Urinalysis was negative. With a high protein
diet, rest in bed and sedatives, the skin condition improved. There was some pigmentation on the hands and wrists, with a rather sharp line of demarcation.

**DISCUSSION**

Dr. Oliver said that he was interested in the alcoholism in this case as many alcoholic persons do not eat anything, and there is a starvation of protein and everything else. He thought that was enough to cause pellagra.

Dr. Towle called attention to the fact that not many years ago it was said that a case of pellagra always originated in the South, but that some sporadic cases did occur in other parts of the country.

Dr. Lane said that about two months ago he happened to see two cases of pellagra, in the wards of the Massachusetts General Hospital, one of which Dr. Oliver had seen. This patient had these brownish, almost atrophic, lesions on the hands, which were not particularly well marked off at the wrists, and there were one or two other lesions on the body. The patient later developed severe gastro-intestinal symptoms, and the mental condition later became disturbed. The other case was much more severe and the patient had a typical condition on the arms, extending up as far as the elbows, with the upper border rather sharply marked off. She also had many lesions on the trunk, buttocks and legs, and she had a much more severe mental disturbance. Both of these patients had always lived in the vicinity of Boston.

Dr. Boardman said that in the autumn Dr. Shattuck had had several cases called pellagra, and every patient had this marked alcoholic history. Dr. Shattuck and he agreed that the condition was due to lack of food and to mental symptoms, together with alcoholism.

Dr. Macdonald said that he had recently had an acute case of pellagra at the Carney Hospital, in a young Irish girl who had been in this country just two weeks, and who had never been out of Ireland before. She had died a few weeks later.

**CONGENITAL SYPHILIS.** Presented by Dr. Boardman.

An American boy, 18 years old, had marked typical scars radiating from the corners of the mouth. He came into the clinic on account of an interstitial keratitis. He also had fairly definite syphilitic teeth, but the most interesting thing to our mind were the scars about the lips. The scars of the cornea, the stellate scars about the lips and the prominence of the forehead and teeth made a picture that is seldom seen. The Wassermann reaction was strongly positive.

C. G. Lane, Secretary.

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**NEW YORK ACADEMY OF MEDICINE, SECTION ON DERMATOLOGY AND SYPHILIS**

*Regular Meeting, Dec. 5, 1922*

Howard Fox, M.D., *Chairman*

**ECZEMA SEBORRHOICUM.** Presented by Dr. Rothwell.

H. A., a woman, aged 23, married, born in the United States, presented on the middle of the forehead and near the left axilla circinate, infiltrated, red, scaly or crusted lesions, and on the arms and forearms various spots of pigmentation which she said were the remains of lesions similar to those on the forehead
and chest. The lesions on the forehead extended from near the scalp hairline to between the eyebrows, and were about 2 inches (5.08 cm.) in width, covered with a thick greasy scale formation. The condition had existed for eleven months; the patient said that it had been diagnosed as syphilis and that she had been treated with arsphenamin, without satisfactory results. There was no history of syphilis, and the Wassermann test was negative.

**DISCUSSION**

Dr. Abramowitz asked about treatment. He said he could not make a diagnosis unless he knew that the patient had received some definite syphilitic treatment. The appearance of the lesion on the forehead as well as the one on the anterior fold of the axilla suggested syphilis. The eruption on the legs and arms, consisting of light scaling and pigmentation, had the appearance of either old syphilitic lesions, or lesions possibly factitious in origin.

Dr. Rulison said that he could not make a diagnosis; he did not think the condition was syphilitic.

Dr. Chargin said he hesitated to offer a definite diagnosis, but that the scars on the arms and legs suggested a passed syphilitic process; that on the forehead he was unable to explain. The patch of eruption on the anterior aspect of the shoulder presented lesions at the border strikingly like the nodules of lupus vulgaris.

Dr. Rostenberg said that while the patient had some seborrhoeic eczema, the two principal lesions did not suggest it. While the lesion on the forehead somewhat suggested a circinate syphilid, the lesion on the shoulder looked like a tuberculous skin affection, and tuberculosis cutis would be his diagnosis for both lesions.

Dr. Rosen said that every one seemed to think the lesion on the forehead was syphilitic. In the clinic, he had seen several cases very similar in type which did not respond to antisyphilitic remedies. The principal characteristic of the lesion on the forehead in this case was more or less that of a squamous syphilitic lesion. The lesion near the axilla might have been influenced by some medication, and one Wassermann test was not sufficient to rule out syphilitic infection. The case should be further observed and reported again later.

Dr. Pollitzer agreed that at the first glance one would think of syphilis in looking at the lesion on the forehead. He understood that the diagnosis of seborrhoeic eczema was withdrawn. It would be well to look at the case as a whole. The woman was 23 years of age, had been married seven years and had one child; she had had no miscarriages. The lesions started eleven months ago, and she had received from eight to twelve injections of something into the arm, presumably arsphenamin, as she had evidently been treated for syphilis. The epitrochlear, nuchal and axillary glands were not enlarged. The lesion consisted of a circinate, somewhat edematous infiltrated red patch; on the margin and on the left side of the shoulder, the lesion was distinctly papular, made up of an aggregation of small papules. In addition, the woman had on the arms (whether or not elsewhere he did not know) a few small papules and several lesions about 1 by 11.5 cm. in diameter, which were slightly pigmented and distinctly atrophic in the center, looking as though they had been papular lesions which had disappeared leaving behind atrophic and slightly pigmented spots. The diagnosis seemed to rest between syphilis and tuberculosis. Against the diagnosis of syphilis were the features already mentioned—a healthy looking young woman who had received a series of arsphen-
amin injections, a negative Wassermann reaction and no adenopathies. In favor of tuberculosis was the general appearance of the lesion. It was not a common lupus vulgaris, but was probably a mixed form. The lesions on the arms, if tuberculous, were not of the same type, but since their disappearance was followed by pigmentation and atrophy, they were probably granulomas. Dr. Pollitzer said that therefore, his diagnosis, subject to correction after further study by biopsy, and also possibly after thorough treatment with arsphenamin and mercury, was tuberculosis.

Dr. Weidman (by invitation) said he did not think the condition syphilitic in nature nor of the lupus vulgaris type, for the infiltration was uniform—there did not appear to be any evidence of local necrosis such as seen in lupus vulgaris or in syphilis. The tissue process was diffuse, such as is seen in connection with internal body processes, and in his opinion it was a mistake to attempt to pigeon-hole precisely every skin lesion of this kind. Such conditions as lupus erythematous and parapsoriasis, of decidedly infiltrated character, like this lesion, would interfere with labeling the lesion properly, and it was better to keep one's mind open in the absence of histologic studies because there was such a running together of a number of lesions of which the nature was not known.

Drs. Wise and Fox agreed with Dr. Pollitzer that it was probably some form of tuberculosis.

TUBERCULOSIS CUTIS (WRIST). Presented by Dr. Trimble.

The patient was previously shown before the New York Dermatological Society, at the November meeting.

SCLERODACTYLLIA. Presented by Dr. Halperin.

A. X., a woman, aged 40, married, born in Spain, a housewife, presented glistening, hide-bound skin of the fingers of both hands, together with telangiectases about the terminal phalanges and destruction of the nail tissue. Telangiectases were apparent on the dorsa of both hands, and there was the appearance of erythema pernio extending up to the lower third of the forearms. The condition had existed for two and one-half years. It was accompanied with slight pain and pruritus and fixation of the fingers.

DISCUSSION

Dr. Weidman (Philadelphia) said that the skin was not scaly and thin, nor was it bound down tightly as in a characteristic case of scleroderma. There were no definite telangiectases on the fingers. It was a diffuse erythema; and other paler spots suggested pernio, not atrophy. He did not think the diagnosis of sclerodactylia was justified.

Dr. Pollitzer said he thought the diagnosis of sclerodactylia was not entirely satisfactory. In view of the rather striking telangiectases on the dorsal surface of the fingers, he had thought of a roentgen-ray burn, and on interrogation, the daughter said that her mother had had about a dozen exposures to a glass tube which gave out a greenish light. It seemed to be a case of roentgen-ray burn received in the treatment of the original condition, which was probably a tinea of the nails.

Drs. Rostenberg and Abramowitz both thought it was a case of roentgen-ray burn.
A CASE FOR DIAGNOSIS: LEUKEMIA CUTIS OR MYCOSIS FUNGOIDES. Presented by Dr. Wise.

C. B., aged 38, a Russian, had had the condition for two months. The patient presented a generalized eruption and dryness of the skin with marked infiltration, particularly of the breasts, general adenopathy and pruritus. The biopsy was not yet completed, but the blood count and the adenopathy led to a tentative diagnosis of leukemia cutis or mycosis fungoides. It was probably an aleukemic type of leukemia.

DISCUSSION

Dr. Pollitzer said that at the stage presented one could not say much about the case. It was evidently of the leukemic group; the large glands were against the alternative diagnosis of mycosis fungoides, which might otherwise be considered. He then asked whether a complete blood count had been made, and suggested that systematically repeated examinations might sooner or later yield a blood-picture that was characteristic.

Dr. Wise replied in the affirmative, but said the microscopic report on the glands had not yet been received.

A CASE FOR DIAGNOSIS: PAPULO-NECROTIC TUBERCULID? Presented by Dr. Rulison.

E. S., aged 3, had a negative family history, and had always been well, with the exception of a congestion of the lungs the preceding winter and an attack of prickly heat the preceding summer. Ten weeks before presentation she had a generalized rash lasting two days. Six weeks before presentation two or three papules had developed on the dorsum of the left foot. New papules had later appeared, especially numerous on the legs and forearms. There had been no itching and no interference with the general health. The older lesions were slightly pigmented; the newer were the same color as the surrounding skin. There were no scars. The lesions were dry and showed a slight tendency to central dimpling and scaling. The provisional diagnosis was early papulonecrotic tuberculid.

DISCUSSION

Dr. Chargin said that he did not know whether papulonecrotic tuberculid occurred in this location in young children, but the onset and character of the eruption suggested to him that it was probably toxic in origin and very likely due to some drug which the child was taking more or less regularly.

Dr. Abramowitz agreed with Dr. Chargin.

Dr. Rostenberg asked whether a Pirquet test had been made.

Dr. Wise said that the diagnosis of papulonecrotic tuberculid should be made in this case. In children and infants the lesions were not as characteristic as in adults, and they were usually smaller. These lesions were necrotic in the center; and there was no itching.

Dr. Highman said that he had been watching the patient, and he thought the condition more likely to be a papulonecrotic tuberculid than prurigo, as Dr. Wise said. Dr. Chargin had said he did not think papulonecrotic tuberculids occurred at this age, but there was a rich literature to the contrary, and it was particularly significant that such patients were likely to develop generalized tuberculosis later. Dr. Jerome Leopold had reported on this subject.
Dr. Highman said he could not see the value of arguing on a basis of time against a disease chronic in character that was only three months old. The mere fact that it was rapid in onset was nothing against the diagnosis. All diseases had to begin. What could this be if it was not a papulonecrotic tuberculid? Certainly none of the itching diseases.

Dr. Pollitzer said that one feature which impressed him was the remarkably healthy appearance of the child. If the condition was a papulonecrotic tuberculid, there was a tuberculous focus somewhere, and it would be extraordinary for a child with tuberculosis to present such a picture of health. He had no diagnosis to suggest.

Dr. Highman said that the child looked better as presented than he had ever seen her look.

Dr. Rosen said that the only other diagnosis that he could suggest would be a recurrent erythema multiforme. He then cited a recent case of Duhring's disease in which the lesions had a central necrosis, and one section of the patient's body had the exact appearance of a papulonecrotic tuberculid.

Dr. Howard Fox conceded that all chronic diseases had to have a beginning, but in this case there was a profuse eruption which had appeared suddenly. In papulonecrotic tuberculids, the lesions usually appeared a few at a time. He thought that Dr. Chargin's suggestion of a drug eruption should be considered.

Dr. Rulison said that there were two other points that might have some bearing on the case. Two years ago the child and its mother went to Germany, and there it had a severe cold and the physician told the mother that it had a congestion of the lung, which cleared up. As to medicine, the only thing the child had taken had been some cough tablets, of which it had not taken more than two or three a day, and that not with any degree of regularity. It was barely possible that the child had tuberculosis following the congestion of the lung a year ago. The child did not appear strong in daylight, but the mother did not think it had lost weight, and there was no history of tuberculosis in the family.

Dr. Ratner (by invitation) said he had had the fortune to see four cases within the last two years, all occurring in early infancy. All came to necropsy with generalized tuberculosis. In all the cases the lesions were small and came out in groups, and one could easily punch out the necrotic area. Three of the children came to the hospital with bronchitis or pneumonia, and they all had the papulonecrotic tuberculids which changed the diagnoses to tuberculosis. One case was followed up for three months from the start; it commenced with small papules which soon developed necrotic centers. All of the tuberculids which he had seen were much smaller than those shown at the present meeting.

GENERALIZED ICHTHYOSIFORM HYPERKERATOSIS. Presented by Dr. Bechet.

M. A., a girl, aged 14, born in the United States, said that the eruption had been present since birth. For the last ten years there had been little change in its appearance. No other member of her family was similarly affected. Her general health was good, and her physical development up to the normal. The eruption was extensive, and irregularly diffused over the arms, legs and trunk. It consisted of thickened, rough, papillary patches of variable size—
all very large. On the legs the patches were aggregated, horny, verrucous and
spiny, the so-called "rhinoceros skin." The intervening skin between the
patches in some instances was normal, and in others dry, rough and reddened.
The face and scalp were free.

DISCUSSION

Dr. Pollitzer said he thought that the limited distribution of the case
would rule out the ordinary type of ichthyosis, and furthermore the appear-
ance of the keratotic lesions in the elbow-bends, where in ichthyosis the skin
is usually free or fairly free, would also rule out the ordinary ichthyosis. In
his opinion it was an ichthyotic nevus.

Dr. Highman said that the case was a congenital anomaly. So far as a
definition of terms was concerned, was it proper to call all congenital anomalies
nevii, or only those lesions possessing nevus cells? This particular case looked
like a nevus and was a nevus, except for the histologic characteristics men-
tioned. What difference did it make? The word nevus could be dropped, and
no one would be the worse. It did not seem to be a proper dermatologic
discussion, but purely one of philology.

Dr. Pollitzer said that the commonly accepted definition of nevus required
not only that the anomaly be congenital, but that it also be circumscribed or
limited in extent. This definition ruled out ichthyosis from the class of nevi.

A CASE FOR DIAGNOSIS: MOELLER'S GLOSSITIS? PHENOL-
PHTHALEIN RASH? Presented by Dr. Scheer.

I. W., a woman, aged 25, single, a clerk, born in the United States, had
had the present affection at varying intervals for six years. The present out-
break lasted for two months. She had taken a proprietary phenolphthalein
preparation three months before. At times she denied taking any phenol-
phthalein preparation. During the last six years she had had five or six
attacks of glossitis, lasting from two to three weeks to as many months.
The location was always the same—the sides of the tongue. There was severe
pain on ingestion of sharp foods or drinks. In the intervals between attacks
there were no subjective symptoms, and the tongue was said to be entirely
normal. On both sides of the tongue, extending from the junction of middle
and posterior thirds to the tip, and over an area three-eighths inch (0.95 cm.)
wide, the tongue was red, very smooth and without papillae. Before coming
to the clinic the patient had had several Wassermann tests made, which were
all negative. She also had received four arsphenamin injections, without
benefit.

DISCUSSION

Dr. Abramowitz said that the histories of drug rashes were unreliable,
and the fact that the lesions occurred on the side of the tongue was rather
against that diagnosis. The phenobarbital (luminal) and phenolphthalein
eruptions that he had seen were usually on the dorsum of the tongue and
palate, and were usually bullous or vesicular, or like eroded lesions, and were
not symmetrical as in this case. This seemed to be more like a Moeller's
glossitis than a drug eruption.

Dr. Chargin said that he had the impression that there were small rup-
tured bullous lesions discernible on the side of the tongue. This did not
occur in Moeller's glossitis. In view of the fact that the patient admitted
taking a proprietary laxative, the diagnosis of a phenolphthalein eruption seemed
to be justified.
Dr. Rosen said he had seen the patient four or five months before. She was referred for syphilitic therapy and received half a dozen injections of arsphenamin, with no benefit. He did not agree with the diagnosis of drug eruption, and he thought the condition was some form of glossitis. He agreed with what Dr. Abramowitz had said that the lesions following ingestion of phenolphthalein or phenobarbital were usually more or less uniformly distributed over the tongue. He then cited the case of a woman, aged 76, with a generalized exfoliating condition of the tongue and a pemphigoid eruption on the body. He did not understand why the eruption should limit itself to the side of the tongue. He thought that the condition was probably a glossitis.

Dr. Rostenberg said that he thought it was a typical case of Moeller's glossitis as it corresponded to the description of this dermatosis in every particular, having the atrophic areas at the margin, the absence of the filiform papilli and the presence of severe pain when food, especially hot fluids, were partaken of.

Dr. Pollitzer said that if this was a drug eruption, the history should show it. In his opinion, it was not a drug eruption; the attacks had been occurring for a number of years, and it would be very easy to ascertain whether or not the patient had been in the habit of taking a drug such as phenolphthalein or phenobarbital. Clinically, the condition had the appearance of Moeller's glossitis.

Dr. Levin agreed with Dr. Pollitzer that the history ruled out a possibility of a drug eruption. In his opinion, the condition was that of a glossitis associated with internal derangements.

LEPROSY (FOUR CASES). Presented by Dr. Kingsbury.

W. F. C., aged 15, was born in China. The duration of the disease was seven years. The lesions were on the face, legs, arms and ulnar nerves. C. T., aged 24, was born in China. The duration of the condition was five years. The lesions were on the face, thighs, backs of the hands and ulnar nerves. H. F., aged 22, was born in China. The duration of the disease was three years. The lesions were on the face, arms, abdomen and thighs. C. D., aged 24, born in Italy, had had the disease for twelve years. The lesions were on the face, back, chest, extremities and ulnar nerves.

DISCUSSION

Dr. Abramowitz said that he was particularly interested in one of the cases, for the patient had been at the Vanderbilt clinic last year. He was remarkably improved, and it would be interesting to know what line of treatment had been followed.

Dr. Kingsbury replied that the patient received chaulmoogra oil, but in comparatively small doses. He did not feel that the improvement in this patient and in some of the others was altogether attributable to the oil so much as to better hygiene and feeding.

Dr. Howard Fox asked whether the patients stood the intramuscular injections well.

Dr. Kingsbury replied that some of the patients were quite rebellious and desired to have it discontinued, while others felt that they were being improved and wanted the treatment continued. A number of the patient had improved and gained materially.
Dr. Howard Fox said he had treated eighteen lepers at Riverside Hospital last year with the ethyl esters of chaulmoogra oil. He had been able to continue the treatment only for about three months, at the end of which time the patients had been transferred to the Leper Home in Louisiana. Smaller doses of the drug (given intramuscularly) were well borne, but in doses of 3 or 4 c.c. the injections were frequently followed by large painful indurations in the gluteal muscles. Another patient from the Public Health Service had been treated for the last year and a half. In this case as well, the larger amounts of the drug were not well borne. This patient had also failed to show any appreciable improvement.

**KELOID FORMATION OVER OLD SYPHILITIC LESIONS.** Presented by Dr. Kingsbury.

L. C., aged 30, was born in China. There was no history of chancre. He noted secondary lesions in November, 1921, on the back, chest and face.

**PSORIASIS AND LEUKODERMA.** Presented by Dr. Scheer.

(Previously presented before the New York Dermatological Society.)

**CHONDRODERMATITIS NODULARIS CHRONICA HELICIS.** Presented by Dr. Levin.

L. F., aged 56, a native of Austria, who had been in this country for twenty-four years, said that the painful growth on the right ear had been present for one and a half years. It was resistant to treatment, and the ulceration now present was caused by the application of carbon dioxide. On the upper part of the rim of the right ear, there was a nodule about the size of a large pea. The lesion was ovoid, elevated, sharply circumscribed, not movable on the deeper tissues, hard and tender. The patient complained of pain that was almost always present. On the summit there was a shallow ulcer, the result of treatment.

**DISCUSSION**

Dr. Satenstein said that he had seen a similar case recently. He had excised the nodule and found microscopically that it was a slowly growing prickle cell epithelioma extending into the cartilage. After the cauterized wound healed, a small nodule was noted at the margin of the scar. Apparently all of the neoplasm had not been removed. He was not sure that the case presented was that of a simple inflammatory process. He advised excision and thorough cauterization. A microscopic examination would reveal the true nature of the process, which he believed was prickle cell epithelioma.

Dr. Wise said that, judging from Dr. Satenstein's remarks, he thought that this case might be an epithelioma, but the four cases described by Foerster were not cases of epithelioma. The only treatment that did any good in such cases, in the experience of the speaker, was radical removal.

Dr. Abramowitz said that he also had seen the case referred to by Dr. Satenstein. The man had a nodule that was quite painful, and the diagnosis of painful nodule of the ear was made. It conformed to the description that Foerster gave. Ornubly called Foerster's attention to the fact that it had been described by Winkler, who gave it its name. The pathology of this condition was that of a chronic lichenification. Dr. Satenstein had shown
him the slide of the case at the Vanderbilt clinic, and it surely was a prickle cell epithelioma; but the question was whether it had been a chronic lichenification that had changed to a prickle cell epithelioma.

Dr. Ludwig Weiss said that, clinically speaking, he regarded it as a gouty node similar to Heberden's nodes encountered about the second interphalangeal articulation of the fingers. They were usually quiescent, and it was best to let them alone. Irritative intervention might cause epithelioma. They should not be opened unless an acute process or softening had taken place; when opened, it took weeks or months for them to heal.

RECKLINGHAUSEN'S DISEASE. Presented by Dr. Thornley.

C. W., aged 25, born in the United States, an oiler, had his attention called to a tumor in 1918. His mother died of consumption three weeks after his birth. Three brothers died in childhood; the cause of death was unknown. An uncle and an aunt on his mother's side died of consumption. The patient was said to have been healthy as a baby; he had had measles in 1910, influenza in 1918 and gonorrhea in 1921. Four Wassermann tests were negative. The last test was made on Oct. 23, 1922. He left school at 14 years of age being in class 5 B (he was a little backward). The tumor to which his attention had been called was located on the right side of the neck, and had not been noticed by the patient. The examination of the blood and stools was negative. Attention was called to the exaggeration of the patient's reflexes, enlarged epitrochlea, high arch of palate and faulty closure of the spinal canal. There were also the characteristic tumors and pigmentation of the epidermis.

DISCUSSION

Dr. Highman asked whether any laboratory work had been done on the case.

Dr. Thornley replied that none had yet been done.

Dr. Highman said that clinically it did not impress him as neurofibroma, but rather reminded him of idiopathic macular atrophy, or of Schweinger-Buzzi's tumor-like disease. In pinching the lesion, it was difficult to think you were pinching a fibroma; on the contrary, there was a soft pulpy yielding of the tissue, and the protrusion that gave the appearance of being tumor-like could be rapidly invaginated into the skin, etc. There were some definitely pigmented spots which suggested Recklinghausen's disease by artificial light, but did not have the right color so much as the color seen in idiopathic atrophy. The case was one that called for further study and another presentation.

Dr. Pollitzer said that the case showed no tumor in the usual sense of that term. There were a few slightly marked elevations of the skin, but these had a soft baggy appearance and on palpation they offered no resistance, the finger sinking into an apparent cavity in the cutis. One expected a fibroma, even a neurofibroma, to present a firm solid tumor, and there was nothing of this kind in the case shown. On the other hand the semblance of an atrophy which appeared on palpation was misleading; the affected spots were soft and yielding because they were made up of soft fibrous, and in part mucoid, tissue. The relation of these soft fibromas, which at times occurred as massive pendulous tumors, to the peripheral nerves was not clear. The case, however, was a good example of what is called Recklinghausen's disease.
Dr. Highman asked whether the fact that the patient showed certain endocrine changes would rule out neurofibroma.

Dr. Abramowitz said he had seen the case and did not think there was any doubt about the diagnosis. He could not call the case an atrophy unless he saw the atrophy, and none was present.

Dr. Thornley said that the first interesting point was that the patient was presented at the Vanderbilt clinic as having neurofibromas or Recklinghausen's disease. In many books the terms were considered almost synonymous. The second point was that when the case was taken to the Vanderbilt clinic, a diagnosis of Recklinghausen's disease was confirmed. Perhaps Dr. Satenstein might remember that Dr. Thornley had requested that a biopsy be made, and that he replied that it was not necessary for he was sure it was a case of Recklinghausen's disease. Dr. Abramowitz might also recall that fact. Darier had also mentioned the fact that the tumors make a hernia through the subcutaneous tissue, which he claimed was one of the characteristics of Recklinghausen's disease. In this case one could feel the little ring that it went through. On these points the diagnosis was made and the patient presented.

LEUKODERMA AND PIGMENTED MOLE. Presented by Dr. Thornley.

R. D., a schoolgirl, aged 7, born in the United States, presented a pigmented mole, surrounded by one of the patches of leukoderma. The mole showed the result of treatment with carbon dioxid (Photographs of the condition previous to treatment were shown.)

TUBERCULOSIS ULCEROSE (SHOWING THE EFFECT OF RADIUM TREATMENT). Presented by Dr. Tremble.

A woman, aged 20, born in Italy, had a lesion which covered an area which included about two thirds of the mucocutaneous junction of the left ala of the nose, and was ulcerated and thickened. Six radium exposures of one hour each (10 mg.) had healed the condition. At the present time there was a slight redness and scaling due to the reaction from the last treatment.

LUPUS VULGARIS SERPIGINOSUS. Presented by Dr. Howard Fox.

A. M. F., aged 27, a mulatto, born in the United States, a school teacher, with no family history of tuberculosis; in addition to several diseases of childhood, had suffered from influenza and pneumonia three years previously. The eruption had first appeared five years previously as a hard "pimple" in the center of the left cheek. This had gradually enlarged attaining the size of a silver dollar at the end of three years. At this time a similar "pimple" appeared on the nose and began to spread centrifugally until the entire nose, upper lip, left cheek and ear, and part of the right cheek were involved. Since February, 1920, she had suffered from hoarseness, and in August of the same year was told by physicians at Bellevue Hospital that she had tuberculosis of the throat. The eruption, she said, was more inflamed and sensitive at the menstrual periods. The patient, who was very intelligent, described the secretions on the skin as follows: There was a watery secretion "which seems to make the disease spread, as wherever it runs it causes an appearance as if the skin were scalded." She also spoke of a "brown, sticky, wax-like substance which gets hard and forms scabs, which on removal leaves at times dry, and at times raw, sore surfaces."
Examination showed a fairly sharply bordered eruption involving part of the right cheek, the greater part of the nose, part of the left ear and the entire upper lip and left cheek. It had cleared up partially in the center of the left cheek. It consisted of a dull red base covered for the greater part of its extent by fairly adherent, grayish yellow crusts. A considerable area of the left cheek was devoid of crusts. The entire eruption was somewhat tender to the touch. It had involved the nasal mucosa, and there was some apparent flattening of the tip of the nose. The laryngologist reported: "Lupus nodules on margin of epiglottis. Right aryteno-epiglottidean fold is thickened and bound down. Epiglottis is small and thickened. Arytenoids are thick and slightly fixed. Diagnosis: lupus of larynx."

PSEUDEPELADE. Presented by Dr. Rothwell.

M. D., aged 21, married, born in Italy, presented generally over the scalp areas of baldness with seeming thinning of the scalp in the bare areas. There was no evident folliculitis in or about the patches. Promontories of hair jutted into hairless areas, and various adjacent patches were separated from each other by only a thin isthmus of hair growth. The patches were generally circular in outline, but the coalescence of many had produced irregular, serpiginous patches. The long hair of the uninvolved scalp was sufficient to conceal the presence of the condition. The condition had existed from the patient's tenth year, being more active at some times than at others; there was slight itching.

LICHEN PLANUS OF THE LIPS. Presented by Dr. Bechet.

J. R., a man, aged 27, born in Russia, said that the eruption began two months previously. He had a classical lichen planus on the arms, hands and trunk. The interesting feature of the case was the extensive involvement of the mucous membrane. The lips, especially the lower one, were covered with a whitened, papillary patch made up of aggregated lesions. The inner cheeks were also covered with lichen papules.

TUBERCULOSIS VERRUCOSA CUTIS. Presented by Dr. Abramowitz.

D. W., a negro, aged 30, unmarried, born in this country, a laborer, had had the skin disease for four years. He was operated on four years ago for perianal abscess, and following that an eruption appeared which first involved the left buttock and the contiguous anal region, and then spread to the left groin; later another patch appeared on the left ankle, all within three months after the operation. Since then all the lesions had increased in size and showed a verrucous and a hypertrophic appearance, with numerous ulcerations and atrophic areas. He gave a history of having a genital sore, but repeated Wasserman tests were negative. Microscopic examination of a piece of excised tissue showed typical tuberculosis.

SYPHILITIC FIBROUS NODULES OF THE FOREARMS. Presented by Dr. Maloney.

H. P., a woman, aged 45, born in Austria, a housewife, had no history of primary lesions. She had been married for twenty-two years, and had had one child twenty years ago, who died when 4 months old, the cause being unknown. There had been no miscarriages. The lesions she presented developed eight years
before with nodules on the knee, others later developing on both arms. When first seen she presented nodular lesions, five in number, on the posterior surface of the right arms over the ulna, three on the left arm in the same location, with crusted spots in three places. On both knees there were several lesions with dirty looking, heaped up scales. The Wassermann test, Nov. 14, 1922, was four plus. Under treatment (six injections of arsphenamin and mixed treatment), all of the nodules on the left forearm and two of those on the right forearm had disappeared.

ALOPECIA TOTALIS. Presented by Dr. Chargin.

M. Z., a woman, aged 23, had been married for three years. Her first child was born dead at full term; the second child, born five months before, was normal. Two months before she became pregnant with her last child she began having “neuralgic pains” in her teeth and head. Five months later her hair began falling out, first on the scalp and then on the rest of the body. In the course of about three months the loss was complete, with the exception of the outer margin of the upper eyelid. The Wassermann test was negative. No one in her family was troubled with a similar condition. There was no evidence of return of hair. The condition was of four months’ duration.

DERMATITIS EXFOLIATIVA FOLLOWING PSORIASIS. Presented by Dr. Rostenberg.

Mrs. M., aged 36, born in Russia, had had psoriasis for the last fifteen years. She had received no medication of any kind up to eight months prior to this attack. She asserted that it started suddenly after a warm bath. When first seen about two weeks ago there was a diffuse erythroderma involving the back and chest, with considerable flaky scaling. Some large psoriatic lesions were still present at the extremities, but soon these were also overshadowed by the spreading dermatitis. The patient was suffering greatly from intense itching and felt bad otherwise. She was admitted to the hospital, where she had a slight rise in temperature. She also had 0.25 per cent. of sugar in the urine, but the blood chemistry and creatinin and urea output were normal. The patient was improving under an ointment of boric acid.

Paul E. Bechet, Secretary.

PITTSBURGH DERMATOLOGICAL SOCIETY

Regular Meeting, Jan. 18, 1923

W. H. Guy, M.D., Presiding

PERSISTENT EDEMA OF THE LOWER EYELIDS. Presented by Dr. Burke.

Both lower eyelids in a woman, aged 57, married, were swollen and felt soft to the touch, and the skin was erythematous. The patient said that the condition had existed for five years, at times being more acute, but never subsiding very much. Her tonsils were removed four months before, and she had a hernia for which operation had been advised but refused. Urinalysis was negative. The sputum was negative for tubercle bacilli.
ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY

DISCUSSION

Dr. Wertheimer said he believed that the swelling might be due to a sinusitis and that her headaches were of the vacuum type described by rhinologists.

Dr. Crawford said these patients often had a chronic streptococcc infection of the air passages or neighboring lymph channels, and he thought that a vaccine of this organism would be of value.

Dr. Guy remarked that a streptococcal infection of the sinuses, antrum, teeth and tonsils should be sought and cured.

Dr. Burke said that a probe had been passed three years previously by a rhinologist, a bloody discharge following.

ERYTHEMA MULTIFORME. Presented by Dr. Phillips,

H. L. S., a woman, aged 37, a housewife, presented on the hands, forearms, neck and legs, a maculopapular eruption characterized by a crimson red at the beginning and gradually changing to a purplish red and finally becoming brownish red as the lesions disappeared. The lesions were symmetrical, varying in size from that of a pinhead to areas the size of a silver dollar, irregular in form, never itchy, never vesicated, nor was there ever any ulceration. As the lesions disappeared, desquamation had been noted; but there had never been any oozing or soreness. The first attack occurred fourteen years ago and lasted for a few weeks; it disappeared and was followed by another in about six weeks. The eruption appeared at varying intervals until the present time. There had been periods of from two to three months when the body had been entirely free from lesions. The length of the attacks had varied from two to eight weeks. At the beginning of some of the attacks there had been malaise, headaches and indefinite pains, while in other attacks there had been an entire absence of subjective symptoms. The physical examination was negative except for the skin manifestations. About fifteen years ago, the patient was operated on for "stricture of the rectum" and again about six months ago. She still discharged some pus with the stools. On the strength of a 2 plus Wassermann reaction she was given as many as 100 injections of an arsenic preparation; probably sodium cacodylate, without affecting her skin condition. The Wassermann test at the time of presentation was negative.

DISCUSSION

Dr. Hollander said that he considered the case an allergic eruption and likened it to erythema perstans. The rheumatoid pains and swollen joints may have been caused by toxins. He believed that examinations for pyelitis, pyosalpingitis, etc., should be made.

Dr. Jacobs said the rectal stricture may be a focus of infection and a source for toxin dissemination to the system.

Dr. Burke said that this case resembled erythema annulare, which was probably of toxic origin.

Dr. Wertheimer agreed with Dr. Hollander's suggestion that pus tubes may be a focus of infection, and with Dr. Jacobs' suggestion that there was probably a focus of infection in the rectum.

Dr. Crawford said that phenolphthalein should be considered, since the patient gave a history of frequent ingestion of proprietary laxatives for many years, the serpiginous configuration of the lesions and their color evolution from red to brown being suggestive.
Dr. Guy suggested that a proctoscope examination be made.

Dr. Phillips said he could see no likeness to erythema annulare, as suggested by Dr. Burke.

**URTICARIA PIGMENTOSA (ACQUIRED).** Presented by Dr. Crawford.

Miss O. J., aged 27, since she was 12 years of age had had small brownish macular areas varying from 3 to 5 mm. in diameter, scattered symmetrically over the neck, upper part of the chest and back, and on both surfaces of the forearms, but principally along the inner aspect of the flexor surfaces, and on the backs of the hands. There were no subjective sensations. These areas have always become red and swollen with rubbing. A red dermographia was present. The patient was a healthy girl of average intelligence, not given to worry; but she was easily excited. She was easily embarrassed; and she said that she always felt nervous and that her face flushed on meeting strangers. She felt well and enjoyed living. The thyroid gland was just palpable and soft. The basal metabolic rate was plus 28. The blood chemistry was: non-protein nitrogen, 30; urea nitrogen, 15; uric acid, 16; and the sugar curve was normal. There was no evidence of thyroid or suprarenal insufficiency. The pulse pressure was: systolic, 117 mm. of mercury; and diastolic, 80 mm. of mercury. The pulse rate was always from 78 to 80. The left pupil had a slightly sharper reaction to light than the right. Some improvement was noted on administration of pituitary (whole gland) extract.

**DISCUSSION**

Dr. Hollander said that this case was very interesting and belonged to the group of dermatoses with evident endocrine disturbance. The imbalance recorded in the vasomotor system supported this view.

**HEMANGIOSARCOMA.** Presented by Dr. Crawford.

Mrs. L. S., aged 54, had had her left breast removed for an adenocarcinoma in July, 1922. The results were apparently good, as there were no later evidences of metastasis or recurrence. During the early part of December, she noticed a bluish discoloration over the third and fourth ribs, anteriorly on the left side. This extended later from the left axilla to the xiphoid. Six weeks after she first noticed the bluish discoloration, a reddish, thickened area, the size of a palm, appeared where the bluish discoloration had previously been. This area was deep red, bluish red at the center; and the surface was thrown into minute, rounded papillations which were themselves red or deep red and rather hard to the touch. On palpation there was infiltration possibly 2 to 3 cm. in depth, extending from the fifth rib up to the base of the neck on the left side. Enlargement had been fairly rapid. No glands were palpable. The patient had been losing weight rather rapidly. A roentgenogram of the chest showed no involvement within the chest, but a supraclavicular and cervical gland involvement. The presenter felt that this was a very unusual case in that a sarcoma, a totally different type of malignancy, should follow in the wake of a carcinomia.

**LICHEN PLANUS LINEARIS.** Presented by Dr. Hollander.

M. T., a Jewish fruit dealer, aged 35, presented a reddish brown papular eruption, which was unilaterial. It began about 10 cm. from the midspinal line
over the left buttock and extended around the thigh anteriorly; from here it continued in a straight line along the inner aspect of the leg across the popliteal space, curving slightly anteriorly and ending on the inner lateral surface of the foot, branching out as it terminated. The individual lesion was rhomboid in appearance and was shiny and covered with a minute scale. Dec. 1, 1922, the patient consulted me on account of a margined bilateral scaly dermatitis which covered the groin. This was diagnosed as epidermophyton inguinale, and the eruption responded readily to Whitfield's ointment. December 12, he called my attention to a new type of eruption on his buttock, composed of papules like those described in the foregoing. The lesions were very itchy until the roentgen ray was used; since then the condition has improved steadily.

NEURODERMATITIS AND THE WHITE LINE OF SERGENT. Presented by Dr. Crawford.

T. H., aged 11, of Russian parentage, had presented, in the popliteal and cubital spaces, for the last three years, circumscribed areas of an eruption which was rough, dry, thickened and excoriated. Just outside of these areas were several small excoriated papules. The skin in these areas was very itchy. The condition was diagnosed as neurodermatitis. There was no other eruption on the body. When the finger was drawn across the skin of the trunk with either light or heavy pressure, a white dermatographia ensued. This condition persisted from fifteen to thirty minutes. A red dermatographia could not be elicited. The blood pressure was normal.

DISCUSSION

Dr. Hollander said that Sergent's white line was of value in that it showed a muscular asthenia and low blood pressure. There was frequently a pathologic condition of the cortex of the suprarenal gland.

DERMATITIS EXFOLIATIVA IN A BRASS SMELTER. Presented by Dr. Crawford.

W. J., aged 38, of Irish descent, had been a brass smelter during the last fourteen years. Once a week he added phosphorus to melted copper, which process was accompanied by many fumes. This phosphorus-copper mixture was added to molten brass with the production of more fumes. These fumes, he said, made his hair green. Five months previously he had complained of cramplike pains in his abdomen which persisted for four weeks, and after twelve weeks of freedom again returned for two weeks. During this time his shoulders became red, scaly and itchy, and in a short time the redness spread over the entire body and limbs and over the face and scalp. The skin felt warm and slightly thickened. Some enlargement of the inguinal and epitrochlear glands was noted. It seemed quite possible to the presenter that metallic poisoning was a factor in erythrodermas of this type.

MORPHEA-LIKE BASAL CELL CARCINOMA. Presented by Dr. Crawford.

A. R., a negress, aged 28, presented on the left cheek centrally a flat, round, indurated area, 2 cm. in diameter. This was traversed with minute capillaries and seemed about the thickness of a silver quarter-dollar embedded in the skin. The patient said that it began six months previously as a "flat, hard lump" and
had enlarged gradually. There were no subjective symptoms. It was evidently resistant to the roentgen rays as two radiations of two skin units each were followed only by redness.

**DISCUSSION**

Dr. Guy remarked that this type of epithelioma was resistant to the roentgen rays and that curettage preceding an irradiation of two and one-half skin units should stop the process.

Dr. Willard recalled a similar case in which radium needles were embedded beneath the growth and a radium plaque was used on the surface, with good results.

**VIENNA DERMATOLOGICAL SOCIETY**

*Session of May 18, 1922*

**Dr. Riehl, President, in the Chair**

**LUPUS VERRUCOSUS OF THE RIGHT HAND AND MILIARY TUBERCULOSIS OF THE TONGUE.** Presented by Dr. Krüger.

This case is interesting because the same virus which caused the benign form of tuberculous verrucosa of the skin developed a malign miliary ulcer of the mucosa.

**LINEAR DERMATOSIS.** Presented by Dr. Löwenfeld.

The lesions covered the knee, leg and dorsum pedis, forming bands of small, flat, yellowish and brownish nodules, some of which were slightly edematous and scaly. The disorder represented a linear dermatosis of eczematous type.

**TAR ACNE AND TAR CARCINOMA.** Presented by Dr. Fischl.

A case occurred in a laborer who worked with tar. There was tar acne on the face and a cherry-sized carcinoma on the prepuce.

**LICHEN NITIDUS.** Presented by Dr. Ballean.

The disease picture corresponded to the one described by Pinkus. The tuberculin tests were all positive. The numerous flat, polygonal, glistening nodules were partly confluent and partly grouped, with an excavation in the center.

**BERLIN DERMATOLOGICAL SOCIETY**

*Session of July 25, 1922*

**Dr. Heller, in the Chair**

**NEVUS VASCULARIS.** Presented by Dr. Ledermann.

The case was interesting as it showed a combination of nevus anaemicus with nevus angiectodes.
IN Volvement OF THE NAILS IN TRICHO PHYTINA. Dr. Heller.

These cases are rare. Trichophyton violaceum was found in one case.

KELOID DEVELOPMENT AFTER RAD IUM TREATMENT. Dr. Heller.

Irradiation of a nevus angiomatosus developed a keloid, which histologically showed new formation of vessels.

INITIAL SORE ON THE NATES. Dr. Buschke.

The patient, a boy, had slept with his syphilitic brother.

PARAFFIN OIL TUMORS OF THE FACE. Dr. Halberstad ter.

Cosmetic injections caused the development of granulation tissue of tuberculoid structure. In the discussion, both Dr. Pinkus and Dr. Arn dt said that they had seen "sarcoi d tumors" develop after paraffin injections. Similar tumors have been caused by mercury and paraffin injections.

CAPILLAROSCOPIC OBSERVATIONS ON THE NORMAL AND THE DISEASED SKIN. Dr. Bruchs.

This method is valuable for some special diagnoses. Thus, in nevus anemicus, the disappearance of the vasodilators can be noticed.

MUNICH DERMATOLOGICAL SOCIETY

Session of July 28, 1922

Dr. Wirz, in the Chair

DISORDER OF THE LICHEN PLANUS TYPE IN A WOMAN AGED 21. Dr. Wirz.

The case is remarkable for the polymorphism of the lichen planus eruptions, only part of which were typically red. There were also spinous eruptions and atrophic regressions in all stages. This is one of the rare cases described by Hallopeau, and Crocker, and lately by Feldman, New York.

SCLERODERMA AND SCLERODACTYLIA IN A GIRL AGED 21. Dr. Mayr.

Hot baths and massage treatment considerably improved the condition. The lesions, in plaques and in bands, were present on the left arm and fingers. There were hyperpigmentation and depigmentation.

Ahlswede, Hamburg, Germany.
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BIOLOGIC REACTIONS OF ARSPHENAMIN

IV. THE EFFECT OF LARGE DOSES ON THE
COAGULABILITY OF THE BLOOD *

JEAN OLIVER and ETHEL DOUGLAS
SAN FRANCISCO

If an animal is killed by the injection of a large dose of disodium arsphenamin and the blood is drawn soon after death from the vena cava, it will be found that the red cells have been agglutinated and that the plasma no longer coagulates.¹ The present paper is an experimental study of the factors responsible for the latter phenomenon. Shortly after this work was begun, Flandin and Tzanck ² called attention to the incoagulability of the blood under such conditions, and from certain experiments came to the conclusion that the lack of coagulation was due to the action of the arsphenamin on thrombin or its precursors.

METHODS

For the experiments in which coagulation was studied in vitro we have used almost exclusively the methods described by Bordet ³ and his pupils ⁴ for the preparation of the various reagents. For this reason we have used Bordet’s terminology. The details of these methods are as follows:

Oxalated Plasma.—Rabbit blood was used throughout the experiments. A rabbit was anesthetized, the abdomen opened and a large paraffined cannula placed in the aorta. The blood was drawn into paraffined vessels containing sufficient 2 per cent. sodium oxalate to make the final concentration in the drawn blood ¹: ¹,000. The blood was thoroughly centrifuged and the plasma drawn off.

* From the Department of Pathology of the Medical School of Leland Stanford Junior University.

* This investigation has been made with the assistance of a grant from the Committee on Therapeutic Research, Council on Pharmacy and Chemistry, American Medical Association.

Di-oxalate Plasma.—This fluid serves as a reagent for thrombin, replacing unstable fibrinogen solutions. It consists of a 1:1,000 oxalate plasma diluted with 4 volumes of 0.9 per cent. sodium chlorid solution containing 2:1,000 sodium oxalate. The addition of any calcium contained in the other reagents of the experiments is insufficient to recalculate this plasma so that coagulation of it may be regarded as due to added thrombin.

Thrombin.—For certain experiments thrombin was used. This was prepared by Howell’s method. Beef blood was defibrinated and the strings of fibrin washed free of hemoglobin in cold water. The mass was squeezed dry, minced and extracted in 8 per cent. sodium chlorid solution for 48 hours in the icebox. The extract was then dialized to about 1 per cent. sodium chlorid content, filtered and portions of 2 c.c. evaporated to dryness in watch crystals by an electric fan. In the dry form it may be kept for months in a desiccator.

"Calcium-Saline Solution."—For purposes of recalcification in certain experiments, this solution was used. It consists of a 0.9 per cent. sodium chlorid solution containing 0.35 gm. calcium chlorid per 1,000 c.c. Four volumes of this fluid are ample to recalcify plasma oxalated to 1:1,000.

Serozyme.—Rabbit blood was drawn in sodium oxalate in the usual manner, centrifuged vigorously so as to remove as nearly as possible all cells, and then recalcified with four volumes of "calcium-saline solution." The weak clot which formed was defibrinated and the clear fluid kept over night to allow the thrombin which had formed after recalcification to deteriorate. Such a serum contains a large amount of serozyme and no free thrombin. On the addition of cytozyme, abundant thrombin is formed.

Cytozyme.—Guinea-pig or rabbit lungs, which had been washed in 0.9 per cent. salt solution until the greater part of the blood was removed, were minced and ground in a mortar with sand. Nine tenths per cent. sodium chlorid was added in excess and the grinding continued until a deeply turbid fluid was obtained. This was centrifuged until all visible particles were removed.

Disodium Arsphenamin.—As a stock solution a 2 per cent. aqueous solution was used, prepared by the standard method of the United States Public Health Service. Dilutions were made from this in distilled water as needed. Care was taken to use only freshly prepared solutions so that oxidation did not affect the results of the experiments.

In the coagulation experiments, reagents were mixed in small tubes of uniform size, and as an end point of coagulation the time was taken when the tube could be inverted without spilling. In all experiments

detailed below the various reagents were tested before proceeding with the experiment proper. Suitable controls against the occurrence of spontaneous clotting were also performed as a part of each experiment. These tests and controls are not given in all the protocols, as they would occupy considerable space. All the experiments were repeatedly confirmed, and only typical examples are given.

In the tables of results of the coagulation experiments, the dilutions of arsphenamin are expressed as fractions of the stock solution, C, that is, of 2 per cent. disodium arsphenamin.

EXPERIMENTAL

General.—The following experiments give a general view of the factors involved in the lack of coagulation.

A rabbit was given 0.3 gm. per kilogram of disodium arsphenamin intravenously at an approximate rate of 2 c.c. per minute. Toward the end of the injection a typical acute reaction with convulsions occurred, followed by death. Blood drawn from the vena cava was found to be agglutinated and although kept for several days did not coagulate. An excess of calcium chloride was added to a sample, with no effect, nor did the addition of an excess of prepared thrombin cause coagulation. Blood which had run into the peritoneal cavity and which had come in contact with the cut and damaged tissues also remained fluid for hours.

Another rabbit was given 0.15 gm. per kilogram, and blood was removed through a paraffined cannula from the carotid artery immediately before and after injection. No delay was noted in coagulation time, the normal blood clotting in twelve minutes, whereas afterward thirteen minutes were required.

In a general way, these experiments cast considerable doubt on the suggestion that the lack of coagulation is due to an effect on thrombin or its precursors. This possibility was now examined in more detail.

IN VITRO EXPERIMENTS

1. Does Arsphenamin Act in Vitro as an Antithrombin?—Thrombin was prepared by the mixture of a suitable amount of cytozyme and serozyme. After an appropriate length of time, arsphenamin was added to this mixture and another interval of time allowed for any action that the arsphenamin might have on the formed thrombin. The activity of the latter was now tested by adding di-oxalated plasma, and the time and character of clotting noted. The results of a typical experiment are given in Table 1.

Examination of this experiment shows that there is no definite delay in coagulation until a concentration is reached at which clotting is entirely prevented, 0.05 per cent. At this concentration a physical
change occurs in the solution, for after some time the mixture was found to be filled with a fine flocculent precipitate. This flocculation must not be confused with the precipitate which forms under certain circumstances in mixtures of serum or plasma and arsphenamin (Danysz, Schamberg). A tube was prepared similar to Tube 1 of the experiment just described, except that it contained no cytozyme. No thrombin could form in such a tube and no flocculation occurred. All the factors required for the development of a precipitate were present, yet none developed. The flocculation is therefore due to the action of thrombin.

Two facts derived from this experiment argue against the idea that the lack of coagulation is due to the action of thrombin: First, the occurrence of a physical change (flocculation) in the tube which did not clot. This effect was due to the activity of potent thrombin, as such a process did not occur in similar mixtures without thrombin. Second, the effect on the time of coagulation is abrupt. There is no delay in clotting unless the delay is permanent, that is, there is no inhibition in the action of thrombin.

<table>
<thead>
<tr>
<th>Dilutions of arsphenamin</th>
<th>1:2</th>
<th>1:4</th>
<th>1:8</th>
<th>Sodium chlorid</th>
</tr>
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<tbody>
<tr>
<td>Coagulation time</td>
<td>x*</td>
<td>1/2</td>
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* Flocculation. † Weak clot.

2. Does Arsphenamin Act More Strongly on the Precursors of Thrombin than on Formed Thrombin?—The same reagents were used as in the preceding test. The arsphenamin was added at once in this instance to the mixture of serozyme and cytozyme, and after an interval the presence of thrombin was tested by the addition of di-oxalated plasma. In this experiment thrombin must form in the presence of arsphenamin.

The presence of arsphenamin during the process of thrombin formation has therefore the same result as noted in the previous experiment in preventing coagulation at a concentration of 0.05 per cent. The delay noted at 0.025 per cent. concentration was irregularly observed, in some experiments the time being the same as that observed in the sodium chlorid control.


In the light of Gratia's demonstration that substances which act as antithrombins are even more potent when they act on the precursors of thrombin, it seems unlikely that arsphenamin can be an antithrombin.

3. Will Thrombin Withstand a Higher Concentration of Arsphenamin Than the Other Fraction of the Coagulating System?—In this experiment, thrombin prepared by Howell's method was used. In Tube 1 the arsphenamin was added to a small amount of di-oxalated plasma, a time interval allowed, and the thrombin added. In this way, the thrombin was brought in contact with a concentration of arsphenamin (0.07 per cent.) which formerly had been found to prevent coagulation. In Tube 2 the arsphenamin was added directly to the thrombin, so that it was in contact with three and one-half times the concentration of arsphenamin in Tube 1. After a time interval, a large amount of di-oxalated plasma was added. The addition of the large amount of di-oxalated plasma lowered the concentration in the complete system to one-third that necessary to prevent coagulation. Tube 3 was a duplicate of Tube 2, except that 0.9 per cent. sodium chlorid was added instead of arsphenamin.

Concentration of arsphenamin 0.08 per cent.
1. 1 c.c. diox. pl. + 0.1 c.c. arsphen. dil. 1:8 | 2 minutes | + 0.1 c.c. thrombin = no clot
   Concentration of arsphenamin in complete system, 0.07 per cent.

Concentration of arsphenamin, 0.25 per cent.
2. 1 c.c. thrombin + 0.1 c.c. arsphen. dil. 1:4 | 2 minutes | + 2 c.c.
   diox. pl. = clot in 1 minute
   Concentration of arsphenamin in complete system, 0.02 per cent.

3. 1 c.c. thrombin + 0.1 c.c. sodium chlorid | 2 minutes | + 2 c.c.
   diox. pl. = clot in 1 minute

The point of attack of arsphenamin on the clotting of blood is definitely shown in this experiment. Since in Tube 2, thrombin was in contact with 0.25 per cent. arsphenamin and there was no effect on its coagulating properties, the lack of coagulation in Tube 1 could not have been due to any action on thrombin, as here the concentration of arsphenamin was only 0.07 per cent.

The fibrinogen (di-oxalate plasma) shows a different relation to the arsphenamin concentration in the two tubes. In Tube 1, in which
it was in contact with 0.08 per cent. arsphenamin, it did not clot, but in Tube 2 in which the concentration of arsphenamin, as it affected the fibrinogen, was only 0.02 per cent., clotting occurred in the normal time and manner.

**COMMENT**

From these experiments it would seem that there is little if any action by arsphenamin as an antithrombin in the production of incoagulability of the blood, even when it is present in high concentration. On the other hand, a marked effect is noted when it comes in contact, even in relatively low dilution, with that part of the coagulating complex which contains the fibrinogen.

These factors may be examined more closely by a study of the reactions in the plasma of an animal which has received an intravenous injection of arsphenamin. As such experiments are needed to establish the fact that the reactions which occur in vivo are analogous to those observed in vitro, the course of the investigation was turned in this direction.

**IN VIVO EXPERIMENTS**

1. *Are the Precursors of Thrombin Destroyed or Inactivated by the Administration of Sufficient Arsphenamin to Kill the Animal and to Render the Blood Incoagulable?*—A rabbit was given 0.33 gm. arsphenamin per kilogram by the ear vein. Death occurred at the end of the injection, with convulsions, and the blood was found agglutinated and incoagulable. Blood withdrawn from the vena cava was centrifuged and the plasma removed. It was distinctly opalescent and of a yellow-greenish tinge. There was no free hemoglobin. As this plasma contained calcium, and as manipulation and centrifugation of the agglutinated cells had given ample opportunity for the liberation of cytozyme, if thrombin can form it should do so without the addition of these reagents. To test for its presence, increasing drops of this arsphenamin plasma were added to normal di-oxalated plasma with the following results:

1 drop arsphenamin plasma + 1.0 c.c. dioxalated plasma = clot in 5 minutes
2 drops arsphenamin plasma + 1.0 c.c. dioxalated plasma = clot in 3 minutes
4 drops arsphenamin plasma + 1.0 c.c. dioxalated plasma = clot in 3 minutes
6 drops arsphenamin plasma + 1.0 c.c. dioxalated plasma = no clot, flocculation

The experiment shows that thrombin forms spontaneously in the plasma of an animal whose blood has been rendered incoagulable by a large dose of arsphenamin. If added to a reagent containing fibrinogen, it clots it, unless added in too great an amount, in which case it prevents coagulation and produces "flocculation."

Although the thrombin can still form, it is possible that it is reduced in amount. This possibility was next examined.
2. Is There a Quantitative Reduction in the Amount of Thrombin That Can Form After the Administration of Arsphenamin?—A rabbit was bled into sodium oxalate. Thirty-four hundredths gram of arsphenamin per kilogram were then given intravenously, and after death, which occurred in the typical manner, blood was collected from the vena cava in sodium oxalate. It was agglutinated, and a sample without oxalate did not coagulate. As both the normal and the arsphenamin plasma thus collected are oxalated, no thrombin can form in either of them. Both were therefore recalcified with four volumes of "calcium-saline solution." The normal plasma clotted in fifteen minutes and was defibrinated at once. The arsphenamin plasma remained a greenish yellow opalescent fluid. Serial dilutions in 0.9 per cent. sodium chloride were prepared of each plasma, and equal amounts of each dilution were added to a definite amount of "fibrinogen reagent" (di-oxalated plasma). The same time elapsed between the recalcification of the two plasmas and the various steps of the remainder of the experiment. The results are shown in Table 3.

<table>
<thead>
<tr>
<th>TABLE 3.—Results of Experiment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 drops plasma dilution + 0.5 c.c. &quot;fibrinogen reagent.&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plasma dilutions</th>
<th>C</th>
<th>1:2</th>
<th>1:4</th>
<th>1:8</th>
<th>1:16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal plasma</td>
<td>10 min.</td>
<td>16 min.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsphenamin plasma</td>
<td></td>
<td>4½ min.</td>
<td>8 min.</td>
<td>15 min.</td>
<td></td>
</tr>
</tbody>
</table>

It is seen that the arsphenamin plasma had apparently formed eight times the amount of thrombin which had formed in the normal plasma.

Several explanations are possible for this rather unexpected result. The increase in thrombin formation may be actual or only apparent. In the first case, its excess may be due to the large amount of cytozyme which is freed in the plasma by the agglutination and consequent damage to cells. As the animal's blood is incoagulable, thrombin might have formed in the circulation without causing intravascular thrombosis, and this amount formed before the blood was taken in oxalate would explain the excess thrombin observed in the titration experiment.

On the other hand, it may be that the increase in the amount of thrombin formation after the arsphenamin is only apparent. In the foregoing experiment, the thrombin which formed in the normal plasma on recalcification clotted the solution, and only that thrombin could be titrated which was extracted from the clot by defibrination. In this way, some may have been consumed in the process of coagulation and more may have been held by absorption in the clot. As the arsphenamin plasma does not coagulate on calcification, neither of these processes would occur.
There seems to be no direct way to measure these last factors. To measure thrombin it must first be formed, and when it is formed it of necessity clots its plasma. Possibly the addition of some substance such as alkali, which by its action on fibrinogen prevents coagulation, might allow the formation of thrombin without coagulation of the plasma in which it is contained, but this adds the complication of the presence of another reagent, which in turn may have a complicating effect on the thrombin. The possibility that there has been an additional amount of thrombin formed in the arsphenamin plasma, either by the action of an excess of cytozyme or by the formation of thrombin in vivo before oxalation may, however, be examined by experiment.

3. Does an Excess of Cytozyme in the Normal and in the Arsphenamin Plasma Equalize the Thrombin Output in the Two Cases?—A rabbit was bled 10 c.c. into sodium oxalate and then given 0.3 gm. of arsphenamin per kilogram intravenously. Death followed immediately at the end of the injection with convulsions, and blood from the vena cava was found to be agglutinated and incoagulable. A large sample was drawn into sodium oxalate. Both the normal and arsphenamin plasma were then recalcified with four volumes of "calcium-saline solution" and rapidly distributed into tubes containing one drop of a very potent cytozyme. At intervals of one, two, three and five minutes, 0.5 c.c. of di-oxalated plasma was added, and the clotting time noted. The last reagent contained enough excess oxalate to prevent further formation of thrombin.

The experiment shows that a lack of available cytozyme is not the cause of the slower thrombin formation in the normal plasma, for the addition of an excess amount of this reagent does not bring its ability to form thrombin to the level of the arsphenamin plasma.

4. Has the Formation of Thrombin in These Experiments Begun in the Arsphenamin Plasma Before the Blood is Drawn into Sodium Oxalate?—A rabbit was anesthetized with ether during the entire experiment. A short paraffined glass cannula was placed in the carotid artery, and to this cannula a paraffined rubber tube with a clamp was attached. Three tenths gram of arsphenamin per kilogram was given intravenously, and on the first appearance of dyspnea a sample of blood was drawn through the cannula into paraffined tubes containing sodium oxalate. Eight samples of blood were obtained before the circulation

| TABLE 4.—Result of Experiment with Excess of Cytozyme |
| Duration of calcification | 1 min. | 2 min. | 3 min. | 5 min. |
| Clotting time, normal plasma * | 4 min. | 3 min. | 3 min. | 3 min. |
| Clotting time, arsphenamin plasma | 1 min. | 1 min. | 1 min. | 1 min. |

* The mixture of recalified normal plasma and cytozyme clotted before the addition of the "fibrinogen reagent." The clot was delbrinated by shaking before the latter was added.
failed entirely and death occurred. The fourth sample was collected without oxalate. Its cells were found agglutinated, and the plasma did not coagulate. The samples were all centrifuged and the plasmas removed. The first three were opalescent and yellowish, and the last five collected were slightly tinged with hemoglobin. To test for the presence of thrombin 1, 2 and 3 drops of each sample were added to 0.5 c.c. of di-oxalated plasma. No clotting occurred in any of the tubes.

There had been, therefore, no formation of thrombin in the blood before its collection in oxalate, so that the excessive strength of the thrombin found in the arsphenamin plasma in the previous experiments cannot be due to an additive effect from thrombin formed in vivo in the last few minutes of life. By elimination, therefore, we reach the conclusion that this increase in thrombin as compared with normal plasma is due to the consumption of thrombin or to its absorption during the process of clotting which occurs in the latter and which is absent in the arsphenamin plasma.

**COMMENT**

It follows from the experiments detailed above that since there is no action by arsphenamin on thrombin or its precursors, it must be on the other phase of the coagulation system, fibrinogen. None of the experiments, however, has directly demonstrated such an action. It is our purpose to examine in some detail the nature of this reaction in another article, so at present we will only describe certain general experiments.

If the incoagulable plasma of an animal which has been killed by a large dose of arsphenamin is heated for twenty minutes at 56 C., instead of the usual heavy precipitate of globulins, no precipitation is observed; in fact, the fluid becomes somewhat clearer. The globulin has therefore evidently been made incoagulable to heat as well as to the action of thrombin. It is not "destroyed," however, as carbon dioxide passed through a similar sample gives a heavy flocculent precipitate of protein and arsphenamin. The mixture may be separated by prolonged washing in alcohol in which arsphenamin is soluble.

The same reaction may be observed in vitro. If 0.5 c.c. of arsphenamin is added to 5 c.c. of normal plasma, it takes on the opalescent greenish color observed in the plasma after intravenous injection of the drug. It does not coagulate on recalcification or on the addition of thrombin. If heated to 56 C. for twenty minutes it becomes more clear, and if saturated with carbon dioxide, a precipitate of globulin and arsphenamin is thrown down.

This in vitro experiment was also repeated with a preparation of globulin precipitated from normal plasma with ammonium sulphate, dialyzed and redissolved in 0.9 sodium chlorid to the original volume.
No precipitate was observed on heating a mixture of this globulin and arsphenamin at 56 C., yet carbon dioxid threw down a heavy precipitate of globulin and arsphenamin.

The direct relation of these reactions of globulin and arsphenamin to heat coagulation with the coagulation by thrombin may be demonstrated by reference to number 1 of the in vivo experiments. Tubes 1 and 4 of this experiment were prepared anew and immediately placed in a water bath at 56 C. Tube 1, whose similar had clotted, showed a heavy precipitate of globulins. Tube 4, in which no coagulation had occurred, became somewhat clearer on heating. Even the flocculation observed in its similar did not occur, doubtless due to the fact that the high temperature destroyed the thrombin which is responsible for this reaction. It is seen from this experiment therefore that the lack of coagulation by thrombin in Tube 4 is due to the action of the relatively large amount of arsphenamin contained in the added plasma, an amount large enough to prevent the typical coagulation of the fibrinogen of the di-oxalated plasma.

One is at once struck by the analogy between the action of arsphenamin and of alkali on the process of blood coagulation. Both have little effect on thrombin and both render fibrinogen incoagulable by either thrombin or heat (Mellanby, Barratt). As the solution of arsphenamin is alkaline, it may well be asked whether its action in regard to the coagulation of fibrinogen is not due to its alkalinity rather than to any specific action of the substance. We cannot at this time enter into the details of the rôle played by the hydroxyl ions in the process and will only demonstrate here that they alone are not responsible for the results obtained in our experiments. A few simple experiments demonstrate this point.

If an animal is given intravenously a 0.9 per cent. sodium chlorid solution containing normal sodium hydroxid in the proportion in which this substance is added to arsphenamin in the preparation of the disodium salt, no reaction is observed in the animal’s behavior even after three times the volume of fluid is given which would have killed the animal from agglutination and rendered its blood incoagulable had the solution been disodium arsphenamin. Blood drawn from the animal clots readily and if oxalate plasma is prepared, its globulin is precipitated by heating at 56 C.

The difference between the relative actions of alkali and arsphenamin may be even more accurately observed in vitro. The following experiment illustrates the comparative effects on the coagulation of prepared reagents of a solution of sodium hydroxid and of arsphenamin of the same hydroxyl ion concentration.

A series of tubes containing serozyme, cytozyme and fibrinogen reagent were prepared similar to those of Experiment 1 of the in vitro experiments. Those which clotted were defibrinated and the fibrin removed. To each tube was added 4 drops of thymol blue. There resulted a gradation in color from a greenish blue in the tube containing the highest concentration of arsphenamin to a light yellow in that tube which contained the lowest concentration. Another series of tubes was prepared containing the same reagents except that the arsphenamin was replaced by dilutions of sodium hydroxid. The two series were now compared, and that dilution of sodium hydroxid was selected as the "stock or concentrated solution" which compared in color to the tube of the arsphenamin series which contained the concentrated or "stock" arsphenamin dilution. For the purpose of simplicity, this dilution of sodium hydroxid was termed the "concentrated dilution." Experiment 1 of the in vitro experiments was now repeated with two series of tubes in which the hydroxyl ion concentration decreased in approximately the same degree. In one series the alkalinility was produced by decreasing amounts of sodium hydroxid, in the other by decreasing amounts of arsphenamin. The table shows the results.

At the end of the experiment the tubes were defibrinated, the clots removed and 4 drops of thymol blue added to each. The corresponding tubes matched well in color.

It seems, therefore, that although alkali has the same effect on coagulation as arsphenamin, the lack of coagulation in the tubes of the arsphenamin series cannot be explained by the hydroxyl ion concentration which existed there. There is some other factor, and this factor is the specific action of arsphenamin.

**DISCUSSION**

In our experiments we did not find any evidence indicating any marked action of arsphenamin on thrombin or its precursors. Our findings differ markedly in this regard from the observations of Flandin and Tzanck. Unfortunately, no details of their experiments are given in their publication, so that it is impossible to analyze the cause of these differences.

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**TABLE 5.—RESULTS OF EXPERIMENT**

<table>
<thead>
<tr>
<th>Dilution</th>
<th>Arsphenamin</th>
<th>Alkali</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>z</td>
<td>6% min.</td>
</tr>
<tr>
<td>1:2</td>
<td>3 min.*</td>
<td>1% min.</td>
</tr>
<tr>
<td>1:4</td>
<td>1½ min.</td>
<td>1% min.</td>
</tr>
<tr>
<td>1:8</td>
<td>1 min.</td>
<td>1 min.</td>
</tr>
</tbody>
</table>

* Weak clot.
We have found, however, a marked change in the properties of the fibrinogen and other globulins of the arsphenamin plasma. Depending on the concentration of arsphenamin present, thrombin produced a series of changes ranging from a firm to a weak clot or simple flocculation. The globulins were also changed in their reaction to heat, as heating to 58 C. for twenty minutes produced no coagulation.

The relation of these changes to the hydroxyl ion concentration of the arsphenamin solution is not entirely clear. It is well known that alkali produces the same changes in the reactions of fibrinogen and globulins to thrombin and heat, and that it has little effect on thrombin. From a comparative study, however, it was found that the alkalinity of disodium arsphenamin is not alone responsible for them in our experiments, since they were well marked at a lower degree of alkalinity when arsphenamin was present than when alkali was used alone.

There is a striking analogy between this relation of hydroxyl ion concentration to coagulation, and the relation of the phenomenon of agglutination of red blood cells by arsphenamin to hydrogen-ion concentration. In the latter case, agglutination of red cells may be produced in sugar solution by the hydrogen ion alone. If arsphenamin is also present, the agglutination occurs at a lesser degree of acidity, and the reaction proceeds more rapidly with increasing acidity. Although at the present time we have insufficient data for a definite statement, it may be that the essential factor in these two processes, incoagulability of fibrinogen and agglutination of red cells, is the hydroxyl and hydrogen ion, respectively, and that the arsphenamin is merely an auxiliary factor which allows the development of the phenomenon at a lesser degree of alkalinity or acidity than is needed when it is absent.

The practical importance of the effect of arsphenamin on the coagulability of the blood is not very evident at the present time. In its therapeutic use, the concentration needed to produce definite changes is never reached. Our interest in the phenomenon is due to a certain light which it throws on the reactions that occur between the drug and the proteins of the plasma when it is introduced into the body. The experiments detailed above indicate only that there is some reaction between the arsphenamin and the globulins which renders them incoagulable to thrombin and heat, and that they are not "destroyed" as they may be recovered by precipitation by carbon dioxide. In another article these reactions are examined more closely.

**CONCLUSIONS**

1. Arsphenamin produces incoagulability of the blood both in vitro and in vivo.

2. The action of the arsphenamin is chiefly on the fibrinogen (globulins), rendering it incoagulable to heat or thrombin.
3. No action on thrombin could be demonstrated.

4. Although this disturbance in the properties of the globulins is similar in nature to that caused by alkali, the action of the latter alone will not explain the results obtained in our experiments with arsphenamin solution.
THE VALUE OF BISMUTH SALTS IN THE TREATMENT OF SYPHILIS

WITH A REVIEW OF THE LITERATURE AND RESULTS OBTAINED IN THE TREATMENT OF NINE CASES *

V. PARDO-CASTELLO, M.D.
HAVANA, CUBA

Arsenic, in the form of Ehrlich's compounds, which was expected to vanquish syphilis in a short time, has been disappointing. Although perhaps one of the most valuable agents we possess today in the treatment of syphilis, it is not the ideal remedy against Spirochaeta pallida. Mercury and the iodids still hold their own and are undoubt-edly the basic foundation of antisyphilitic therapy.

A multitude of investigators are industriously trying to find the desired drug that will cure syphilis. We all know about the interesting and valuable contributions of Schamberg, Raiziss and Kolmer of the Dermatological Research Institute on the organic mercury compounds. A short time ago, a new mercury compound of exceptionally good qualities was discovered by E. C. White, J. H. Hill, J. E. Moore, and H. H. Young of the Johns Hopkins Hospital; the sodium salt of hydroxymercurifluorescein (flumerin). In Germany, most of the work has been directed to improve the arsenic salts or arsphenamin preparations, and the result in recent times has been sodium arsphenamin and silver arsphenamin. In France, new promising chemical compounds have been discovered recently which have given such good clinical results that they have been widely tried, and the literature on the subject today is extensive.

REVIEW OF THE LITERATURE

We refer to the bismuth compounds presented by R. Sazerac and C. Levaditi ¹ before the French Academy of Sciences in 1921. These authors have employed the sodium and potassium tartrobismuthate for intramuscular injection. Their observations of the action of this drug in animals led them to the conclusion that bismuth salts had a powerful spirocheticidal action. Rabbits infected with different strains of spirochetes were readily sterilized after from three to four days, and the spirochetes could not be found after the second day. In human

* Read before the Sixth Latin-American Medical Congress, Havana, Cuba, Nov. 19-26, 1922.

cases, the clinical lesions healed rapidly, and the spirochetes disappeared in a short time.

After the original experiments of Levaditi and Sazerac, numerous investigations have proved the value of bismuth salts in syphilis. Louis Fournier and L. Guenot treated 110 cases of syphilis in different stages. They claim that in the primary stage there is complete disappearance of the spirochetes after the first or second injection, cicatrization of the chancre in from six to twenty days and arrest of the disease, no secondary lesions having developed in any of the cases; in the secondary stage disappearance of the spirochetes from mucous patches, papular lesions and glands after the first or second injection occur and all lesions heal in a remarkably short time. General phenomena like cephalalgia, ostalgia and general malaise disappear after a few injections. In five patients who had had a relapse after arsenical and mercurial treatment, a few doses of bismuth arrested the disease, and no relapse occurred after three months. In a case of meningitis, four injections stopped the headache; the rigidity of the neck and Koerning's sign disappeared, and the cell count in the spinal fluid became almost normal. Bismuth was found in the spinal fluid. In tertiary lesions, the effect of bismuth is remarkable, the ulcers and nodular lesions disappearing very rapidly. The Wassermann test becomes negative and remains so in some treated patients.

J. Nicolas, J. Massia and J. Gaté consider bismuth superior to mercury.

Fournier and Guenot every second day gave intramuscular injections of sodium and potassium tartrobismuthate in doses varying from 0.1 to 0.3 gm., suspended in oil. The site of the injection becomes rather painful after a few hours, and there may be a severe stomatitis. No other accident has been observed. Bismuth may be found in the urine, blood, feces and saliva, but in no case has the kidney been damaged.

Other bismuth salts have been used, among them bismuth subnitrate, oxid, carbonate, sulphid, phosphate, salicylate, citrate, and quinin bismuth. Of these, only sodium and potassium tartrobismuthate, the hydroxid and quinin bismuth of quinin iodid are now used.

N. V. Greco and H. A. Muschietti, after using different compounds of bismuth, conclude that they have a curative action on the lesions of syphilis but that they cannot take the place of the arsenicals and


mercurials. They believe that the new compounds may be of great help in many cases, but that we cannot give up our present methods of treatment and rely entirely on the bismuth salts.

M. Fourcade, L. Jaloustre and P. Lamy\(^5\) have used bismuth hydroxid and report that clinical lesions are rapidly cured under its action, and that the Wassermann test is modified in some cases but that in others it remains positive.

The quinin bismuth iodid was introduced by Louis Fournier. It is not painful, it rarely produces stomatitis, and its therapeutic value is at least as high as that of the other salts.

A. Pasini\(^6\) has used several different compounds in a large number of patients, and he arrives at the conclusion that they are more active than mercury but less than the arsphenamin preparations.

A. de Bella\(^7\) concludes that bismuth is an acquisition in the therapy of syphilis, but that we cannot as yet consider it the remedy of choice.

G. Define\(^8\) has treated eight patients with syphilis in different stages, one of whom had general paralysis; and in his experience bismuth has a specific action on Spirochaeta pallida. In the case of general paresis, there was no improvement.

RESULTS OBTAINED IN THE TREATMENT OF NINE CASES

Considering the favorable reports in the foregoing publications, I decided to try sodium and potassium tartrobismuthate and quinin bismuth iodid in the treatment of nine patients, three with chancre of the penis, four with secondary manifestations and two with tertiary lesions.

The tartrobismuthate proved to be so painful that we decided to stop it and instead use quinin bismuth iodid. The patient showed severe stomatitis with bleeding gums after the sixth injection of tartrobismuthate.

The iodobismuthate, then, was the only drug used. The patients did not receive mercury, neo-arsphenamin or potassium iodid. The injections were made in the gluteal region deep in the muscular tissue, with the same technic used for the insoluble salts of mercury. The injections were given every other day, beginning with 0.1 gm. and increasing to 0.2 gm. and ultimately to 0.3 gm. The patients did not complain of pain or any other disturbance, and stood the treatment

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Race</th>
<th>Sex</th>
<th>Clinical Type</th>
<th>Before Treatment</th>
<th>Number of Injections</th>
<th>Results</th>
<th>After Treatment</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18</td>
<td>M</td>
<td>F</td>
<td>Macular and leukoderma</td>
<td>++++</td>
<td>6 tartrate bismuthate, 20 iodobismuthate</td>
<td>Complete disappearance of the lesions</td>
<td>Negative</td>
<td>Stomatitis after six doses of tartrate bismuthate</td>
</tr>
<tr>
<td>2</td>
<td>33</td>
<td>M</td>
<td>M</td>
<td>Papular, pigmented, alopecia</td>
<td>++++</td>
<td>20 iodobismuthate</td>
<td>Complete disappearance of the lesions</td>
<td>Negative</td>
<td>Slight stomatitis after 16 injections</td>
</tr>
<tr>
<td>3</td>
<td>36</td>
<td>W</td>
<td>M</td>
<td>Papulopustular mucous patches</td>
<td>++++</td>
<td>+</td>
<td>Complete disappearance of the lesions</td>
<td>+++</td>
<td>Negative</td>
</tr>
<tr>
<td>4</td>
<td>19</td>
<td>M</td>
<td>M</td>
<td>Chancr</td>
<td>+</td>
<td>15 iodobismuthate</td>
<td>Chancr healed after 8 doses</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>5</td>
<td>29</td>
<td>N</td>
<td>F</td>
<td>Papular, areiform, mucous patches</td>
<td>++++</td>
<td>16 iodobismuthate</td>
<td>Mucous patches healed after 10 doses</td>
<td>+++</td>
<td>Patient stopped treatment after 2 injections; returned with a relapse</td>
</tr>
<tr>
<td>6</td>
<td>36</td>
<td>W</td>
<td>F</td>
<td>Nonoleated gummae, base of the sternum</td>
<td>+++</td>
<td>19 iodobismuthate</td>
<td>Complete reabsorption of the tumor</td>
<td>Negative</td>
<td>Spirochetes absent from chancr after 2 injections</td>
</tr>
<tr>
<td>7</td>
<td>53</td>
<td>W</td>
<td>M</td>
<td>Chancr</td>
<td>+</td>
<td>24 iodobismuthate</td>
<td>Chancr healed after 9 doses</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>8</td>
<td>36</td>
<td>N</td>
<td>M</td>
<td>Chancr</td>
<td>+</td>
<td>12 iodobismuthate</td>
<td>Chancr healed after 10 doses</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>9</td>
<td>31</td>
<td>W</td>
<td>F</td>
<td>Tertiary tuberculides, arms, hands and feet</td>
<td>++++</td>
<td>18 iodobismuthate</td>
<td>Lesions cleared after 8 doses</td>
<td>Negative</td>
<td></td>
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</table>
well. Urinalysis revealed no abnormality during the treatment. There was no stomatitis except in the patient who received the injections of tartrobismuthate. A course of twelve injections was followed by a Wassermann test and a rest of ten days, when a second course was given followed by a second Wassermann test. The patients received from twelve to thirty injections.

The cases of primary syphilis showed a complete absence of spirochetes from the chancre after the second injection, and in all three cases the chancre was healed after the eighth to twelfth injection. No secondary symptoms developed, and the Wassermann test became negative and remained so.

Patients with secondary syphilis—macular, papular, papulocursted and circinate with mucous patches, alopecia and headaches—responded promptly to this treatment, the lesions in the mucous membranes healing in a few days and the cutaneous lesions also clearing up rapidly. The headache and general disturbance also disappeared after a few injections.

Concerning tertiary syphilis: In one patient, a gumma of the sternum suffered a complete reabsorption and left no trace after the first twelve injections. In another case, tuberocircinate lesions cleared up quickly, leaving slight scarring and pigmentation.

Seven of the nine patients have had a negative Wassermann reaction. Two cases have remained positive—one, a case of severe papulocursted secondary lesions, and one a case of circinate lesions in a colored woman, the latter being weakly positive. These two patients have received only one course of treatment.

CONCLUSIONS

1. The bismuth salts have marked antisyphilitic properties.

2. Quinin bismuth iodid seems to be the compound of choice. I have not observed a single accident with its use in over 180 injections. Sodium and potassium tartrobismuthate is painful, and stomatitis is likely to occur with its use.

3. Spirochetes disappear from the chancre and mucous patches after the second or third injection of quinin bismuth iodid.

4. The primary lesion and all the secondary manifestations heal in a short time, and the general disturbance and headache also disappear after the fourth or sixth injection.

5. Tertiary lesions respond more slowly, but they finally disappear entirely.

6. The effect on the Wassermann test is marked. It became negative in seven of nine cases.
7. Bismuth, in the light of my experience, is entitled to a prominent place among antisyphilitic remedies. Further experiments will show its real value as compared with the arsenicals and mercurials. Time alone will demonstrate whether bismuth will take the place of the other antisyphilitics or be used in combination with them. It will also show whether the effects are permanent.

Prado 98.
THE HYDROGEN-ION CONCENTRATION OF THE SURFACE OF THE HEALTHY INTACT SKIN*

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Ionization in solution or electrolytic dissociation is a conception of the late nineteenth century that promises results of increasing importance, not only in the fields of pure physics and chemistry but also in industry and biology as well. Since Arrhenius first presented his electrolytic dissociation theory, there has developed about the concept "acidity" a new nomenclature, with new and interesting procedures for the determination of degrees of acidity.

Since this paper concerns itself with the application of these new procedures and names, new at least to the special field of dermatology, it seems necessary to explain the several principles underlying the observations hereinafter recorded.

Many solvents, especially water, effect, on solution of many substances (the solutes), a splitting of these substances into electrically charged units called ions. Thus, hydrogen chlorid [HCl] in dilute solution is H⁺ — Cl⁻; for, when hydrogen chlorid dissociates, the hydrogen gives up a negative charge (electron) to the chlorin and the hydrogen becomes positively charged as against the chlorin. Though elements are regarded as being made up of groups of unit charges called electrons arranged about a neutralizing charge of positive electricity, hydrogen, on ionization, is believed to be distinctive in that it is made up of a single positive charge alone. As all acids have this characteristic feature of positive hydrogen ion, so all bases have the presence of negative hydroxyl ions [OH⁻].

The effective portion of a substance (acid or alkali) in solution is that portion which is dissociated. The ratio of the mass dissociated to the total mass present is called the dissociation constant for the particular solvent used.¹ This constant, therefore, is a measure of the strength of acid or base. Strong acids and bases give high concentrations of dissociated units; weak acids and bases give little concentration of dissociated units.

Water itself, the common solvent, dissociates into H⁺ and OH⁻ the ions characteristic of acids on the one hand and bases on the other. The dissociation products, however, are exceedingly slight as compared

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¹ We will throughout this discussion consider water as the solvent.
to the total amount of undissociated water present. But, in pure water, for every hydroxyl ion [OH⁻] present there should be a neutralizing hydrogen ion [H⁺]. Consequently, under all circumstances, be the solute acid or base and, if the latter, no matter how concentrated the hydroxyl ion [OH⁻] present there must exist hydrogen ions [H⁺] in equilibrium with the hydroxyl ions [OH⁻] of the dissociated water [HOH]. With hydrogen ions thus present in alkaline solutions, we may express alkalinity in terms of hydrogen-ion concentration. A scale may be built for acidity-alkalinity measures expressed in units of hydrogen-ion concentration. Exactly this has been done.

In the development of this scale of measures, Sørensen introduced the symbol \( p_H \) as representing the logarithmic reciprocal of the hydrogen-ion concentration (log \( \frac{1}{[H^+]_0} \)), a form of expression convenient for use in work with the potentiometer (gas-chain method of hydrogen-ion determination). After this procedure, \( p_H \) is expressed as simple numerical units to the second decimal place; to wit: 1.23, 4.78, 5.50, etc.

A hydrogen-ion concentration of \( p_H 1 \) is equivalent in terms of hydrochloric acid to a solution of one-tenth normal hydrochloric acid; a \( p_H \) of 2 to a one-hundredth normal hydrochloric acid; a \( p_H \) 3 to a one-thousandth normal hydrochloric acid. Evidently, the greater the numerical value expressive of the \( p_H \), the less the acidity; the greater the approach to the alkaline side. The \( p_H \) of perfectly pure water is 7; and a \( p_H \) of 7 is looked on as neutrality. Therefore, in terms of the acid-base relationship, a \( p_H \) of less than 7 is acid; of greater than 7 alkaline.

In the study of the hydrogen-ion concentration of certain solutions, a very interesting phenomenon was observed. As one changed the \( p_H \) of a solution by the successive addition of a constant quantity of acid or alkali, it was found that at certain \( p_H \)'s the solution showed a tendency to resist further changes in hydrogen-ion concentration. That is, for a further addition of a unit quantity of acid or alkali, very little change in \( p_H \) was observed. This property of solutions to resist change in its \( p_H \) within certain ranges of its titration curve is referred to now as the buffer action. The level in the titration curve where this buffer action manifests itself depends on many variables; the composition of the mixture titrated and the nature of the acid or alkali with which the titrations are made. Buffer action has become a subject of much interest in biochemistry and physiology. The buffer

3. The expression "titration curve" is applied to the resulting graph after plotting the added acid or alkali as abscissas and the corresponding \( p_H \)'s as ordinates.
action of the blood salts has become intimately related to the subject of acidosis and to the clinical conditions involving the problems of acidosis and alkalosis.

Proteins, like many complex organic compounds, contain both acid and base radicals. These substances are called amphoteric electrolytes (electrolytes with acid and base groups). The dissociation curve for such a substance may be resolved into two curves, one for the substance acting as a base and the other for it as an acid. The point of intersection of these two curves is at a pH representing a dissociation of least concentration (maximum undissociated residue). These points for amphoteric electrolytes are called iso-electric points and for amphoteric proteins have been correlated with points of minimum viscosity, minimum solubility, minimum swelling, optimum agglutination and optimum precipitation. We can at once see from this last statement the direct bearing of hydrogen-ion concentration on the physical properties of proteins.

The concentration of hydrogen ions in a solution are estimated electrometrically. A hydrogen electrode and a solution containing hydrogen ions supply the conditions under which estimations may be arrived at. Under these circumstances, the difference in potential between the ions of electrode and solution furnish the electro-motive force [E. M. F.] in terms of whose measure the hydrogen-ion concentration is calculated. It is not our purpose to discuss this method of hydrogen-ion determination, but simply to call attention to its existence and to point out that it is the most accurate method available and is the method used to check up work done by the colorimetric method.

Without going into the theory of indicators, we will simply outline their use in hydrogen-ion determination. Many chromogenic compounds (vegetable, animal and synthetic origin) pass through a range of colors when applied to solutions of proper hydrogen-ion concentrations. For each of these substances, there may be ascertained the range of hydrogen-ion concentrations within which the complete sequence of color changes occur. This known, the substance may serve as an "indicator" for that particular span of hydrogen-ion concentration, and so for colorimetric estimations of pH. In the colorimetric method for pH determination, it is the technic to take standard pH solutions of about the range of the unknown solution to be tested, and to given quantities of each of these and the unknown add a given number of drops of the indicator. The pH of the standard solution whose color most closely matches that of the unknown represents the pH of the unknown solution.

In determining the $p_H$ of the skin surface, the electrometric (gas-chain) method cannot be used; for substances in a solid state do not lend themselves to such manipulation. The colorimetric method alone is available and even this must be modified to the extent of rendering the estimations merely approximate. It is quite impossible to equalize the concentration of indicator in standard solutions and unknown, when the unknown substance is a solid surface. However, if the proper indicators are used, such that each tint in their color sequence is readily discernible, and if two indicators are employed, each as a check on the other, determinations are obtainable that are sufficiently accurate to be serviceable. Clark 4 has attempted to put "on the flat" the color ranges of eight indicators in the form of a color chart. This chart is admirably adapted for our particular problem. The indicator (especially methyl red) applied to the skin can be fairly well matched on the color chart. The skin offers a virtually white back-ground to the superimposed color, a condition essential for color reading. Of necessity, similar estimations on the skin of negroes are not readily obtainable.

In the determination of the $p_H$ of the skin surface, three indicators were used:

1. Bromophenol blue (tetrabromophenolsulphonephthalein) 0.04 per cent. strength in alcohol. This has a $p_H$ range from 3 to 4.6, passing from yellow on the acid side to blue on the alkaline side of its range.

2. Methyl red (orthocarboxybenzene-azodimethyl anilin) 0.02 per cent. strength in alcohol, having a $p_H$ range from 4.4 to 6, with a color change from red to yellow in passage from its acid to its alkaline limits.

3. Bromocresol purple (dibromo-orthocresolsulphonephthalein) 0.04 per cent. strength in alcohol having a $p_H$ range from 5.2 to 6.8, changing from yellow to purple in passage from its acid to its alkaline limits.

The skin of the cubital fossa was chosen as the area to be tested. This skin surface was cleansed with alcohol; with forearm extended and arm raised to about shoulder level, a drop of each of these indicators was applied to the skin. The indicator was applied from a pipet held perpendicular to the skin surface, and care was taken that the surfaces covered by each of the several drops were mutually exclusive. When the alcohol evaporated (in from twenty to thirty seconds) the indicator color was strongest and the readings were taken. Observations were made on eighty-five persons manifesting no skin eruption of any kind.

In all eighty-five persons, the bromophenol blue indicator turned strongly blue on application to the skin, indicating that the $p_H$ of skin was at least as great as 4.6, the upper range limit of that indicator. In all but one of these persons, the color reaction of brown cresol
purple was yellow with a definite tinge of green representing a $p_H$ of between 5.4 and 5.6. The color reaction of methyl red is difficult to indicate by words; but it displayed a mixture of red and yellow that, on comparison with standard colors, indicated a $p_H$ definitely greater than 5 and less than 5.6. An organization of these results strongly points to the $p_H$ of the skin surface being about 5.5. The one person who gave a different finding was tested on three different occasions; twice, he gave a $p_H$ reaction of 6.2 and once of 5.5. The reason for this increased alkalinity on two observations we cannot as yet explain.

We are immediately struck with the question: What is giving the reaction? The skin surface represents a heterogenous mixture of inorganic, organic and protein materials. The first two classes of substances represent the secretory and excretory products of sebaceous and sudoriferous glands and the protein element represents primarily keratin of the horny layer of the skin. That the reaction is not due to the invisible perspiration and sebaceous matter on the skin appears reasonably certain from the following observations: 1. Before testing, the skin was washed with alcohol to remove such materials. 2. Many tests were made without previous cleansing of skin with no resulting difference in color reaction. 3. Talbert\textsuperscript{5} collected sweat and determined its $p_H$. His findings, in the light of our own, show that sweat is distinctly more alkaline than the skin surface. The accompanying table summarizes his findings.

It seems reasonable to assume that what is being determined is the $p_H$ of the keratin of the horny layer of the skin. Unfortunately, we could nowhere find a report of a study on hydrogen-ion concentration and the protein keratin. In greatest probability, the $p_H$ as recorded in this study approximates the iso-electric point of this skin surface protein. As pointed out in the foregoing, it is at its iso-electric point that a protein is most inert—optimum precipitation, minimum solubility, minimum swelling, etc. Thomas and Kelly\textsuperscript{6} determined the

<table>
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<tr>
<th>Number of Observations</th>
<th>Subject</th>
<th>$p_H$</th>
<th>Number of Observations</th>
<th>Subject</th>
<th>$p_H$</th>
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<tr>
<td>20</td>
<td>G</td>
<td>5.73</td>
<td>15</td>
<td>G</td>
<td>5.42</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>5.84</td>
<td>7</td>
<td>M</td>
<td>5.54</td>
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<tr>
<td>9</td>
<td>E</td>
<td>7.15</td>
<td>11</td>
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<tr>
<td>4</td>
<td>J</td>
<td>6.18</td>
<td>6</td>
<td>J</td>
<td>5.83</td>
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<tr>
<td>13</td>
<td>X</td>
<td>6.19</td>
<td>14</td>
<td>X</td>
<td>5.61</td>
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iso-electric point for collagen, a mixture of proteins of the corium, and found it to be at \( p_H 5 \). That the protein of the skin surface should be at its iso-electric point is what is most reasonable to expect, at least from a teleologic standpoint. The outermost protecting coat of the body of an organism would best serve its function when chemically most inert. Assuming the keratin of the surface horny layer to be at its iso-electric point and in view of the fact that the proteins of the corium, by more delicate methods, show an iso-electric point at \( p_H 5 \) closely approaching which we might expect to find that of keratin, we are inclined to believe the \( p_H \) of the surface of the skin to be closer to 5 than we estimated it.

We made a few simple experiments directed along the line of study of the buffer action of the skin surface. The skin surface, it appears, is somewhat more strongly buffered against acid than against alkali. This is in harmony with the fact that keratin is soluble in alkali and insoluble in acid. If one washes the hands with soap, though the soap be thoroughly washed off and the hands thoroughly dried, the skin surface thus treated gives a distinctly higher \( p_H \); that is, it shows a more alkaline reaction. Similar manipulation with very dilute acetic acid does not make the \( p_H \) of the skin surface more acid. A definite increase in acidity of the skin was procured only by thoroughly rubbing over the skin a towel dipped in one-hundredth normal hydrochloric acid. When skin so treated, to increase or decrease its \( p_H \), is left untouched for several hours, the indicator takes on the color of the normal \( p_H \). The mechanism apparently exists, therefore, in healthy skin for maintaining a constant \( p_H \) of its surface. It is of interest in this connection that in the tanning trade reference is made to "old" and "young" keratin, the latter term referring to the basal layers of the epidermis. Seymour-Jones \(^7\) points out that "young" keratin differs from "old" in being more sensitive to proteolytic enzymes and more readily hydrolyzed by dilute alkali, both of which tendencies point to a more active chemical state of the keratin in the deeper layers. In the language of hydrogen-ion concentration, the basal layer keratin is probably not at its iso-electric point but assumes that state as it approaches the skin surface.

**SUMMARY**

A colorimetric estimation of the \( p_H \) of the skin surface gives a value of about 5.5. The reaction of the skin surface, therefore, is on the acid side of neutral and represents, in terms of hydrochloric acid, the acidity of a solution of about one hundred thousandth normal

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hydrochloric acid. There are reasons for believing that what is giving the reaction is the keratin of the horny layer. The keratin of the horny layer is probably near its iso-electric point; and this state of ionization of a surface protein and its ability to maintain that state are conditions ideally suited to the protective function of the skin.
ASPERGILLUS IN SCALP LESIONS FOLLOWING RED-BUG (LEPTUS) BITES

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One of the most common insect nuisances in certain sections of this country, particularly throughout the South and Southwest, is Leptus. This insect is a minute red bug, visible to the naked eye only by close observation, and is especially abundant in rank grass and other vegetation in the early summer. It is popularly known in Texas and in some other sections of the country by the names “red-bug” and “chigger,” the latter name being likely to confuse it with the “jigger” or chigoe, a sand flea (Dermatophilus penetrans) of South America and certain sections of Africa. Leptus is an active insect and from contact with grass and weeds during the season of prevalence one may become covered with these bugs. On close inspection, they may be seen running about on any part of the body, but particularly where clothing obstructs progress. They commonly collect below the garters or the belt. Children playing in the grass are attacked by numbers of these insects scattered over the body.

The bite of the insect causes a rounded urticularial wheal which increases in size and produces exquisite itching on scratching. Leptus does not actually burrow in the skin, but often becomes embedded at the root of a hair or within the swelling which occurs around it. It may be difficult to remove, and sometimes it is necessary to use a fine pointed instrument to dislodge it. Ordinarily, if the bite is not scratched, the lesion causes no trouble and disappears in two or three days. From scratching, however, and especially when the bug remains embedded, a considerable sore may result, probably from secondary infection. This occurs particularly on moist parts of the body, as in the axilla.

Of the more serious lesions resulting from these bites, a not uncommon one occurs in the scalp. The insect does not commonly reach the scalp in adults, but it does in small children; it is less likely to be observed there and to be properly dislodged. The primary lesion in the scalp is not different from that on other parts of the body, but not infrequently it has superimposed a condition which has been confusing and is sometimes most disagreeable to the child and its parents. This lesion consists of a conical or columnar accumulation of hard lumpy yellowish-brown crusts, through which the hairs run and become embedded, piled on a low elevation of the skin with more or less surface abrasion. The hair does not appear to be involved and does
not fall, but it is a handicap in caring for the sore, and it is consequently often clipped or shaved. Removal of the accumulation of exudate reveals the skin lesion on which the lump of yellowish-brown crusts again forms, piling up until elevations a quarter of an inch (0.63 cm.) high may occur. Usually the condition when first noticed consists of a single sore, but this is commonly followed by others. Not infrequently they may grow to considerable size, and some may extend beyond the margins of the hair, especially around the ears. While they tend to disappear spontaneously, they usually last well into or through the hot season.

Although this condition is in no sense grave in so far as the outcome is concerned, and while the affected person is not ill, it often proves a source of much annoyance and worry and is even subject to confusion with other diseases of the scalp, such as favus and ringworm. From these it is to be differentiated by being superimposed on "red-bug" bites, accompanied probably by these bites on other parts of the body, the lack of actual involvement of the hair, and the piling up of the lumpy crusts. Microscopically, the causative factors in ringworm and favus may usually be easily obtained directly from the respective lesions or in culture.

**ASPERGILLUS IN THE LESION**

On account of the fact that the condition appeared to be a secondary infection grafted on the "reb-bug" bite by scratching, fostered by the favorable location in the scalp; and also on account of the suggestive character of the lesion with its piling up of yellowish-brown crusts, which would reform when removed, the hairs and the crusts from the sores were examined for fungi. Fresh preparations, made in 10 per cent. sodium hydrate and allowed to stand for a sufficient length of time to clear the material, revealed no infection of the hairs, but from the scabs appeared numbers of peculiar mycellia-like and sporelike bodies, as represented in a in the illustration. The majority of these were refractive ring bodies about 2 or 3 microns in diameter, lying singly, in groups or in short chains. In addition, there were larger ovoid bodies of similar appearance; some branched, some clubbed, some jointed and branched, and some long, not jointed and not branched; all with thick refractive walls and clear interior. Cultures on Saboraud's sugar agar at about 35 C. gave, in twenty-four hours, a growth composed of a tough white flat membrane, made up of masses of interlacing mycellia, as represented in figure b. These were jointed and branched, the elements varying in length, about 3 microns in diameter, with usually one branch to a segment. At the end of about twenty-four hours the surface of the growth had become downy and exhibited the development of large terminal elements, about 5 or 6 microns in diameter, with expanded extremities. These proved to be conidiophore hyphae,
forming prolifically in the next twenty-four hours and giving the surface growth a dark greenish brown, finely feathered appearance. The sterigmas developing on this fruit body, as illustrated in figure c, became about 6 microns long, and each produced a chain of highly refractive doubly contoured rounded or ovoid spores about 2 or 3 microns in diameter. These characteristics identify the fungus as *Aspergillus fumigatus*, which is a common saprophyte and has been found parasitic in the lungs, ears and other parts of the human body and in wounds.

*Aspergillus fumigatus* from scalp lesions following *Leptus* bites.
Growth of the fungus on ordinary nutrient agar is not so profuse as on the sugar agar; the surface is not so feathery; the color is yellowish rather than greenish, and the fruit body does not mature well, giving frequent terminal clubbing, budding, and bifurcation, as seen in figure d. Hanging drops made from the culture and sealed lead to arrest of development and failure to mature the fruit body, as represented in figure e. These blighted conidiophore hyphae become septate, vacuolated, branched, granular and clubbed, and seem to represent some of the peculiar elements seen in the fresh preparation from the sores. Old cultures on Saboraud's medium showed degenerated mycelia and large numbers of spores in masses and in long branching chains, as in figure f.

These findings appear to have justified the suspicion that a fungus is responsible for the continuation of the sore at the "red-bug" bite and for the change in the character of the lesion, as well as for its spreading.

TREATMENT

A sulphur ointment was used in the treatment of some of these sores. The hair was not disturbed, the masses of exudate were removed and the ointment applied twice daily on the elevated and eroded area. A few small yellowish masses reformed but were easily removed, and in a few days no further formation occurred. The skin lesion gradually disappeared in the course of ten days or two weeks.
AN UNUSUAL CASE OF DERMATITIS VENENATA CAUSED BY COLORED PAPER

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A child, about 10 years of age, was referred to me by the principal of a school with the tentative diagnosis of infection of the face. At first appearance this seemed a possibility, the right cheek of the child, from the corner of the mouth to the sulcus in front of the ear and from the ramus of the lower jaw to the zygoma presenting a uniformly bright red appearance, with a definitely defined border. It was distinctly an inflammation of some kind, the child's face resembling the wind-beaten face of a person who rarely indulges in outdoor sport, after long exercise in a strong gale.

Careful examination of the throat and teeth revealed no possible cause. I thought an ulcerated tooth might be the etiology, for the cheek was generally tender and slightly swollen. However, the edema was uniform. There was no particular tenderness over the antrum, and the eyes appeared normal. This seemed to rule out a local infection with a secondary inflammation of the cheek.

Considering the possibility of erysipelas, we took her temperature and found it normal; the pulse rate was 104. On palpation, the cheek was definitely hot and moderately indurated, giving a slightly porky feeling. The fact that the lesion was unilateral suggested a streptococcus infection. When the cheek was touched, the child winced and complained of considerable pain; in fact, the erythematous area gave a burning pain even when nothing touched it. Although the child denied local application of ointment, the stickiness of the inflamed area suggested that the family had given her some form of home treatment, probably with one of the common household remedies.

On questioning, the pupil told me that at about half past nine the previous evening she and another girl of her own age had been playing "grown up" and adorning themselves as for an important social event. Highly colored cheeks were considered essential for the success of this purpose, and, no rouge being available, some red pieces of paper were moistened, the color being thus transferred to the cheeks. The other girl's cheeks were not so adorned.

At bedtime, the child attempted to wash off the color with soap and water; she was successful with the left cheek. Although she made considerable effort, the color on the right cheek could not be removed. The next morning, a similar but equally unsuccessful effort
was made, and she then went to school. During the morning the cheek became increasingly painful, and the case was referred to me, about twelve hours after the color was applied.

Two days later, the cheek showed much less redness and induration, the mother having applied one of the familiar burn ointments locally. The color persisted for another three days, but to a much less degree; and the pain, inflammation and porky feeling had disappeared entirely. After six days more, the color had entirely disappeared from the cheek, but the skin was peeling; otherwise normal conditions had been restored. The family were now using ordinary petrolatum on the skin. Five days later there was complete recovery, except for a few spots of scaling epithelium here and there. Apparently, no permanent damage had been done.

Regarding treatment, I felt that the family had probably applied numerous home remedies and that there was more danger of harm from further applications than from leaving the skin alone temporarily. I advised the child to apply no more soap and water to the cheek until it was less tender. A school physician is not expected to treat cases except in emergency, and then not for an extended period, this work being cared for by private physicians and clinics; for this reason I advised the child to leave the cheek alone but to go to some physician if she felt worse or if the cheek gave her more trouble. At this time she had no general symptoms, nor did any appear at any time.

Fortunately, I was able to secure a piece of the paper, which had been obtained from a mill in a neighboring city, and which seemed to be part of some sort of a label. It was bright red, with a shading toward orange, but not quite as dark as scarlet red. On testing the paper, I found that the dye easily came off in bright red solution in the presence of a drop of water. The simplicity of the transfer of color from paper to cheek was easily demonstrable.
ULCUS EPIDEMICUM*

A PRELIMINARY REPORT

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Stelwagon, in his monumental work, writes under the heading of "Tropical Ulcers" that the term seems to be both a comprehensive and uncertain one in the Tropics, employed to designate ulcers that terminate several diseases, such as tuberculosis cutis, syphilis, or the oriental button, which is also often termed "endemic ulcer," or frambesia, also called "endemic ulcer." He quotes Manson, Crocker and others, who think there is a suggestive resemblance in tropical sloughing to hospital gangrene, except that the tropical ulcer has a more marked tendency to self-limitation. Cabois is convinced that there is a destructive ulcer phagedenicum due to Bacillus phagedenicus. But Stelwagon thinks the bacillus is probably only one of many factors, the one that may give rise to the more virulent cases. He says, further, that the prevailing view is that there is no distinctive idiopathic tropical ulcer other than that explainable on the basis already suggested. Stitt, writing of tropical ulcers in the Philippines, describes two types which appear to be distinct tropical ulcers. The second type resembles, in several points, the ulcer about to be described. Bulkley, however, in his extensive observations on skin diseases in the Far East, doubted their existence as a specific entity. "Nowhere," he writes, "did I find ulcerative lesion which could not be more accurately defined and classified." Shattuck found that about 94 per cent. of so-called "tropical ulcers" in the Philippines could be classed as syphilitic, although a few were thought to be due to a special infection.

*Read before the University Pathology Society, Dec. 11, 1922.
2. Stelwagon: Diseases of the Skin, p. 734.
THE ULCEa WAR LEGACY

With this hazy and mostly negative evidence from keen observers, I feel it is a duty to record an epidemic of ulcers, called "tropical ulcers" by many, which invaded Syria, a subtropical land, during the Great War. And I believe that the ulcer deserves a description and a name. I would suggest that it be called epidemic ulcer and that the term "tropical ulcer" be applied to some other lesion. This paper is a preliminary study, to which I expect to add more information in the near future; and I hope to stimulate further research on ulcers in tropical lands and to clarify our ideas on the subject.

The habitat of the epidemic ulcer that I have studied is Syria and Palestine, which "Home for the Jews" is only politically separated from Syria. Cases of similar ulcers have been reported from North Africa by French army surgeons.

The ulcers first came to my attention in 1916—in a few cases—but these were among the worst ulcers that I have seen, for most of them were on the legs of men suffering from starvation edema which caused their legs to resemble those of elephants. My colleague, Dr. Ward, professor of surgery in the American University of Beirut, and I at first regarded them as a form of hospital gangrene—it was the best name we could give them at that time. They resembled it in several points—the rapid, shallow, phagedenic growth, the foul odor of the pus and the difficulty in inducing healing. But that was not surprising, considering the starvation and edema, and the low physical condition of the poor wretches.

In 1917, there were more cases, but fewer of this phagedenic type—more of the type I shall describe presently. In 1918, cases were abundant and widespread along the coast "from Dan to Beersheba," or more accurately from Gaza to Alexandretta. I gathered data from my former students, surgeons in the Turkish army, and after Allenby's victory, from surgeons in the British army. In 1919, the ulcer was a veritable scourge among the poor. Many cases were reported to me by physicians from inland cities, such as Jerusalem, Nazareth, Damascus, Homs, Hamath and Aleppo. In 1920, there was a marked lessening of the number of cases; in 1921, they became relatively few, and in 1922, they were seen only occasionally. The disease seems to be disappearing. An epidemic so distinctive and so sharply marked appears to be worthy of record.

SEASONAL INCIDENCE

The ulcers usually appear in the late spring, after the rains cease, rarely before May; if they are seen before that time, they are unhealed ulcers which have remained since the previous summer. New cases have not been noted to begin after the autumnal rains set in.
DESCRIPTION OF THE ULCERS

The ulcers are almost invariably found on exposed parts of the body; they occur most commonly on the legs, then on the ankles, then on the feet; frequently they are seen on the hands and forearms; rarely above the knees or elbows. I have no record of a case on the trunk or the face. The ulcers usually, although not invariably, occur singly; four, five, six or even more have been noted. Occasionally they are grouped; in some patients, they are present on both legs, or on the legs and arms. Often two or three cases are observed in one family; but they rarely begin simultaneously. The first member is accused of "giving" the ulcer to the others.

The lesion begins as a small, itchy, painful papule, about the size of a mosquito bite. Some patients, however, attribute it not to a mosquito bite, but to a traumatism—often a slight one. This papule, situated just below the skin, rapidly increases in size in twenty-four

Fig. 1.—Ulcus epidemicum lesion above ankle.

hours. The primary itching and discomfort give place to pain which steadily and greatly increases out of all proportion to the size of the lesion. Indeed, the pain becomes so severe that the patient cannot sleep at night; and if the ulcer is near the ankle he finds walking difficult and painful; if it is on the hands or forearm, the member is practically incapacitated. The color changes rapidly from dusky red to almost black, as the ulcer begins to grow. If it is cut open at this black, soft, painful, papular stage, one finds a small, necrotic mass which has not yet burst through the skin. There are a few droplets of pus. In fact, it resembles a small, angry furuncle, except for the dark color.

In a few days, sometimes in one or two, the papule rapidly breaks down and becomes a raw, angry ulcer, with a sloughing surface, the edges beginning to be elevated above the surrounding skin and undermined by pus. The sloughing subcutaneous tissue and true skin separate—this is the most painful time—and for two or three days there is a discharge of a thick, brownish, bloody, tenacious, foul-smelling
pus. This is followed by a thinner and more abundant discharge. At times it flows freely. It is usually sanguineous, and not ordinary, yellow, “laudable pus”! The pain diminishes when this free flow of pus begins. The sloughing spreads rapidly. In a week or less, the ulcer may reach a diameter of 3, 4, 5, or even 10 cm.

The odor is offensive; and the lesion is exquisitely sensitive to pressure, dressings or the lightest touch, and gives constant pain—worse at night is the almost universal testimony.

The shape is usually round; many ulcers are almost exactly circular; but some are oval. Occasionally two or more may coalesce and then the outline is serpiginous and irregular. The edges are undermined by the spreading. They are elevated and soon harden, forming a cord-like edge which thickens and becomes tough and sclerotic. In some severe, fulminating types, accompanied by starvation edema of the legs, this elevated and hard edge was not noticeable, and the progress of the ulcers seemed to have no self-limitation, but they became phagedenic. I have seen them with a diameter of 10 by 15 cm. on the legs, and one which encircled the member.

The depth of the ulcer is not great. It seems greater than it is on account of the elevated edges. In fact, one might say that the depth is in inverse proportion to its extent. The huge, fulminating ulcers are more superficial. The smaller ones are deeper, although only occasionally do they penetrate deeply. I have noted one huge ulcer on the calf, 10 by 10 cm., that rapidly penetrated through the gastrocnemius into the soleus. But that was unusual. Generally the ulcers are superficial; they rarely penetrate to the bone.

If untreated, the lesion becomes a chronic ulcer lasting several years, deeper than at first, with increasingly hard, sclerotic edges; in some cases, the ulcers may become phagedenic.

**BACTERIOLOGY OF THE ULCER**

The bacteriology in the early part of the epidemic was obscure. A smear from the floor of the ulcer revealed enormous quantities and a great variety of bacteria. A culture of the liquid pus nearly always showed streptococi—at times in nearly pure culture—and, not being trained bacteriologists, and our professor of bacteriology being drafted into the Turkish army, we concluded that the etiologic factor must be a special strain of streptococi. However, in 1919, Miss Eugenia Valentine of the New York Board of Health, at that time in the service of the American Red Cross in Syria and lent to the American University of Beirut, examined smears, and found the same wealth of cocci; she found nothing characteristic. I next determined to scrape from the edges, and in every case but two—and they were old chronic cases—Miss Valentine found a fusiform bacillus that resembled the diphtheria bacillus in shape, but which stained quite differently; with it
there was always a symbiotic spirillum. My students call it "the Valentine bacillus." There is a resemblance to the bacillus and commensal spirillum of Vincent's angina. Are they identical?

French physicians in North Africa, I was told, supposed that it was the diphtheria bacillus and even injected patients with diphtheria antitoxic serum "with varying results, some curative, some useless."

THE CARRIER IS UNKNOWN

If there be a host other than man, it is unknown. The carrier, also, has not been traced. The fact that the disease occurs only in the dry season would point against the mosquito and suggest the sand-fly, horse-fly, or some other summer insect as the carrier. The cases occur almost invariably among the poor people who do not, and cannot afford to, sleep under netting protection. This seems to be a broad hint to the zoologists.

Fig. 2.—Ulcus epidemicum on both feet.

TREATMENT

The treatment is varied. The object, naturally, is to destroy the germs without too great irritation of the already inflamed and abused part; to break down the cordlike ring of sclerotic tissue surrounding the ulcer; to stimulate the tissue to a healthy reaction and granulation; to protect it from further invasion of cocci, flies and dirt; and to stimulate epithelial growth and healing. Even with the best of care, considerable time is required to heal the ulcers; and they leave a scar more or less pigmented as a reminder of the suffering.

SUMMARY

Tropical endemic and epidemic ulcers are terms loosely and vaguely used.

An epidemic of ulcers, frequently called "tropical," began in Syria in 1916, swept through the land, reached its height in 1919, and now seems to be gradually disappearing.
It is a dry weather disease, flourishing during the summer drought and never beginning in the rainy season.

The painful, obstinate ulcers invariably occur on the exposed parts of the poorer people of the community.

The etiology seems to be a fusiform bacillus and a commensal spirillum found in the edges; but a rich flora flourishes on the floor of the ulcers.

The host, if there be one other than man, is unknown, as is the carrier.

The treatment calls for prompt and energetic measures; but at best, the healing is slow.

The painful ulcers incapacitate patients for work for a long time, thus causing a serious loss to the community.

The term epidemic ulcer is suggested as appropriate for the lesion.

Is the ulcus epidemicum, as described in the foregoing, found in other countries?
CLINICAL NOTE ON LEUKODERMA ACQUISITUM CENTRIFUGUM (SUTTON) *

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In November, 1916, Sutton ¹ reported two cases of a peculiar form of depigmentation to which he gave the name leukoderma acquisitum centrifugum. This modification of vitiligo consisted in an oval or circular depigmented lesion, having at its center "a minute rounded, slightly elevated brownish maculopapule which resembled a small pigmentary nevus, which the patient said had been present only since the onset of the attack. The hyperpigmented areola commonly found in vitiligo was absent. The lesion had developed slowly and has never given rise to subjective symptoms of any kind." On histologic examination, Sutton believed that he recognized a collection of endothelial cells in the derma, which he interpreted as an infiltration. Treatment for one year was without effect.

Sutton's report aroused my interest, and during the last six years I have been on the lookout for similar cases with a view to defining more sharply the histologic and pathologic background of the condition. Sutton, in his discussion of the literature on vitiligo, remarked on Hebra's observation that a vitiliginous depigmentation may begin near a pigmented nevus. Shepard saw it begin following collar-button pressure and likewise noted a case in which depigmentation appeared around the site of a cauterized "wart." Circular or oval patches of pigmentation as a residue of syphilitic papular infiltrations and following the involution of psoriatic lesions are of course familiar.

Sutton apparently did not interpret the pigmentary changes he observed as being particularly associated with nevi. In the series of cases which I have seen, ten or twelve, the appearance of the depigmentation around a pigmented nevus has been such a constant feature of the picture that I believe it entitles leukoderma acquisitum centrifugum to be regarded as a definite clinical entity, which, although of little significance to the patient, does nevertheless occasionally raise a diagnostic question which entitles the picture to textbook description.

In the lesions which I have observed, the nevus character of the central dark macule or papule has been practically indisputable, both clinically and pathologically, and much more conspicuous and easily interpreted than in Sutton's case. The atypical character of the

* From the Section on Dermatology and Syphilology, Mayo Clinic.
cellular collection in Sutton's patient probably explains why he did not designate the condition as one associated with pigmented nevi in line with Hebra's original observation.

SUMMARY OF CASES

Case 1.—The patient's father had only previously had many moles, but had never developed ringed lesions. The family history was otherwise negative. The description of the lesion from my notes at the time of examination was as follows:

About thirty lymphangioma-like papules, some with typical grape-cluster formation were scattered over the back and upper thorax (Fig. 1). Venules were visible on some lesions. Practically all of them were surrounded by depigmented rings, ranging from 1 to 3 cm. in diameter, and usually, but not invariably, perfect circles or ovals with sharply defined margins. In all there were approximately twenty lesions on the back and ten on the front of the trunk. On the back a tendency to an axial arrangement of the depigmented ovals in the lines of cleavage was recognized. The central papule (Fig. 2) varied from an almost imperceptible elevation to a small sessile tumor 1 cm. or more in diameter. The degree of pigmentation of the central papule was variable, and some of the darkest lesions had no rings.
On histologic examination of an excised lesion, the diagnosis of lymphangioma was abandoned in favor of nevus pigmentosus. The characteristic nevus cells with their typical cord-like and cluster distribution is apparent in the sections (Fig. 3). Practically no pigment could be recognized in the basal layer of the affected vitiliginous area, and no clue to the mechanics of the depigmentation could be found. There were no chromatophores in the cutis, and no evidences of inflammatory process or of phagocytic action responsible for the removal of the pigment. While the nevus structure of the central papule was established histologically in this case, in some of the subsequent cases the clinical diagnosis was unquestionable without the need of histologic confirmation.

Fig. 2.—Central nevus papule with depigmented ring (leukoderma acquisitum centrifugum). Adjacent is a nevus papule without depigmentation.

Fig. 3 (Case 1).—Sections of nevus papule in typical lesion.

COMMENT

The condition having been brought to my attention in such a vivid fashion, depigmentation around other types of lesions was looked for. Checks on subjective interpretation were instituted, and the following two cases managed to pass muster with several members of the staff, including the head of the photographic department, and proved to be demonstrable photographically.
Fig. 4 (Case 2).—Faint ring of depigmentation around a psoriatic papule.

Fig. 5.—Ring of depigmentation around a papular lesion of multiple benign sarcoid.
Case 2.—A young man, aged nineteen years, presented a guttate psoriasis, with small papular lesions scantily distributed over the trunk. A number of these lesions exhibited faint rings of depigmentation or pallor, and in one of the most conspicuous (Fig. 4) a 5 cm. halo was at once recognized by the photographer without previous suggestion. A number of other less conspicuous halos around other psoriatic papules were then recognized. Ice was applied

Fig. 6.—Typical leukoderma acquisitum centrifugum.

to one of the lesions, and the ring was distinctly more visible through the ice than through the air. The photographer was immediately called to see the patient under the same lighting conditions, and without having his attention directed to it, immediately noticed the difference between the ring around the lesion and the surrounding skin. With a pointer, he outlined the lesion substantially as it had been observed by my assistants and myself, and called out
attention to the fact that, on limiting the light entering the eyes by holding the hand like a telescope tube, the lesion became much more distinct, and other lesions on the flank could be easily recognized. Examination with a 2-diameter lens failed to show any difference between the texture of the skin over the larger part of the pale area and that of the surrounding region. The lesion was covered with a piece of white paper the size of the papule, and the ring was still distinctly visible. On observation by direct light from above, the crinkling of the epidermis was visible for a zone of 2 to 2.5 mm. around the entire lesion. This zone, however, did not extend as far as the zone of pallor,

Fig. 7.—Depigmented ring around a large pigmented nevus. No treatment of any kind has been employed.

especially where the latter was most pronounced. The patient made the positive statement that the lesion had not at any time undergone regression; that he had watched it constantly, and that it had increased in size steadily, thus eliminating the possibility of depigmentation following involution.

Case 3.—The second case not associated with nevi occurred in association with multiple benign sarcoids of the papular type. Rings of depigmentation around a number of lesions were noticed (Fig. 5). The diagnosis was established histologically.
COMMENT

While the depigmentation in these two cases was not as marked as was that around the nevi, they at least suggest that a nevus per se is not an essential element in the production of annular depigmentation. It seems conceivable that cellular infiltration as such, by setting up a physical or chemical disturbance of equilibrium in the affected skin, may be responsible in certain persons for destruction of pigment or for the disappearance of melanoblasts. It was not possible to carry out histologic studies to demonstrate whether or not melanoblasts were actually present in the depigmented basal layer, or to make the microchemical studies suggested by the work of Bloch on "Dopa."

Fig. 8.—Flat nevus pilosus with leukoderma acquisitum centrifugum.

Cases 4, 5, 6, 7, 8 and 9 establish beyond reasonable doubt from the clinical standpoint the usual association of this type of depigmentation with pigmented nevi. In none of these cases did the patient's ailment appear to have any bearing on the depigmentation. Figures 6, 7 and 8 illustrate satisfactorily the essential clinical features. The wide range of variation from the minute central brownish punctum to a large verrucous hairy nevus is apparent.

SUMMARY

1. Leukoderma acquisitum centrifugum (Sutton) is a special type of depigmentation of the skin, which, although of little importance from the standpoint of general health, is of sufficient clinical interest to deserve separate description.
2. This type of depigmentation is associated in a great proportion of cases with pigmented nevi, and appears as an oval or circular halo of depigmentation around the darker central punctum, papule, nodule or tumor.

3. Rings of faint depigmentation, not associated with regression or involution changes, were seen around papules in one case of psoriasis and in one of sarcoid with papular lesions.
FRAMBESIFORM SYPHILID*

WITH REPORT OF A CASE

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AND

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It is quite generally agreed that the early frambesiform syphilid is an uncommon form of secondary syphilis. Although Sauvages (1768), as quoted by Kolaczek and others, is credited with the first description of this manifestation, few cases have been reported. Practically no attention has been paid to the matter in this country, and very little abroad. It has therefore been thought that a brief review of the condition would be a fitting accompaniment of this report of a case of frambesiform syphilid.

REPORT OF A CASE 2

G. D., 36 years of age, was a sea butcher. He had never been in the tropics. Eight weeks before coming under observation he had been cut while being shaved by a barber. Later, he noticed from three to four small growths on his chin, and one similar but larger lesion below the left corner of the mouth. There were several small scratched lesions on the scalp. The lesions on the chin had increased in size since first noticed and had become slightly verrucous, with the appearance of crusted condylomas. On questioning, we learned that about five weeks prior to the appearance of the lesions on the chin, the patient had had a sore on the penis which at the time was diagnosed as herpes. It was treated with dusting powder and disappeared in about two weeks, leaving a small scar. The Wassermann reaction on admission was four plus. A biopsy was refused.

At the time of presentation before the Academy the patient had received two doses of silver arsphenamin, with local applications of boric acid ointment. Before passing from our observation, a total of eight silver arsphenamin injections were administered. No remnants of the lesion were seen after this course, but the patient has not returned for follow-up serologic or clinical examination.

LITERATURE

A review of the earlier literature on frambesiform syphilid shows a concurrence of opinion regarding its nature as being syphilis rather than frambesia. There is also a general agreement concerning its

*From the service of Dr. Williams at the New York Skin and Cancer Hospital.


2. The patient was presented before the Section on Dermatology and Syphilis, New York Academy of Medicine, May 5, 1921. Arch. Dermat. & Syph. 4:268, 1921.
clinical features. Of course, prior to 1905, no discussion of the organism was possible, and most of the reported cases were in the pre-Wassermann and pre-arsphenamin era.

Ormsby 3 classifies this type of lesion as a nodular syphiloma, stating that at times the lesions assume a serpiginous character and distribution, in which case secondary changes commonly occur. They may be covered on the surface with a thin yellowish crust; they may lose their firmness and become soft and of a rather more lurid red hue; from colloid or suppurative degeneration they may vegetate luxuriantly and become the seat (especially on the scalp) of warty growths covered with a semipurulent secretion of a disgusting odor; or, finally, they may ulcerate, the superimposed crusts thickening in bulk and deepening into a greenish or blackish shade.

Sequeira claims that the vegetating (frambesiform) syphilid is developed from the papule or pustule. It appears in the form of isolated plaques with fungating and papillomatous excrescences standing above the surface for perhaps a quarter of an inch (6.35 mm.). It occurs on the neck, face, and chest—and sometimes on the palms. Its evolution is slow, and its disappearance is followed by staining.

Crocker 4 reports an instance of frambesiform syphilid in a man 32 years old, who had had a sore for three months followed only by lesions about the size of a fifty cent piece on the chin and other parts of the face. These partially coalesced, projecting abruptly about one-quarter inch above the surface, with a rolled edge. The surface was granular and fungating, and was partially covered with a dried purulent crust.

J. A. Hutchinson reported the case of a man from Ceylon who contracted syphilis in London and presented a secondary eruption like yaws.

Ehrlich's "Diagnostic Atlas" contains a colored plate showing almost the same lesion on the cheek.

There was an interesting discussion of frambesiform syphilid before the British Royal Society of Medicine, Section on Dermatology, on the occasion of the presentation of a case of frambesiform syphilid by O'Donovan. 5

The patient was a laborer, single, aged 28, who had never been abroad save for a period of service in France. Ten months before, he had had gonorrhea. He denied having had a primary sore or sore throat. For two months he had had an eruption on the scalp, which appeared as several round lesions, 1 to 3 cm. in diameter, sharply defined, discrete, raised, with a reddened verrucous surface. When

first seen, the surfaces were yellow with pus. Hairs removed and heated in liquor potassii showed no spores. There was bilateral enlargement of the posterior cervical glands, and one smooth shining macule 0.5 cm. in diameter in the right antecubital fossa. There were no throat lesions, no headaches, no scar on the penis and no enlargement of the inguinal glands. The Wassermann reaction was positive.

Pringle said it was amazing to him how little was known in the profession generally about the "frambesioid" syphilis, of which the foregoing case was a typical example. The lesion was by no means a rare one, and its appearance was absolutely characteristic, *sui generis*, but the number of mistakes he had seen in connection with it was large. The conditions were generally taken for impetigo, and in three cases occurring in soldiers poulticing had been assiduously carried out for three months before they came under his care; while another patient, in private practice, had been treated with a proprietary manganese preparation for more than two months. It was unusual to find the condition confined to the scalp. The lesions on other parts of the body were frequently of the conglomerate, suppurative, follicular type before they became frambesioid. A point of interest was that the condition was almost always a comparatively early secondary manifestation, and another feature was the surprisingly small amount of scarring after recovery, which was usually extremely rapid under treatment. In several cases he had seen in which the scalp was involved, no appreciable baldness was left, although the lesions when first seen had had the clinical appearance of being deeply destructive.

Pernet* said he had written a short paper on the subject based on three cases observed at the West London Hospital. The patients were white European women who had never been out of the country. The frambesiform lesions were few and far between on the glabrous skin, but in all three cases the scalp was mainly affected.

Whitfield did not think these cases were common, but they were much commoner in patients who had come from the tropics and had possibly caught the disease there. In the last 12,000 cases in the Syphilis Clinic at King's College Hospital they had had only one mild case.

McCormac had seen a number of these cases at the Seaman's Hospital, Greenwich, and was interested in the resistance of certain forms to treatment. His impression was that failure generally results from giving too small doses of arsphenamin; the spirochetes become habituated to it, and so it is not lethal to them.

DISCUSSION

There has been and still is, in certain quarters, a dispute as to the duality of syphilis and frambesia. The existence of a clinical lesion which has warranted the retention of the name “frambesiform syphilid” certainly shows how close the resemblance of some of the lesions of these diseases really is.

One of us (H. G.), while in the tropics, had the opportunity to study cases of frambesia tropica, or yaws, and in his report 7 gives the following table of comparison between syphilis and yaws:

**SYPHILIS**
1. Disease pandemic
2. Acquired by heredity and contagion
3. Begins by a primary pathognomonic lesion at point of inoculation
4. Immunity conferred by syphilis is in a sense permanent
5. All attempts at autoinoculation of a patient with secondary or tertiary syphilis are fruitless
6. The hard chancre and other signs of syphilis can appear on a subject who may have yaws
7. The polymorphism of syphilitic manifestations
8. Syphilids, at least those of the tertiary period, destroy the skin, and leave after cure, permanent scars
9. Syphilis is an infection in which the several lesions correspond to three periods, primary, secondary and tertiary
10. Syphilitic eruption involves mucous membranes
11. Localizations in the viscera
12. Syphilids are not pruriginous
13. Alopecia in secondary period

**FRAMBESIA TROPICA**
1. Disease tropical
2. Acquired only by contagion
3. Initial lesion near portal of entry is not constant nor different from lesions appearing later
4. Reinoculation of yaws is possible
5. The autoinoculation of yaws is possible for an indefinite period, but quite long
6. Yaws can develop on a subject with syphilis
7. Monotony of eruption; it showing only papilloma
8. Frambesial lesion which is not exposed to any irritation heals without leaving a trace
9. All the manifestations of yaws are identical, whatever be their date
10. Frambesia lesions do not involve mucous membranes
11. No localization in the viscera
12. Yaw lesions are accompanied by lively itching
13. No alopecia in the course of the disease

On the basis of his own clinical experience, one of us (H. G.) is inclined to believe in the dual character of frambesia tropica and syphilis, and he wrote that the extensive evidence accumulated was confirmatory to nonidentity.

Klauder of Philadelphia, who saw our patient at the meeting, said it was difficult on purely clinical evidence to differentiate yaws from a frambesiform syphilid. The lesions in this case bore a close resemblance to yaws; on the other hand, one could not gainsay the diagnosis of syphilis. Further study would be necessary in order to establish a diagnosis, and he believed that such a study would show the case to be yaws. The laboratory diagnosis between yaws and syphilis was not easy. The diagnosis could not be made with certainty by the Wassermann reaction, although this reaction performed with an extract of yaws' nodule might be of help in the differential diagnosis. In a recent study of a case by Schamberg and Klauder, morphologic differences between *Spirochaeta pallida* and *Spirochaeta pertenue* were observed in stained specimens, although under the dark field these organisms were indistinguishable. The differential diagnosis was difficult to make by rabbit inoculations of the two organisms. The lesions of both yaws and syphilis disappeared after the administration of arsphenamin, hence the diagnosis could not be made in this manner. If the Wassermann reaction became negative after a few injections of arsphenamin, the diagnosis of yaws would be favored; whereas it was likely that more injections would be required to make the Wassermann reaction negative in syphilis. The only satisfactory way of making a laboratory diagnosis between yaws and syphilis was by a crossed inoculation of a monkey's eyebrow. If the spirochetes obtained from the case were
inoculated in one eyebrow of a monkey and, after a positive result was obtained the other eyebrow was inoculated with spirochetes known to be pallida, a positive result would make the diagnosis of yaws. In other words, monkeys infected with yaws did not become immune to syphilis. On the other hand, a successful inoculation of a monkey’s eyebrow with syphilis precluded obtaining a second successful inoculation with syphilis soon after the first.

Unfortunately, we were unable to carry out any of the possible laboratory differential procedures; but we are certain from the period of observation, the practical unanimity of clinical diagnoses, and the agreement of this case with most of the published accepted cases of frambesiform syphilid, that we were dealing with a case of frambesiform syphilid and not a case of frambesia. In this particular we do not agree with Dr. Klauder’s belief that the case would have proved to be one of yaws.

On the other hand, we have been fortunate recently in being able to compare our case of frambesiform syphilid with a case of frambesia tropica—probably the first diagnosed in New York City—which was presented before the Section on Dermatology by Drs. Howard Fox and B. F. Ochs.† Clinically, the yellowish crusts on the lesions of this patient indicated yaws rather than syphilis. The absence of mucous membrane lesions was a point in favor of yaws. Multiplicity of lesions—those about the scalp especially but not of the scalp—indicated yaws rather than syphilis, for, as our own case showed, the frambesiform syphilid is sparse in distribution.

SUMMARY

We have called attention to a rare syphilid—frambesiform syphilid—and reported an example in a man who presented most strikingly the accepted features of the manifestations. We have briefly reviewed the textbook descriptions, summarized the opinion of the earlier writers, and extensively reported the discussion of the gentlemen of the Section on Dermatology of the Royal Society of Medicine. We have briefly recalled the comparison between syphilis and frambesia tropica, and quoted at length some of the methods used in the experimental laboratory to distinguish the spirochetal diseases, syphilis and yaws, as well as giving some of the differential diagnostic clinical features of the two diseases.

BULLOUS ERUPTIONS IN HEMORRHAGIC SARCOMA OF KAPOSI AND IN LICHEN PLANUS*

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The occurrence of vesicular and bullous lesions in diseases in which one least expects their incidence is always of interest to the dermatologist.

Well developed bullous lesions formed a part of the eruptions in the two patients here described; one case was an example of Kaposi's multiple hemorrhagic sarcoma, the other, one of lichen planus.

REPORT OF CASES

Case 1.—Multiple hemorrhagic sarcoma of Kaposi. The patient was referred to us in private practice by Dr. Apisdorf of New York. Mrs. S. M., aged 66, married, the mother of four healthy children, was born in Russia and had been in good health up to the age of 50. The family and personal histories were negative. Physical examination (Dr. Thatcher, Vanderbilt Clinic) revealed a slightly enlarged heart, with a definite mitral leakage. The liver extended to about 4 inches (10.16 cm.) below the ensiform cartilage and about 1 inch (2.54 cm.) below the costal margin at the midclavicular line. Its consistency was soft. The spleen was not palpable. There were no palpable masses in the abdomen. The lungs were moderately emphysematous. There were no discoverable signs or symptoms of internal metastases. The urine was normal. The blood count revealed: white blood cells, 10,000; red blood cells, 4,500,000; polymorphonuclear leukocytes, 80 per cent.; lymphocytes, 20 per cent.; hemoglobin, 65 per cent.

The general health was fair, the only definite complaint being inability to do housework on account of the swelling of the legs and thighs and pain in the right leg.

Fifteen years ago, an eruption of reddish-brown and violaceous patches appeared almost simultaneously on the neck, backs of the hands and backs of the feet. These slowly increased in size and in the depth of color. New crops soon sprang up on both upper and lower extremities, some of them remaining isolated, others showing an early tendency to coalesce with each other, forming large plaques. The hands, feet and lower part of the legs became swollen and thickened, the skin hardened and rough. This was most pronounced in the skin of the right foot and leg. Within four or five years after the beginning of the disease, nearly all regions of the body were more or less involved, including even the face and, to a slight extent, the scalp.

* From the Department of Dermatology and Syphilology, Vanderbilt Clinic, Columbia University.
Skin.—(Figs. 1, 2 and 3). There was a generalized eruption of macules and plaques, individual lesions varying in size from half an inch (1.27 cm.) to 8 or 10 inches (20.32 or 25.4 cm.) in diameter. In some regions, they were isolated and more or less grouped, as on the back, chest, face and arms; in other places, they were confluent, as on the thighs, forearms and buttocks; the lower part of the legs presented a solid mass of eruption—there was no evidence of the fusion of individual lesions. The lower extremities presented a practically uniform diffuse infiltration of the skin, most pronounced on the lower half of the legs. The popliteal spaces, the skin over the knees and small areas below the groins, on the buttocks, the lumbar region and the back of the neck were in places free of eruption. On the chest, back and face the lesions were relatively small and scattered. All lesions were more or
less infiltrated and thickened, some of them distinctly scaly. The infiltration and thickening was most pronounced on the right leg. The right thigh was swollen, and the skin was edematous throughout, from the groin to the knee, in its entire circumference. The color of the plaques varied considerably in different areas; the smaller lesions were reddish to violaceous, the larger fused plaques were more purple in tint, while the skin of the lower legs approached dark-brown and even black. The skin of the right leg resembled a leg afflicted with a long-standing hyperkeratotic elephantiasis. Around the ankle the skin was bound down to the underlying tissues and was of almost boardlike hardness. On the lower half of the right leg, the contraction and hyperkeratosis gave rise to constricting broad bands, partly encircling the leg several inches above the ankle.

Fig. 2 (Case 1).—Hemorrhagic multiple sarcoma of Kaposi. Note vesicular lesions on the back of the right thigh and the hyperkeratosis of the skin of the legs.
On the anterior and posterior surfaces of the right thigh, much more so on the anterior, there were large areas of closely grouped vesicles and bullae, both isolated and fused. These vesiculobullous lesions sprang up right in the midst of infiltrated and thickened areas of skin. The bullae ruptured easily and spontaneously, giving rise to a profuse, noniccid, clear watery discharge, which kept the affected area wet and uncomfortable all the time.

These vesicular lesions constituted the interesting part of the eruption. They were not true vesicles and bullae in the strict sense of the term; they were analogous to the vesicular efflorescences of lymphangio-ma circumscrip- tum, so far as their fluid contents were concerned. They arose as a result of the lymph-stasis caused by the constricting bands of skin above the ankle, giving rise to an intense lymphedema of the skin above the constricted area, this edema eventually causing the formation of the vesiculobullous lesions.

Two biopsies were made from an early and a late lesion; microscopic examination revealed a characteristic angiomatos type of Kaposi's sarcoma, the tissues exhibiting an unusual degree of lymphedema.

The bullous eruption of the right thigh was treated with roentgen rays. One skin unit (Holzknecht), filtered through 3 mm. of aluminum screen, was administered at an interval of seventeen days, resulting in a "drying up" of this part of the eruption, so that the lymph exudate definitely ceased. The other areas are being treated with one unit skin doses (Holzknecht) through 1 mm. of aluminum filter screen, once in two weeks.

Case 2.—Lichen planus with bullous lesions. The patient applied for treatment at the Vanderbilt Clinic. Mrs. E. A., aged 41, married, was born in Germany. The family and personal histories were negative, except that the patient had suffered from nervousness for many years. The duration of the eruption was four weeks. The patient was not addicted to any drug and had never taken arsenic, nor any other medicine which might provoke an eruption of the skin.

Skin.—The patient presented a generalized eruption. It began on the neck and forearms, and within a fortnight it involved nearly all parts of the body, to a greater or less extent. The lesions appeared to be in different stages of evolution and involution. The upper and lower extremities presented large areas of isolated and confluent lichen planus patches, typical in every respect, some of the papules exhibiting distinct Wickham's striae. Numerous vesicular lesions were scattered throughout the papular elements on the trunk.

Fig. 3 Case 1)—Hemorrhagic multiple sarcoma of Kaposi, showing infiltrated and scaling lesions of the left arm and hand.
arms and legs. Large bullous lesions were present on the thighs, buttocks and lower part of the legs (Figs. 4 and 5). These bullae arose from areas already the site of papular lichen lesions, so that the two forms of eruption were present in the same areas of skin. Most of the bullae were flaccid and ruptured easily. The bullous lesions did not seem to be more numerous or more pronounced in regions subjected to pressure by clothing, etc.

Fig. 4 (Case 2).—Lichen planus bullosus, showing large blebs and ordinary lichen planus eruptions.

Many of the typical lichen lesions occurred in the form of scratchmarks on the trunk and legs. Pigmented remnants of involuted papules and numerous crusted spots resulting from broken blebs were present on the trunk and lower part of the legs. The contents of the bullae were clear, with the exception of a few which showed a slight mingling with blood. The mucous membranes exhibited no lesions of lichen planus, but the buccal mucosa presented a few
faint whitish linear discolorations at the point of contact with the teeth. On the patient's second visit to the clinic, these had disappeared, while the cutaneous lesions had progressed and multiplied. Itching was intense.

Impetigo contagiosa, epidermolysis bullosa, dermatitis herpetiformis, bullous erythema multiforme and bullous drug eruptions were eliminated in considering the diagnosis. Combined lichen planus and pemphigus did not come into consideration.

Fig. 5 (Case 2).—Lichen planus bullosus, showing vesicular and crusted lesions of the right leg, together with active involuting areas of lichen planus.

A piece of tissue was excised, including a papule of lichen planus and an adjacent vesicle. Microscopic examination revealed the characteristic changes of ordinary lichen planus in one half of the specimen; in the other half, the entire epidermis was cleanly raised from the corium to form the roof of the vesicle. In this portion of the specimen, the infiltrating cells in the corium
were much more sparse and more scattered than those in the papular portion. In the latter, there was far more edema than is usually seen in ordinary lichen planus, as was to be expected from the clinical phenomena.

The further course of the disease is unknown, as the patient lived in a distant town and refused to return for systematic treatment.

**COMMENT**

We have not discovered any other record of hemorrhagic sarcoma of Kaposi in which bullous lesions formed a part of the general eruption. As stated, the bullae in our case were caused by a mechanical lymph-stasis and were therefore not elementary bullous lesions in the strict sense. The occurrence of the disease in the female is extremely rare—not more than seven or eight examples are recorded in the world’s literature. In the male, hundreds of cases have been published.

In lichen planus, vesicular and bullous lesions are not so rare, but rare enough to justify the publication of well developed examples.

24 West Fifty-Ninth Street.
PITUITARY GLAND DYSTROPHIES

LESTER HOLLANDER, M.D.

PITTSBURGH

Two cases of dystrophia adiposa genitalis came under my observation recently, showing definite skin pathology, and as the diagnosis of the existing endocrine disturbance could be established without any doubt, the coexisting skin picture is of importance. The findings in clear cut endocrine syndromes should be noted to allow for conclusions at a later date when a sufficient number of cases can be analyzed.

Dystrophia adiposa genitalis was described by Babinsky in 1900, and one year later by Froelich, whose name it carries. Although it is not possible to show pathologic involvement of the pituitary gland in every instance, and although some cases show at least clinically the presence of thyroid and ovarian deficiency, most observers, notably Fisher, Erdheim and Cushing, suggest that the condition is due to a lesion of the posterior lobe of the pituitary gland. Mason classifies the disorder under pituitary dystrophies causing disorders of nutrition.

Cases may develop at infancy or during adult life and can be recognized by two definite conditions: (1) marked obesity, and (2) delay in development or atrophy of the genitalia.

REPORT OF CASES

Case 1.—B. K., a girl, aged 9 years, 4 feet 7½ inches tall (140.97 cm.) weighing 144 pounds (65.31 kg.), American born, of Russian Jewish parentage, had marked adiposity, which involved the entire subcutaneous layer of the body. Her skin looked waxy as though she had myxedema. Her hair was oily and thin and grew far down on the forehead, which had a definite slant or tilt. Her face was round and showed less fat deposit than any other portion of her body. The palate was highly arched. Her neck was short and stubby. Her breasts showed a fair amount of invasion of adipose tissue, which later will result in burdensomely heavy mammary glands, in which the glandular structure will be greatly atrophied. Her abdominal wall was relaxed and tended to form an apron over the pubes. The genitalia were small; the labia majora showed an adiposity resembling elephantiasis. The extremities were large, especially her buttocks, and her legs were column-like. She presented a true genu valgum. Her arms and legs ended in a padlike formation. There was no apparent axillary or pubic hair, but her arms and legs showed a definite hypertrichosis. In addition, the arms showed a mild form of keratosis pilaris. A marked cyanosis could be observed on her feet and hands. Her nails were thin, showed longitudinal striation, grew slowly and were friable.

Roentgen-ray examination revealed a normal pituitary fossa, with normal clinoidal processes. Her basal metabolic rate was normal. There was no evidence (roentgen ray) of a persistent thymus. Sergent’s line was marked, the resulting anemia lasting from four to five minutes on slight pressure.
Fig. 1 (Case 1).—Different views of adiposity in the first patient.

Fig. 2.—Sergent's line on skin of first patient; $A$, immediately after draw $B$, three minute later.
Fig. 3 (Case 3).—Patient at the age of 20. Note expression of eyes.

Fig. 4.—Patient at age of 26. Note facial dyssymmetry.

Fig. 5.—Patient at the age of 32.
The patient was put on post pituitary substance, 5 grains (0.32 gm.) a day, and will be observed.

Case 2.—Mrs. J. N., aged 34, American born, a Jewess of Russian parentage, who had been married for ten years and had two children, presented herself on account of extreme oiliness of her scalp and scanty growth of hair, especially about the parietal areas. She was 5 feet (152.4 cm.) high and weighed 221 1/2 pounds (100.47 kg.).

Her previous medical history showed that she had had scarlet fever, typhoid fever, pneumonia, influenza, dislocated sacro-iliac synchondrosis, "frequent nerve strains," and that she had been blind in her left eye since birth.

General Appearance: There were marked adiposity, small genitalia, a nervous tendency and blindness, which caused her to be classified as a patient with dystrophia adiposo-genitalis.

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<td>177</td>
<td>72</td>
<td>Postpituitary substance, 3 grains; thyroid gland, 0.3 grain</td>
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Course of Disease and Treatment.—The patient was put on a treatment with post pituitary gland substance, 7 1/2 grains (0.49 gm.) a day. Her general condition improved, she had more nervous stability, and within three weeks her eye condition improved sufficiently for her to discern objects. There was a gradual loss of weight until she now weighs 177 pounds (80.28 kg.). She has a sense of well being and can read print with her left eye. The condition of her scalp has been greatly benefited.

Several changes were necessitated during the treatment. This is shown in Table 1.

Case 3.—Mrs. M. M., a Croatian housewife, 33 years old, consulted me on June 22, 1921, on account of disfiguring growths on her face, which had
begun about three years before and had slowly multiplied. In addition to small and large fibroma-like moles, the skin showed an acniform eruption and pigmentary changes, and there was marked frontal alopecia.

General examination revealed a unilateral (left) enlargement of the face, the presence of a large cystic goiter, and several pads of fat irregularly distributed on the patient's body. One of these may be seen in Figure 5 as a pad on the neck.

She dates her trouble back three years, when she noticed that she suffered from severe headaches and anorexia, and her friends noticed a marked change in her expression; with the severity of these attacks, the facial change became more marked. The facial changes are shown in Figures 3, 4 and 5.

Figure 6 shows the patient when she was 20 years old, that is, twelve years before the last picture (Fig. 3); there seems to be a definite stare in her eyes. Figure 4 was taken six years later at the age of 26 years, and on close observation a disproportion in the left side of the face can be recognized. The eyes seem to show a definite stare also. Figure 5 was taken at the age of 32 years, and shows frontal alopecia, multiple fibromas, pigmentation extending down the chest, thyroid gland hypertrophy and a marked change in the patient's facial expression.

Roentgen-ray examination showed a distorted pituitary fossa, which was thought to signify a tumor; further observation could not be made as the patient returned to southern Europe.

The skin changes were not definite enough to make the diagnosis of Recklinghausen's disease but I felt certain that I could not place this condition in a class of dermatosis, which this condition resembled more closely.

I am appending this case for its relative value in the consideration of pituitary gland disturbances and their possible effect on the skin.

COMMENT

In reporting these cases I am not endeavoring to show any relation between the existing skin conditions and pituitary dystrophies. I am merely putting on record the presence of keratosis pilaris, hypertrichosis, cyanosis, nutritional disturbance of the scalp, pigmentary and hypertrophic changes of the skin in unmistakable cases of this type.

(The glandular substances used in all patients was prepared by Burroughs Wellcome & Co., for the sake of uniformity of results. Thyroid gland substance of this manufacture is one fifth the strength of the American manufacturer's product.)
Editorial

THE NEED FOR MORE MONOGRAPHS AND FEWER BOOKS ON DERMATOLOGY AS A WHOLE

A few weeks ago, a writer in the *British Medical Journal*, reviewing three standard American works on dermatology, criticized, in a good natured way, the number of American books in this field. He had no vital criticism to make on any of the three; they are all excellent works on dermatology. But each one of them covered the subject in much the same way as the others, and he asked the question, "What is the use for the great number of comprehensive texts published in America?" We are not inclined to yield on the criticism that America is any more at fault, if fault it be, in this respect than the British Isles, for we recall about the same relative proportion of texts on dermatology in Great Britain as there are in America. But we believe the point is a good one. We have in view especially dermatology, but the condition is the same in all departments of medicine. We have a larger number of current works on dermatology as a whole than we need. They do no harm. Each is probably better for the existence of the others. At least the competition between them is healthy, for even superdermatologists are human beings, and are made more alert by competition. It is useful exercise for the authors to write them. Every man who has written a book on dermatology, or on any part of it, is a better dermatologist for the exercise, regardless of the benefit of the book to others.

But the point that we are emphasizing is that the field of books that undertake to cover the whole subject of dermatology, either in an abbreviated or in a comprehensive way, is overcultivated; on the other hand, the field of monographs is almost untouched. And monographs are what we need. No man can write with authority and mature personal experience on the whole domain of any department of medicine, but all of the abler men of mature experience have some particular forte, some particular topic or topics in which they are masters. And in writing monographs on these special parts specialists can do their greatest service to medicine and to themselves. In the study of a subject, it is just as useful an exercise to write on a circumscribed topic as it is to spread it thinner and cover the whole specialty.

We could at this moment suggest half a dozen subjects. The most crying need is for a work on the pathology of the skin. Highman has given us a number of articles that would make chapters in such a
book; by all means let him give us as many more chapters as he can, even if he has not the time to make a complete work. We need a book on the mycology of the skin. Hodges or Weidman occur to us as men who would do this service in mycology. Let us have such a monograph. Another monograph on bacteriology of the skin would be well worth while, but it is not so insistently needed. There is a place for a book on drug eruptions, including those caused by the external application of drugs. Wise should give us this. These are but outstanding examples of the subjects that are crying to be covered. The usefulness of such books is illustrated by Professor White’s “Industrial Dermatoses.” The author, in his preface, offered this book almost apologetically, his reason for writing it being the very good one that he felt the need for it himself. In a couple of years a second much larger edition appeared, and the book is an invaluable part of the dermatologist’s library. Let others give us some more of the same kind.

The Europeans greatly surpass us in this respect; most of the monographs that we have are theirs. The reason, of course, is in the publishing business. European publishers are willing to publish these smaller books that have not a universal appeal. The American publisher, as a rule, has his eye on the whole book buying medical public, and turns a deaf ear to propositions for the publication of books that do not promise such large sale. One or two publishers have been exceptions and publish occasional monographs. Let us see if we cannot educate some of our publishers to the possibilities of special works. If we cannot, let us try to publish the books ourselves. It is no reflection on a writer to finance the publication of his own book; it is a great credit if it is a good book. Noah Webster financed his “Blue Book Speller.” We cannot think of any way that one can do more good with a little money than to give the profession a useful book. It also gives the writer an opportunity to have the fun of cultivating his own special interests; and it is better to cultivate one’s dermatologic hobby than orchids, or etchings, or canceled postage stamps.

W. A. P.
News and Comment

SECOND CONGRESS OF FRENCH SPEAKING DERMATOLOGISTS AND SYPHILOLOGISTS

The Second Congress of French Speaking Dermatologists and Syphilologists will be held at Strasbourg, July 25 to 27. Professor Pautrier, the president, will preside.

Members of national societies of dermatology and syphilology and other physicians acceptable to the Organization Committee are eligible as members. The membership fee is 60 francs. The meetings will be held at the Institute of Hygiene and Bacteriology and at the Clinic of Cutaneous Diseases.

The topics for discussion are:
1. Sensitization and Desensitization in Dermatology. Dr. Ravaut and Professor Spillman.
3. The Treatment of Syphilis in the Presystemic Period. Dr. Queyrat and Professor Malvoz.
4. The Value of Different Avenues of Administration of Drugs Used in the Treatment of Syphilis. Dr. Milian and Dr. Bodin.

The Congress will be preceded by the Congress on Cancer, July 23 and 24, and followed by the Conference on Leprosy, July 28, 30 and 31.

Applications for membership and fees should be sent before June 1 to Professor Pautrier, 2 quai St. Nicolas, Strasbourg.
Obituary

WILLIAM AUGUSTUS HARDAWAY,
A.M., M.D., LL.D.

In the sudden death of Dr. W. A. Hardaway, at midnight, Feb. 3, 1923, the American profession lost a valued and distinguished member. Born on June 8, 1850, at Mobile, Ala., of a well-known and influential family, he was brought to St. Louis at the age of 7 years, which city remained his home to the end. He received his literary education at the University of Virginia, the mother of many who like him achieved eminence, each in his own pursuit. He never outlived the refining influences of the classic atmosphere of Charlottesville, but cherished and nurtured them so that they largely contributed to the traits and tastes of the mature man.

He began the study of medicine at the St. Louis College of Physicians and Surgeons. This school had no connection with the present college of the same name, but was an offshoot of the Humboldt Medical College. These schools have long since passed out of existence, but students of local medical history will agree that they were organized according to scientific ideals far ahead of their time in America. He was graduated from the Missouri Medical College in 1870.

Hardaway's insatiate love of reading was probably one of the causes which led him to turn his attention to diseases of the skin, a subject at that time far removed from the beaten path of medical studies. While almost totally neglected in the West, in the East it had begun to attract a few students in the larger centers of learning. In fact, the world over, dermatology was still in its swaddling-clothes, and thus it became Dr. Hardaway's fortune to watch and contribute to its development from the cradle to the position it occupies today as one of the most highly developed branches of medical science. He might well have said "quaeque ipse vidi, et quorum pars magna fui."

Dr. Hardaway was one of the founders of the American Dermatological Association, in 1876. Of these Duhring, White, senior, Taylor, Wigglesworth, Hyde, Atkinson, Piffard, Heitzman, senior, and Keyes preceded him to their repose. For many years he continued to be a regular attendant at the annual meetings, to which from year to year he looked forward with keen anticipation of the pleasure he derived from intellectual contact with his peers and the renewal of old friendships. In 1885, he was elected president of the Association.

Space is lacking to enumerate his contributions to clinical dermatology, which were many and important and made his name known to
WILLIAM AUGUSTUS HARDAWAY, M.D.
1850-1923
his fellow specialists throughout the civilized world. He published eighty-one papers within a period of forty years. Among them was one for the first time describing prurigo nodularis (1880), although under another title, while his discussion of papilloma cutis in the same year served to clarify and set in order what had been a confused jumble. One thing, however, will especially secure the transmission of his fame to future generations of dermatologists, namely, the electrolytic method. Originating (1875) with Dr. Charles E. Michel of St. Louis, who used it for the destruction of "wild hairs" of the lids, it was introduced to dermatologic practice by Hardaway (1877), who never failed to give Michel full credit for the idea. The fact none the less remains that Hardaway introduced the procedure to dermatology.

Among the volumes from his pen were the "Essentials of Vaccination" (1882), "Manual of Skin Diseases" (1890 and 1898), and "Cutaneous Therapeutics" (1907). He was joint editor with Dr. L. Bolton Banks of the American Text Book of Genito-Urinary Diseases, Syphilis, and Diseases of the Skin" (1898), and contributed special articles to the "Systems" edited by Pepper, Keating, Hare, Morrow, Dennis and Park; to the "Reference Hand-book of the Medical Sciences," to Gould and Pyle's "Cyclopaedia of Practical Medicine and Surgery," to the "American Text-book of Diseases of Children" and to the "American Year-book of Medicine and Surgery."

As a teacher he was clear and forceful, and he took the keenest interest in this phase of his activities. Hundreds of practitioners throughout the Middle West and South were among his pupils during his long years with the Missouri Medical College, beginning soon after his graduation, and continuing after that school was merged with the Medical Department of Washington University and until he resigned in 1910.

As a clinician, Hardaway had few equals and no superiors. He took a lively interest in the therapeutic side, often reminding his younger associates that after all that was the aim and end of all medical science. He took much pleasure in communicating his knowledge to others, and while possessed of a great store of information as to the early history and later growth of his favorite study, he never lost a youthful interest and enthusiasm for the latest developments and refinements. Literally, to his last day he continued his studies and kept abreast with the march of progress. From the fund of knowledge thus amassed he was always ready to draw for the benefit of his friends. It was a rare treat, as well as a precious privilege, consultation hours over, to sit in his office, having accepted a cigaret tendered with an engaging smile and a brief eulogy of the brand, and to hear him set forth his thoroughly digested ideas and the conclusions of his long and rich experience. His innermost scientific thoughts, which he might have hesitated to
set down in cold print, he would at times convey to his intimates—in unstudied phrases between puffs of smoke, probably interlarded with bits of reminiscence or apt illustrations drawn from his retentive memory.

This gift of memory, on which we must admit he rather plumed himself, extended not only to his reading, allowing him often to cite a passage and give the reference, but also allowed him to recall the details of cases seen years before and the names of persons casually known. He took little interest in the natural sciences not directly auxiliary to medicine, and abhorred mathematics, but in the belles lettres, general literature, history and biography, his knowledge was not only all-embracing, but extraordinarily exact. His store of precise information on the last-named subject was a constant source of comment and wonder to all who enjoyed his intellectual companionship.

Dr. Hardaway's physical and intellectual tendencies were in sharp contrast, for while taking little pleasure in any form of bodily exercise, his mind was ever alert and occupied. Even his amusements were of a mental sort, such as the original "limericks" with which he regaled his friends within a day or two of his death. His flow of humor continued even in weariness and sickness.

While enjoying a wide acquaintance, both within and without his profession, he was careful as to whom he admitted to his intimacy. To those, however, whom he counted among his friends his loyalty was unswerving, and his affection secure. His courtesy was unfailing and his kindliness but the outward expression of his attitude toward his fellow-man.

While disliking crowds, he was known to many men. While never seeking popularity, he had many friends. While shunning notoriety, he achieved fame. He had no need to seek these things, which came to him as the natural result of his courtesy, his broad charity and his attainments.
Abstracts from Current Literature


The author reports eight cases of eczema in detail, and reaches the following conclusions:

1. Eczema in breast fed babies is a result of sensitization to food proteins contained in the mother’s dietary and transmitted to the infant through the breast milk in a great majority of cases.

2. Removal of these proteins from the diet of the mother usually results in cure of the patient.

3. In cases in which all the foods cannot be eliminated from the diet of the mother, limitation of the same will often result in improvement of the eczema.

4. Sensitization of the infant may be determined by the cutaneous reaction to the purified food proteins.

5. The erythematous reaction at the site of the test is to be considered as indicating sensitization and being much more common than the wheal is correspondingly more important.

6. Sensitization is usually multiple and may be due to a majority of the foods in the dietary of the mother.

7. Sensitization tends to become more widespread in a great many cases as time goes on, due to the acquisition of sensitization to new foods.

8. Repeated exacerbations and failures to cure may be due to a lack of cooperation on the part of the mother; sensitization so widespread as to make sufficient limitation of diet impossible, failure of the physician to test for all the foods, the acquisition on the part of the patient of sensitization to new foods and to errors in the procedure of determining sensitization whether avoidable or otherwise.


The authors report an interesting case of this disease. Their case corresponded to Ballantyne’s description of ichthyosis congenitum mitior. The child they describe was fully grown, born at term and died on the fourth day. The skin at birth had no fissures and looked like parchment or colloidion. A complete histologic examination of the skin in this case showed that the stratum corneum in some places was of normal thickness, in other places was either thicker or thinner. There was also parakeratosis. The blood picture was a peculiar one. The blood contained 123 per cent. of hemoglobin (Sahli), 8,369,000 red blood cells and 11,000 white blood cells.


The suggestion of treating flat warts by the internal administration of mercury was first made by Dr. Charles J. White, in 1915. Fox treated ten patients with this condition with entirely successful results in five. The
eruption entirely disappeared in from three to eight weeks. The treatment consisted solely of the internal administration of mercurous iodid tablets in doses of 1/4 grain (0.016 gm.) three times a day. In the five unsuccessful cases, there was no improvement after two or four weeks of treatment.

Oliver, Chicago.


A patient with a clinical case of epithelioma of the cornea was treated with radium, so that at the end of six weeks all the macroscopic evidence of the limestone color of the cornea had disappeared. Seven months later, there was no evidence of recurrence. On a former occasion, the patient had been treated for a malignancy of the left temporal region and cured. The dosage applied to the recent growth was 42 mg. hours to each half of the eye.

ULTRAVIOLET AND X-RAY AS PHYSIOLOGIC COMPLEMENTS IN THERAPEUTICS: A NEWLY ESTABLISHED CLINICAL TREATMENT. C. M. Sampson, Am. J. Roentgenol. 9:570, 1922.

The effect of a scientifically produced "sunburn" by ultraviolet light induces epidermal pigmentosis, so that the area exposed to relatively soft roentgen rays permits of the assimilation by that part of a greater quantity of physiologic roentgen radiation, at the same time precluding the physiologic effect that otherwise would be produced on an area of the skin unexposed to intense actinism. By first applying ultraviolet rays the area is rendered more resistant to subsequent roentgen-ray radiation. By applying the roentgen rays first, a dermatologic change injurious to the organism may be produced, but the effects of the injury can be alleviated or entirely neutralized by applying the ultraviolet radiation secondarily.


Recent deaths among workers in radiology stimulated experimental and clinical work on the health of radiologists. Undue exposure to the roentgen rays or radium is associated at times with a moderate leukopenia, a relative lymphocytosis, a relative polycythemia and occasionally an eosinophilia. A low blood pressure is quite common among radiologic workers, which does not seem associated with any other definite symptom. The asthenia sometimes noted can probably be accounted for by strenuous work. These symptoms are also probably caused by close confinement, lack of fresh air and lack of recreation. The skin changes found in the earlier workers are not increasing, and are being avoided entirely by the younger ones because of the increased knowledge and increased protection. Complete protection can undoubtedly be obtained. It requires not only the means but constant caution. A dental film carried in the pocket for two weeks will give a quick index of excessive exposure. If definitely fogged or blackened, protection should be increased. In the author's institute, of films carried by ten workers, only two showed any fog, and these workers handled most of the radium and roentgen rays received in two weeks, about 1/2400 of an erythema dose.

A method is outlined for determining the intensity of radiation from any applicator in terms of the intensity from a point source of the same strength. General curves are given for tubular, circular, square and rectangular applicators, for filters of 0.0, 0.16, 0.50, 0.75 and 2.0 mm. of brass. Several examples are worked out to illustrate the uses of these curves.

PROTECTION TO THE OPERATOR FROM UNNECESSARY RADII RADIATION. Albert Soiland, Am. J. Roentgenol. 9:684, 1922.

Adequate protection against unnecessary radium radiation may be obtained with little difficulty and with care and a little common sense. A respectable distance between the operator and unscreened radium should be maintained. All work should be done with long handled forceps. Body screens may be fashioned. A tabulated blood count record serves as a guide to the working time permitted in the radium room. Operators should alternate, one month in the radium room and one month elsewhere.

GOODMAN, New York.

A STUDY OF FOUR HUNDRED AND FORTY-THREE CASES OF HEREDITARY SYphilis WITH ESPECIAL REFERENCE TO RESULTS OF TREATMENT. Park J. White and Borden Veeder, Am. J. Syphilis 6:353 (July) 1922.

PART I. SOCIAL AND CLINICAL DATA

The work reported is based on a study of 396 families, in each of which were one or more syphilitic children. In 372 families about whom definite information was obtained, there had occurred 1,463 pregnancies, of which 318 or 21.7 per cent. resulted in miscarriage or stillbirth. These accidents occurred in 53 per cent. of families; in 47 per cent. there were none. In the 396 families, a history of syphilis in one or both parents was obtained in only eighty. Four hundred and forty-three of the 912 living children were clinically and serologically syphilitic; 197 of these were infants under 2 years of age. In this infant group the most commonly noted clinical signs in orders of frequency were: eruption, enlarged spleen, rhinitis. In the late group of 246 cases, the most commonly noted clinical signs in order of frequency were: interstitial keratitis, mental retardation, polyadenitis, Hutchinson's teeth. Involvement of the nervous system in the 443 cases was clinically positive in 17.8 per cent., while the Wassermann reaction of the spinal fluid was positive in 30.6 per cent.

PART II. END RESULTS OF TREATMENT

The plan of treatment consisted in three weekly intravenous injections of arsphenamin, followed by weekly injections of 1 per cent. mercuric chloride. In addition to this, mercury and chalk (gray powder) was given in doses of from ½ to 1 grain (0.01 to 0.06 gm.) two or three times daily. This plan is followed in infants for one year and in older children for two years. At the end of this period further treatment is determined by the Wassermann reaction. Much difficulty was experienced in securing cooperation of parents. Although assisted by a well arranged social service department, in only one third of their cases were the authors able to give a satisfactory or fairly satisfactory course of
treatment. Tables accompanying the article show results obtained. So far as the individual case is concerned, their results would show it to have a fair chance of clinical and serologic cure or improvement. The thoroughly treated case offers much better chances for cure. The earlier treatment is begun, the better. If there is either clinical or serologic evidence of central nervous system involvement, the chances are poor. End results of 308 of the 443 cases are given as follows: cured, 22 per cent.; improved, 25 per cent.; unimproved, 17 per cent.; died, 25 per cent.


The author's summary follows: A study of 231 cases of early syphilis, largely untreated, yields the following observations bearing on the diagnosis of early stages of the disease:

1. The diagnosis of early syphilis has become a laboratory problem, divided between the dark-field examination and the Wassermann reaction. Clinical criteria, while interesting, have lost most of their final diagnostic value. The primary stage especially should no longer be overemphasized in teaching.

2. The dark-field examination showed 55 to 65 per cent. of all genital lesions to be chancre.

3. In our consecutive series, irrespective of age, 66 per cent. yielded positive dark-field examinations; 80 per cent. were positive the first week, and none were positive after the ninth week.

4. Seventy per cent. of the Wassermann tests made in the second week of the chancre were positive.

5. The dark-field detected Spirochaeta pallida in twenty-three of twenty-four moist secondary lesions, and in five of seven Wassermann negative, early, or recurrent secondary cases.

6. The dark-field on treated primary lesions is not hopeless. Eleven of seventeen cases yielded positive results. Nevertheless, the withholding of treatment until after repeated negative dark-field examinations needs to be vigorously preached.

7. Glandular aspiration of the satellite bubo of the chancre with dark-field examination of the serum yielded 50 per cent. positive results.

8. Of eighty patients who previously had seen physicians, we found that only three had had dark-field examinations, one army man, one navy man and one civilian.

9. The practitioner's margin of error in diagnosis was 30 per cent. In 24 per cent. treatment of some kind had been instituted while no diagnosis had been given the patient.

10. "Chancreoid" is still the chief diagnostic pitfall. The attitude that every genital lesion is potentially a chancre until proved otherwise is the safest for the public and the patient. Diagnosis of chancreoid should not be made until four months after the appearance of the lesion and following repeated negative Wassermann tests. "Cancer," "tumor," "herpes," "felon," are the masquerades of extragenital chancre.

11. One patient had been used as a transfusion donor before coming to the clinic, while he had a chancre, and when he was at the height of his spiro-
chetemia, and ten days before his secondary eruption appeared. The physician who used him as donor had evidently made no inquiry into his condition.

12. The Wassermann test in our secondary cases yielded the following: 92 per cent. positive in treated and untreated persons, 95.7 per cent. positive in those with slight treatment, 98.5 per cent. positive in those without treatment.

13. We believe the repeated positive Wassermann test, in secondary syphilis is a safer guide for the inexperienced than the characteristics of the eruption. If it is negative, the dark-field or the combination of findings may make the diagnosis.

14. In the aggregate, 24 per cent. of patients with florid secondary syphilis, a high per centage, could give no history of chancre, even though their secondary lesions were fully developed. This included a physician with secondary lesions, but no sign of a primary lesion (needle prick?).

15. Women are especially likely to give no sign of a primary lesion (concealed, short duration, and so forth).

16. Macular eruptions preponderate in our secondary cases. This we believe is an effect of special attention to lighting on our part, and is of great importance where inspection is used as a clue to syphilis as in industrial and military hygiene.

17. More than half of our patients had infectious lesions when seen (68 per cent.). More women than men had infectious lesions (75 per cent. in contrast to 64 per cent.), which makes them even more effective carriers than men. In this we are in accord with Fournier.

18. Half of our patients had constitutional symptoms with secondary eruptions; much fewer in the preeruptive stage (four in twenty-eight).

19. Women show a markedly greater tendency to constitutional symptoms than men (63 per cent. in contrast to 43 per cent.). In this also we are in accord with Fournier.

20. The leading constitutional symptoms are sore throat (53 per cent.), headache and head pain (31 per cent.).

21. Combinations of mild fever, sweats, loss of weight, asthenia, gastrointestinal symptoms, nervous irritability, arthritic and myalgic pains with anemia are frequent and are easily confused with early tuberculosis. They justify a routine Wassermann test when tuberculosis is suspected, especially in early adult and middle life.

22. Myalgia, arthralgia and bone pain are easily confused with "rheumatism." The traditional nocturnal character is not a safe guide to syphilis, and is often absent.

The author's summary follows: This communication is a discussion of the pathogenesis of tabes dorsalis and general paralysis with a view to the bearing on treatment. The attitude is taken that the immediate presence of the spirochete may be of less importance in the genesis of the lesions, from a therapeutic standpoint, than other factors, such as a hypersensitivity of the tissues or the presence of an irritant in the spinal fluid; and consequently that the correction of these factors and others like them, as well as the destruction of the parasite, should be considered in devising methods of treatment. Present methods are regarded as giving results far short of ideal and so radical departures are advocated in experimental work.

Case histories of the following six conditions are given to exemplify the ability of syphilis to simulate other conditions.
1. Syphilis, cerebrospinal, tertiary, with intraventricular hemorrhage; recovery.
2. Syphilis, cerebrospinal, tertiary, with intraventricular hemorrhage; death.
3. Syphilitoma of pons varolii with recent hemorrhage; death.
4. Addison's disease, due to syphilitic fibrosis of the suprarenal glands; death.
5. Syphilitic fever, simulating typhoid fever, recovery.
6. Syphilitic meningitis, subacute; recovery.  

Tomlinson, Omaha.


The problem in this investigation was to determine whether any changes due to antisyphilitic treatment can be observed by histologic methods. Clinical studies have given rise to considerable divergence of opinion as to the results of antisyphilitic treatment in patients with general paresis. As a result of his study of the brains of twenty-seven treated cases and fifteen untreated cases of general paresis, the author concludes:

1. Antisyphilitic treatment of patients with general paresis affects the histologic picture.
2. It tends to reduce the plasma cell infiltration of the perivascular spaces so that in many cases there are fewer plasma cells than are commonly found in untreated cases.
3. This reduction of the plasma cell reaction is probably an evidence of lessened chronicity of the process.
4. Perivascular lymphocytosis is often reduced in amount by treatment.
5. Pial inflammation is often reduced in amount by treatment.
6. Intraventricular injections of arsphenamized serum ordinarily produce no injurious effects on the choroid plexus or ependymal lining of the ventricles.
7. The cell count of the spinal fluid does not give a true indication of the amount or extent of cerebral meningitis.
8. The colloidal gold reaction, Wassermann reaction and cell count of the spinal fluid in paresis may become negative during treatment.

Oliver, Chicago.


Among other things, the subject of syphilis is considered, the vagaries of the Wassermann reaction in pregnant women being discussed, and also Colles' law with reference to the explanation of McDonagh and Routh. The value of treatment of the disease during pregnancy is stressed, and also the need
for laws preventing the marriage of a syphilitic person. The establishment of clinics for prenuptial examination is advised.


The symptomatology is outlined, and two cases of purpura hemorrhagica, one of Henoch's purpura and one of simple purpura are described as examples, the cases of purpura hemorrhagica being fatal. The matter of treatment is considered, the value of rest and warmth being stressed, and the necessity of a search for foci of infection. In the author's experience with purpura hemorrhagica, hemolysis has followed transfusion of blood from an apparently suitable donor.


This type is characterized by a recurrent pyrexia, and the author describes such a case in a girl of 8 years who presented the peculiar gray-yellow or icteroid tint of the skin, first described by Pel, enlargement of the cervical lymph nodes, liver and spleen, slight bronchitic attacks with breathlessness, sometimes semidelirium, erythropenia and leukopenia, and a fatal issue. Unfortunately no postmortem examination could be made.

Parkhurst, Toledo, Ohio.

EPITHELIOMA ADENOIDES CYSTICUM. Louis Savatard, Brit. J. Dermat. & Syph. 34:381, 1922.

Savatard presents a complete discussion of epithelioma adenoides cysticum. He reviews a number of cases previously recorded in the literature, and then adds fourteen cases from his own experience, one of them being one of Brooke's original cases. An interesting feature was the occurrence of a solitary lesion in eight of the forty-three cases reviewed. The author states that these single lesions are clinically indistinguishable from nonpigmented moles, and he hazards the opinion that in course of time the solitary lesions will be found the rule and the multiple lesion the exception. In the case of solitary lesions, a history of heredity seems to be lacking.

In the series of cases, there were thirty females to thirteen males. The course of the disease is slow, but may vary at any time, taking on a sudden acceleration without any cause, even after many years' duration. Spontaneous involution never takes place, and ulceration is rare, although malignancy sometimes intervenes.

Savatard insists, on the basis of histopathologic differences, that this condition should be kept as an entity, and not fused in a common group with trichoepithelioma of the lids and syringoma of the trunk.

In closing, the author suggests that the condition might better be called "nevus follicularis" or "follicular nevi of the skin," as all authorities agree that these tumors belong to the large group of nevi.

The paper is recommended for its discussion of the various benign epithelial tumors other than the one which gives the title to the paper.

Semon records two instances in which ringworm infection of the nails was shown to be the source of infection in others, thus demonstrating the infectivity of this condition in given circumstances.

He also suggests that an unrecognized ringworm infection of the toe nails may frequently be the source of reinfection of the interdigital spaces in ringworm dermatitis of these parts.


Thomson outlines a method of treatment of syphilis employed in a large series of cases. The patients were given neo-arphenamin in a dosage of 0.9 gm. at intervals of three weeks, a minimum of three such injections being used. A quantitative Wassermann test was made at the time of each injection, and injections were continued until the serum reaction was negative. Mercury was also employed in the form of mercury and chalk, 1 grain, three times daily, throughout the whole course of treatment; when the Wassermann test is negative, the mercury is continued for one year at least. The Wassermann reaction is tested frequently during this period, and when it has remained clearly negative for at least twelve months, all treatment is stopped, and the Wassermann test is observed during the next year. If it remains negative during this time, the cerebrospinal fluid is examined, and if found negative the patient is discharged as cured.

The author claims for his method therapeutic efficiency and a low comparative incidence of toxic effects from treatment, since the long interval between arsenic injections reduce the possibility of accumulation of the drug in the body.

A NOTE ON MOLLUSCUM CONTAGIOSUM. J. Jackson Clarke, Brit. J. Dermat. & Syph. 35:24, 1923.

For the last twenty-eight years, Clarke has been observing the changes taking place in molluscum bodies of Molluscum contagiosum when cultured in water baths according to a technic which he describes. He states that at various periods he has observed the following vital changes in molluscum bodies so treated: (1) streaming of protoplasm with reproduction by budding; (2) formation of a supporting framework and of protective capsules; (3) formation of bird's-eye bodies; (4) vacuolation with oscillation of granules; (5) formation of active flagellate or spirillar bodies. These changes are described in detail. He believes that the molluscum body is a parasite, which he proposes to call Plassomycxa contagiosa. He asks that others conduct similar observations to corroborate his findings.

Senear, Chicago.


This is an interesting lecture, dealing with the subject with a great amount of detail. The author gives the reader a clear insight into the history, mode of infection and prophylaxis of the disease. He firmly believes in segregation.
SYPHILIS AS A CAUSE OF ANTENATAL DEATH. I. N. CRUICKSHANK.

The author concludes, from a study based on the Wassermann reaction of
over 3,500 specimens of blood and on the clinical records of 1,000 pregnant
women, that:

1. Between 9 and 10 per cent. of women of the hospital class in Glasgow
show evidence of syphilitic infection.

2. The results of the Wassermann reaction in the blood of the new-born
are of little value in proving the presence of congenital syphilis.

3. The incidence rate of congenital syphilis has been greatly exaggerated
by most recent writers.

4. Syphilis in the mother cannot be shown to be a factor of predominating
importance in the etiology of the interruptions of pregnancy in the earlier
months.

5. Syphilis is one of the most important causes of stillbirth and of interrup-
tion of pregnancy in the later months leading to premature birth, and more
particularly to premature birth with death of the fetus.

OLIVER, Chicago.

LEISHMANIASIS IN THE UNITED STATES, H. K. FABER and H.

In this article is included a case of oriental sore. The patient was an
Armenian boy who probably contracted the disease in Mesopotamia. The
ulcer was situated on the left buttock. It healed readily under treatment with
the following ointment: creosote, 0.3 c.c.; ointment of mercuric nitrate, 4.0 gm.;
and sufficient petrolatum to make 30 gm. So far only imported cases of oriental
sore have appeared in this country, but as conditions make implantation of
the disease possible, the authors make a plea for careful medical inspection of
immigrants with this possibility in mind.

CAPILLARY PERMEABILITY IN ANAPHYLAXIS. W. H. MANWARING,
R. C. CHILCOTE, and V. M. HOSEPAIN, J. A. M. A. 80:303 (Feb. 3) 1923.

Experiments with isolated canine lungs demonstrated an increased capillary
permeability in the anaphylactic state. The authors believe that the increased
capillary permeability thus demonstrated will ultimately be shown to be the
dominant fundamental physiologic change in protein sensitization, to which all
other anaphylactic reactions are secondary.

OBSERVATIONS AND REFLECTIONS ON THE ETIOLOGY OF
PELLAGRA. J. W. JORLING and L. ARNOLD, J. A. M. A. 80:365 (Feb. 10)
1923.

After discussing the various theories as to the cause of pellagra, the authors
present a theory of the etiology of the disease. To support their concept, they
record experiments on animals as well as investigations on pellagrins in whom
they have discovered fungi producing fluorescent substances. In more than
fifty nonpellagrous persons, they were unable to isolate this organism. The
organism was encountered in five of nine acute cases, in one of six subacute
cases, and in two of twenty-three so-called chronic cases of pellagra.
The fungus apparently belongs to the *Aspergillus glaucus-repens* group. The medium in which it is grown becomes strongly fluorescent. Its photodynamic effect on mice is marked, even leading to death after exposure of the animal to sunshine.

The authors conclude that the most tenable theory of the etiology of pellagra is that it is due to a special organism producing a photodynamic substance. This organism requires a rich carbohydrate diet to flourish in the intestinal tract. It is not the deficiency of protein, but the increased carbohydrate intake, which explains the influence of diet on the disease. This concept comports more with the clinical and epidemiologic features of the disease than any so far advanced.


Besides recording his results in asthma and hay-fever, the author records fifteen cases of eczema and urticaria. Every patient gave positive tests to one or more proteins. The results of treatment were excellent when the rigid cooperation of the patient was obtained. The author reports a hitherto undescribed positive reaction which consists in the production of an abraded surface exuding minute droplets of serum.


This is a comparative study of the Wassermann reaction and the contact (Herrold) modification of the Kahn test. In 1,500 tests, agreement occurred in 1,483 serums: the Wassermann test was positive and the precipitin test negative in fourteen instances, and the reverse occurred three times. For the present, ultimate reliance must be placed on the Wassermann reaction, but the precipitin test is so much simpler that it deserves further study.

A SKIN CANCER FOLLOWING EXPOSURE TO RADIUM. W. J. MacNeal and G. S. Willis, J. A. M. A. 80:466 (Feb. 17) 1923.

The patient was a physician who worked with roentgen rays from 1905 to 1917. From 1912 to 1920 he handled radium; in small amounts until 1915, then in large amounts. Skin changes began in 1918. In 1922, a lesion developed on the right thumb, which microscopic examination showed to be squamous cell epithelionma. The authors believe the cancer was the result of radium exposure, and publish the case to call attention to the danger of handling radium without proper precautions.


The patient had influenza in 1919, which was followed by vague pains, early exhaustion and other minor symptoms. A year later, she had zoster along the course of the left sciatic nerve. An attack of grip in February, 1922, was again followed by zoster in the distribution of the eleventh dorsal nerve. This sequence of events is attributed by Hollander to a dormant infection in the posterior root ganglions, which became active when the patient’s resistance was lessened by an intercurrent infection.

After discussing the symptomatology of lupus erythematosus disseminatus, the author reports several cases of this type in which tuberculous adenitis was demonstrable. His observations inclined him to believe that lymphatic tuberculosis is the fundamental predisposing cause of the disseminate variety. This does not apply to the discoid type. Certain elements in the clinical and pathologic picture strongly suggest that patients with disseminate lupus erythematosus are under a cross-fire from tuberculosis and septic infection. The prognosis is grave. Four of the five patients whose cases are reported are dead. In one case, one dose of filtered roentgen ray was applied to the gland-bearing areas and resulted in a remarkable improvement. Foci of septic infection must be removed with the greatest caution.


This is a report of twenty-one patients who had positive Wassermann reactions after treatment with arsphenamin and an insoluble mercurial. These patients were given from four to sixteen silver arsphenamin injections at weekly intervals, and twelve then gave negative reactions, five a diminution in its strength, and the reactions in four remained positive.

Michael, Houston, Texas.

BIOLOGICAL EVIDENCE FOR THE INHERITABILITY OF CANCER IN MAN. Maud Slye, J. Cancer Res. 7:107 (April) 1922.

Spontaneous cancer is said to result from the absence of a mechanism fitted to control proliferation and differentiation in regenerative processes. The absence of such a controlling mechanism is a recessive hereditary characteristic like albinism. Cancerous and noncancerous tendencies are unit hereditary characters which can be transmitted as such or segregated out by selective mating. According to the laws of evolution, applicable equally to plants, lower animals and man, what goes into the germ plasm must come out in the offspring. "The heterozygote, the product of hybridization in any species or any variety, in whom the recessive (cancer or albinism, etc.) lies hidden but potent for transmission, may be a very puzzling factor in heredity, for he contains in his germ plasm, and therefore can transmit to his offspring, unit characters different and frequently opposite in nature. As, for example, a pair of heterozygous black mice transmitting albinism to their immediate offspring, or a pair of heterozygous noncancer mice transmitting cancer to their immediate offspring, because potential cancer went into the germ plasma from which the heterozygotes developed."

FIBROSARCOMA OF THE SKIN IN A GOLD FISH. Jay F. Schamberg and Baldwin Lucke, J. Cancer Res. 7:151 (April) 1922.

This is an anatomic and histologic report of a case of metastatic sarcoma, with a discussion on fish tumors in general.

H. R. Foerster, Milwaukee.
THE BACTERIOLOGY OF THE SKIN LESIONS IN SMALLPOX.


Twenty cases of smallpox in a mild epidemic in Chicago, in the winter of 1921 to 1922 were studied. Three were confluent cases that terminated fatally. Six were of a mild type with only a few discrete lesions, and the remaining eleven were of a severe discrete type. Hemolytic streptococci occurred in the pustules of smallpox in three, and nonhemolytic in two of twenty cases. Staphylococci were found in seven cases. Death took place in three cases, and streptococci were found in the skin lesions of all of them.


Fusiform bacilli and spirochetes were found in the normal smegma secretions of two of thirty-six pregnant women. In their morphology, they appear identical with similar organisms in the preputial secretions of men. Associated with these bacteria were pyogenic organisms, including staphylococci, colon bacilli, diphtheroids and streptococci. The occurrence of fusiform bacilli and spirochetes with pyogenic bacteria in certain genital lesions would indicate that these organisms may be primary and secondary infecting agents causing ulcerative and gangrenous processes. The presence of these organisms normally would indicate that such processes may result, especially under conditions of lowered general resistance, and do not entirely depend on the introduction of these bacteria from other sources.

OLIVER, Chicago.


The author gives a summary review of the etiology and distribution of animal anthrax and of previous methods of treatment of cutaneous anthrax in man. This is followed by a description of a method of treatment by anti-anthrax serum alone, injected in part in the immediate neighborhood of the lesion and in part intravenously or subcutaneously. The statistics quoted by the author from his own cases and from the literature show that this method gives better results than any other. All surgical interference, whether by incision, excision, caustic or cautery, is condemned.

WILLIAMS, New York.

ERYSIPÉLOID. W. DUBREUILH and P. JOLIA, Ann. de dermat. et syph. 3:609 (Dec.) 1922.

The authors report five cases observed by them, the hand being affected in all, and abrasions by bones of fish and meats being apparently causative.

SUPERFICIAL TERTIARY SYPHILIDS WITH CUTANEOUS ATROPHY. LORRAT-JACOB AND P. LEGRAIN, Ann. de dermat. et syph. 3:615 (Dec.) 1922.

These peculiar lesions, of twenty years' duration in a man of 62 years, consisted of plaques involving the palms, flexor surface of the left forearm, entire right thigh, left buttock and genitalia. All were erythematous, finely
THE RÔLE OF THE SYMPATHETIC NERVOUS SYSTEM IN THE
PATHOGENESIS OF A LARGE NUMBER OF DERMATOSES.
and Nov.) 1922.

In a sixty-two page article with an eight page bibliography, the author
exhaustively considers this subject. His classification is as follows:

1. Instances in which functional trouble in the sympathetic system gives
rise to pruritus, which in turn is followed by the cutaneous manifestations.
This group includes the prurigos, lichenification, eczematization, the lichens,
dermatitis herpetiformis and urticaaria.

2. Those cases in which the cutaneous manifestations are directly depen-
dent on a functional disorder of the sympathetic system. In this group are
included the erythemas, erythoderma, purpuras, eczema, herpes, pemphigus,
psoriasis, and possibly nevi.

3. Cases in which the skin manifestations are dependent on a functional
disorder of the sympathetic and endocrine organs. Such conditions are scler-
derma, ichthyosis, pigmentation, hypertrichosis, nonparasitic alopecias,
hydroes, seborrhea and seborrheic affections.

Each condition is considered separately, the author’s views being based
mainly on clinical observations. He anticipates that certain of his present
convictions may some time be disproved.

SCLERODERMA AND SYPHILIS (CONTRIBUTION TO THE STUDY
OF ANGIONEUROTROPHIC ENDOCRINIDS OF SYPHILITIC
ORIGIN). C. Audry and L. Chatelier. Ann. de derm. et syph. 4:1
(Jan.) 1923.

The authors record two cases of generalized scleroderma in women, one 18
years of age, whose syphilitic infection may have been congenital, and the
other 40 years of age, with signs of syphilitic involvement of the central ner-
vous system (treated). Urinalysis in the second case showed signs of changes
in metabolism, probably due to hepatic affection.

In conclusion, the authors indicate the need of a careful examination for
syphilis in cases of scleroderma, in order to determine to what extent that
infection may be causative.

THE VARIETIES OF TINEA OF THE SCALP SEEN IN BORDEAUX
4:9 (Jan.) 1923.

In a series of 176 patients in whom the organisms were isolated, the per-
centages of incidence were as follows: Microsporon audouini, 63 per cent.;
Trichophytton violaceum, 18 per cent.; Trichophytton crateriforme, less than
1 per cent.; Trichophytton gypseum asteroides, less than 1 per cent.; and
Achorion schonleinii (of favus), 17 per cent. The ages of the patients ranged
from 2 to 15 years.
ARCHIVES OF DERMATOLOGY AND SYPHILIOLOGY

TWO CASES AND SOME CONSIDERATIONS ON THE PATHOLOGIC ANATOMY AND THE PATHOGENY OF GENERALIZED ARGYRIA.

G. Maranon, Ann. de dermat. et syph. 4:35 (Jan.) 1923.

In two patients who had previously taken silver nitrate by mouth, the skin of the face and hands was affected. A biopsy examination was made in one case, and it showed the presence of a large amount of melanin in the cells of the epidermis. It is considered possible that this abundance of melanin may be one of the special physiologic conditions of the skin which render some people more susceptible to the formation of silver deposits.

CONTRIBUTION TO THE STUDY OF KRAUROSIS VULVAE.

H. Halkin, Ann. de dermat. et syph. 4:65 (Feb.) 1923.

The author has made detailed comparative studies of sections taken from the labia minora and clitoris of a patient, aged 58 years, with an extensive kraurosis vulvae complicated by fatal vulvar epithelioma; for purposes of comparison, he has described the histology of these parts in a patient at the age of 26 years, without kraurosis, and in a woman of 56 years, also without kraurosis. The author found sclerosis and also degenerative changes in the elastic tissue, and he considers kraurosis vulvae a distinct entity, clinically and histologically. In this case epithelioma developed from it, there being no sign of leukoplakia, in a way comparable to the development of epithelioma from the chronic balanitis of old men.

TWO CASES OF PRURIGO LYMPHADENIQUE.

M. Raynaud, J. Montpelier and A. Lacroix, Ann. de dermat. et syph. 4:74 (Feb.) 1923.

A man, aged 44 years, complaining of pruritus of the extremities, of six months' duration, presented a generalized enlargement of the palpable lymph nodes. Roentgen-ray treatment was followed by the appearance of a polymorphous eruption, more severe on the extremities and face, consisting of papules, vesicles and pustules. There were 2,350,000 red blood corpuscles per cubic millimeter, and 94,000 white blood cells, 4.5 per cent. of which were eosinophils. A histologic examination of a lymph node revealed the presence of a granulomatous infiltration, cells of various types being present, including giant cells of the Sternberg type; there were no eosinophils in these sections.

A man, aged 63 years, with a pruritic papular eruption of the extremities and neck, of several months' duration, and generalized lymphadenopathy, had a red blood corpuscle count of 6,029,000 and a leukocyte count of 17,000 to 10,000, of which the eosinophils numbered 7 and 0.5 per cent., respectively. Histologically, a lymph node showed granulomatous invasion of polymorphous cell type, but no Sternberg cells were found. In both cases, tuberculosis and syphilis were excluded as etiologic factors.

CHEILITIS EXFOLIATIVA AND ITS TREATMENT BY ROENTGEN RAYS.

R. Abimelech, Ann. de dermat. et syph. 4:85 (Feb.) 1923.

In two cases which resisted other means of treatment, roentgenization was apparently successful.

THE NATURE OF ECZEMA.


To the apparently normal skin of seventy-seven eczematous patients and to the skin of 140 normal controls, ordinarily harmless percentages of liquor
formaldehyde, turpentine and tincture of arnica were separately applied and allowed to remain for twenty-four hours, the resultant reactions being noted. Patients with infantile, professional or the so-called constitutional, eczemas reacted frequently (50 per cent.), while reactions were observed in only 4 per cent. of the controls. Some reacted to only one substance, some to two or three. There seemed to be a definite hypersensitiveness of the eczematous skins to certain substances, the epidermal cells apparently being at fault and the condition probably either acquired or congenital. The literature is thoroughly reviewed.

Parkhurst, Toledo, O.


In cases of tuberc, meningomyelitis and cerebral arteritis, fairly, strenuous arsenical treatment usually diminishes the positivity of the Wassermann reaction; in general paresis this does not seem to be true. But this is the only instance in which the degree of intensity of this reaction can be used as a help in differential diagnosis.


Three cases are cited to show the value of this test in husband and wife, in conjunction with the routine spinal fluid examination.

Parkhurst, Toledo, O.


A typical eruption, of general distribution but more accentuated on the upper extremities, was present in a child of 14 years, its duration being three weeks. Diagnoses of syphilis and of urticaria pigmentosa were excluded, with the aid of a biopsy examination, which is recorded in detail.


In a man, aged 36 years, this condition was accompanied by constitutional symptoms, being of nearly a year's duration. A fistula appeared, leading to the bone, and roentgen-ray examination revealed a rarefaction of the head of the humerus and diaphyseal periostitis.


A roughly circular crusted, violaceous, raised, somewhat infiltrated and tender lesion was located on the forehead of a woman, aged 80 years. It had appeared following injury from a pointed instrument received four months
previously, and a peculiarity was the presence of small gritty granules, which were found to be necrotic epidermal cell masses.


A woman of 36 years presented three of these tumors; the largest was 1 cm. in diameter, the sites being the forehead, lower eyelid and cheek, and the oldest being of nine years' duration. Such cases are often wrongly diagnosed.


In a patient, aged 31 years, with gummas of the arm, syphilitic infiltration of the chest wall, gummatous changes in the cervical lymph nodes and a history of three recent attacks of icterus, there were some lesions of sarcoid type. There being some pulmonic infiltration, the question was raised as to whether the lesions, if sarcoids, were of tuberculous or syphilitic origin.


Hyperthyroid cases were intensively irradiated, and hypothyroid patients were treated by galvanism, with good results, which are reported in detail.


The author cites instances in which the reaction of Vernes has been negative in the presence of active syphilis, even with an eruption, and he cautions us against relying solely on it in the diagnosis, treatment and prognosis of syphilis. A committee is to investigate the matter further.


Both patients were young army officers whose initial lesions had been diagnosed early and who had received thorough treatment in the absence of positive Wassermann reactions. Both subsequently became serologically positive, and the second patient, who had married and produced a healthy child, presented oral mucous patches. Therefore our prognoses should be guarded, even in the most apparently favorable cases, and our period of observation prolonged.


This nevus, in a woman of 21 years, followed the course of supply of the radial nerve. It had appeared eleven years previously.

Occurring in a woman, aged 26 years, infected by her husband and subjected to mixed treatment, a pyloric ulcer perforated and soon a quadriplegia appeared, followed by death, probably as a result of syphilitic meningomyelitis.


In this case the nephritis, of less than three weeks' duration, was considered to be a syphilitic manifestation of the nature of a Herxheimer reaction. However, bismuth may cause nephritis, and in such cases it is to be used cautiously.


In a woman, aged 44 years, with rather extensive leukoderma of the trunk, the plaques showed diminished sensation, especially to temperature changes, and the pilomotor and vasomotor responses were diminished. We are reminded of the frequent occurrence of leukoderma following nerve injuries, notably leprous, syphilitic and traumatic; and the author concludes that the fault often apparently lies in a lesion of the sympathetic nervous system.


In a boy of 8 years, the keratoderma had been present for six years, having attained its full extent in six months and remained stationary since. The face, scalp and extremities were involved, the trunk remaining free from the manifestations. The palms and soles were affected, and there were many points of resemblance to pityriasis rubra pilaris, but not the extreme degree of follicular hyperkeratosis.


Three fresh cases of syphilis are cited to illustrate the supposed tendency of certain cases of early central nervous system involvement to advance rapidly in spite of any treatment that may be used. In the first case, the question of a possible bismuth neuritis is considered; but the eye-ground findings were those seen in syphilis, which was probably causative here.

The cornea of this rabbit had recently been inoculated with the contents of herpetic vesicles, and simultaneously there had appeared a keratitis and impetigenous alopecic areas about the affected eye. In the discussion, it is brought out that similar alopecia often occurs in animals after experimental shock or after an operation.


Comparing the results from the use of the new arsenical drugs with those from the introduction of antidiphtheritic serum, the author stresses the importance of their intensive use, in spite of the occasional accident which may occur. Many practitioners fear to use arsphenamin and neo-arsphenamin, and as a result their syphilitic patients are long able to communicate the infection to others.

Having treated more than 2,500 patients, the author now reports his fifth fatality, in a woman, aged 38 years, who presented severe hemorrhagic manifestations after the third injection of neo-arsphenamin in small doses. Such accidents seem to be especially frequent in female patients.


The infra-red rays are used intensively first, to increase the blood supply of the part, and then the ultraviolet rays, produced by a 440-volt Kromayer lamp, which seems to increase the oxygen content and leukocytic percentage of the blood. Recurrences are frequent. The method is similar to Finsen's.


In a soldier, aged 21 years, the condition involved the fingers and toes, nose and left ear, with the characteristic areas of infiltration and underlying bone changes. Histologically, the picture of Boeck's sarcoïd was recalled, and since there was some pulmonary infiltration, the manifestations were considered to be of tuberculous origin.


In a woman, aged 21 years, with congenital syphilis, a bilateral hydarthrosis had appeared eleven years previously. The condition in the left knee soon cleared up, but the involvement of the right knee had persisted, without pain or tenderness, and with little limitation of the motility of the joint. Three
injections of a bismuth preparation were given, resulting in temporary improvement, and then arthroty was done, a fibrinous mass being removed. Six months later there had been no recurrence.


To a man with an initial lesion of syphilis and a negative Wassermann reaction, three bismuth injections were given within six days, and two days later a slightly pruritic erythematous papulosquamous eruption appeared on the flanks, thorax and abdomen.


Pruritic patches resembling those of seborrhic dermatitis first appeared near the midline of the chest and back; within four days the entire trunk was involved, some of the lesions being typically those of pityriasis rosea. There was also slight urticaria and dermatographism.


A man, aged 62 years, with lymphatic leukemia, had first noticed small nodules on his nose one year previously. The cheeks and ears subsequently also being involved, with a resultant clinical picture highly suggestive of leprosy. Histologic examination, however, showed the infiltrations to consist of densely packed lymphocytes. Benzol was given, but had to be discontinued, and intravenous injections of sodium cacodylate combined with roentgen-ray treatment were followed by great improvement and by total disappearance of the facial nodules.


There were two remarkable features in this case: the margins of the plaque were digitate and indefinite, and the plaque had begun, according to the patient, as an area of yellowish pigmentation.


A woman, aged 38 years, with pulmonary tuberculosis, who had had facial lupus erythematosus for nine years, experienced an acute flare-up with purpura and a fatal outcome.

DIFFUSE GANGRENOUS PHLEGMON OF THE NECK; ANTI-GANGRENOUS SERUM THERAPY; CURE. F. Masmonteil and H. Grouge, Gaz. d. hop. 95:1693 (Dec. 30) 1922.

The patient was a woman in the ninth month of pregnancy, and the process involved the neck and cheek, with considerable necrosis. On each of two suc-
cessive days 80 c.c. of an equal combination of serums to combat gangrene was injected, and healing rapidly ensued. The patient gave birth to a healthy child.


Cases are cited to illustrate the occurrence of neurosyphilis in both husband and wife, even though the clinical symptoms were nil and the spinal fluid changes slight. The importance of a thorough investigation is stressed.

PARKHURST, Toledo, O.


Chancre of the breast is more common in women during lactation. It must be differentiated from herpes, impetigo, fissures, epithelioma and Paget's disease. In the secondary stage of syphilis, there may be analgesia of both breasts and diffuse mastitis which sometimes suppurates. In the tertiary stage, localized gumma or diffuse gummatous mastitis is observed. In these cases a certain retraction of the nipple may occur, and the condition may be mistaken for a malignant tumor. In some cases of gummatous mastitis, the skin of the breast may present the "orange peel" aspect described in cancer. The authors warn against a diagnosis of cancer until syphilis has been ruled out.


Intravenous injection of a 2 per cent. tartar emetic solution was used in the treatment of several cases of leprosy, the amounts injected varying from 2 to 5 c.c., twice a week. The ulcers healed rapidly, in all cases, and there was marked improvement in the general condition of the patients; but the Hansen bacillus was present in all cases.

TREATMENT OF ALOPECIA. E. Savini, Reforma Med. 39:103 (Jan.) 1923.

In cases of alopecia seborrhoica, the author asserts the daily massage of the scalp with the following invariably gives good results:

Formaldehyd .......................... 1.00 gm.
Salicylic acid .......................... 0.15 gm.
Mercuric chloride .......................... 5.00 gm.
Menthol .......................... 120.00 c.c.
Chloral hydrate .......................... 10.00 c.c.
Alcohol 70° .......................... 10.00 c.c.

He also uses suprarenal extract internally, 0.1 to 0.2 gm., daily.

Pardo-Castello, Havana.

ABDERHALDEN'S DIALYSIS PROCEDURE IN SCLERODERMA. O. Kiess, Dermat. Wchnschr. 75:863 (Sept. 9) 1922.

In eleven cases of scleroderma, diffuse and circumscribed, the hypophysis was found to be faulty in all but one, and hypophysin was administered sub-
cutaneously in two of these cases, with good results, which in one, at least, were only temporary.

A CASE OF PEDICULI VESTIMENTORUM AND OVA UNDER THE TOENAIL. R. BRAUN, Dermat. Wchnschr. 75:874 (Sept. 9) 1922.

This peculiar condition is described with the aid of a picture, there having been an onychogryphosis with minute holes bored into the nail substance, in which the parasites were found.

INNOVATIONS IN MICROSCOPY FOR DERMATOLOGISTS. II. TELESCOPE LOUPE AND MICROSCOPE. F. W. OELZE, Dermat. Wchnschr. 75:875 (Sept. 9) 1922.

There is given an illustrated description of a binocular magnifying apparatus, with or without a headband, for examining skin lesions from a convenient distance (say 1.5 meters); it may be used with illuminator attachment for examining the buccal cavity. It may be passed around in the amphitheater to enable students to see cases to better advantage.

A magnifying apparatus attached to a stand is also described, whereby lesions may be minutely examined, and with the aid of colored slides, pigmenitary distinctions better appreciated. Thus, with the aid of a green filter, a good contrast is secured whereby a faint macule may be easily seen.

THE FINDING OF SPIROCHETES IN THE SKIN AT SITES FREE FROM SYPHILITIC LESIONS. R. FRUHWALD, Dermat. Wchnschr. 75:878 (Sept. 9) 1922.

In two patients with early syphilis, one with a strongly positive Wassermann reaction, the other in the sixth week with a reaction still negative, an artificially produced vesicle contained Spirochaetae pallidae.

SYphilis WITHOUT A CHANCRE. F. WEILER, Dermat. Wchnschr. 75:880 (Sept. 9) 1922.

Weiler's patient had had intercourse with a woman subsequently found to have syphilitic condylomas involving the labia. Immediately after contact he had noticed an abrasion of the frenum and applied potassium permanganate solution to it. This lesion was examined frequently by the author and never found to contain Spirochaeta pallida; it soon healed under bland antiseptic applications. The Wassermann reaction was persistently negative until eleven weeks after infection, when it became positive and a rash appeared. The permanganate probably attenuated the organism of syphilis, preventing the appearance of the primary sore and delaying the appearance of systemic signs.

A CASE OF SYPHILITIC CHANCRES APPEARING SIMULTANEOUSLY ON THE LOWER LIP AND EYEBROW. U. GREIF, Dermat. Wchnschr. 75:895 (Sept. 9) 1922.

The lesion of the lip preceded that of the eyebrow by a few days, the organism probably having been conveyed from one site to the other by the patient's fingernail. There is a good description and a photograph of the patient, a man, aged 21 years, who did not know how he had become infected.
PSORIASIS OF THE ORAL MUCOSA. P. Keller, Dermat. Wchnschr. 75: 917 (Sept. 16) 1922.

In a woman, aged 25 years, who was having her second attack of psoriasis of the so-called seborrhoeic type, there were peculiar lesions of the mucosa of the cheeks and palate which suggested psoriasis clinically and microscopically. If psoriasis occurs in the mouth it must be rare, and the author brings out one point against Samberger's theory of a parakeratotic diathesis: Leukoplakia often occurs in the mouths of psoriatic persons, and this is a hyperkeratosis rather than a parakeratosis.

MOUSE FAVUS IN MAN. H. SolTMANN, Dermat. Wchnschr. 75:869 and 920 (Sept. 9 and 16) 1922.

The author reviews the literature and reports the case of a man, aged 21 years, who apparently had acquired the infection from contact with horses. Only the glabrous skin was affected, the arm being the site of involvement, and the Achorion of Quincke was cultivated from the lesions and successfully inoculated in the rabbit and mouse.

THE COLORED NORMOMASTIC REACTION OF KAFKA IN THE CEREBROSPINAL FLUID. T. Benedek, Dermat. Wchnschr. 75:883, 925 and 943 (Sept. 9, 16 and 23) 1922.

This reaction is considered both in theory and practice, illustrative charts and tables being included. The author concludes that its theory is not yet strong; the reaction depends on the quantity and quality of the globulins present. The technic is simple, room temperature being considered preferable to the cold. No satisfactory differentiation between the various syphilitic involvements of the central nervous system is possible by this means. The normal curve is defined, and also those found in syphilis and in tuberculous and pyogogenous meningitis.


In 1912, Lipschutz described this condition as an entity and named the bacillus crassus as causative; but the author considers the etiology less definite, and cites two cases, both in virgins, the first showing typical lesions containing many streptococci and staphylococci but no Bacillus crassus, while the second yielded a pure culture of Bacillus crassus in the complete absence of any ulceration.

THE TREATMENT OF CARBUNCLE ACCORDING TO THE METHOD OF SCHUTZ. F. Hammer, Dermat. Wchnschr. 75:949 (Sept. 23) 1922.

The plan of Schütz, as described by him in this publication (74:421, 1922) and abstracted in the ARCHIVES OF DERMATOLOGY AND SYPHILIOLOGY (7:244 [Feb.] 1923), has not been so successful in the author's experience as rest and protection, with which treatment healing has been rapid and scarring slight.


Eight patients were thus treated by the author with favorable results, and he concludes that bismuth therapy is valuable especially for patients who cannot be treated with mercury and arsphenamin.
Society Transactions

NEW YORKDERMATOLOGICAL SOCIETY

Regular Meeting, Nov. 28, 1922

WILLIAM B. TRIMBLE, M.D., President, in the Chair

PAGET’S DISEASE OF THE ABDOMEN. Presented by Dr. Trimble.

A woman, aged 63, had had a lesion for thirty years, which first appeared on the right side of the navel, and which increased peripherally up to its present dimensions, now covering almost the entire right lower quarter of the abdomen. It was superficial, dusky red, and a fine, thread-like, rolled border could be seen on the inner margin near the midline of the abdomen. The patient was seen in 1916, when the lesion was only one half its present size. She did not at the time follow the advice given, and had allowed the condition to progress until it had almost tripled in size.

DISCUSSION

Dr. Fordyce said that the type of epithelioma shown in this case was not unusual, except as to size. He had studied a number of these cases both clinically and microscopically. In some of them, it was possible to demonstrate edematous and vacuolated cells similar to those seen in Paget’s disease of the nipple. In others, there was a budding of the basal cells as seen in rodent ulcers. Recently he had observed multiple epitheliomas of this type, which developed from the lesions of psoriasis. There seemed to be considerable confusion as to the relation of this type of epithelioma to Bowen’s precancerous keratosis.

Dr. Lane said he had intended to mention the point brought up by Dr. Fordyce about the difference between this condition and Bowen’s disease. The clinical points of difference in the two conditions had never been clear to him.

Dr. G. H. Fox said that the first case of Paget’s disease presented before the Society was shown some years ago by Dr. Sherwell, the large patch around the nipple presenting clinically the same appearance as this one.

Dr. Highman, referring to the question of the similarity of this condition to Bowen’s precancerous dermatosis, said there were seven cases of the latter on record—three of Bowen’s dermatosis, three of Darier’s, and he himself had seen the seventh case which had been repeated in the literature. Bowen’s disease resembled a crusted ulcerating gumma, serpiginous in arrangement. There was rather an amazing clinical similarity between this disease and that type of gumma, so far as the eye was concerned, but close examination showed that it was not syphilitic but neoplastic, like senile keratosis or seborrheal warts. Microscopic examination revealed a striking variation in the picture—at times no suggestion of malignancy, only an acanthotic mass with a curious multibodied dyskeratotic type of cell in the malpighian rete, containing anywhere from two to six nuclei in orderly arrangement, suggesting what a giant cell would look like in an infiltration. In other lesions one saw the typical basal cell epithelioma changes, so that from the examination
of one lesion alone it was impossible to decide whether one was dealing with malignancy or not. Some of the lesions were frankly malignant and others not, except for the dyskeratoses suggesting Paget's disease. Clinically, if one had seen a case of Bowen's disease, it seemed impossible to confound it with Paget's disease, or with that large group of conditions loosely called Bowen's disease, but which were really senile keratoses undergoing malignant change. Bowen laid emphasis on the peculiar serpiginous arrangement of the lesions. The individual elements varied in number in a given group, from three to four or seven to nine. In a case seen at Cornell University under Dr. Johnston, the lesions were on the side of the neck, and it was almost impossible not to believe at first that the man had syphilis.

Dr. Highman said further that so far as he understood Bowen's disease it did not suggest Paget's disease, except histologically as to the multinucleated bodies.

Dr. Trimble said it was a basal cell epithelioma, but on account of having these keratic bodies that occur in Paget's disease, it seemed to be in that class spoken of as extramammary Paget's disease.

Dr. Highman recalled Jadassohn's speaking of the so-called psorosperms that were frequently found in ordinary epitheliomas of the skin. Since this was so, it was likely that often these so-called round bodies were interpreted as the curious bodies seen in Bowen's disease. Furthermore, if Jadassohn's statement were true, it served to increase confusion in judging the significance of dyskeratotic bodies.

Dr. Trimble said that he was well aware of the fact that the peculiar cells just referred to were found in other conditions than Paget's disease, although he was not aware that Jadassohn had been the first to call attention to it. It was Darier who decided that these cells were the cause of psorospermosis or Darier's disease, and it was afterward that Bowen proved that they were merely dyskeratotic cells and not psorosperms at all. In a few other conditions, these cells were also found, one of them being Paget's disease; therefore this case was thought to be Paget's disease rather than plain epithelioma.

Sarcoid (Speigler-Fendt Type). Presented by Dr. Trimble.

J. L., aged 58, born in Scotland, a gardener, had a lesion which began seven months before as a small papule on the right side of the face just under the right eye and about one-fourth of an inch (6.35 mm.) to the right of the nose. This papule grew rapidly until it formed an indurated plaque one and one-half (3.81 cm.) by three-fourths inches (19.05 mm.) in size, as presented. The skin over this was slightly reddened, and superficial, enlarged veins ran across the surface. A biopsy showed the picture of a sarcoid of the Speigler-Fendt type.

Report: "The principal histologic feature is a diffuse infiltration located in the corium, which almost entirely replaces the same and encroaches on the epiderm so as practically to obliterate the pegs and leave the epiderm as a thin narrow rim with an occasional plugged hair follicle. This infiltration is diffuse and is made up of cells of the large lymphocytic type with numerous mitotic figures in a dense fine reticulum. No giant cells were found. Diagnosis: Histologically a similar picture has been observed in cases of mycosis fungoides and lymphosarcoma. This picture would probably correspond with the histologic picture described for sarcoid of the Speigler-Fendt type."

(Signed) Charles G. Darlington.
DISCUSSION

Dr. Fordyce said that on first looking at the case, sarcoma would be suggested, and that he would very much like to see a section of the lesion.

Dr. Highman said that clinically the sarcomatous of Boeck could be excluded. The lesion looked like a new growth; it had the glossy color of a new growth, particularly of the sarcoma type, and palpation suggested a new growth rather than an inflammatory lesion. It was too elastic for a typical gumma, and too hard for other specific infections of the skin, such as sporotrichosis or blastomycosis. The absence of ulceration favored the diagnosis of a neoplasm. Microscopically, it seemed almost to tally with lymphosarcoma or round cell sarcoma. There were connecting links between certain of the less typical sarcomas and true sarcomas on the one hand, and the related conditions, such as lymphadenosis, on the other; nor did he think that the histology in this case conformed to that of sarcomatous.

TUBERCULOSIS CUTIS (WRIST). Presented by Dr. Trimble.

D. O'L., aged 40, married, born in Ireland, a chauffeur, presented on the flexor aspect of the left wrist an infiltrated, serpiginous, crescentic, nodular lesion about 2 inches (5.08 cm.) in diameter. The base of the nodular border was about three-eighths of an inch (9.51 mm.) wide, and the elevation above the surface was about the same. The color was reddish or violaceous. Six years before, the patient had cut his wrist with a piece of beef, and always since he had had a crusted lesion. In July, 1922, active ulceration appeared. The Wassermann test was negative. Microscopically, chronic inflammation had been reported on one occasion and squamous epithelioma on another.

DISCUSSION

Dr. G. H. Fox said that unfortunately for the clinical diagnosis, the treatment had so changed the appearance of the lesion that one could hardly determine what it was. He thought that in all cases presented to the Society all local treatment should be suspended.

Dr. Lane said he did not remember seeing a case of epithelioma developing on tuberculosis verrucosa cutis, although it frequently developed on lupus. It was quite possible that the present lesion was an epithelioma preceded by tuberculosis. The location was such that there might have been considerable irritation.

Dr. Williams said he thought Dr. Lane's explanation the most probable.

Dr. Fordyce said it would be interesting to know whether the epithelioma belonged in the squamous cell group. Its long duration without involving the lymph nodes was interesting.

Dr. Trimble said he was inclined to agree with Dr. Fordyce, although there was, in some instances, no glandular involvement for a long time. Dr. Lane's suggestion also appealed to him strongly—that an epithelioma might develop on a tuberculosis verrucosa cutis.

XANTHOMA MULTIPLEX ASSOCIATED WITH XANTHOMA PALPEBRARUM. Presented by Dr. Bechert.

C. D., a woman, aged 48, born in Russia, said that the eruption had been present for some years. The lesions on the elbows and knees had existed for
six months or more before the appearance of those on the eyelids. On the elbows and knees, was a considerable number of various sized, nodular, decidedly yellow lesions. The region of the tendon of Achilles was free. The characteristic, sharply defined, slightly raised, chamois lines were present in large numbers on the upper and lower lids of both eyes. Another interesting feature was the presence of the lesions in all the palmar striae. The woman did not have jaundice.

**Discussion**

Dr. Higman said he would like to hear discussed the relationship of the two types of so-called xanthoma, on account of Pollitzer's work indicating that xanthoma of the eyelid was different from xanthoma tuberosum. Xanthoma tuberosum was a response to cholesterin deposited in the corium—a point of view corroborated by Lebedew, who by experimentation with rabbits found he could produce xanthoma. The point was whether, after all, in spite of their histologic and clinical differences, the pathogenesis was not referable in both to a disturbance of fat metabolism. It was a subject worth careful consideration.

Dr. Fordyce said it was difficult to get away from the idea that the two conditions were closely associated, for often one sees the two conditions in the same patient. The association might be a coincidence, but there appeared to be an etiologic relationship. He did not recall that there had been any recent study of xanthoma since Pollitzer's work.

Dr. Higman said that some authorities disagreed with Dr. Pollitzer's views. His histologic definition was evidently correct, but the two conditions seemed nevertheless to be related etiologically.

Dr. Lane said the point that interested him most was the presence of the xanthoma following the lines in the palms of the hand.

Dr. G. H. Fox said he was glad to hear a discussion of the identity or nonidentity of the two diseases. In most cases of xanthoma of the elbows and knees, according to his experience, the eyelids were not affected, and in the vast majority of cases of xanthoma of the eyelids there were no lesions elsewhere; but since in some cases xanthoma occurred on both the lids and other portions of the body, and as the clinical features were quite similar, any difference in microscopic appearance apparently was due to the anatomic conditions of the portions of skin affected, and the two conditions apparently were different manifestations of the same disease.

Dr. Trumble said that the majority of those who had expressed an opinion believed that xanthoma palpebrarum and tuberosum were the same, or were closely related. He merely wished to call to mind that they differed widely in two important particulars—one clinical and the other pathologic. Pollitzer's studies tended to prove that xanthoma palpebrarum was a muscle tissue degeneration; this could not be said of the tuberous variety, as a different pathologic picture was presented. The clinical difference was that xanthoma tuberosum was a firm, hard, infiltrated lesion and on palpation was markedly different from xanthoma palpebrarum; in fact, the latter condition in many instances could not be felt. If the examiner's eyes were closed, he could not tell whether he was palpating the xanthoma or the normal skin.

Dr. Lane asked whether any one had seen xanthelasmas of the eyelids in very young persons. Dr. Wise had said that he had never seen xanthoma of the body without its being also on the eyelids, but he recalled the case
of a child in which the condition started at the age of 8 months; there were a large number of xanthomas on the body and none on the eyelids.

Dr. BECHET said that Stelwagon had mentioned in his textbook the simultaneous occurrence of the two types of xanthoma.

KAPOSI'S SARCOMA. Presented by Dr. WISE.

Mrs. M., aged 66, a private patient, had had the disease for fourteen years. The peculiarity of the case was its extensiveness and the large bullae on the thighs. The trunk, arms and legs were involved. The legs and feet presented brownish black, verruca-like lesions, and the legs were swollen greatly. The upper thighs had numerous bullae varying in size from that of a pea to that of a bean. The bullae contained a hemorrhagic fluid. Microscopic examination made at the Vanderbilt Clinic confirmed the clinical diagnosis. The urine was negative. A blood count made at the pathologic laboratory of the Vanderbilt clinic showed: hemoglobin, 65 per cent.; white blood cells, 10,000; lymphocytes, 20 per cent.; polymorphonuclears, 80 per cent.; eosinophils, 2 per cent. An interesting fact was that the marked exudation and bullae cleared up for a few weeks after two roentgen-ray treatments given a fortnight apart. The factors were one filtered unit through 1 mm. of aluminum. \( \frac{6 \times 5}{8 \times 8} \) = time, 2 minutes, 17 seconds. They then recurred, but they were not so severe in character as before.

DISCUSSION

Dr. FORDYCE said it was a rare complication and he had never before seen a case like it. It was evidently due to the involvement of the lymphatic vessels.

Dr. WILLIAMS said it was an exceedingly interesting case: first, because of the extent to which the legs and also the face and hands were involved, second, because of the bullae, and third, because of the curious warty growth on both legs, which he had never before seen in a case of Kaposi's sarcoma. The lesions looked very much like tuberculosis verrucosa, in which one could pick out cheesy masses.

Dr. LANE said he had noticed the verrucous condition mentioned by Dr. Williams, and that it appeared to him to be part of an elephantiasis which was present in connection with and as a consequence of the sarcoma.

Dr. BECHET said that the verrucosity to which Dr. Williams had referred was not a rare condition; he had frequently observed it in a number of advanced cases of that disease, particularly over the ankles. The comparatively benign course usually run by this disease was well exemplified in the case under consideration; the eruption was a most extensive one, the legs, arms, and even the face being greatly affected, and yet the woman seemed to be in good health.

Dr. HIGHMAN said that, in his opinion, the point which Dr. Lane mentioned showed the consistency of the entire process as presented in this patient. As he remembered it, the Kaposi type of sarcoma extended through the lymphatics—as it were, a slow type of lymphatic metastasis—consequently, many of the lymphatics must be clogged by masses of new growth, causing the various manifestations of bullae, verruca, etc., as in elephantiasis. Whereas he had never seen bullae like those in this case, in cases of elephantiasis in which the verrucous stage had developed, he had frequently seen a small vesicle or cyst developing at the end of each papillomatous proliferation. One did not see
bullae so frankly in elephantiasis as in this case, but it seemed that it must be the same process. The striking point in this patient was that the contents of some of the bullae were hemorrhagic, so that one would imagine that the perivascular lymphatics were those mainly involved.

Dr. Trimble said that he agreed with most of what Dr. Highman had said, but he would not say that Kaposi's sarcoma was followed by bullae. The lesions were lymph vesicles, not bullae. In his opinion, the condition was Kaposi's sarcoma with secondary elephantiasis, due to lymph stasis; and in connection with it, the lymph vesicles were formed.

Dr. Wise said that other interesting features were that the patient had received two filtered roentgen-ray treatments on the thigh at intervals of two weeks, after which the vesicles and bullae disappeared, only to reappear two weeks later. The roentgen ray had a decided effect in causing the lesions to disappear.

Dr. Highman said that evidently the roentgen rays caused a temporary involvement of the metastases blocking the lymphatics.

ACRODERMATITIS CHRONICA ATROPHICANS. Presented by Dr. Wise.

S. H., a woman, aged 32, married and the mother of three children, had the condition for three years. The skin of the left elbow down to the middle of the arm was bluish and wrinkled. On the dorsum of the left hand, there was a similar wrinkling of the skin with a tendency to anetoderma. The skin in that location was soft and velvety. On both legs, but more pronounced on the right, the skin was reddish blue, and the veins showed prominently through the overlying skin. Over the right knee, there was a patch of anetoderma; the right elbow was similarly affected.

DISCUSSION

Dr. Bechet said the case clearly represented the clinical picture described under the heading of acrodermatitis atrophicans. He did not believe it was scleroderma.

Dr. Fordyce said there was no doubt as to the diagnosis. He referred to a case he had seen in which the atrophy involved not only the skin of the lower extremities, but also the vaginal mucous membrane. He had investigated these cases from various points of view, namely, the blood chemistry, the condition of the nervous system, etc., but the results had been negative.

Dr. Williams said that in a case so symmetrical as this and with atrophic changes, it would be interesting to have a neurologic examination made in order to ascertain whether there were any central nerve lesions. He then cited a case of scleroderma in which a neurologist found certain changes in the central nervous system, indicated by sensory disturbances in apparently normal skin, such as occur in syringomyelia.

A CASE FOR DIAGNOSIS: PECULIAR PIGMENTATION AND HYPERKERATOTIC FOLLICLES. Presented by Dr. Bechet.

E. S., a married woman, aged 38, born in Italy, who had lived in the United States for nine years, said that the eruption was of four years' duration. It began on the face, and it did not appear on the arms until two years later.
The patient had been stripped, and the trunk and legs were found to be entirely free. She denied the application of any actinic or chemical agent, either to the affected parts or to the scalp. The face was deeply pigmented, with areas of lighter skin in lacelike effect, and markedly atrophic. There was even slight ectropion of the right eye. The follicles at the hair margins were hyperkeratotic, as were also those on the arms, in what location greatly resembling pityriasis rubra pilaris. There were extensive intrafollicular hemorrhages. The woman had appeared at the clinic the day of presentation, hence the inadequacy of the report.

**DISCUSSION**

**Dr. Williams** said he did not know what the condition was, but that the curious dry parchment-like appearance was very suggestive of the atrophy following exposure to actinic or roentgen rays. The eruption occurred on the exposed portion of the body only; it seemed analogous to xeroderma pigmentosum, although it was not that.

**Dr. Fordyce** said that Dr. Williams' remarks were interesting as a possible explanation. The keratosis of the forearms suggested pityriasis rubra pilaris, but the picture did not fit that condition.

**Dr. Highman** inquired as to the nature of the patient's occupation, and on being told that it was housework, he said that if she was in the habit of bending over a stove she might have dermatitis ab igne, but that this would not account for the eruption on the arms. Possibly metabolic studies with reference to hemachromatosis, that is, bronzed diabetes with hepatic cirrhosis, might throw light on the case; but the patient's evident good health made such a general disturbance seem unlikely.

**Dr. Trimble** said that he could add nothing to the discussion so far as the diagnosis was concerned. Not considering the condition of the face, pityriasis rubra pilaris would be suggested, but he had never seen a case of that disease with that facies. Dr. Wise had written an interesting paper on lymphadenosis cutis. The patient, whom he had seen a number of times, had a face the counterpart of this patient's—the redness, pigmentation, atrophy—everything seemed to be practically the same.

**Dr. Becher** said that the patient spoke little if any English, but her daughters spoke it fluently, and had given a clear history. They specifically denied roentgen-ray treatment or any chemical application, nor had anything been used on the hair. As he had seen only one case of poikiloderma vascularis atrophicans, he would like to ask Dr. Lane whether the case under consideration resembled even remotely the cases of poikiloderma reported by him.

**Dr. Lane** said that in most of the cases of poikiloderma there was no keratosis pilaris; the skin was smoother than normal, and the horny follicular appearance seen in this patient was noticeable by its absence.

**GUTTATE PSORIASIS WITH LEUKODERMA.** Presented by Dr. Wise.

I. W., aged 4 years, had had the condition for five months. Scattered over the trunk and extremities was a moderate number of guttate psoriasis lesions, covered with micaceous scales. Scattered over the back were many spots of leukoderma.
BROMODERMA FOLLOWING LONG CONTINUED USE OF BROMOSELTZER. Presented by Dr. Howard Fox.

C. E. W., a woman, aged 45, married, was first seen six weeks before, on November 3. She then presented a symmetrical eruption occupying the anterolateral aspects of the middle third of the legs. The eruption, which had been present for three months, had begun as a "blister," to which iodin had been applied. At that time, her family physician considered the disease impetigo, and treated her for six weeks with white precipitate ointment. Despite this the eruption increased in area, clearing up somewhat in the central portions. When first seen by the presenter, the eruption had elevated vesiculopapulous borders and an outer halo of bright red erythema. It suggested a bromoderma or a blastomycosis. The pain seriously interfered with sleep and made walking difficult, and there was marked tenderness. After prolonged questioning the patient admitted the frequent use of bromo-seltzer for headaches. She estimated that she had taken three or four doses a week for fifteen or twenty years. The drug was then discontinued, after which the eruption had gradually regressed. At the end of three weeks, the pain and tenderness had disappeared, and she found no difficulty in walking.

According to "Nostrums and Quackery" (published by the A. M. A. Press, Ed. 2, 1912, p. 499), a teaspoonful of bromo-seltzer weighs 76 grains (5 gm.), containing 7 grains (0.5 gm.) of potassium bromid, 3 grains (0.2 gm.) of acetanilid and 0.8 grains (0.05 gm.) of caffei.

DISCUSSION

Dr. Lane asked whether the acetanilid mixed with the bromid had any effect.

Dr. Highman said that he was interested in hearing Dr. Fox say the lesion resembled blastomycosis, and cited the case of a patient who ten years before was operated on repeatedly for bromoderma of the ankles under the misapprehension that it was blastomycosis, the lesions recurring after each operation. Her family physician had not realized that she had been taking as much as 300 grains of bromids a week, over a period of eight years.

Dr. Howard Fox, replying to Dr. Lane's question, said that he did not think it necessary to consider the effect of the two drugs. The eruption was clinically bromoderma, and the patient had admitted taking bromids in the form of bromo-seltzer for many years.

HEALED EPITHELIOMA AFTER CURETTAGE AND CAUTERIZATION. Presented by Dr. Bechet.

Mrs. M. T. L., aged 55, came under observation in October, 1920, with a lesion over the left eye which had been present for seven years. It was painless, but had been growing steadily. It was deeply ulcerated, with large, rounded, indurated, irregularly outlined borders. It measured about 3 by 3 cm. in diameter, and was most formidable in appearance. On Dec. 4, 1920, it was thoroughly curetted, and cauterized with acid nitrate of mercury, unneutralized after application. She was seen again two years later, with the scarcely perceptible, flat, whitish scar now present, and without the slightest suggestion of recurrence.
DISCUSSION

Dr. Howard Fox said that he wished Dr. Bechet would show another much more extensive case which they had treated in common, Dr. Bechet treating the lesion (of the scalp) by curettage, and he applying the roentgen ray in massive doses.

Dr. Bechet said that the patient to which Dr. Howard Fox referred had a large, flat, basal cell epithelioma extending from the hairline to the eyebrow. In its center was a prickle cell epithelioma, cauliflower-like in form, and about 1 inch (2.54 cm.) in diameter. Sections had been made of both lesions, corroborating the clinical diagnosis. The patient was seen a year later, and presented at that time a flat, smooth, whitish scar, with no evidence of recurrence.

Dr. Winfield said that Dr. Bechet's patient illustrated the cases which Dr. Sherwell had often spoken of. He had treated several hundred patients with curettage and acid nitrate of mercury, and 75 per cent. of them were cured, and remained so.

Dr. Trimble said that in his opinion it was the method of election for the majority of cases.

Dr. Bechet said that in his experience, curettage and cauterization thoroughly done were the equal of radiotherapy, both as to cosmetic results and permanence of cure. He had presented the case simply as a reminder of the good results attained with this older method, as advocated by Sherwell and others. It emphatically did not deserve to be discarded entirely for radiotherapy.

PARAPSORIASIS? (FOR DIAGNOSIS.) Presented by Dr. Howard Fox.

Mr. X., aged 51, single, born in the United States, a retired business man, as an infant had had an attack of scarlet fever followed by otitis. Since then there had been an intermittent discharge from one ear and some deafness. As a child, he had suffered from malaria and a slight attack of pleurisy, and as a young man from acne. About twenty-five years ago, he had suffered during the course of two years from a "weeping eczema" of the leg, and later of the axillae and back. Previous to these outbreaks his skin had been normally smooth and pliable, without any abnormality in sweating. The present type of eruption had first appeared about twenty-three years ago, and had gradually increased in extent. Since then his skin had become progressively drier, there being little or no perspiration in winter. During the summer, he suffered at times from slight itching. The patient said that his father had had syphilis, although he himself presented no congenital stigmas, and the Wassermann test was negative. The eruption consisted of large, diffuse, dry, somewhat inflammatory patches covered with fine scales (when not removed by baths and emollients). It was present on the trunk and extremities and on the temples. There was no abnormality of the hair or nails. The patient was a well nourished man of good size, apparently in excellent health. An examination of the urine showed nothing abnormal. A blood examination showed 11,700 white cells, with a normal differential count.

Subsequent to the presentation of the patient, the following histologic report on a piece of tissue excised from the back, under local anesthesia, was made by Dr. D. L. Satenstein.

"There is an infiltration in the papillary and subpapillary zones apparently diffuse which is more or less limited at its lower margins and in the deep and deeper tissues is perivascular. There is an edema throughout the entire
tissue, interstitial as well as parenchymatous, and extending up into the lower portion of the epidermis. The upper part of the epidermis does not show any edema. There is a slight hyperparakeratosis and occasional shreds of parakeratosis. High Power: The infiltration is noted to be perivascular and for the greater part is lymphocytic in character. There are occasional connective tissue cells. The basal cell layer of epidermis in places is disorganized and at the top of an occasional papillary body is a subepidermic vesicle. There is no acanthosis. The granular layer is retained throughout, not increased in thickness. Résumé: From the character and the arrangement of the infiltration and the slight change in epidermis, the picture more closely resembles that of a parakeratosis than any other of the scaly erythrodemas. A positive diagnosis of parapsoriasis is not possible as the inflammatory reaction is somewhat too marked for this condition."

**DISCUSSION**

Dr. Wise remarked that if the patient had had the eruption since early youth, it was probably ichthyosis; and since there was an acquired type of ichthyosis, he was inclined to think that that was the condition presented.

Dr. Lane said that the case appeared to him to be one of mild ichthyosis, that is, ichthyosis simplex, and that the redness was due to the cold. The redness was not infrequently seen in such cases.

Dr. Winfield agreed with Dr. Lane.

Dr. Whitehouse said that in the axillary region there was a good deal of inflammation. He could not see any parapsoriasis in the case. The closest he could come to a diagnosis was that it was an ichthyotic condition aggravated by the cold weather, even though it was considered that the man had not bathed for several days.

Dr. Bechet said he believed there was more inflammation than was usually observed in ordinary ichthyosis. It was too diffuse for parapsoriasis. The lesions taken as a whole were more suggestive of an ichthysiform erythroderma.

Dr. Williams said that the man's pubic hair was acquiring a feminine type, and he was putting on a good deal of weight since the disease began—two symptoms pointing to a pituitary condition. He had had under observation two patients with ichthyosis of the hereditary type who had improved markedly under pituitary treatment. It seemed worth while to have a roentgenogram taken of the head to ascertain whether the sella turcica was affected. In his opinion, it was a case of ichthyosis.

Dr. Highman inquired whether Dr. Fox had seen the case during the summer. He said that while he did not think it was parapsoriasis, he did not think it was ichthyosis. It did not look like fish skin. The scaling was not that of parapsoriasis, but of the kind found on a person who had not bathed for several days. The skin was red and wrinkled, and looked like a primary atrophy of some kind. He was not satisfied to dismiss the case with the diagnosis of acquired ichthyosis.

Dr. Trimble did not agree with the diagnosis of parapsoriasis, chiefly because the man had the lesions on his face and forehead, and parapsoriasis was rarely seen on the face. The condition looked like ichthyosis, but the man had lived twenty-five years without any evidence of this condition, which was against the diagnosis of acquired ichthyosis—if there was such a thing
as acquired ichthyosis. The condition on the head and forehead seemed to be a seborrhoeic eczema, and that seemed to be the basis of the whole eruption, which had lasted a very long time. He then cited a similar case observed for ten years without a diagnosis being made, and after rather vague treatment along the lines of seborrhoeic eczema, the case cleared up. It might be worth while to try that line of treatment in this case.

TWO ERUPTIONS (POSSIBLY PITYRIASIS ROSEA AND THE SO-CALLED ECZEMA MARGINATUM). Presented by Dr. Winfield.

H. S., aged 34, born in Russia, had had a generalized eruption for two weeks. The lesion in the groin had existed for several months.

DISCUSSION

Dr. Highman said it might be one of those cases which resembled, but was not pityriasis rosea. It was due to a fungus infection, as described by Dubois in his studies on pityriasis rosea. He found a case that conformed to the classic type which revealed a definite micro-organism. There was no reason why epidermophyton might not be present in all the lesions in Dr. Winfield's case, although it might be that two concomitant diseases were present.

Dr. Whitehouse said that he understood Dr. Winfield had seen a number of these cases, but they were not common in his own observation. He did not recall ever having seen a pityriasis rosea in connection with tinea cruris, although he could see no reason against it. He was aware that it was formerly supposed to be a fungus disease and called herpes tonsurans maculosus, but it is now generally recognized as pityriasis rosea and not a contagious disease due to a fungus. In his opinion, there were two separate diseases present.

Dr. G. H. Fox said he recalled one typical case of herpes tonsurans maculosus, and that it was not at all like this case. Some time ago he had called attention to the fact that there were many different types of pityriasis rosea, in some of which there were patches of marginate pityriasis in the axilla and groin. In many cases of typical pityriasis rosea with circinate spots and rings, he had found and photographed these patches in the axilla and groin; and he believed that cases like the one presented, although not typical pityriasis rosea, were of the same nature and allied to that disease.

Dr. Lane said that clinically it seemed to be a case of pityriasis rosea, and that he agreed with Dr. Winfield's diagnosis.

Dr. Kingsbury said he believed that the two diseases in the same patient was merely a coincidence, and that there was no connection between the two.

Dr. Williams said he believed it was a case of two diseases in the same patient. By looking at the thighs one could see the sharp margin of tinea cruris with a ridge slightly raised and a flattened discolored surface within; and one could see several erythematous patches of pityriasis rosea occupying part of the place where the tinea cruris had been. He said, further, that he had seen a case of tinea of the feet and hands which showed the organism, and he had found one or two patches on the trunks which resembled pityriasis rosea.

Dr. Williams further said that the diagnosis of the various forms of tinea was still in its infancy. He had seen cases that looked like intertrigo which cleared up under treatment with iodin, and cases that looked like tinea in
which the organism could not be found. He would be cautious in making a
diagnosis of tinea in the absence of laboratory confirmation.

Dr. Trimble cited the case of a young woman with an extensive pityriasis
rosea; the diagnosis was made, and she was put on the usual treatment, when
she mentioned the fact that her mother asserted that she had contracted the
condition from a pet poodle, and wanted the dog killed. Later she brought
in the dog and on it were found typical patches of ringworm, like those on a
child's head. The girl had pityriasis rosea; that there was any connection
between the two conditions was doubtful.

Dr. Winfield said he had presented the case in order to provoke discussion.
Dr. Whitehouse had said that he had seen a number of similar cases. He had
himself seen a great number of cases of pityriasis rosea, and at least half a
dozen of the patients had eczema marginatum which had existed for a number
of months. He had been wondering whether there might possibly be any
connection between pityriasis rosea and eczema marginatum.

PITYRIASIS RUBRA (HEBRA). Presented by Dr. Winfield.

E. P., aged 44, born in the United States, had an eruption which first
appeared about fifteen years before on the knees, showing as a scaling patch
with slightly atrophic skin, which gradually spread over the body. At times,
there was a good deal of itching.

DISCUSSION

Dr. Winfield said he did not think it was a typical case of pityriasis
rubra, although it might be. According to the French, these ruddy people
ultimately developed mycosis fungoides, an opinion with which he did not
agree, for in his experience they had not developed mycosis fungoides or
leukemia, or any of the lymphogranulomas. It might eventually be a leu-
kemia, but it was not mycosis fungoides.

Dr. Williams said it did not appear to be a pityriasis rubra, for there
was not enough scaling; he thought it was either mycosis fungoides or
belonged in the lymphogranuloma group. The patient had small tumor masses
in various parts of the skin. On the outer surface of the left arm and on
both sides of the chest under the axillae were small nodules under the skin,
which might accompany either lymphogranuloma or mycosis fungoides.

Dr. Highman agreed with Dr. Williams. He said that he did not believe
that pityriasis rubra of Hebra was a clinical entity. Many cases which might
be classified in that group ultimately were classified in the lymphogranuloma
group, or related to tuberculosis or cutaneous tuberculosis of Bruusgaard.
In our present state of ignorance, it was sufficient to bear in mind that there
was great likelihood of cases of this kind eventualizing in the aforementioned
way. In his opinion, the case was one of lymphogranulomatis cutis, not full
fledged as yet, for the reasons mentioned by Dr. Williams.

Dr. Becher said that the man had marked palmar keratosis, and his skin
was red. The follicles on the backs of the fingers were acuminate and horny.
He believed the lesions were of the Devergie type rather than of the Hebra
type. It might well be, however, that the two diseases were the same with
slight differences in appearance; such was the opinion of Stelwagon in the
latest edition of his textbook.

Dr. Howard Fox said the patient had a universal scaling erythroderma
associated with adenopathy. That was all that could be said now. Exam-
tion of the blood might show a normal leukocyte count, and a histologic examination might fail to show the presence of lymphogranuloma. He had presented a similar case with such negative findings.

Dr. G. H. Fox said he had seen several cases exactly like this one with deep redness of the skin, slight scaling and severe itching, continuing from year to year without much change. In such cases, he had been contented with a diagnosis of chronic eczema. As to pityriasis rubra of Hebra, he had seen two or three cases in a long experience. He had seen many cases of dermatitis exfoliativa, usually following psoriasis, which presented the same clinical appearance. In his "Atlas" was one plate showing a case of dermatitis exfoliativa which was cured by alkalis in about two months. There was no difference in appearance between dermatitis exfoliativa and pityriasis rubra of Hebra in its early stage; but while dermatitis exfoliativa was amenable to treatment, the other disease persisted, going on to atrophy, a smooth shining skin, and a fatal termination.

Dr. Trimble said he had seen several similar cases at Bellevue Hospital. He did not disagree with the diagnosis of pityriasis rubra of Hebra, for the term suggested the clinical picture which the patient showed. There seemed to be a possibility that it might be tuberculous. It was asserted that under some conditions tuberculous glands might produce this condition in the skin. He had seen one such case at the Skin and Cancer Hospital, and Arndt, when he was visiting here several years ago, said he felt quite sure that it was tuberculosis.

Dr. Highman said that if he was not mistaken, Jadassohn found tuberculous in ten of twelve cases that came to necropsy.

Dr. Winfield said that there were two or three points on which he would like to correct Dr. Williams: He had not spoken of scaliness; but the man was thoroughly greased, and if he was not for two or three days, there were plenty of scales. The man had never had psoriatic patches. He had been treated early in the course of the disease with arsenic and diet, and had lost 44 pounds (19.9 kg.) on a rice diet, which he never regained. His blood was negative as to leukemia. The lesion on the neck was epithelioma; he had had enlarged glands for several years. It seemed reasonable to present the case as pityriasis rubra of Hebra.

**EARLY ACRODERMATITIS? FOR DIAGNOSIS.** Presented by Dr. Bechet.

L. V., a woman, aged 38, said that a lesion had appeared on the back of the left hand once and a half years previously. While it improved at times, she had never been entirely free from it. The seasons seemed to have no effect on it. The patch was dusky red, the overlying skin was somewhat thinned and translucent, and the veins were more plainly visible than in the adjacent healthy skin. The circulation in the fingers was good. The patient had never had chilblains.

**DISCUSSION**

Dr. Williams agreed with the diagnosis of chilblain.

Dr. Bechet said the patient had had the condition for a year and a half, and said that it did not disappear during the warm season. In daylight, one could more easily observe the thinned skin—the peculiar dusky red color and prominent vessels so frequently noted in early cases of acrodermatitis.
A WARTY GROWTH ON THE BACK OF A FINGER. FOR DIAGNOSIS. Presented by Dr. Williams.

M. S., a man, aged 33, had had psoriasis for fifteen years. On the dorsal surface of the right index finger was a smooth growth of three months' duration. The growth was about 2 mm. in diameter, 5 mm. long, soft and pink, the dorsal surface being smoother and firmer than the rest. The nail was pitted.

DISCUSSION

Dr. Williams said that he did not know what kind of growth it was. He had considered granuloma pyrogenicum, but there did not appear to be any inflammation, he had also considered the diagnosis of a filiform wart, but it was rather large for that and was a single projection. He did not think it was a cutaneous horn. The essential feature in that disease was a greatly increased proliferation of horny cells, and a continued cohesion of these cells, forming a projecting mass of keratinized tissue, resting on a warty base. In the case presented, on the contrary, the projecting mass was soft and vascular, and the keratinization only slightly exaggerated.

Dr. Whitehouse said he believed it was a cutaneous horn. The softness at the base might be present because it was in an early stage.

Dr. Highman said that all cutaneous horns had a somewhat soft and vascular medulla, just like an ordinary horn; it might be a filiform growth becoming keratinized.

Dr. Williams said he was willing to regard the growth as a filiform wart becoming keratinized, but he could not at present accept a diagnosis of cutaneous horn.

RHINOSCLEROMA. Presented by Dr. Schwartz.

W. S., aged 30, was born in Austria and had lived in the United States for twelve years. The condition began in 1917, with a swelling of the right side of the nose, which grew progressively larger, reaching its maximum size in 1920. The nares had been occluded for four and a half years, and ulcerations had developed. Roentgenotherapy for three months resulted in a slight decrease of the growth. The cartilaginous portion of the nose was enlarged, the tip was red, and both nares were occluded by ulcerated tissue. The upper limit of the enlargement was characteristic—pushing out and making prominent the nasal bones. The growth was hard as stone, involving the roof of the mouth. The physical examination was negative, except for enlarged cervical nodes. The Wassermann test was negative. The Frisch bacillus was not found in smears. Biopsy Report: "Section typical of rhinoscleroma, showing many large cells containing bacilli (Russell bodies and Mickulicz cells present)."

KERATOSIS OF THE PALMS AND SOLES. A CASE FOR DIAGNOSIS. Presented by Dr. Howard Fox.

C. A., aged 58, a mulatto, born in Porto Rico, a laundress, had first noticed scaly spots on the palms and soles two years previously. They had gradually increased in extent and thickness. One year before a physician in Porto Rico had administered three intravenous injections of arsphenamin, without affecting the eruption. The Wassermann test had not been made. Twenty-
eight years before she had had a large ulceration on the lower third of the left tibia, which had lasted more than a year. Healing eventually took place after a month's rest in a hospital. Examination showed both palms to be covered with slightly elevated, dirty, yellowish-gray keratoses, some of which were discrete and pea-sized. The larger ones were aggregated in patches. The soles, and especially the heels, instep and internal border of the great toe were covered with moderately thick, dry, dirty grayish-yellow keratoses, which were fissured in places. Irregular, depressed, deformed scars were scattered over the greater part of the left leg, particularly in the pretilial region. These alternated with areas of brownish pigmentation and partial depigmentation. The Wassermann test was negative.

LEPRA. Presented by Dr. Howard Fox.

(Previously presented as a possible case of tuberculosis cutis [Arch. Dermat. & Syph. 3:462 (April) 1921].)

In a young man, born in the West Indies (identity withheld at request of the United States Public Health Service), the disease had steadily progressed until at present it involved not only the face but large areas of the trunk, and especially the extremities. There were now typical anesthetic, brownish macules and nodular infiltrations. He had received thirty intramuscular injections of the ethyl esters of chaulmoogra oil (from the Hygienic Laboratory in Washington), without apparent benefit. In doses of 3 c.c. the drug was not well tolerated, the injections causing painful indurations which necessitated an interruption in treatment and made it difficult for him to continue his work as a clerk. Doses of from 1 to 1.5 c.c. were well tolerated.

LYMPHANGIOMA CIRCUMSCRIPTUM. Presented by Dr. Bechet.

R. W., a girl, aged 14, had had a lesion on the right hip since early infancy. It consisted of one large patch of aggregated, thick-walled, yellowish-red vesicles, measuring 4 cm. in length by 5 cm. in width. This patch was covered with dried exuded lymphatic contents. At the periphery of the patch were a number of discrete vesicles, some of which were red and purplish, due to the admixture of blood and lymph.

HEALED ULCER ON THE WRIST. Presented by Dr. Trimble.

(Case previously shown at the October meeting.)

The lesion had improved promptly under treatment with boric acid ointment, and was completely healed without any other treatment.

PARAPSORIASIS. Presented by Dr. Trimble.

A man, aged 27, married, born in Austria, presented a generalized eruption with marbled appearance. The lesions were pinkish, noninfiltrated, with slight scaling and scarcely any itching. The duration was six years. The condition had not been affected by treatment.

PAPULOVESICULAR ERUPTION. Presented by Dr. Wise.

T. R., aged 37, colored, married, a chauffeur, born in the United States, came to the Vanderbilt Clinic on Dec. 19, 1922, exhibiting an eruption of three days' duration, which appeared on the affected areas at almost the same
time. The eruption was present on the trunk and extremities; it was densest on the proximal portions of the extremities. The face, scalp, palms and soles were free. The eruption consisted of papulovesicles which were closely aggregated but not grouped. Many of the lesions were slightly umbilicated. They were not shotty, and there were no areolae. There was slight itching. The buccal mucosa was free of lesions. Temperature and pulse were normal. The patient denied ingestion of drugs. The Wassermann test was negative.

NEW YORK ACADEMY OF MEDICINE, SECTION ON DERMATOLOGY AND SYPHILIS

Regular Meeting, Jan. 2, 1923
PAUL E. BECHET, M.D., Chairman

SARCOID. Presented by DR. ABRAMOWITZ.

A. S., a woman, aged 25, Italian, a sewing machine operator, had been married four years and had one child in good health. Ten years ago she had an operation on the right side of her neck for a tuberculous adenitis, and still showed a scar. The eruption started two years before on her nose and right eyebrow, where there were no lesions now. The patient said that the eruption disappeared in some places, to reappear in others. The eruption now consisted of a violaceous red streak on her forehead, one-half inch (1.27 cm.) wide, which on palpation felt quite hard, the induration extending beyond the surface of the lesion. A linear patch extended from the center of the forehead to the inner edge of the left eyebrow. Another linear patch extended from near the outer canthus of the left eye, in a slightly curved line outward and downward to the left ramus of the jaw, then extended forward along the jaw, curving upward. This entire patch was of a dusky color, and made up of lenticular nodules. Similar lesions were present on the right side of the face, with smaller pigmented scaly and indurated plaques on her shoulders. Several Wassermann tests had been negative, and microscopic examination of tissue excised from one of the lesions confirmed the diagnosis. A roentgen-ray examination of the patient's abdomen was negative.

DISCUSSION

DR. SATENSTEIN said that a piece of tissue taken from the arm showed the ordinary findings of sarcoid.

DRS. CHARGIN and POLLITZER agreed with the diagnosis.

KERATOSIS PILARIS OR ICHTHYOSIS (FOR DIAGNOSIS). Presented by DR. SCHEER.

S. J., a schoolboy, aged 12, born in the United States, exhibited an eruption of one year's duration, consisting of a generalized prominence of all the hair follicles on the trunk and extremities. There was also an alopecia of the eyebrows. The condition suggested an endocrine disturbance.

DISCUSSION

DR. HIGHMAN said that he agreed with both diagnoses. He said that the Germans consider keratosis pilaris a form of ichthyosis.
Dr. Gilmour said that he had examined the patient’s lower extremities, and had found no evidence of ichthyosis; he therefore considered it a case of keratosis pilaris.

ACUTE GENERALIZED LICHEN PLANUS. Presented by Dr. Howard Fox.

H. K., aged 51, married, a Jewish woman born in Austria, was the mother of four healthy living children. One child had died of appendicitis, and another one week after birth of unknown cause. With the exception of an attack of appendicitis, the patient had always enjoyed unusually good health. The menopause had occurred one year before, since which time she had gained considerable weight. The eruption had appeared suddenly and without apparent cause three weeks previously. She first noticed “blisters” on the lips accompanied by tenderness and slight swelling, and a few red spots scattered over the body. On the following day, the eruption became profuse and soon involved the greater part of the body. From the beginning of the eruption there had been constant and severe itching which had interfered seriously with sleep during the first week of the disease. For the last ten days there had been some soreness of the mouth and dysphagia. She had not suffered from any constitutional symptoms except insomnia due to pruritus and weakness from difficulty in eating. Examination showed an unusually extensive eruption of the trunk, the palms and soles below the ankles being unaffected. On the entire abdomen, back, gluteal region, part of the thighs, axillae and forearms the eruption formed a solid confluent sheet, which within the last few days had shown marked pigmentation. It was impossible to distinguish individual papules in these areas, although there was a suggestive violaceous hue. On the upper portion of the chest and breasts, the shoulders, arms, parts of the thighs, and the legs, the eruption showed large numbers of discrete typical flat, shiny, polygonal papules with a violaceous color. The buccal mucosa showed ill defined erythematous erosive areas, together with whitish streaks and patches. There was also considerable exfoliation of the lips. The papules on the breasts were unusually large and elevated. On the back and shoulders were numerous parallel scratch marks strongly suggestive of pediculosis, though no evidence of this disease was found on the clothing, and the patient was a cleanly woman. The special features of the case were the extensive confluent patches with deep pigmentation and the evidence of most intense itching.

DISCUSSION

Dr. Fox, replying to an inquiry as to whether the patient had taken any arsenic, said the patient gave no history of having taken arsenic or any other drug.

SARCOID—TUBERCULID. Presented by Dr. Lapowski.

S. G., a well developed married woman, aged 36, had had two children and no miscarriages. The condition began when a child with a lesion on the left thigh, posteriorly, which took a long time to heal. Other lesions had appeared within the last three to four years, the last three to four months ago, on the left leg, posteriorly. The lesions consisted of pea to one cent sized papules, red to brown, sharply outlined, hard, shotty, and movable with the skin. These occurred on the right arm, left chest, posteriorly, and left
leg, posteriorly. There was one one cent sized, depressed, hard scar with pigmented borders on the left thigh, posteriorly. There was no pain and only slight itching.

SARCOID—ANGIOMAS. Presented by Dr. Lapowski.

F. S., a single woman, aged 29, with a family history negative for tuberculosis and a negative personal history, on the outer surface of the right arm, right knee, right ankle, left knee and left leg had a number of pea-sized, sharply outlined, nodular lesions. Those on the legs were violaceous and shiny. Those on the upper extremities were brownish, somewhat depressed, and scarred. Scattered over the entire body, there were also numerous fine angiomas.

SARCOMA AND PSORIASIS. Presented by Dr. Lapowski.

M. G., a widow, aged 66, had had three children, one an epileptic child; she had had no miscarriages. For the last fifteen years she had had a small coffee-bean sized mass on the left arm which never gave any trouble until a year ago, when it began to burn. Six months before it had been removed by her physician. The present condition was of six months' duration, recurring immediately after the operation. On the lower left arm, posteriorly, near the elbow, was one large walnut-sized mass, made up of a number of individual soft pea-sized masses, sharply outlined, which could be raised and moved in all directions. In the lower part of the mass was a depressed transverse scar, probably the remains of a previous incision. The mass was purplish, smooth, soft, with whitish soft nodulations on the surface. Scattered over the surface of the tumor were numerous fine dilated capillaries. On the knees and elbows and scattered over the body were patches of psoriasis.

DISCUSSION

Dr. Pollitzer said he believed that the woman with a single large irregular tumor on the outside of the left arm had sarcoma. As to the other cases, he was much in doubt; he believed that a biopsy would have to be made to settle the question. The lesions were too few to be sarcoid. This disease was relatively rare on the lower part of the body and occurred most frequently on the upper part of the trunk. Some of the lesions were too hard. He was inclined to consider keloid, but did not feel satisfied with the hasty examination he had made. He was not impressed with the diagnosis of sarcoi'd.

Dr. Rostenberg said that he agreed with the diagnosis of sarcoma.

Dr. Highman said that the clinical diagnoses seemed correct, but that one could not be arbitrary in an opinion on lesions of this type, so few and isolated, without making a closer examination. The term sarcoi'd indicated clinical similarity to sarcoma, and where that was questionable the only method of corroboration was through the microscope, which had not yet been resorted to in these cases.

Dr. Lapowski said he could not accept even a suggestion of keloid, as neither the color nor the course of the disease corresponded with it. The color was red, the form round, and the lesion not branching out. As the case was under observation only for a few days, it was impossible to predict the course. Keloid would not disappear, while sarcoi'd would sometimes disappear even without treatment.
PSORIASIS AND LEUKODERMA. Presented by Dr. Scheer.

I. W., aged 4, had had the eruption for four months. Scattered over the trunk and extremities were guttate spots of psoriasis. The scales on some of the spots were yellowish brown, and on others the usual silvery shade. On the back were numerous depigmented spots (leukoderma). Whether these had been the seat of a previous psoriatic eruption could not be determined. The patient had received no treatment.

LESION ON BUTTOCK. Presented by Dr. Abramowitz.

K. H., a woman, aged 42, single, native born, a dressmaker, one year ago noticed a small painful lump on the outer side of the right thigh, just below the trochanter. At present there was in this location a red and scaly lesion about 2 c.c. in diameter, with an infiltrated plaque that extended below the lesion and was located in the subcutis. There were two brownish raised hard papules below the infiltrated plaque, and a few scaly guttate psoriasis-like lesions on the shins. The Wassermann tests had been negative repeatedly. A small piece of tissue had been excised for microscopic study, and a report would be forthcoming shortly. Examination of a section revealed a picture resembling sarcoid more than any other dermatosis. The patient said she had been taking some medicine during the last year for some nervous trouble, but she was not definite as to whether the skin lesion was present before she started to take the medicine.

DISCUSSION

Dr. Rostenberg said the nearest diagnosis he could make was sarcoid.

CASE FOR DIAGNOSIS. Presented by Dr. Lapowski.

L. P., a woman, aged 44, married, had had four children and no miscarriages. She had had typhoid fever five years before. There was no tuberculous or syphilitic history, nor any suggestion of syphilitic manifestations. She had been under observation since May, 1922. Her present condition began ten years before; the last lesion appeared six years before on the dorsum of the base of the right thumb.

She now has: (1) scars, depressed and not adherent to the underlying structures on the dorsum of the right foot and on the dorsum of the right hand; (2) scars, depressed and adherent to the underlying structures on the right foot, the inner surface, and the plantar surface of the right foot, on the base of the right thumb, and to the right of the same thumb; and (3) on the dorsum of the right hand between the index finger and the thumb, one one cent sized, erythematous infiltrated patch, not sharply outlined, not adherent to underlying structures, with an oozing and red surface. (This was the latest of all the lesions, being of six years' duration.) Four Wassermann tests were made, and all were negative. Roentgen-ray examination revealed osteomyelitis. Blood examination showed slight secondary anemia. From July 20 until November 2, she received ten intravenous injections of neo-arsphenamin and considerable potassium iodid, about 20 grains (1.3 gm.) daily, with practically no improvement in the active lesion. The active patch had been dressed with mild ointments for the last few months.
DISCUSSION

Dr. Highman said it was a remarkable case, for it was difficult to get a clean-cut view of what the entire disease might be. It was obviously an infection, and equally obviously it was not syphilis. He was inclined to consider seriously the possibility of some fungoid infection, such as sporotrichosis, perhaps, though the history of ten years' duration contradicted this. A laboratory report would be necessary to make a diagnosis.

Dr. Lapowski said the patient had been under observation for nine months. In the beginning, he was inclined to consider it a case of blastomycosis, but after a negative cultural examination the diagnosis of blastomycosis was abandoned. The Wassermann test was negative; she had received about ten injections of neo-arsphenamin. The lesions on the dorsal aspect of the right foot disappeared, leaving a scar, but the lesions on the thumb remained constantly the same, in a condition of infiltration and slight oozing. When the crust was removed, a plain red surface remained; but if left alone after a few days, the oozing would start again and a new crust would form. No culture could be made from the oozing secretion. There was no pain on palpation.

RHINOSCLEROMA. Presented by Dr. Scheer.

W. S., a man, aged 30, born in Austria, a window cleaner, who had lived for the last twelve years in the United States, married and the father of one child, had an illness which had begun five years before presentation with a swelling of the right side of the nose. The swelling later appeared on the left side, and the process grew slowly larger. The greatest size of the lesion was attained in 1920. Following the biweekly application of the roentgen ray for three months, there had been a slight diminution in the size of the nose. Five weeks before admission to the clinic, there had been ulceration on the right side of the nose. The patient had been unable to breathe through his nose since the first six months of his illness. The cartilaginous parts of the nose were very much enlarged; the tip projected downward like an eagle's beak. The nose was red, and both nares showed ulceration. The upper limits of the enlargement had pushed the nasal bones out sideways. The entire nose felt almost stony hard. The hard and soft palate and the pharynx were involved in the process. The Wassermann test was negative. A stained smear showed two encapsulated organisms that morphologically looked like B. rhinoscleromatis. A culture was negative. A section of tissue from the roof of the mouth was reported typical of rhinoscleroma, showing many large cells containing bacilli corresponding to those in rhinoscleroma.

DISCUSSION

Dr. Pollitzer said that he agreed with the diagnosis, but he believed that the lesion at the orifice of the nares had nothing to do with the rhinoscleroma, as the process did not seem to extend quite down to the alae. Roentgen-ray therapy had proved curative in a number of these cases. He had himself shoveted before the Section the first case so cured. This man came from Galicia in Austria, which is a region in which rhinoscleroma is prevalent. In a general way, the valley of the Danube seems to be the special habitat of this disease, although it does occur in other parts of Europe. In America, while we have many imported cases, only one case has been reported in a native.
DISCUSSION

Dr. Pollitzer said that Recklinghausen described a neurofibroma with distinct tumors. We occasionally see them with distinct firm palpable tumors, most of them fusiform in shape, some of them discoidal tumors in the cutis. Recklinghausen was the first to make a careful examination of these tumors, and he showed that they were developed from the fibrous tissue around the nerve fibers. In the course of the development of the fibroma, the nerve fibrils soon disappear, and one finds scarcely anything but the fibroma with only an occasional nerve fiber scattered through the tissue; this fibrous tissue readily undergoes mucoid degeneration, and then we have the soft squishy lesions that look like tumors but feel like empty pockets. So far as this patient was concerned, he had only these soft atrophic pockets, which were simply mucoid remnants of the original fibromas.

Dr. Thornley said that the pigmentation shown on the body had been somewhat exaggerated by violet rays, which had been applied in order to keep the patient under observation; but there was a definite history of this pigmentation for two or three years before any violet rays were used.

NEUROTIC EXCORIATIONS OF THE SKIN. Presented by Dr. Scheer.

J. I., aged 47, single, a salesman, born in the United States, had an eruption on the extremities of fifteen years’ duration, and on the face and scalp of six weeks’ duration. On the scalp and face were many deep excoriations covered with crusts. Some were also present on the shoulders. On the thighs and legs, were many pigmented macules and a few superficial scars. The patient had an irresistible impulse to pick at his skin, and the lesions were thus produced. He had had a syphilitic infection six years previously, for which he had received six arsphenamin injections. The Wassermann test three months before was negative. He had no syphilitic manifestations on presentation.

DISCUSSION

Dr. Pollitzer said that he regarded it as a characteristic case of what had been called neurotic excoriation. The syphils had nothing to do with it. The man had an impulse to rub and scratch, and presently dug a hole through the epidermis. That accounted for all the lesions shown. It was nothing but the effect of superficial traumas produced with the fingernails—old ones on the shoulder and more recent ones on the face. The type could be recognized at a glance. The man had an impulse to scratch, and he did so until he produced a local lesion, and then stopped scratching that particular spot. Cases like this were well known. These patients scratch until they dig through the epidermis. Whether there is more itching and scratching at that particular place is all matter of chance. They may stop irritating the skin, or they may dig off the scab and produce a deeper lesion. The trouble is not in the skin, but in the brain. So far as the lesions being located where the patient could not scratch, there were few places which could not be reached by the
fingernails. Between the shoulders, for instance, there were no lesions. The lesions were not ordinary scratches, but were sharply defined, generally circular lesions, looking as though they had been dug out with the nails. The man did not itch in the ordinary sense of the term; he had the impression that something was in the lesion, an insect or a germ, and he wanted to get it out. Accordingly, he dug at that particular point, so that the lesions were small and round.

Dr. Bechet agreed entirely with Dr. Pollitzer's remarks. He said that at first he had thought of dermatitis herpetiformis, but the condition was not of that type. He had seen a dozen or so cases of "picker's disease," and this was analogous to all the cases he had seen described under that diagnosis.

Dr. Levin said that the case of neurotic excoriations which he presented during the evening resembled this case in that the lesions in some places were round, pea-sized and superficial. Scars and pigmented spots were also present. His patient had admitted several days prior to presentation that the lesions were being caused by her attempts to squeeze out skin worms.

Dr. Wolf said that the lesions were of a uniform character, close together, with necrotic centers; he suggested the diagnosis of acne varioliformis. The man looked rather cachectic and said he had lost 25 pounds (11.34 kg.).

Dr. Highman said he saw clearly the point of Dr. Pollitzer's remarks, and also the basis of the objection that if the man were a neurotic, why should he suddenly have stopped scratching his body and confined his manipulations to the face? The answer was that the man was abnormal, and that for some reason not understood he had confined his attention to the face, for it was easier to get at that than the rest of the body. The striking point about the lesions on the body was their uniformity, which would indicate that at some time or another the same process had gone on in his integument, which had been acted on in the same way. Either the condition had been spontaneous or it had been induced. It was rather curious that it should have lasted for so long a time, but a striking thing about the lesions on the body was that they had appeared only in places accessible to the patient's fingers. For that reason, and for the reason that the lesions on the face were obviously infected, it seemed well to regard the condition, tentatively at least, as a self-induced dermatosis. The appearance of the man and the nature of the lesions, as well as the localization, all indicated that. However, this was contradicted by the fact that the man was rather run down looking—though he hardly seemed cachectic. He was physically below par, and perhaps mentally, and self-mutilation seemed the best explanation for the condition, until it was disproved.

Dr. Scheer took issue with the suggestion of malingering or that the condition was induced with the intention to deceive. The man had openly admitted that he picked the lesions, even before he was asked about it.

DERMATITIS EXFOLIATIVA. Presented by Dr. Lapowski.

I. R., a man, aged 61, whose past history was negative for tuberculosis or any other disease, had been under observation since April 9, 1917. At that time, he presented a case of dermatitis exfoliativa, and was presented on June 4, 1917, (two months later) at a meeting of the American Medical Association as having a case of dermatitis exfoliativa. Soon after he was treated at the Mount Sinai Hospital for six weeks with local applications and the
roentgen ray. He returned to the Good Samaritan Dispensary on Aug. 8, 1917 (two months later). Since September, 1919, his condition had been practically the same as presented tonight, being of about three years' duration. On the entire trunk, front and back, the skin was covered with patches varying in size from that of a pea to that of a penny, arranged annularly, and disseminated. The patches were dark red or brown, and covered with fine scales which were arranged in fine lines looking like cigaret paper. On removal of the scales, the fine lines were more pronounced and red, like very fine ridges. The scalp was red. There was no itching. The treatment for the last three years had been sulphur applied externally.

DISCUSSION

Dr. Lapowski said that he had presented the case mainly because the eruption exhibited had lasted for nine or ten months without any change. Dermatitis exfoliativa might in the course of its development change into different skin conditions—such as mycosis fungoides or lichen planus. What its ultimate end would be he could not determine.

Dr. Highman said it was difficult to express an opinion on the case as presented. There was a series of irregular, superficial atrophies, and where the individual spotty lesions had been there was anetoderma. Unquestionably, it had been exfoliative dermatitis, reduced to the present minimum. That there had been an inflammatory process was evident. It was not known that dermatitis exfoliativa changed into other diseases, but many conditions secondarily produced dermatitis exfoliativa—psoriasis when irritated, lichen planus and Devergie's disease were all liable to become universally exfoliative; so were eczema and other dermatoses. As Dr. Lapowski had said, these might be described by one clinical term at one time and another at another. Certainly scarlatina ended as dermatitis exfoliativa. This was evidently a rare form of some dermatitis, at one time having caused universal exfoliation.

Dr. Pollitzer said the case was unusual because of the long period of time that the patient had been under observation. He now presented atrophic patches resembling the patches following lichen planus, and in addition there were infiltrated patches on the head and scalp, which might be seborrhic eczema. On the other hand, they might be beginning infiltrations of mycosis fungoides, and the whole process might be interpreted as having been a dermatitis exfoliativa introducing mycosis fungoides, though for that diagnosis there was little ground, and it was merely a suggestion. Another suggestion would be that the exfoliative dermatitis was itself secondary to a lichen planus, and as the exfoliative dermatitis disappeared, the lichen planus lesions came to light in the form of atrophic macules.

Dr. Lapowski, replying to Dr. Pollitzer's suggestion of lichen planus, said that if this were lichen planus lasting for so long one would expect that at some time there would be some pigmentation, and he had never seen any. His own explanation had been that it was dermatitis exfoliativa originally—not lichen planus.

Dr. Pollitzer replied that lichen planus atrophicus was not pigmented.

A CASE FOR DIAGNOSIS: Presented by Dr. Lapowski.

M. K., a man, aged 55, a waiter, had had this condition for five years. It began as a gradual swelling of the end of the right middle finger, simul-
taneously with scaling; and finally there was depression of half of the nail. There was no history of any trauma or pain. The patient had never received any treatment until about six weeks ago, when he received two fulgurations a week apart. At the distal phalanx, on the dorsum of the middle right finger, was a cherry-sized mass. The skin covering it was practically normal, except for a few scarlike points. There was no redness on the borders. The whole mass was movable from side to side, but it seemed attached to the underlying structures. The inner side of the nail was depressed. The Wassermann test was negative. Cultures and smears from the mass were negative. No fluid was obtained from the mass, although in some places the parts seemed soft. One injection of calomel, given about two weeks before, was followed by slight, if any, diminution in size. Roentgen-ray examination showed a soft tissue tumor, with slight destruction of the bone of the phalanx, probably due to the pressure of the tumor. Treatment since Dec. 12, 1922, consisted of one injection of calomel (December 14), kalium iodid, about 25 grains (1.62 gm.) daily, and hot applications. There was no history of any drugs taken internally. Physical examination showed a marked myocarditis and arrhythmia. No other manifestations were present on the skin or mucous membranes. Blood examination revealed: hemoglobin, 70 per cent.; red blood cells, 5,070,000; white blood cells, 7,200; polymorphonuclears, 46 per cent.; lymphocytes, 41 per cent.; eosin, 2 per cent.; basophils, 1 per cent.; transitionals, 7 per cent.; myelocytes, 3 per cent.

**DISCUSSION**

Dr. Highman said that this was one of the most interesting cases that had been presented before the Section. Superficial examination erroneously suggested xanthoma tuberosum. At one point on the outer aspect the lesion was as hard as bone, and for that reason the clinical diagnosis would have to be reached by reconstructing the picture of a tumor either growing from, or involving, the phalanx. For that reason he had thought of osteosarcoma. There were many such tumors which were not extremely malignant, the term sarcoma merely indicating a histologic fact. In all tumors of the skin it was important to corroborate the clinical findings by histologic study, and in this instance the lack of such study would make any discussion purely an exchange of opinions.

Dr. Pollitzer said that a tumor of six years' duration was probably not malignant. Some sarcomas were of slow growth, but he did not think that osteosarcoma belonged in that class. This was evidently not a malignant but a benign tumor, and the problem was to discover its nature. It was a very hard, definitely circumscribed mass lying over the articulation between the terminal and the second phalanx. That was well shown in the roentgenogram, as well as the regular spheroidal or ovoid shape of the tumor. A hard tumor, nonmalignant, growing over the articulation seemed to suggest the probability of a chondroma. The shadow was not deep enough to justify the diagnosis of osteochondroma. In depth of shadow it was about midway between the phalangeal bones and the cutaneous tissue covering the lesion. It was not quite dark enough to contain bone tissue, though there might be a little bone tissue scattered through it. It accorded perfectly with the shadow one would get from cartilage, and it was probably a chondroma arising from the articular cartilage. Of course, that was merely little more than a guess; a biopsy would lead to a definite diagnosis.
Dr. Gilmour said that he believed, in spite of the hardness, it was a synovial cyst with a very hard wall. Another possibility that had not been suggested was that it might be a calcareous deposit, but he was not inclined to believe that it was calcareous. The roentgenogram ruled out that diagnosis.

Dr. Wolf said that the suggestion made by Dr. Gilmour was what he had thought of—an inspissated synovial cyst, similar to a sebaceous cyst, which fills to the utmost and cannot grow any further.

Dr. Levin said that it was impossible to make a positive diagnosis without a study of the pathology. He could not understand, considering the site, how it could be a dermoid cyst. In his opinion, it was probably a synovial cyst with dense fibrous tissue formation.

Dr. Lapowski said that the opinion of the radiologist was that the growth had nothing to do with the bone lesion, and that the bone lesion in itself was only secondary from the pressure of the tumor. When first observed three weeks before, it was not so hard as at present, and was a little larger. The outer edge was more raised, and now it was flatter. The man had received some roentgen-ray treatment before he came under observation, and claimed that the condition was improved. Dr. Lapowski also said that a biopsy had not been made, because he did not usually have one made until he knew something about the case under observation, as he did not wish to be unduly influenced by the histology that might be reported. In this instance, he intended to continue treatment for a month or two, and would then present the case again, when perhaps the tumor would be a good deal smaller or entirely gone. In his opinion, it was a chronic inflammatory process and not a chondroma, although it might be a synovial cyst. He had seen a number of cases in which biopsies had been made and a diagnosis of chondroma or fibroma had been made, which disappeared under treatment.

DERMATITIS HERPETIFORMIS. Presented by Dr. Levin.

E. De B., a woman, aged 42, married, a Belgian, came to the Cornell Clinic one month before, complaining of a recurrent, intensely pruritic eruption of two years' duration. Protein skin tests and the Wassermann blood test were negative. On admission, the face and upper chest were red, swollen and edematous. The exterior surfaces of the upper and lower extremities and the sacular and sacral regions were covered with innumerable excoriated erosions, vesicles and papules. There was some tendency to crescentic grouping. Gynecologic examination revealed a small fibroid of the anterior lip of the cervix and thickened left adnexal. Radiograph examination of the teeth revealed nothing abnormal. The urine showed a slight trace of albumin, but was otherwise normal. A smear from the cervix showed pus cells but no gonococci. The blood sugar was 130 mg. and the urea nitrogen 12 mg. Treatment consisted of a reduced carbohydrate diet, alkalis and thyroid with lutein. The skin condition as presented showed the face, chest and back cleared of lesions.

NEUROTIC EXCORIATIONS. Presented by Dr. Levin.

M. K., a woman, aged 53, married, appeared at the Cornell Clinic eight months before, complaining of an eruption of the face of two years' duration. She presented numerous lentil to bean-sized superficial erosions and ulcers.
and brownish scars of the face. Under observation, the old lesions would heal but new ones continued to appear. She said that the lesions developed at sites where she expressed skin worms. The patient was neurotic and had recently suffered the loss of two members of her family. The urine was normal. The Wassermann test was negative. The blood chemistry revealed nothing abnormal, and the hemoglobin and blood cell counts were normal. As presented, the skin of the face showed numerous erosions, excoriations and scars.

MORPHEA. Presented by Dr. Wolf.

J. A., a boy, aged 5, born in the United States, had had the eruption for one and a half years. The lesion occupied the entire area of the left lower eyelid from the inner canthus downward and outward for about 1½ inches (3.81 cm.). It was pearly white, of board-like consistency and infiltrated. Under treatment, the lesion had improved about 50 per cent.

BROMODERMA. Presented by Dr. Levin.

S. D., a girl, aged 5, born in Russia, who had been in this country for four months, following hardships consequent to the flight from Russia, developed epilepsy and was given bromids. The eruption on her legs appeared four months ago. The middle one-third of the right leg showed the presence of a large lesion which was made of a tuberoserpiginous border and a central depressed area. The border was elevated and made up of inflammatory tubercles and pustules. The central area was purplish white and scarred. Scattered over the thighs and legs, were several pea to bean sized pustulo-tubercles. The urine showed albumin, but bromids were absent. The Wassermann test of the blood was negative. The blood sugar was 0.09, the urea nitrogen was 10, and the creatinin 1.05.

ALOPECIA AREATA TOTALIS. Presented by Dr. Gilmour.

H. S., a man, aged 36, married, a teacher, had had a slight attack of the condition on the scalp in 1916. Two years before, two patches appeared on the head, which gradually increased until the loss of hair was complete. This condition had remained for the last thirteen months.

ERYTHEMA NODOSUM AND SCLERODERMA. Presented by Dr. Levin.

P. F., a woman, aged 28, married, seven weeks before began to complain of pains and an eruption of the legs. When first observed two weeks prior to presentation, she showed several dark red, tender nodes on the legs. The lower half of the legs were swollen, edematous and indurated. During the next two weeks the painful nodes gradually faded under treatment with alkalis, cinchophen and rest in bed. As presented, there were several fading, purplish areas, and the lower part of each leg was discolored, hard and inelastic. The urine showed albumin and acetone; the phenolphthalein kidney function test showed 20 per cent. the first hour and 42 per cent. the second hour. The total output being 62 per cent. The red blood cell count was normal. The white blood cells numbered 16,900, 83 per cent. being polymorphonuclears, 2 per cent. eosinophils, and 15 per cent. mononuclears. The Wassermann test of the blood was negative.

Oscar L. Levin, Secretary.
TRAUMATIC ULCERATION OF A NEVUS. Presented by Dr. Patricia Hart-Drant.

Baby C. B., a girl, aged 11 months, at birth presented a vascular nevus involving the buttocks and genitalia. The child was brought into the clinic October 10, exhibiting a considerable piling up of vascular tissue on the labia majora and minora, associated with a great deal of ulceration and sloughing. The anus was deeply fissured, and the child experienced much pain when the bowels were evacuated. On the right buttock, there was a crescent shaped, punched out ulcer, about the size of a half dollar. This ulcer was deep, extending into the subcutaneous tissue, the base of which had a yellowish cast, with here and there buds of granulation tissue. Both the baby and the mother had negative Wassermann reactions. Since the baby's first visit to the clinic, the ulcer described has cleared up, but similar ones have broken down.

CASE PRESENTED FOR DIAGNOSIS. Presented by Dr. Patricia Hart-Drant.

Mrs. E. D. M., aged 17 years, showed chronic itching papular lesions affecting both axillae, which had also commenced to appear in the pubic region. The lesions appeared in the right axillae in October, 1922, preceded a few hours by an intense itching and burning and an eruption which resembled prickly heat. On December 1, the left axilla was affected in the same manner as the right, and two weeks later a few papules appeared on the pubis.

The papules were uniform and approximately the size of a pinhead, shiny, smooth, hemispherical, translucent, with a slightly pinkish cast on the base, and firm. The intervening skin was slightly but definitely pigmented, and there was no induration. The papules were distributed in a moniliform arrangement, and in some of them a tiny black speck was perceived at the apex of the dome. The itching was intense and of a paroxysmal character.

The patient, a large, well nourished, athletic girl, had never had a growth of hair in the axillae, and the pubic hairs were sparse, having started about a year before.

DISCUSSION

Dr. Brown said he regarded the condition as the chronic papular eruption of Fox and Fordyce.

Dr. Strauss agreed with this diagnosis.

Dr. Weidman said he believed that the individual papular lesion looked like hidrocystoma; he pointed out their uniform spacing (and occasional arrangement in lines) which suggested their origin in one of the definite anatomic cutaneous structures like sweat glands or hair follicles. He could not name the condition clinically, but he believed it might be related pathologically to benign cystic epithelioma, particularly since it developed at such an age and was bilateral, and that there was evidence of such a congenital defect as hairlessness.
LUPUS VULGARIS FOLLOWING GENERAL TUBERCULOSIS. Presented by Dr. F. D. Weidman.

Earl S., aged 11 years, colored, was first admitted to the hospital for osteomyelitis of the hand, and two fingers had been amputated. The internists had found pulmonary tuberculosis, and the laryngologists destruction of the epiglottis. No tubercle bacilli were found in the sputum. The skin lesions developed about one month after his arrival in the hospital and consisted of one patch of closely-set, nonulcerative nodules under the right eye and a smaller one on the left cheek. On the basis of a plus Wassermann test, he received mercury rubs over a period of two months, and four or five intra-venous injections of arsphenamin, with no effect on his general condition or on the skin lesions. Suggestions were requested as to treatment in view of the advanced disease of the respiratory tract.

DISCUSSION

Dr. Knowles agreed with the diagnosis and advocated radium.

Dr. Strauss said he believed that such small patches could be curetted.

STRIAE ATROPHICAe OVER THE LUMBAR REGION. Presented by Dr. F. D. Weidman.

Philip M., aged 26, white, had typical striae extending transversely quite across the small of the back. There were others over the hips. The patient had lost 18 pounds (8.16 kg.) in eighteen months. There was no history of a previous stage of redness. The case was shown on account of the unusual lumbar position of the lines.

MULTIPLE SUBCUTANEOUS FIBROMAS. Presented by Dr. F. D. Weidman.

Joseph G., aged 25, white, had four or five hard nodules on the forearm and around the waist, which lay deep in the cutis, but were movable over the subcutaneous tissue. They were invisible, except for the elevated one in the forearm. They were not in the category of molluscum fibrosum, but of the desmoids.

DISCUSSION

Dr. Knowles agreed with the diagnosis.

Dr. Greenbaum said that the sarcoid of Darier-Roussy should be considered.

John B. Ludy, M.D., Secretary.

CHICAGO DERMATOLOGICAL SOCIETY

Annual Meeting, Jan. 17, 1923

Harold N. Cole, M.D., Presiding

GRANULOMA ANNULARE. Presented by Dr. Stokes.

A man, aged 32 years, had entered the Mayo Clinic with multiple, annular, nodular lesions, many of them presenting annular arciform configurations. Although the Wassermann reaction was negative, the tentative objective diag-
DISCUSSION

Dr. Pusey said that the lesion in the case presented by Dr. Stokes looked like a tertiary syphilid, but as he understood the case, the lesion had not yielded to antisyphilitic therapy as a syphilid should. The histologic picture was suggestive of granuloma annulare; he would not call it a typical radiating nodule, but it was suggestive. Dr. Stokes' study of the case was much more extensive than his, and he was willing to be taught. The case was unique as granuloma annulare in his experience, although he once had a case of this disease that was not recognized for six months. He believed that the clinical conception of granuloma annulare should be changed.

Dr. Ormsby said that his patient was presented without a diagnosis to stimulate discussion and interest. Every one agreed that it was a case of granuloma annulare, and the only other patient he had seen with this disorder presented the same picture. His case was not like the one shown by Dr. Stokes. He thought it was hard to reach a conclusion about any case when the lesions had largely undergone involution, as they had in that case.

Dr. Stokes said he was embarrassed at the readiness with which Dr. Pusey accepted his diagnosis. The case was not recognized by them at first because of the unusual extent of the lesions. One point in this case might be of value in the future. Two biopsies had been made; the first was too superficial, as the little nodules were very deep. Even in the biopsy from which they finally made the diagnosis there was only one area which compared well with the standard apparently typical case, slides of which he had used for comparison. The response to antisyphilitic treatment was opposite to what was expected, but three-fourths of a skin unit of roentgen ray had caused about 60 per cent. involution of the lesion since the patient was last seen.

Miliary Tuberculosis of the Skin. Presented by Drs. Finnesand and Oliver (by invitation).

A girl, aged 5½ years, had a generalized eruption, chiefly on the trunk and extremities, which appeared immediately following measles seven months before. The lesions when first noticed were similar to their appearance at the time of
presentation but were slightly red and more elevated. A few had disappeared. The patient entered the hospital because of night sweats, dizziness, cough, afternoon temperature, anorexia, sties and rheumatism of the joints of the legs, chiefly involving the left hip. There were no cutaneous subjective symptoms.

The father and mother were living and well; there was a history of three miscarriages between the third and fifth months, before the birth of this child. The patient had had influenza when 1½ years old and had occasional mild attacks of sore throat. The tonsils were removed following the attack of measles.

At the time of presentation, the motion of the left hip was limited to adduction and abduction, the pelvis moving with the hip. Roentgen-ray examination revealed definite areas of consolidation in the right upper lobe. A fibroid, tuberculous and questionable tuberculous involvement of the hip were considered.

**DISCUSSION**

Dr. Foerster said he believed it was a case of multiple disseminated lupus such as is seen following measles. The individual lesions under glass pressure were small brown nodules such as are seen in lupus.

Dr. Grindon said he believed it was a case of lichen scrofulosorum.

Dr. Zwick said he believed that the widespread distribution of the eruption did not speak against the diagnosis of lichen scrofulosorum. The disseminate type of eruption (due to hematogenous dispersion) was rather characteristic of lichen scrofulosorum following in the wake of the acute exanthems—measles in the present case.

Dr. Michelson said he believed that the individual lesions looked very much like the individual lesions of lichen nitidus, but in lichen nitidus the eruption was grouped and not generalized as in Dr. Finnerud's case. He did not think that the lesions were lichen scrofulosorum because of the lack of scaling and of grouping. There were reports, one especially in the German literature by Hamburger, and two in the American literature by Wronker and Tilleston, describing an acute disseminated miliary tuberculosis of the skin in children following acute infectious diseases. Cultures from these lesions were positive in 98 per cent. of the cases.

Dr. Pusey said this was the most interesting case of the afternoon, and he believed it was a miliary tuberculosis of the skin. There were no lichen, no scaling and no primary acuminate lesions.

Dr. Haase said he had seen quite a number of cases of lichen scrofulosorum, and he would not call this a case of that nature. He agreed with Dr. Finnerud's diagnosis.

Dr. Finnerud called attention to a lesion on the back of the right leg, which he thought might have been overlooked and which was a typical lupus nodule about the size of a finger nail.

**CARCINOMA OF THE TONGUE TREATED WITH RADIIUM.** Presented by Dr. Simpson.

**Case I.**—W. G. C., a man, aged 65 years, when first seen (July 7, 1921) presented a papillomatous carcinoma of the middle and posterior part of the left border of the tongue, measuring about 6 by 4 cm. The cervical glands
were not definitely palpable. On July 7, 1921, 310 millicuries were applied for
one hour at a distance of 2 mm. to the tongue lesion. On July 8, 1921, fifteen
glass ampules containing a total of 19 millicuries of radium emanation were
injected in the tongue lesion under local anesthesia. Prophylactic surface
radiations were used over the neck, a total radiation of 14,000 millicurie hours
at a distance of 3 cm. being given. Clinical recovery occurred, which has been
maintained to the present time—about a year and a half, after the treatment.
The tongue showed a smooth and depressed cicatrix.

Case 2.—G. W. C., a clergyman, aged 39 years, when first seen (Dec. 10,
1921) had an ulcerated carcinomatous lesion measuring 1 by 1.5 cm., which was
situated in the middle of a patch of leukoplakia on the left anterior border of
the tongue. The glands in the neck were palpable but freely movable and
somewhat tender on pressure. It could not be determined whether they were
carcinomatous. On Dec. 10, 1921, four glass ampules, each containing 2 milli-
curies of radium emanation, were implanted in the edges of the ulcer. A total
radiation of 20,000 millicurie hours was given over the neck at a distance of
3 cm. The patient appeared clinically well at the end of two months. A smooth
depressed scar marked the site of the healed tongue lesion. At the time of
presentation, more than a year having elapsed since the treatment, the patient
was in the best of health.

Case 3.—C. C., a policeman, aged 52 years, when first examined (Oct. 6,
1922), presented a marked leukoplakia of the tongue and buccal membrane.
A carcinomatous nodule 2 by 2 cm. was present on the right border of the
tongue posteriorly. The cervical glands were not palpable. On Oct. 6, 1922,
the tongue lesion was radiated with 400 millicuries for one hour and on
October 7, 300 millicuries were applied for one hour. On October 9, five
ampules, each containing 0.5 millicurie, were buried in the tongue nodule. The
patient also received a radiation of 18,000 millicurie hours at a distance of
6 cm. over the neck. He was clinically well.

Case 4.—G. H., a man, aged 51 years, was first seen Oct. 17, 1922. On the
posterior portion of the left border of the tongue, there was a markedly ulcerated
carcinoma measuring approximately 2 by 4 cm. The cervical glands were
distinctly tender and palpable but were probably not carcinomatous. On
Oct. 17, 1922, 300 millicuries were applied to the tongue lesion for thirty minutes
at a distance of 2 mm. On Oct. 18, 1922, sixteen glass ampules, each containing
0.5 millicurie of radium emanation, were implanted in the borders of the ulcer.
A radiation of 16,500 millicurie hours at a distance of 6 cm. was given
to the neck. Two months later, complete healing of the tongue had occurred,
the site of the lesion showing a depressed scar. The patient was in excellent
health.

Case 5.—A. L. F., a druggist, aged 60 years, was first seen on Nov. 11,
1922. On the right border of the tongue, near its base, was a carcinomatous
ulcer measuring about 1.5 cm. in diameter. Just below the angle of the lower
jaw on the right side was an enlarged gland about the size of an egg. This
gland was very hard but movable and not tender. It was possibly carcinomatous.
On Nov. 11, 1922, eight ampules, each containing 0.5 millicurie of radium
emanation, were buried in the tongue lesion. A radiation of 20,000 millicurie
hours at a distance of 6 cm. was applied to the neck. The tongue lesion healed
and was replaced by a small, scarcely perceptible scar. The gland under the
jaw slowly resolved so that it was no longer palpable. Six weeks later the
patient appeared clinically well, and was still in excellent health.
In the etiology of these cases the use of tobacco appeared to be a prominent factor. There was no evidence of syphilis in any of them.

The diagnosis of the tongue lesion was both clinical and microscopic in three patients and clinical only in two cases. In the judgment of those presenting these cases, it is not advisable to remove a section for microscopic diagnosis, except in selected cases, as the clinical diagnosis is nearly always sufficient.

**DISCUSSION**

Dr. Sweitzer said he was interested in this group of cases because of the etiology, and he wondered whether the patients were syphilitic. Dr. Simpson had said they were not and believed the causative factor to be excessive smoking.

Dr. Guy said he believed that the apparent good results in two of these cases at least was temporary. It was obvious that where the lesions were as extensive as these, one to two years had been added to the patient's lives by the use of radium. His personal experience had been rather discouraging, except with early lesions. He believed that radium was a cure in early cases and that it was an excellent palliative in all other cases.

Dr. Ormsby said that he had seen two or three cases of typical carcinoma of the tongue that had been referred to Dr. Simpson and treated as successfully as these. They were treated rather energetically with radium emanations, with excellent results. Four or five years ago, it was believed that within a reasonable time they would succumb but within the last few years many patients had responded very well to this treatment; and Dr. Ormsby considered it far superior to anything he had seen in these deep cases.

Dr. Lain said he believed Dr. Simpson was to be congratulated on the results. He believed those working with radium were getting similar results, providing radium was supplemented with deep roentgen-ray therapy over metastasizing regions. He thought only a small percentage of cases were permanently cured. A longer lease on life was offered than might be given by surgery, with more comfort to the patient. In two or three of these patients, the deep cervical glands were easily palpable, and probably most of them had metastases. He believed it to be definitely established that carcinoma in the mouth was clearly a case for radiotherapy.

Dr. Cole said that if radium accomplished nothing more, one of these patients illustrated its value. That patient had been well for a year and had his tongue in addition, which was more than a surgeon could do for him.

**LYMPHANGIOMA.** Presented by Dr. Pusey.

A girl, aged 11 years, when first seen in November, 1922, complained chiefly of a swelling which involved the left cheek. It appeared four years previously following a blow on the cheek. It gradually increased in size during the first year, but had remained stationary since that time. It was said that the cheek would present an almost normal appearance for a day at occasional intervals, and that the swelling was more pronounced in the morning, decreasing in the afternoon. No pain or discomfort was complained of.

One inch (2.54 cm.) above the left nipple, there was a red area 1 inch in diameter; within that area were four vesicles having the appearance of normal skin. They were grouped and deep-seated, with thick walls. According to the patient, this lesion followed an injury received six months previously.
The girl's grandmother was said to have a similar swelling of the left cheek. The patient had had pneumonia at 2 years of age, scarlet fever at the age of 7, and she had had frequent attacks of tonsillitis. She was well nourished, no adenopathy could be detected, and the teeth were in good condition. The tonsils were hypertrophied, nearly meeting in the median line. The thyroid, heart and lungs were negative. The temperature was normal, the pulse 78, the blood pressure; systolic, 100; diastolic, 75. A marked difference could be noted in the size of the two cheeks, the left being much larger. The margins of the tumor were ill-defined, the growth gradually becoming continuous with the surrounding normal tissue.

The macromelia appeared as a flat, loose swelling, covered by normal skin, which could not be raised from the tumor. The tumor decreased in size when pressure was exerted, regaining its normal size on release of pressure. It did not pit on deep pressure like an ordinary edematous mass, but offered more resistance. When felt between the thumb and index finger, some septums or meshwork could be determined.

On Nov. 9, 1922, the patient received radium, forty minutes. + 1 Pb.; on Dec. 28, 1922, she received a similar dose.

**DISCUSSION**

Dr. Wile said that while the history of the case did not quite follow the usual one of lymphangioma, he believed both lesions were definitely of this nature. He thought the lesion over the nipple was distinctly a lymphangioma circumscriptum, and that on the cheek the same lesion of a more diffuse type. The unusual feature of the case to him was that the lesion on the cheek had followed a trauma.

Dr. Engman said it was the second case he had seen with a history of trauma. The other patient was a girl seen a few months previously who had first noticed the lesion after a blow. He thought the blow had nothing to do with it, except that it attracted attention to the part. Dr. Pusey's patient had the same distribution in the skin of the neck that was present in his case.

Dr. Pusey said he believed there was no question that it was a lymphangioma of the cheek and of the chest. The interesting thing was the occurrence of the lesion on the chest in connection with that on the cheek. He did not know that a history of trauma preceded such a lymphangioma very often, but a review of the literature showed that this was the case. Another interesting thing about the case was that if one took the cheek between the fingers and rolled the lymphatics between the fingers, there was a feeling which one did not usually get in the ordinary angioma. The association of the two lesions was the interesting point in the case. Radium had been used once in the treatment, being placed inside the mouth. He believed the cheek could be reduced to almost normal size. He agreed with Dr. Engman that the trauma was not the cause of the condition, but the exciting factor.

Dr. Stokes said that he had obtained pleasing results with radium, especially in deep angiomas, by long exposures—eight or nine hundred milligram hours.

**COCCIDIOIDAL GRANULOMA.** Presented by Drs. D. J. Davis and E. P. Smith (by invitation).

A man, aged 32 years, in 1911, went to California from Chicago and worked in the Mojave Desert with a surveying crew. His right ankle became chafed
and badly infected. After six or eight months, he was unable to use his foot; he consulted Dr. Norman Bridge in Los Angeles, who pronounced the condition an *Oidium coccidioides* infection. This right foot was amputated above the ankle. He then used an artificial foot, with which he could work and even dance. Three years ago, his left ankle became involved in a similar way, and later he had ankylosis of this ankle. Lesions of a similar character appeared on his body, which were lanced from time to time to release pus, after which they would slowly heal. Two months ago, fresh lesions appeared on both sides of his left ankle, which increased in size and were curetted down to the bone. The results were not satisfactory, and an amputation was made several inches above the the ankle joint. Lesions on other parts of the body were still present. Repeated Wassermann tests had been negative.

The lesions on the amputated foot were open, with ragged, bare and rather clear-cut, prominent margins. The skin around them was discolored, and the margins were undermined, often to a distance of 2 or more cm., by a necrotic, gelatinopurulent exudate, which in places reached the bone, tendon and muscle. Smears, cultures and sections had been made from these lesions. Specimens were shown under the microscope. In the smear preparation were many spherical double contoured bodies, varying roughly from 5 to 30 microns in diameter. No budding forms or mycelial filaments were seen; definite intracellular, sporelike bodies appeared in some of the organisms.

**DISCUSSION**

Dr. Engman expressed his gratitude and pleasure at seeing the case, for it was the first opportunity he had had of seeing this disease and the organism, and he considered it a good demonstration.

Dr. Pusey said he believed this was the first case of this disorder that had ever been shown in Chicago, with the exception of the one he had presented twenty years ago. In that case, Dr. Stober found the organisms. At that time there were no other cases known in this country, except those in the San Joaquin valley. Dr. Davis said that several cases had been found recently in the region where these men had been. Dr. Pusey's patients was a Polish woman, who was in the County Hospital with extensive serpiginous lesions which he at first thought were blastomycosis.

Dr. Haase said that because they saw so many cases of blastomycosis in his part of the country, and because he had never seen such a case as this, he was beginning to doubt whether there was such a condition as coccidioidal granuloma, but after seeing this case he could not doubt. Whether the case could be differentiated clinically he was not so sure, but the lesions this man showed on his arm were quite different from those of blastomycosis.

Dr. Ormsby said that in 1901, when working extensively on blastomycosis, he watched carefully for cases of coccidioidal granuloma; but he never found one. Dr. Howard Morrow of San Francisco exchanged sections and cultures with him and the cultures would grow; but blastomycosis is rare in the West, and coccidioidal granuloma is rare in this region. The case presented today was imported, and it was interesting to know that the cultures would grow in laboratories when exchanged, but that the two diseases, although similar in many respects, seldom developed outside of their respective geographic locations.

The only experience Dr. Omsby had had with a patient with blastomycosis going to the coast, was with a patient with generalized blastomycosis to whom
they gave an unfavorable prognosis. This patient went to the Western coast and recovered in a few months. Dr. Ormsby had always felt that it was because she went to California and lived outdoors that the great improvement took place. He afterward saw this woman, and she had fully recovered from the disorder; but the major portion of the patients die.

Dr. Butler said he was much interested in the case as it was the first one of this nature that he had seen. After seeing this case, he believed the clinical diagnosis was possible, between the coccidioidal granuloma involving the bone primarily with resulting fistulous tracts and blastomycotic osteitis with resulting skin fistulas. He had seen a case of primary bone blastomycosis at the University Hospital that had also been seen by Drs. Michelson, Irvine and Sweitzer, when the fistulas broke through, the surrounding skin became involved, showing papillomatous vegetations corresponding to primary blastomycosis. In Dr. Davis' patient with coccidioidal granuloma, the skin around the fistulous openings was not involved, the perforations simulating more closely the skin fistulas resulting from bone tuberculosis.

Dr. Butler said that his case of primary blastomycosis of the bones, involving the skin secondarily, reminded him of the picture of coccidioidal granuloma shown in the textbooks of Dr. Pusey and Dr. Sutton. Enormous numbers of blastomyces were demonstrated in the pus secretions. It was interesting to know that under iodid treatment, up to 200 grains (13 gm.) a day, the blastomyces would disappear from the pus. On stopping the iodids for two weeks, the blastomyces could again be demonstrated in the pus, and they were as numerous as when first observed.

Dr. Cole said that his impression on seeing the patient was that the disorder resembled a sporotrichosis, because of the linear arrangement of the lesions.

Dr. Davis said that the differentiation from blastomycosis was very easy so far as the organisms were concerned. These organisms never show budding forms in the experimental or human lesions, whereas this is a striking characteristic of blastomyces. The organism of coccidioidal granuloma shows the intracellular sporulation which does not occur in the blastomyces.

The cases of coccidioidal granuloma do not react to the administration of potassium iodid. The cases in California have been treated intensively with iodids, without any reaction. Of about thirty cases reported up to a short time ago, all the patients except two died, and those two had had early amputations. The course of the disease might be as long as seven or eight years. Sooner or later the lesions become more and more generalized, and the patient succumbs.

Dr. Davis was interested in the distribution of the disease and said that the first case occurred in Rio de Janeiro in 1892; two cases have been reported from there. Then there was the isolated case of Dr. Pusey in Chicago. The others have all been from California. The earlier cases appeared in the San Joaquin valley. Now they are appearing around Los Angeles. He had received a letter a few days previously from Dr. Evans of Loma Linda, who said that the cases were becoming quite numerous, that about twenty-five to thirty cases had been reported by Dr. Hammock of Los Angeles, and that all these cases had appeared in the region of Los Angeles. Apparently the disease is spreading, now occurring south of the great central valley.

As to the pathology, in man the lesions resemble tuberculosis more closely than blastomycosis. Attention was called to this several years ago by Dr. Hektoen.

The patient presented was under the care of Dr. E. P. Smith of Chicago, who had known the man for many years.
A CASE FOR DIAGNOSIS. Presented by Dr. Oliver.

A woman, aged 80 years, had a disorder which began on the left leg in September, 1921, and on the right leg in November, 1921. The lesions first appeared about the ankle as pea-sized dark bluish red nodules, firm, indurated and painful. New ones constantly appeared, and the old ones enlarged until they attained the size of a large walnut. A few had broken down and ulcerated. All the lesions developed a thick, bulky crust which was very adherent and which when removed left a raw, bleeding surface. The lesions were painful, especially while they were enlarging. Edema had been present about the ankle for three months. The urine, blood count and blood pressure had been normal for one of her age.

Sections were shown under the microscope.

DISCUSSION

Dr. Engman said it was an extremely interesting case. When first seen he thought it was a bromid eruption, especially the lesion on the middle of the outside of the right leg, that had some almost warty growths. The lesions undergo involution and leave pigmented spots. Considering the case histologically, he was undecided about the diagnosis. It looked to him more like a granuloma, although not frankly this condition. There was occlusion of the vessels and some giant cells in groups in the sections.

Dr. Ravitch said he believed it was a case of mycosis fungoides such as occurs in elderly people. He believed it was not a drug eruption.

Dr. Grindon said that, like Dr. Engman, he believed at first it was a form of iodid eruption, although the patient denied having taken any drugs. The section was not frankly that of a granuloma. There was a great deal of intracellular tissue.

Dr. Senear said that the picture was much the same as when he saw the patient with Dr. Oliver six or seven months before. It then suggested a case of mycosis fungoides limited to one leg, which he reported in 1916. Dr. Oliver said at that time that some of the lesions were very hard. Clinically, it bore a close resemblance to mycosis fungoides, and the histologic picture was much like that.

Dr. Crutchfield said he believed it was a case of granuloma fungoides, according to the histologic picture. There were some giant cells and epithelioid cells.

Dr. Wile recalled the case Dr. Senear reported, and he was struck with the resemblance of that case to Dr. Oliver's. He understood from the patient that some of the lesions undergo spontaneous involution, which would fit in with the diagnosis of granuloma fungoides. He thought the profession was too apt to regard granuloma fungoides as always disseminated. In Dr. Senear's work on his case he found two or three other cases in the literature in which the disease had occurred in one arm or one leg, or two legs, the trunk not being involved. He believed that the case presented bore a closer resemblance to granuloma fungoides than to any other condition. There was no history of itching, which was perhaps unusual.

Dr. Michelson asked whether the sections were recent or taken some time ago. In sections of granuloma fungoides taken from lesions which were clinically as far advanced as in the presented case, there was usually much
more change in the epithelium—either an acanthosis, or later the epithelium may be thinned out appearing like a mere deposit or membrane.

Dr. Oliver said that the section was taken from the edge of an open ulcer. He had another section which he had not shown which showed more of the round cell infiltration. This was taken from the edge of the ulcer when it broke down. He found no plasma cells.

Dr. Engman asked whether he found any plasma cells. He thought the point of interest about the case was that it was an interesting tumor histologically on account of the borderline which it might occupy. Such tumors respond rapidly to radium and roentgen and arsenic therapy. The question was how this case should be classified. There were no plasma cells and no fragmentation cells. It was not the picture one would expect in mycosis fungoides, but the picture seen in the type of tumor that is neither granuloma nor new growth. In some sections, one saw things that looked like sarcoma and in others things that resembled granuloma. It was also difficult to differentiate this from a type of endothelioma. He thought the case belonged to the group Dubreuilh had described. They are not malignant in the sense of a new growth like carcinoma and sarcoma, but granuloma, and partake of the properties of each. The closest condition to it was the sarcoma of the dog's penis.

Dr. Senear asked whether this patient had received radiotherapy. The case reported from Dr. Wile's clinic was treated successfully with roentgenotherapy.

Dr. Sweitzer said that he had not recently looked the matter up, but it might be the Spiegler-Fendt type of sarcoid occurring on the lower extremities. It struck him that it was not typical mycosis fungoides.

Dr. Wile said he believed one should be somewhat open-minded about diagnosing granuloma fungoides after studying a single section. In several cases of this disease in which the patients had died in his clinic, and in which postmortem examinations had been made, there was a striking dissimilarity in the pathologic picture of the various cases. One of the most typical cases clinically was diagnosed at necropsy as lymphomatosis granulomatosa; a second one identical clinically, as well as pathologically, was diagnosed as malignant lymphoma. In neither of these two cases were any plasma cells present in the section. A study of the various tissues made during life showed a considerable degree of variance in the histology, depending on the size of the lesion and the various stages of the development of the lesions. Thus, in some sections cells of various types seemed to be present. In other sections, cells of one type would predominate. Dr. Wile believed that in granuloma fungoides one is dealing with a disease which varies greatly in its histology, depending on the time at which the particular case is studied. To attempt to say that a case was not granuloma fungoides because one or another type of cell was not present, he believed was not justifiable.

Dr. Oliver said there never had been any itching in this case, and there was no history of the patient taking bromid or bromoseltzer. The chief symptom was pain, a great deal of pain being associated with the development of all the new nodules. Some months previously, when the patient was able to be out, he had given her two treatments with the roentgen ray, one half skin unit on each lesion, with no improvement. In fact, she became worse, and the only improvement obtained was on complete rest in the hospital. The lesions on the left leg involuted without treatment.
NODULAR TERTIARY SYPHILIS. Presented by Drs. Stillians and Oliver.

A man, aged 28 years, entered the hospital, Jan. 9, 1923, complaining of an ulcer on the back of his neck of six months' duration. There was a history that similar lesions of the right forearm had been healed by mercury eight months previously. The present lesion was a nodule which was spreading peripherally. There was history of a chancre nine years ago, and examination revealed inguinal and epitrochlear adenopathy. The Wassermann test was positive.


A man, aged 36, whose disorder was of six months' duration, in July, 1922, was said to have been attacked with "chiggers," which induced lesions on the trunk and neck. Shortly after this, "water blister" developed in these areas as well as on the face and upper extremities. Various applications were employed in treatment, including the rays from an Alpine lamp. On examination, October 5, the skin in the regions noted presented crusted and erythematous lesions, each the recent site of bullae. The patient was weak and had lost much weight. Within two weeks, bullae developed in crops over the entire cutaneous surface, and it became necessary to use the water bath daily. The blood picture revealed no significant changes. The urine was normal. There was constant elevation of temperature, varying up to 102 F. In view of the rapid progress of the disease in spite of treatment, transfusions of blood were instituted. Six were given over a period of five weeks. The first blood was contributed by a relative, the others were obtained from outside sources. Each transfusion was followed by a sharp reaction, the temperature rising on one occasion to 105 F. Improvement began in one week and continued. A gain of 23 pounds (10.43 kg.) in weight and marked improvement in general has occurred. The skin, which formerly was readily detachable, is now firm, and only an occasional lesion is appearing.

PEMPHIGUS. Presented by Drs. Ormsby and Mitchell.

A man, aged 39 years, whose disorder was of sixteen months' duration, said the first change noted was looseness of the skin in small areas of the neck. The skin "slipped off" in these areas. Within two weeks most of the skin of the face and neck became involved. During the next three months it became generalized. As the disease progressed, the patient described a greenish-yellow fluid in the areas from which the superficial layers of the skin were removed, leaving a raw surface which later became scale covered.

On examination, Dec. 4, 1922, the entire surface presented lesions or scars. No bullae were present. The areas above noted, which probably had been the site of bullae, presented large adherent scales. While in the hospital, three small lesions developed on the conjunctivae. The mucous membranes of the mouth were free. A slight elevation of temperature was constantly present. The blood findings showed: red cells 3,410,000; white cells 16,500; hemoglobin 60 per cent. The differential count revealed no significant changes.

PEMPHIGUS. Presented by Drs. Eisenstaedt and Zeisler.

A Russian Jew, aged 34 years, complained chiefly of a generalized bullous eruption of the skin and mucous membranes, accompanied by itching. This disorder had been present for one year. The teeth were poor; the tonsils had
been removed. There was a history of "water blisters" on the right shoulder, which were healed with naftalan ointment, but which recurred three months later together with a sore mouth.

Examination of the mouth revealed red, superficial ulcers on the mucous membrane of the tongue. On the body were numerous coin-shaped crusted, some bullous, lesions. The blood examination showed the coagulation time to be four minutes, hemoglobin 90 per cent., white cells 13,750; 1 per cent. eosinophils. Roentgen examination of the teeth revealed no abscesses.

Treatment had consisted of naftalan ointment, thromboplastin, epinephrin injections and violet ray.

**DISCUSSION**

Dr. Zeisler said that one of the patients presented by Dr. Ormsby had consulted him about four months previously. At that time he had numerous bullous lesions on the body and said that he had been treated for impetigo. Dr. Zeisler made a diagnosis of pemphigus and sent him back to his physician with a gloomy prognosis. He was surprised to see how much more severe the disease had become since he saw the patient.

The other patient had been under his care at the Michael Reese Hospital, where everything they did seemed to aggravate it. At the County Hospital they had used a new method of treatment, so far as he knew. They had given injections of epinephrin, 10 minims twice a day; and this treatment together with exposure to the Kromayer lamp had caused remarkable improvement. The skin lesions and some of the mouth lesions had cleared up. The patient was well enough to go home. This improvement was perhaps temporary.

Dr. Engman said that he had seen one of the patients about two years before, and he thought it was a case of pemphigus foliaceous. There was some improvement, although the patient thought he was no better. He was put at complete rest in the hospital and received the ordinary treatment.

Dr. Ormsby said he believed two points should be emphasized. The patient Dr. Zeisler spoke of had a perfect classical pemphigus when first seen three months previously. At that time, the face, arms and neck were covered with typical bullous lesions. Within two weeks after the patient entered the hospital, the legs and feet, including the toes, became involved. Two months ago, the patient was in an apparently hopeless condition. The blood for the first transfusion was furnished by a relative and that for the subsequent five transfusions was obtained from persons not related to the patient. Six injections were given at weekly intervals. Following each injection there was a marked reaction, the temperature on one occasion rising to 105 F. Within a week after the first injection, he showed improvement. This continued until there was comparatively normal skin over almost the entire body, and he had gained 23 pounds (10.43 kg.). This was the first time that Dr. Ormsby had ever seen pemphigus of this severity halted in its progress; the disease had always continued to a fatal termination.

It was interesting to see the patient from the County Hospital because it appeared that epinephrin had brought about some improvement. He had seen the patient before he entered the hospital, and as he was very much better at present, the epinephrin treatment evidently had been of service.

Dr. Ormsby said that he was glad to have Dr. Engman clear up the diagnosis of their case and asked him to state how they treated pemphigus in St. Louis.

Dr. Stokes called attention to the tendency to spontaneous remission and relapse in pemphigus. He had treated one patient with the Alpine lamp, but no
epinephrin, with such marked improvement that he felt sure they had found a method of treatment that would be successful in all cases; but the patient, while under this treatment, became worse and was now at the point of death. Another patient showed remarkable improvement under antimony, but when the injections of antimony were continued, she had a relapse. If a method for treatment of pemphigus had been discovered that would keep these patients well, they had not learned of it at the Mayo Clinic. As in eczema, a change of physicians seemed to be more effective than anything else.

Dr. Stillians said that when treatment was started at the County Hospital they had two cases, one much more acute than the other, which was presented. One patient seemed to be in a serious condition, but he had been discharged apparently well; and they had not heard from him since. The lesions in both had cleared up rapidly on injections of epinephrin, 10 minims twice a day.

Dr. Eisenstaedt said that about eight or nine years ago there was a report from Bavaria of cases of pemphigus treated with injections of whole blood into the buttocks, resulting in great improvement. He had hoped to put this method of treatment into application at the County Hospital, but he had not yet done so. He asked Dr. Ormsby whether the injection of whole blood in smaller quantities, perhaps more frequently, might not be as good a method as the intravenous transfusion.

Dr. Lieberthal said he had seen the cases before and was glad to note the great improvement in both, especially in Dr. Ormsby's case. In pemphigus, the patient was as helpless as the physician was powerless to bring about much relief. Therefore whatever method produced improvement, even if this were only of short duration, should be hailed as a God-send. The result from blood transfusion in Dr. Ormsby's case was very good and should be used again if the patient should have relapses. The patient of Drs. Eisenstaedt and Zeisler who was treated with epinephrin injections was unquestionably improved since Dr. Lieberthal had seen the patient a few months ago in the service of the Michael Reese Hospital. Regarding the use of epinephrin, Dr. Lieberthal said that three or four months ago a report by a Czecho-Slovakian author appeared in the Archives of Dermatology and Syphilology tending to show that epinephrin secretion was increased in pemphigus.

DERMATITIS NODULARIS (NECROTICA). Presented by Dr. H. W. Fink (by invitation).

A white man, aged 41 years, entered Cook County Hospital on June 14, 1919, with a cutaneous disorder which had been present for seven years, beginning on his right leg. The patient thought that the lesion began deep in the skin and broke through to the surface. After three weeks of treatment with mercury the lesion healed, to be followed by others on the extremities, the trunk, back and head. These lesions had recently become extensive.

The family and past history were negative except that he had had a Neisserian infection seven times; he had never had a chancre. Examination revealed no scars on the penis; the right leg was swollen and edematous; the entire body was covered with lesions which were more numerous on the back and dorsal surfaces and which varied in size from that of a pea to that of a twenty-five cent piece, or were even larger. They were discrete, oval or circular; the base was erythematous, and the lesions were copper color or dull red. Infiltration was marked, and many of the lesions had broken down to
form ulcers which were punched out and oval, about 1 by 6 cm. in size and 3 mm. deep. The base was covered by a jelly-like, necrotic material; the border was indurated for more than 5 cm. all around, slightly elevated, and about all there was a bluish, erythematous zone which was slightly indurated.

The lesions on the palms consisted of numerous small, deep papules, some surrounded by a ring of scales, others showing pigmentation where the lesions had faded. The lesions were said to begin as deep-seated, bright red papules, accompanied by a burning sensation at the onset, but later becoming free from subjective symptoms. These enlarged to form lesions above. Where ulcers had formed, the lesions healed leaving depressed thin scars with a varying amount of pigmentation.

**DISCUSSION**

Dr. Butler said he did not believe it was a case of dermatitis nodularis necrotica, and factitious dermatitis should be considered. While it was true that the lesions were numerous and that some of them were situated where it was difficult for the patient to reach them, their singular appearance made him think it a factitious condition. The ulcers preceding the scarring were extremely superficial, for the base of the scars were stippled by the follicular openings. In dermatitis nodularis necrotica, the resulting ulcers are deeper.

The patient was eager to exhibit himself, and that, taken with the appearance of the lesions, made up a picture comparable with a factitious condition.

Dr. Oliver said the man had been in the County Hospital three times. The first time he was there, the diagnosis of dermatitis nodularis necrotica was made by Dr. Harris. He did not agree with Dr. Butler that it was a factitious condition. The lesions present now were not typical of the disease, for when they first appeared they were large nodules which showed in time a necrotic apex; and the man had quite a high temperature when they appeared. This might be due to the absorption of pus, but he believed they were a definite entity, and he believed any one who watched the patient over several months would agree. It was true that the man exhibited himself readily, but he took his treatment very energetically and improved under hot baths.

Dr. Ravitch said that several years before he had had a similar case that was not so extensive. Eventually he found that the lesions were caused by the hypodermic needle, and he believed this case might be a similar one.

Dr. Pusey said he did not think it was a factitious dermatitis. Many of the lesions left almost perfect varioliform scars. He believed the case belonged in the group of tuberculids and cachectic lesions of some kind, and that Dr. Harris' term described it well. He believed the man had a nodular dermatitis of cachectic origin.

Dr. Zwick said that although some of the lesions gave one the impression of a dermatitis factitia, others were in locations where the patient could not readily produce them himself.

**SCALING ERYTHRODERMA WITH GENERAL ADENOPATHY. Presented by Dr. Ravitch.**

A man, aged 21 years, whose disorder had been present for about one and a half years, when first seen by Dr. Ravitch in October, 1922, had a general erythema with distinct dermatographia, edema of the eyelids and persistent scaling without pruritis; the liver and spleen were enlarged; there was thickness over the anterior mediastinum, and the patient complained of dyspnea and of
pain over the chest. The blood picture was that of pseudoleukemia; the Wassermann reaction was negative. Under roentgenotherapy and cacodylate of iron, the glands decreased considerably in size and the dermic phenomena improved.

Discussion

Dr. Wile said that the history given, and the clinical findings suggested that this was a case of parapsoriasis en plaque. In this disease, however there were not usually found such striking changes as enlargement of the liver and spleen, dyspnea and a change in the lymphatic elements of the blood. These findings suggested to him the general picture of a leukemia. One could justify the cutaneous manifestations on this basis, notwithstanding their resemblance to parapsoriasis. He believed that sooner or later a direct leukemic condition would be found in the blood.

Dr. Grindon said the scaling and other symptoms suggested a leukemia or pseudoleukemia. His idea of what was meant by a pseudoleukemic condition of the blood was that there was no leukocytosis but that the percentage of lymphocytes was greater than normal and the percentage of neutrophils less. Other cases had been presented at this meeting of what might be called dermatitis exfoliativa, which was nothing but a symptom. Some of them are drug eruptions, some leukemias or pseudoleukemias and others follow psoriasis or other extensive dermatoses, especially after the use of chrysarobin and other irritating applications. There was one point about these cases which was a new thing to him, although it was possibly well known to the others. Sabouraud, in his very delightful "Entretiens dermatologiques," says that in all of these cases there was oliguria with polydipsia. Dr. Grindon had been able to confirm this since his attention was called to it. He now had a case very much like the one under discussion, that of a man with general exfoliation and greatly enlarged lymphatics. The glands in the groin were large and sclerosed. His total fluid intake, including tea, coffee, soup and water, had been 7,500 c.c. a day; his total daily urine averaged about 750 c.c., so the fluid intake was about ten times that of the output. The greatest amount passed out as perspiration. He believed this was the reason why these patients all suffer from cold. Not because they are losing their cuticle, but because of the large amount of heat lost by evaporation.

Dr. Ravitch said the hemoglobin was 61 per cent., the red cells 4,000,000. The condition had improved somewhat under roentgenotherapy, and there was no history of polyuria.

Dr. Weiss said that in Dr. Engman's service at the Barnes Hospital there were now two cases of leukemia showing skin involvement. One case was a lymphatic leukemia and the patient had had skin trouble for seven years. During a large part of that time, in the few examinations that were made, the blood showed no change suggesting leukemia. When the patient was first seen by him she had a leukocyte count of 75,000, as he recalled it, with a lymphocyte count of 70 per cent. The skin was thick, leathery and lichenified over the entire body, and studded with nodules as large as 1 cm. in diameter. The case was thoroughly studied in the Barnes Hospital. The total count under roentgenotherapy of the spleen and lymphatic glands was lowered. The relative lymphocytosis, however, did not improve. Sections were made of her skin and a remarkable picture was found. The entire corium was studded with collections of lymphocytes and lymphoblasts. Dr. Bunting confirmed the diag-
nosis of leukemia of the skin. The terrific itching did not improve and roentgenotherapy brought no relief.

The second case was an acute leukemia with a leukocyte count of approximately 200,000, and a relative lymphocytosis of 90 per cent. The skin manifestation was extensive purpura, both of the punctate hemorrhagic type and large ecchymotic type. Roentgen-ray treatment of the spleen and glands brought the leukocyte count down from a very high count to slightly below normal, but the patient did not improve subjectively. The transfusions were given, with marked improvement, the purpura disappearing. (This patient has steadily grown worse. There were occasional remissions. Her death is expected shortly.)

About four years ago, Dr. Engman had a case which he diagnosed as leukemia of the skin. The patient was covered with tumors varying in size from that of a hazelnut to that of a walnut. There was no change in the blood in the beginning, but in two months the typical blood picture appeared; the patient's condition became worse, and he finally died.

Three or four other cases of preleukemic symptoms had been seen, cases with thickening of the skin like leather, dermatitis, and adenopathy particularly of the inguinal and axillary glands. There was slight mononucleosis, and he thought that possibly these cases in the course of a few years might prove to be typical chronic lymphatic leukemia.

The case presented impressed Dr. Weiss as being an aleukemic leukemia, and he believed that the patient later would show the classical symptoms.

SCLERODERMA. Presented by Drs. Ormsby and Mitchell.

A boy, aged 9 years, had a disorder which had been present for six months and which involved the skin of the entire left arm.

When presented there was a linear band of patchy, waxy scleroderma slightly below the middle forearm, extending along the extensor surface to the tip of the deltoid. No redness had ever been present.

SCLERODERMA. Presented by Drs. Ormsby and Mitchell.

A man, aged 23 years, whose disorder was of eight months' duration, had a lesion, situated over the left scapula, which first appeared as a dollar-sized, purple discoloration, and which had recently developed into a bluish red, indurated plaque, 9 by 9.5 cm. in its greatest dimensions. Telangiectasia was present, but there were no subjective symptoms.

DISCUSSION

Dr. Grindon said some one had raised the point as to whether this was a case of circumscribed scleroderma or sarcoma. He believed it was the former, because he had noticed an appearance which he had always seen in scleroderma. In the area in which the change was taking place, where the scleroderma tissue was being deposited, it could be seen in little reticulated bands longer than they were broad and extending into the skin in various directions. This could not be seen in the center of the patch or around the border of every patch, but at some points. He knew of no other condition which presented that appearance. He thought the question as to whether there was a difference between circumscribed scleroderma and morphea was a barren
one. Nevertheless, he believed that he could see a difference between the two, and that this was a case of circumscribed scleroderma.

Dr. Ormsby said he showed the patient because he presented a similar case last year which proved to be sarcoma. That patient developed general metastases and died. He thought the disorder in this case was scleroderma. The band over the arm in the other patient was interesting, because it showed an extensive involvement.

POROKERATOSIS. Presented by Dr. Finnerud (by invitation).

A Japanese man, aged 27 years, presented a disorder of five years' duration. The lesions first appeared on the legs as pinhead-sized, slightly raised, scale covered papules, which itched mildly and spread peripherally until they reached the size of a thumb nail, then remaining stationary, except for a tendency to clear gradually from the center. The lesions were located on the legs, with the exception of a single lesion on the face and wrist. The patient had been seen only twice at the time of presentation, and a biopsy had not been made. The mouth and penis were grossly normal.

The family history was negative, as was the personal history, except that when the lesions first appeared the blood was examined by a physician in Vancouver, who told the patient that he had syphilis and gave him five injections of arsphenamin, without improvement. Later two blood tests were made in Toronto; both were negative. He denied chancre or secondary manifestations.

DISCUSSION

Dr. Grindon said he looked at the case carefully but he could not see the double wall with the intervening furrow. He thought it was a case of lichen planus annularis.

Dr. Haase agreed with Dr. Grindon that it was a case of lichen planus annularis. He thought many would say that it was porokeratosis but he believed, without considering the histologic section, that it was not.

Dr. Pusey said he had tried to find the ring of lichen planus annularis but could not find it. He thought one could usually make out the lichen planus character of the lesion of lichen annulare, but he could not make it out in this case, and if the patient had come to him he would not have made that diagnosis. He was afraid he would not have made the diagnosis if Dr. Finnerud had not made it first. On the front of the leg he found a lesion 0.75 cm. in diameter with an imperfect ridge around the border. In another lesion found later, there was a complete ring of epithelium around its border.

Dr. Grindon asked whether he saw the dark, depressed furrow dividing the boundary wall.

Dr. Pusey said that he saw a complete ring around a practically round lesion with a narrow ring that was a complete circle. It had a translucent horn. The other ring was incomplete but had a black horny ring around the lesion. One lesion showed a central area of normal skin; beyond that there was a pink ring and then the ridge around the border.

Dr. Wile said that he did not think this was porokeratosis. The largest lesion had a smooth, glazed or waxy surface. In the case they were able to study in their clinic, none of the lesions had this glazed, waxy appearance, and the double ridge that Dr. Grindon spoke so positively about was the most
striking feature of all the lesions presented. He believed there was a much more warty appearance in porokeratosis.

Dr. Grindon said that in porokeratosis he would expect to see a groove dividing the raised border lengthwise. That was a marked appearance in all fully developed lesions.

Dr. Förster said he believed that having seen one case of porokeratosis one had seen all, as Dr. Grindon had remarked last year, because the lesions were so typical. Looking at Dr. Finnerud's case brought to mind, however, that lichen planus annularis must be considered, and he was in doubt as to the diagnosis. The lesion on the inner side of the right leg was definitely keratotic, with a sloping edge rising almost to a point, with a narrow groove in the apex. The lesion viewed from above was annular with a narrow trench running along the top. That made him think it probably was a case of porokeratosis rather than lichen planus annularis, and he believed that histologic study, would be required to decide between the two.

Dr. Ormsby called attention to the fact that the patient was a Japanese and that the disorder was quite common in that race. He had seen few cases in Chicago over a period of many years. The Japanese seemed to have a great many cases, and perhaps they were not quite classical. He thought possibly there might be some minor differences in this patient and that the condition might still be porokeratosis.

Dr. Senear said he believed that in one of the definitely ringed lesions the border was made up of small, flat-topped papules which were so minute that it required close examination to make them out. He also noticed the grayish-white shade spoken of by Dr. Wile, and thought that the condition was lichen planus annularis.

Dr. Finnerud said that there was a definite trench around the periphery of the top of each lesion.

POIKILODERMA ATROPHICANS VASCULARE: JACOBUS DISEASE.

Presented by Dr. Zeisler.

A woman, aged 42 years, presented a disorder which began at the age of 12 and had been present continuously for thirty years. She was married at the age of 20, but had no children. The skin eruption caused no discomfort, except for dryness and chilliness in cold weather. The general health was good. One year before, she was examined by an endocrinologist and received thyroid extract, without improvement. Local treatment, consisting chiefly of salves, had given no results. The patient had been seen by Dr. Zeisler only once, and no laboratory work had been done.

Examination showed that from the neck down, the body and extremities were continuously involved in an eruption which consisted of a telangiectatic purplish red network, arranged in meshes and rings, which became white on stretching the skin, showing a reticulated atrophy with apparent loss of elastic tissue. There was slight scaling. The lower portions of the arms and legs showed a more congested condition, with evidence of vascular stasis. The mucous membranes were free, the nails normal. The face was slightly dry and scaly. The disorder showed a marked resemblance to roentgen-ray dermatitis.
Dr. Wile said that he saw this patient about two years before, when she had an extraordinary eruption which had not existed very long. As he recalled it, the disease began on the thighs and gradually spread, without any symptoms, until it involved practically the entire body. He thought it was necessary to consider only a few things in the differential diagnosis. A few spots on the thighs were definitely purpuric in character and rather suggestive of a purpura annularis telangiectodes, or Majocchi's disease. The only other tentative diagnoses were what Hutchinson called angioma serpiginosum and poikiloderma atrophicans vascular. He believed the patient represented the last-named disease. When he first saw the case, there was no atrophy present, but the disorder had progressed markedly during the last two years, and the atrophy had apparently appeared during this time.

Dr. Haase disagreed with Dr. Wile. He thought when the patient was presented in May at the meeting of the American Dermatological Association, he would recognize all such cases. The only difference he could see between this case and the one described by Jacobi was that there was no pigmentation, and the disorder was so widespread that he was willing to accept the diagnosis.

Dr. Guy said that the case was a counterpart of one presented in Pittsburgh last year, in which Dr. Wise made the diagnosis of poikiloderma atrophicans vascular, basing this diagnosis on the appearance of the lesions being that of a chronic roentgen-ray burn. Dr. Howard Fox suggested the use of the ultraviolet ray as treatment.

Dr. Grindon said the resemblance to roentgen-ray atrophy was striking. He agreed with Dr. Haase that there was atrophy, a reticular atrophy which was quite apparent when the skin was put in certain positions. When it was gently pinched together it fell into folds, and the atrophic lesions became little slits rather than disks, owing to the great thinness of the minute lesions. They were minute but disseminated.

Dr. Ormsby said that eight years ago he presented a case for diagnosis before the Chicago Dermatological Society, and various gentlemen were unable to come to a decision. That case was included with Dr. Lane's when he made a report on poikiloderma atrophicans vascular two years ago. On several parts of the body of that patient, there were lesions which looked like patches of healed roentgen-ray dermatitis. It was a perfect classical case. Each area presented atrophy and hyperpigmentation. Histologically, there was nothing characteristic about it except that it was an atrophic process which involved the cutaneous tissues as well as the vascular system. The case presented by Dr. Zeisler looked a great deal like it, except that the lesions were diffuse rather than localized.

Dr. Lieberthal said he did not accept the diagnosis. He could see no atrophy, reticulated blood vessels nor pigmentation. He believed it was a case of parapsoriasis and suggested submitting the patient to pilocarpin injections, as recommended by Koester and Herxheimer. Reports of a series of cases have appeared in the literature, which were treated by this method and cured. Dr. Lieberthal believed it would be interesting to note the effect of pilocarpin in this case.

Dr. Foerster suggested the diagnosis of pityriasis lichenoides chronica of an unusual or atypical form, and lichen variegatus should also be considered. Poikiloderma occurs with diffuse atrophy, and in these areas the skin has a
parchment-like feeling, being distinctly thin, and is spotted with follicular dots. Peripheral pigmentation appears to be present in all cases of poikiloderma, but is absent here.

Dr. Zeisler said he had seen the patient only once before and had made the diagnosis by exclusion. He had seen many cases of parakeratosis, and he had never seen in those cases the reticular atrophy which was present in this one. The patient was literally covered from the neck to the toes, and he thought this involvement was not present in parakeratosis of any type. In parakeratosis, there were always normal areas of skin present. On stretching the skin, he could make out definite atrophy. The long duration of the disease, thirty years, made him believe it was a case of Jacobi's disease. There were only fourteen cases on record, so no one had had much experience with them.

Dr. Pusey said he believed the case did not belong in any of the types of parakeratosis, but that it did correspond closely to the picture in the Iconographia and to the case reported by Lane.

**SPOROTRICHOSIS RESEMBLING BLASTOMYCOSIS.** Presented by Drs. O. H. and H. R. Foerster.

A white man, aged 60 years, a gardener and farm laborer, reported on Dec. 1, 1922, because of a vegetative plaque on the flexor surface of the right wrist, which had developed gradually during the course of several months from a small nodular ulceration to an oval, papillomatous granuloma about 5 cm. in diameter and 0.5 cm. in elevation, sharply margined, reddish brown. Its surface studded with drops of creamy pus from numerous milliary abscesses. The lesion had the typical appearance of a common form of blastomycosis, but yielded a pure culture of sporothrix in six days and failed to show blastomycetes on repeated examination. The lesion had involuted rapidly under potassium iodid, and the patient was presented chiefly to emphasize the importance of cultural examinations in the differential diagnosis of chronic granulomatous lesions.

The patient was seen six months previously, at which time he had vegetative sporotrichotic chancres on the right index finger and left thumb, and cutaneous and subcutaneous nodules along the lymphatics of both forearms, associated with palpable thickening of the lymphatic vessels.

**DISCUSSION**

Dr. Stillians expressed his pleasure at seeing this interesting case, and he said that he was impressed with its resemblance to blastomycosis.

Dr. Eisenstaedt said the lesion itself would have suggested to him a blastomycosis, and if he had not had time to look up the organism it would have been called a blastomycosis on his records. He had a case last year at the County Hospital with an identical clinical picture which proved to be syphilis, but which was thought to be blastomycosis.

Dr. H. R. Foerster said that the purpose in presenting the case was chiefly to bring out the importance of basing a diagnosis on cultural examination. Unfortunately, the lesion had healed to a marked degree, but when seen originally it was typical of blastomycosis. Examination for blastomyces was negative, but the pus showed the sporothrix on culture. They felt that at
least some cases of this type were overlooked, the diagnosis being made on clinical grounds and blastomycosis given the right of way.

LUPUS VULGARIS FACIEL. Presented by Dr. Ravitch.

A Russian woman, aged 41 years, had had tubercular adenitis since childhood. Nodules began to appear on the right side of the face at the age of 12 years; shortly afterward they commenced to coalesce, and the face soon began to swell. There was no history of syphilis, and the patient had three healthy children. The patient claimed that hyperemic treatment administered by physicians in Russia had been of benefit. She was seen by Dr. Ravitch for the first time on the day of presentation, and a thorough examination had not been made.

SARCOID. Presented by Drs. Ormsby and Mitchell.

A woman, who had been under observation since 1917 and who had been presented before the Society on several different occasions, was in a serious condition when presented in 1921. When shown at the annual meeting in 1922, she was practically well and was presented again at this time to show her continued favorable progress. The face, which formerly presented many deep nodules over both cheeks and the nose, was now free from lesions other than moderate telangiectasia. The feet showed no trace of former nodules.

DISCUSSION

Dr. Wile expressed his belief, with Dr. Ormsby, in the protracted use of arsenic in sarcoid. At previous meetings, some cases had been presented with the inference that arsenic had not done any good. The original cases that were described years ago, particularly by the French, were markedly benefited by arsenic, and many of the failures here were due to the fact that arsenic was not given over a sufficiently long period. He recalled a case, in which he and Dr. Fox were interested, that yielded to arsenic therapy only after a year or a year and a half, then yielded completely. He remembered the patient shown today when she was presented two years ago, when many of the members thought that arsenic was not doing any good. At present, she presented practically a cured case of sarcoid. There was some danger in the protracted use of arsenic, but he had recently learned from Dr. Ormsby that he had used it in the form of the Asiatic pill, which was perfectly safe, over the protracted time necessary to effect a result.

Dr. Ormsby said they had constantly demonstrated these cases because they had a great deal of confidence in the treatment, and believed the other members would arrive at the same conclusion. They exhibited sections from another patient who appeared three months ago with thirty-two subcutaneous lesions, the Darier-Roussy type of the disorder. That patient was put on the Asiatic pill treatment, and one month ago was so nearly well that the relics were scarcely visible. That case responded with unusual rapidity. At the original examination, there was a question whether the condition was multiple sarcomatosis or sarcoid, but sections proved it to be sarcoid.

TUBERCULID. Presented by Drs. Ormsby and Mitchell.

A woman, aged 24 years, whose disorder had been present for one year, had an eruption which was present on the lower part of the legs and was
said to have become more marked during the last months. The patient stated that there were soft red spots during the winter of 1921, which cleared up somewhat in the warm weather.

When presented, there were several bluish red pea to dime sized deep-seated nodules. No subjective symptom was present.

DERMATITIS MEDICAMENTOSA. Presented by Dr. Senear.

A girl, aged 8 years, who had been sent to the Juvenile Home ten days previously with scabies and impetigo, made a rapid recovery under treatment. The eruption which was present at the time of presentation had developed five days previously.

DISCUSSION

Dr. Senear said that the girl could not speak English and the little information he had, he had obtained from the nurse. In addition to the eruption, the patient had webbed fingers and toes.

Dr. Grindon said he believed it was a sulphur dermatitis.

Dr. Ravitch said he believed it was purpura.

Dr. Senear said it was a purpura probably resulting from scratching and the use of sulphur in the treatment of scabies. It was interesting because on the arms and trunk the eruption ran in distinct lines, and at a distance suggested a nevoid condition.

KERATOSIS PALMARIS ET PLANTARIS (ARSENICAL). Presented by Drs. Oliver and Finnerud (by invitation).

A boy, aged 11 years, who had had chorea for the last three years, three years ago began taking a solution of potassium arsenite (Fowler's solution) for the relief of that disorder, and for two years he took on an average 30 drops of this solution daily. When presented, the palms and soles were involved with marked hyperkeratosis.

The condition of the palms and soles had improved markedly under radiotherapy and salicylic acid ointments.

CONGENITAL SYPHILIS WITH VITILIGO. Presented by Drs. Oliver and Finnerud (by invitation).

A colored boy, aged 11 years, entered the Children's Hospital in December, 1922, with an interstitial keratitis which began in March, 1922. The vitiligo began in June, with several small patches scattered over the body. The disorder spread extensively for a month and then remained stationary. The Wassermann test was strongly positive.

DISCUSSION

Dr. Grindon said he wondered whether in the use of the word vitiligo it was intended to make a distinction between leukoderma and vitiligo, and called attention to the fact that the French make a distinction between these terms, whereas with us they are synonymous. This boy's skin was so black everywhere that he could not determine whether there was any extra deposit of pigment. The French believe that vitiligo, that is, where there is dis-
placement and not mere atrophy of pigment, is syphilitic in origin, whereas leukoderma is not. Dr. Grindon knew that this was true in a large proportion of cases of vitiligo.

Dr. Oliver said he wanted to show the case because of the development of vitiligo in a patient with syphilis. The disorder began in June; the patches spread rapidly and then became quiescent. He believed it was a peculiar anomaly that might be interesting to the members of the Society.

**PITYRIASIS ROSEA.** Presented by Drs. Oliver and Finnerud (by invitation).

A girl, aged 5 years, was shown principally because of the early age at which the disease appeared. The herald patch had appeared one month before presentation, and the generalized eruption about two weeks before, and was clearing up.

**DISCUSSION**

Dr. Finnerud said the child was presented because of its age and because they had been seeing quite a number of cases in children between the ages of 3 and 6. It was a perfectly typical case at first, but the lesions as now presented were considerably altered by treatment.

Dr. Oliver said that if he had known Dr. Finnerud was going to present this case, he would have brought down another patient who was seen for the first time on the preceding day. She was only 5½ years old, but she had a typical case of pityriasis rosea. The lesions were in the typical medallion form, but a little more elevated than the ordinary lesion.

*(To be continued)*

**FIFTH CONGRESS OF THE NORTHERN DERMATOLOGICAL SOCIETY**

*Held at Stockholm, June 6 to 8, 1922*

The meeting was attended by a large number of Finnish, Swedish, Norwegian and Danish dermatologists.

**A CASE OF ACTIVE SYPHILIS AND POSITIVE WASSERMANN REACTION SIXTY-TWO YEARS AFTER INFECTION.** Presented by Dr. Boas.

The patient had originally been treated exclusively with potassium iodid and had had no clinical symptoms. He has now developed an aneurysm of the aorta and a one plus Wassermann reaction.

**PROPHYLACTIC ARSPHENAMIN TREATMENT.** Dr. Hedén.

Thirty-six patients who had had intercourse with syphilitic persons were submitted to prophylactic arsphenamin treatment. None of them acquired syphilis.

**COLLOIDAL REACTIONS IN THE SPINAL FLUID.** Dr. Nander.

The benzol-resin reaction gave satisfactory results.
TO WHAT EXTENT CAN AN ARSPHENAMIN INJECTION PROVOKE A POSITIVE WASSERMANN REACTION IN NONSYPHILITIC PERSONS? Drs. Boas and Kissmeyer.

In the fifty patients examined, the authors did not see one case of positive fluctuation of the Wassermann reaction.

PRECARCINOMATOUS DISORDERS AND SKIN CARCINOMA. Dr. Bruusgaard.

The author warns against radium treatment.

ACNE ROSACEA, WITH SPECIAL REFERENCE TO WOMEN. Dr. Cederkreutz.

Rosacea is frequently associated with an alteration in the endocrine glands.

COLOGNE DERMATOLOGICAL SOCIETY

Session of Feb. 24, 1922

A CASE OF ACUTE GENERALIZED PSORIASIS FOLLOWING LOCAL IRRADIATION OF THE KNEE. Dr. Zinsser.

The discussers believed the disorder was of an infectious nature. Dr. Habermann said the decomposition products of lymphocytes were responsible for the general spreading of the lesions. Auto-immunizing processes appear to play a rôle in psoriasis.

DEMONSTRATION OF STREPTOBACILLUS SMEARS STAINED WITH A SOLUTION OF METHYLENE BLUE AND RONGALIT. Dr. Krantz.

A one-half per cent. solution of methylene blue, to which rongalit is added until the color disappears, stains the streptobacilli blue in two minutes.
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BISMUTH IN THE TREATMENT OF SYphilIS

REPORT OF CLINICAL AND EXPERIMENTAL STUDIES *

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PHILADELPHIA

It appears that Balzer was the first to suggest bismuth as an anti-syphilitic drug in the treatment of human syphilis. Anticipating such an employment of bismuth, Balzer first studied its effects in dogs. Severe untoward reactions consisting notably of stomatitis and enteritis resulted in the animals treated, and Balzer discontinued his studies.

In 1916, Sauton and Robert, following the publication of their work on the bactericidal action of bismuth compounds, reported on the spirocheticidal action of bismuth in hen spirillosis due to Spirocheta gallinarum. The drug they employed was sodium tartrobismuthate. Their anticipated work on the action of bismuth in the treatment of recurrent fever and of syphilis was interrupted by the recent war.

Sazerac and Levaditi, in 1921 and 1922, reported the results of their experiments on bismuth compounds—bismuth ammonium citrate, lactate, subgallate, oxyiodgallate, and sodium and potassium tartrobismuthate, in the treatment of rabbit syphilis. They observed that these salts of bismuth possessed a spirocheticidal action. The least toxic and most effective was sodium and potassium tartrobismuthate which they proposed for treating human syphilis and were the first to employ, using it in an oil suspension by intramuscular injections.

* From the department of dermatology and syphilology, clinic of Dr. J. F. Schamberg, Graduate School, University of Pennsylvania, and from the Research Institute of Cutaneous Medicine.

Subsequent to this study they reported equally favorable results in the treatment of rabbit syphilis with precipitated bismuth as with sodium and potassium tartro-bismuthate. The compound was injected in oil suspension.

As a result of the elaborate researches of Sazerac and Levaditi, the clinical use of bismuth as an antisyphilitic drug has been made possible. The favorable results reported by them in the treatment of human syphilis with sodium and potassium tartro-bismuthate were confirmed first by Fournier and Guénot, who reported on its employment in the treatment of 200 syphilitic patients in different stages of the disease. Other reports, mostly French, have since appeared, until now a considerable number of syphilitic patients in all stages of the disease with diverse manifestations have been reported treated with the drug. In most of these reports, sodium and potassium tartro-bismuthate in an aqueous solution and an oil suspension of the same drug were used. Exceptions to this, however, are the reports of Fournier and Guénot on the use of the metal bismuth (precipitated bismuth in isotonic solution) by intramuscular injections; Lacapere and Galliot 8 on the intravenous injections of colloidal suspension of bismuth; Grenet, Drouin and Richard 9 on the intravenous injections of an aromatic bismuth compound—a sodium derivative of trioxybismuthobenzoic acid; Horta and Ganns 10 on the intramuscular injections of sodium tartro-bismuthate and Azoulay 11 on the intramuscular injections of quininbismuth iodid and also bismuth citrate.

The foregoing reports show that bismuth is therapeutically active when employed in the treatment of human syphilis.

This report is based on an experimental study of bismuth as a spirocheticidal drug in rabbit syphilis, which determined the ratio between the therapeutic active dose and the lethal dose; it also presented the clinical results from the use of bismuth in the treatment of fifty syphilitic patients in the three stages of syphilis, the majority of whom presented a cutaneous manifestation of the disease. The bismuth preparations employed in this study were the French preparations of sodium and potassium tartrobismuthate in aqueous solution and in olive oil; potassium tartrobismuthate (see chemistry of bismuth compounds) prepared by Dr. George W. Raiziss and bismuth trioxid employed in olive oil and by inunctions.

THE CHEMISTRY OF BISMUTH COMPOUNDS

Although the structural formula of bismuth tartrate has not as yet been definitely established, several alkali salts of this compound have been prepared and designated either as bismuthotartrates or tartrobismuthates. In this study we have selected the potassium salt because its chemical constitution is probably more definite, its preparation easier, and because its spirocheticidal action was regarded as efficient as that of "sodium and potassium tartrobismuthate," which is probably a mixture of the potassium and sodium salts. The sodium salt, on the other hand, was not studied on account of its instability.

According to Rosenheim and Vogelsang, the constitution of potassium tartrobismuthate may be represented by the formula:

\[
\begin{align*}
CH(OBiO).COOK \\
CH(OBiO).COO(BiO) \quad 4H_2O
\end{align*}
\]

and should contain 67.08 per cent. of bismuth; but the product prepared by Dr. George W. Raiziss and used in this study had a bismuth content of only 62 per cent. We have also analyzed several commercial samples of sodium and potassium tartrobismuthate and found less than 52 per cent. of bismuth. Bismuth trioxid, which should theoretically contain 89.6 per cent. of bismuth, was not analyzed.

THE CLINICAL USE OF BISMUTH IN THE TREATMENT OF SYPHILIS

All of the bismuth preparations which have been employed in the treatment of syphilis, with two exceptions mentioned in the foregoing—colloidal bismuth and a sodium derivative of trioxibismuthobenzoic acid—are administered intramuscularly. Intravenous administration is positively contraindicated, since the drug is toxic when injected in this

12. The histologic changes in rabbits succumbing to the lethal dose of the bismuth preparations employed are being studied in collaboration with Dr. Baldwin Lucke and will be reported separately.

manner in rabbits (see animal experimentation). Intramuscular injections are given in the same way as is mercury. Sodium and potassium tartrobismuthate is administered either in an aqueous solution or in an oil suspension, the former in doses of 0.1 gm. in 1 c.c. every other day or 0.2 gm. in 2 c.c. every fourth day. The oil suspension is usually administered in doses of 0.2 gm. in 2 c.c. of oil every fourth day. Stomatitis has been reported as occurring soon after a single dose of 0.5 gm. of sodium and potassium tartrobismuthate.

The bismuth preparations employed in this study were given in varying dosages at variable intervals. Sodium and potassium tartrobismuthate in aqueous solution and potassium tartrobismuthate in aqueous solution were administered in doses of 0.1 gm. in 1 c.c., triweekly or every other day, or 0.2 gm. in 2 c.c. for a limited number of injections, or 0.2 gm. was given in alternating doses with 0.1 gm. An oil suspension of sodium and potassium tartrobismuthate was given in 0.2 gm. doses every fourth day, and bismuth trioxid in olive oil in doses of 0.1 gm. in 1 c.c. of oil triweekly and 0.2 gm. in 2 c.c. every fourth day.

The different dosages of the bismuth preparations were administered in order that the patient should receive as much of the drug as is possible in a given time without developing an untoward reaction of bismuth, particularly stomatitis, which is one of the early toxic symptoms. It was observed that this amount of the drug is differently borne in different patients. The earliest appearing untoward reactions were noted after a total administration of 1 gm. of the aforementioned preparations in 0.1 gm. doses injected in the course of one month. This, however, is exceptional. On the other hand, untoward reactions in other cases were not noted until as much as a total of 2.5 gm. had been administered in divided doses in the course of one month.

The total amount of one or the other bismuth preparations that can be well tolerated in a specified time, say one month, cannot be stated arbitrarily. The majority of patients will perhaps tolerate about 2 gm. in one month without developing any untoward reactions.

Levaditi advises the following plan of treatment: An oil suspension of sodium and potassium tartrobismuthate in 0.2 gm. doses administered in 2 c.c. every three or four days until a total of 2.8 gm. to 3 gm. has been administered, followed by a rest period of one month, then a repetition of this treatment until the Wassermann test is maintained negative.

Fournier and Guénot advise the use of an oil suspension of sodium and potassium tartrobismuthate given in the following manner:

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one course of treatment consisting of ten to twelve injections in doses of 0.2 gm. to 0.3 gm. to be given in about one month.

In my experience, this plan of treatment is too intensive, as it would produce stomatitis in many of the patients so treated. No definite plan of treatment was pursued in this study, as aforementioned, the dosage and interval of treatment being regulated by the conditions. After untoward reactions were noted the dosage was decreased. After the administration of a total of 2.5 gm. given in a period varying from one to two months, a rest period of about one month was instituted, followed by the administration of a total of another 2.5 gm. of the drug.

UNTOWARD REACTIONS OF BISMUTH THERAPY IN SYPHILIS

The early untoward reactions observed in this study were a foul breath and a gingival blue line. The nature of the foul breath is such that when appearing after bismuth therapy there is little doubt as to its significance. This symptom was almost always associated with a blue line on the gums. In some patients, it preceded the blue line; and in others, the latter was present in the absence of the foul breath. The foul breath and the gingival blue line forecast the appearance of stomatitis and are associated with it.

The blue line, which is indistinguishable from that seen in plum-bism, appears on the dental margin of the gums (Fig. 1). It usually appears first on the gingival margin of the incisor teeth, both anteriorly and posteriorly, and may later appear on the gingival margin of all the teeth. It is said to represent a precipitation of bismuth due to the action of hydrogen sulphid of the buccal cavity, which forms a bismuth sulphid. After its appearance, it persists if bismuth is continued and disappears after cessation of treatment. It was observed in this study that a well marked blue line disappears in about one month after treatment is stopped (Case 1).

Bluish spots on the gums, tongue and buccal mucous membrane may appear with the gingival blue line. They likewise represent a deposit of bismuth sulphid.

STOMATITIS

Bismuth stomatitis differs from the well-known picture of mercurial stomatitis in the lesser degree or absence of salivation, the presence of a diphtheroid membrane, a gingival blue line and bluish spots.

14. It is interesting to note the following from Cushing's volume on Pharmacology, Ed. 5, page 693: "A symptom formerly noted in cases treated with bismuth was an extremely disagreeable odor in the breath, but this has been shown to be due to the presence of tellurium in the preparation." None of the bismuth preparations employed in this study contained tellurium.
The local lesions vary from a localized catarrhal gingivitis to ulcers, which appear around the teeth and are usually covered by a false membrane. In the more advanced stage, there is a generalized ulcerative stomatitis which may be accompanied by ulcers involving the tongue and buccal mucosa.

The benign form of bismuth stomatitis soon disappears after bismuth treatment is discontinued, and is of little consequence. The severe forms with extensive ulceration are of greater import. Most of the cases of stomatitis reported have been of the benign form.

Milian and Perin 15 and Azoulay 11 have shown that infection with Vincent's spirochetes and its associated bacillus play an important rôle in the production of the ulcerative form of bismuth stomatitis.

The incidence of stomatitis is intimately associated with the intensity of bismuth treatment and the hygienic condition of the mouth of the patient treated. It is to be noted in most of the reports on the occurrence of bismuth stomatitis that the bismuth preparation was given in doses of 0.2 gm. and even 0.3 gm. repeated at frequent intervals for as many as ten to twenty consecutive injections.

Other untoward reactions are chills and fever occurring soon after an injection of bismuth. Loss of weight, anorexia and malaise may appear after prolonged treatment with bismuth. These symptoms were noted in a few of the patients in our series. The following reactions were not noted but have been reported by others: polyuria (Fournier and Guénot 6) which disappears soon after the cessation of treatment and which is said to occur at times after the oral administration of bismuth. Milian 16 and Ducrey 17 report symptoms of enteritis occurring following bismuth therapy, and in others localized eczematous eruption, rubcoliiform eruptions and discrete purpuric eruptions. All of the latter symptoms are apparently uncommon.

Only a few of the patients in this series developed albuminuria after bismuth therapy. From the report of others, albuminuria is apparently not a common occurrence after the administration of bismuth. However, severe nephritis has been reported. Although this is exceptional, nevertheless in the present state of our knowledge it is desirable to conduct frequent examinations of the urine of patients receiving bismuth treatment.

After the administration of bismuth a black deposit may form in the urine after standing, or it may be black at the time it is voided.

This has been shown by Demelin to be due to bismuth sulphid, which is formed by bacterial action in the urine on the bismuth excreted therein.

A foul breath and gingival blue line, which are prodromal symptoms, should be stressed as important "danger signals" so far as the further administration of bismuth is concerned. After their appearance, it is desirable to interrupt treatment temporarily; or, in lieu of this, to decrease the dose or increase the interval between treatment, not only to avoid the occurrence of stomatitis, which may be of the severe ulcerative type, but also to avoid a state of bismuth intoxication.

The presence or absence of these symptoms was taken by us as a criterion in determining the intensity and the duration of treatment by consecutive injections. After temporarily interrupting treatment, the latter was not resumed until the foul breath and gingival blue line disappeared. This occurred in three to four weeks. More significance attaches to the presence of the foul breath than to the blue line.

As already stated, the incidence of stomatitis is principally related to the intensity of bismuth treatment. Its occurrence has been regarded as an obstacle in the successful treatment of syphilis with bismuth.

Of the acute cases in this series, the active lesions of syphilis were entirely involuted, and in some the Wassermann test became negative before it was necessary to curtail or to stop treatment temporarily. In the treatment of patients with tertiary syphilis, when considerable and prolonged treatment is necessary, bismuth cannot be administered in too large amounts at too frequent intervals without a rest period. In this respect bismuth treatment does not compare with arsphenamin treatment.

It is known that relatively enormous doses of bismuth can be taken by mouth without producing signs of intoxication. This is probably due to the fact that little is absorbed by the digestive tract. Although at times following oral administration of large amounts of bismuth, signs of intoxication may occur, these signs also occur following absorption from wounds and when injected in the form of Beck's paste. Absorption is more rapid following the therapeutic use of bismuth by intramuscular injection. It is logical to believe that following this treatment any of the symptoms of bismuth poisoning with which we are familiar may appear. There is doubtless much to learn regarding the untoward reactions from the prolonged administration of bismuth by intramuscular injections. The bismuth therapy of syphilis is too

18. Demelin: The Treatment of Syphilis with Bismuth. These, Paris (Vanderperre edit.), 1922. This reference was not available, quoted from Levaditi, footnote 15a.
recent to have given us full information in this regard. It is a matter of considerable importance that one practicing bismuth therapy of syphilis should be cognizant of the symptoms of bismuth poisoning and to watch for the appearance of these symptoms. It is shown in this study that the administration of an arbitrary amount of bismuth in a specified time is not always possible. In the bismuth therapy of syphilis, as in the treatment of any infectious disease, the fundamental principal in therapeutics, namely, the importance of treating the patient as well as the disease, should not be neglected.

**CLINICAL RESULTS IN THE TREATMENT OF SYPHILIS WITH BISMUTH**

The clinical results with sodium and potassium tartrobinmuthate in aqueous solution and in oil suspension, potassium tartrobinmuthate in aqueous solution and bismuth trioxid in olive oil, which were employed in this study, corroborated the favorable reports of others employing sodium and potassium tartrobinmuthate in aqueous solution and in oil suspension.

These results may be summarized as follows: Lesions of primary, secondary and tertiary syphilis involving the skin and mucous membranes were involuted after a total administration of bismuth ranging in total amounts from 0.3 gm. to 1.5 gm. These results obtained with each of the three bismuth preparations employed are shown in Figures 2, 3 and 4 (Cases 2, 3, 4). Patients with visceral syphilis and neurosyphilis were not included in this study. Others, however, have reported favorable results in the treatment of such cases.

**EFFECT ON THE WASSERMANN TEST**

The four plus Wassermann reaction of patients with early secondary syphilis, previously untreated, and in the late secondary stage became negative, in the majority of cases, following a total administration of about 2 gm. of one or the other of the bismuth preparations employed. A few patients, however, required 3 gm. or more of the bismuth preparation before the test became negative. Such an instance occurred in

19. The Wassermann tests employed in this study were performed in the laboratory of Dr. John A. Kolmer. The method employed was the new Kolmer modification of the Wassermann test (Am. J. Syphilis 6:64, 74, 82, 1923) based on results of studies in the standardization of technic (series of papers published in the Am. J. Syphilis starting with vol. 3, No. 1, 1919) and employing a new antigen. This method possesses sensitiveness and specificity and other desirable features (Schamberg, J. F., and Klauder, J. V.: The Clinical Value of the Kolmer Modification of the Wassermann Test, Clin. North America 5:667 (Nov.) 1922. The advantages of the quantitative feature of this new test is shown in Case 1.
the patient whose photograph is shown in Figure 3 (Case 3). The four plus reaction of primary syphilis became negative after a lesser amount of the drug, and was proportional to the duration of the chancre. The four plus Wassermann reaction of tertiary syphilis required varying amounts of bismuth treatment and cannot be stated arbitrarily. Many of the tertiary syphilitic patients in this study are still under treatment, sufficient time not having elapsed to state the outcome in all cases. However, in some of them the four plus Wassermann reaction became negative after treatment with each of the three bismuth preparations employed. The following case may be appropriately mentioned. A patient in the tertiary stage of syphilis, the duration of the infection unknown, previously untreated, presented a nodular syphilid of the face. After a total administration of 0.8 gm. of potassium tartrobismuthate injected in aqueous solution in doses of 0.1 gm. three times a week, the syphilitic lesion was involuted. The four plus Wassermann reaction became negative after a total administration of 3.4 gm. given in the course of four months. There were no untoward reactions during treatment. At the termination of treatment there were only a few inflammatory nodules at the site of injections.

To be sure, the patients treated in this series were not regarded as cured after the initial negative Wassermann and treatment was continued. It was, therefore, not determined how long the Wassermann test remained negative after the cessation of treatment. However, the patient whose photograph is shown in Figure 1 disobeyed instructions after receiving a total of 2.4 gm. of sodium and potassium tartrobismuthate (the initial negative Wassermann test was obtained after 1.3 gm.) and absented himself for two months. After this period the Wassermann test was four plus. In another patient with a secondary eruption of syphilis, the four plus Wassermann became negative after a total administration of 2.3 gm. of sodium and potassium tartrobismuthate. No further treatment was administered (the patient disobeyed instructions) until three months later, at which time the Wassermann reaction was four plus. In one of Levaditi's patients, who was in the primary stage of syphilis, treatment was stopped after the initial negative Wassermann reaction. Seven months later the reaction was still negative.

The reports of Milian, Guibert, Fournier and Guénot show that bismuth caused involution of syphilitic lesions which had resisted


treatment with the arsphenamin and with mercury. These are the so-called "arsenic-fast" and "mercury-fast" cases. 22

DELAYED ACTION OF BISMUTH

It was observed in this study and also reported by others that the antisyphilitic effect of bismuth continues for some time after the administration of the drug. Some of the patients with active syphilitic lesions after receiving about 0.3 gm. of one or the other bismuth preparations absented themselves for from three to five weeks. On their return, the syphilitic lesions were either involuted or almost involuted. In others, it was observed that a positive Wassermann reaction became negative during a rest period in treatment. This prolonged antisyphilitic action of bismuth can doubtless be explained by the delayed absorption of the drug when injected intramuscularly and its slow elimination from the body (see "Distribution and Elimination of Bismuth"). This applies particularly after an injection of oil suspensions of sodium and potassium tartrobismuthate, or of bismuth trioxid.

The patients in the series herein reported were, with few exceptions, previously untreated. It was, therefore, not determined whether bismuth therapy is efficacious in producing a negative Wassermann reaction in those patients whose reaction remains persistently positive in spite of considerable treatment with the arsphenamin—in other words, the so-called Wassermann-fast cases.

PAIN AFTER INTRAMUSCULAR INJECTIONS OF BISMUTH PREPARATIONS

The pain and local reaction following an injection of 1 c.c. containing 0.1 gm. of sodium and potassium tartrobismuthate in aqueous solution is variable. Some injections produce only slight discomfort and no induration, others produce considerable pain and inflammatory nodules.

22. Patients are occasionally seen with active syphilitic lesions which remain unchanged after arsphenamin treatment, and other patients whose lesions resist treatment with mercury. In the former patients, the lesions may involute after changing the brand of arsphenamin to which they were resistant, that is, changing from arsphenamin to neo-arsphenamin and vice-versa; or, by treating with mercury. Syphilitic lesions which resist mercurial treatment are likely to involute after arsphenamin treatment. Syphilitic lesions are rarely resistant both to arsphenamin and mercurial treatment. These clinical observations have led to the assumption that Spirochaeta pallida may become arsenic-fast or mercury-fast or both. There is some evidence of this experimentally. The author produced an arsenic-resistant strain of Spirochaeta pallida in syphilitic rabbits by initial treatment with a small amount of arsphenamin, later transplanting from the animals thus treated to other animals, then treating these animals with a slightly larger amount of arsphenamin, and so on until the curative dose was reached. It was possible in this manner to exceed the amount of arsphenamin which is the therapeutic active dose in animals not so treated. (Work not as yet published.)
A few of the patients complained of pain only at night when lying in bed, and disturbance of sleep. Mention may be made of patients who received a total of forty injections with only an occasional painful injection and whose gluteal muscles at the end of this treatment contained two or three inflammatory nodules. In two patients, the pain following each of three injections was so severe that further treatment was refused. They, however, received 0.2 gm. in 2 c.c. at each injection. This amount nearly always produces pain and inflammatory nodes, so that its employment in consecutive injections is not practicable.

Injections of an aqueous solution of sodium and potassium tartrobismuthate were more painful than any of the other bismuth preparations employed. The pain following injections of this preparation has been cited as an obstacle to its employment.

Injections of an olive oil suspension of sodium and potassium tartrobismuthate are less likely to cause pain, and when it does occur is less than that produced by an aqueous solution of the same drug. Moreover, its administration in doses of 0.2 gm. in 2 c.c. of oil is practicable.

Potassium tartrobismuthate was injected with a local anesthetic butyn. The drug was injected in doses of 0.1 gm. in 1 c.c. which contained 5 minims of a 2 per cent. solution of butyn. Without the anesthetic, the drug produced considerable pain, which was most evident during the injection and continued for a short period. In some patients, the pain was considerable after an injection of 0.2 gm. in 2 c.c.

Injections of an olive oil suspension of bismuth trioxid in doses of 0.1 gm. in 1 c.c. and 0.2 gm. in 2 c.c. were not painful. Inflammatory nodules resulting from the injections were unusual. The employment of a local anesthetic with this preparation is not necessary.

The addition of 5 minims of a 2 per cent. solution of butyn to 1 c.c. of an aqueous solution of sodium and potassium tartrobismuthate would no doubt considerably lessen or eliminate the pain resulting from an injection of this drug.

**Distribution of Bismuth and Its Elimination When Injected Intramuscularly**

Experimental studies which have been conducted on dogs and other animals show that after the salts of bismuth are injected intramuscularly, bismuth is found in the liver, kidney, spleen, brain and salivary glands. It is eliminated in the urine, saliva, bile, feces and sweat. Radiographic examinations at the site of injection of bismuth show that it remains in the tissues for a long time after injection.

Aubry and Demelin 23 have perfected Leger's method of detecting bismuth. With their method, the metal can be detected in a dilution of 1:600,000. These investigators found bismuth in the blood and spinal

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23. Aubry: Soc. de Pharm., Nov. 9th, 1921. This reference was not available, quoted from Levaditi 13.
fluid of patients who were being treated with sodium and potassium tartrobismuthate and studied its elimination in the aforementioned fluids. In the urine, bismuth appeared from eighteen to twenty hours after the drug was administered, and was detected from twenty to twenty-five days after a course of treatment consisting of a total administration of 2.0 to 2.5 gm. of tartrobismuthate of sodium and potassium.

**BISMUTH INUNCTIONS**

The spirocheticidal action of inunctions of bismuth trioxid observed in the treatment of syphilitic rabbits, and the fact that this method of bismuth administration has not, to my knowledge, been employed in the treatment of human syphilis, led to its employment in the treatment of syphilitic patients.

![Image](image_url)

**Fig. 1 (Case 1).—**Blue line along dental margin of gums represents bismuth deposit (indistinguishable from the blue line of plumbism).

Finely pulverized bismuth trioxid was employed in amounts ranging from 0.5 to 2 gm. in a total of 4 gm. of hydrous wool fat and petrolatum. This ointment was used as an inunction and applied daily to patients presenting cutaneous lesions of syphilis. Bismuth administered in this manner exerted a feeble spirocheticidal action. A considerable number of inunctions were required to cause involution of the syphilitic lesion. Its antisyphilitic action was less apparent than the same action of mercury administered by inunctions.

**REPORT OF CASES**

**Case 1 (Fig. 1).—**A woman, aged 39, who had an asymptomatic infection, the duration of which was unknown, had received two injections of neo-arsphenamin, subsequent to which jaundice appeared. After the disappearance of jaundice,
bismuth therapy was instituted. The Wassermann reaction with 0.1 c.c. of serum was four plus; with 0.05 c.c., it was four plus; with 0.025 c.c., it was four plus; with 0.005 c.c., it was two plus; with 0.0025 c.c., it was negative. Triweekly intramuscular injections were given of 0.1 gm. in 1 c.c. of sodium and potassium tartrobismuthate in aqueous solution. After the seventeenth consecutive injection (1.7 gm. total), the Wassermann reaction with 0.1 c.c. of serum was four plus; with 0.05 c.c., it was four plus; with 0.025 c.c., it was one plus; with 0.005 c.c. and 0.0025 c.c. it was negative. After the twentieth consecutive injection (2 gm.), the initial reaction appeared, consisting of chill and fever. At this time, the breath was foul and the blue line was first discovered. Urinalysis and examination of the blood smear were negative. Treatment was suspended for five weeks, at which time only a trace of blue line remained, and the breath was no longer foul. Treatment with 0.1 gm. weekly was resumed. The Wassermann reaction at the end of the rest period with 0.1 c.c. of serum was four plus; with 0.05 c.c., it was three plus; with 0.025 c.c., it was one plus; the remaining dilutions were negative. The Wassermann test performed according to the foregoing method showed about 50 per cent. improvement after a total administration of 2 gm. of the bismuth preparation, although the reaction with 0.1 c.c. remained four plus (Fig. 1).

Case 2 (Fig. 2).—There was considerable induration. The cervical glands were greatly enlarged (Fig. 2 A). The dark-field examination was positive; the Wassermann reaction with 0.1 c.c. of serum was four plus; with 0.05 c.c., it was four plus; with 0.025 c.c., it was three plus; with 0.005 c.c., and with 0.0025 c.c., it was negative. The patient was treated with sodium and potassium tartrobismuthate in aqueous solution, 0.1 gm. in 1 c.c. being administered intramuscularly, three times a week. Twenty hours after the initial injection, the dark-field examination was negative. After the fourth injection, induration of the chancre had entirely disappeared; the cervical glands were about one-half their former size. Both chancres had entirely healed (Fig. 2 B) after the ninth injection (0.9 gm., total). The Wassermann test was negative after the thirteenth injection (1.3 gm., total). After the nineteenth injection there was no apparent enlargement of the cervical glands, although they were palpably enlarged. Triweekly injections continued until
a total of 2.4 gm. had been administered. At this time the breath was not foul; the gums were in good condition. A rest period of one month was advised. The patient returned after two months, at which time the Wassermann reaction was positive in the same degree and same dilution of serum as before treatment. After a further administration of 1.8 gm. the Wassermann reaction again became negative.

Fig. 3 (Case 3).—Generalized macular syphilid: A, before treatment; B, after treatment with potassium tartrobismuthate.

Case 3 (Fig. 3).—The duration of the eruption was one month. No chancre was demonstrable. The Wassermann test with 0.1 c.c. of serum was four plus; with 0.05 c.c., it was four plus; with 0.025 c.c., it was four plus; with 0.005 c.c., it was four plus; with 0.0025 c.c., it was negative. Treatment consisted of triweekly intramuscular injections. The dose at each injection varied from
0.1 to 0.2 gm. After a total administration of 0.4 gm., the macular lesions on the face disappeared. Figure 3B shows the result after a total administration of 1.2 gm. The syphilitic eruption at this time was completely involuted, discolored areas only remained, as shown in the illustration. The large black areas represent the application of iodin at the site of an intramuscular injection of potassium tartrobismuthate. Consecutive triweekly injections were continued until a total of 3 gm. of the drug had been administered in the course of six weeks. At this time the Wassermann reaction was still four plus. After a further administration of 1.6 gm., the Wassermann reaction became negative.

Case 4 (Fig. 4).—The patient had a vegetating tertiary syphilid which was treated with bismuth trioxid suspended in olive oil injected intramuscularly in doses of 0.1 and 0.2 gm. Treatment was given at irregular intervals owing to the irregular attendance of the patient. Figure 4B shows the result after a total administration of 1.4 gm., given in ten injections in the course of two months. At this time, the lesion was completely involuted, pigmentation only remaining.

It was apparent from these studies that little of the drug was absorbed when used in the form of inunctions. It is possible that greater absorption may occur with other bismuth preparations. Further studies are being conducted in which the metal bismuth, colloidal bismuth and other soluble bismuth preparations are being employed in the form of inunctions.

ANIMAL EXPERIMENTATION

In this study, twenty-five syphilitic rabbits were employed to determine the therapeutic active dose of sodium and potassium tartrobismuthate in aqueous solution and in an olive oil suspension; an aqueous solution of potassium tartrobismuthate and an olive oil suspension of
bismuth trioxid. Fifty normal rabbits were employed to determine the maximum tolerated and lethal doses of these drugs.

Intravenous injection of an aqueous solution of sodium and potassium tartrobismuthate and of potassium tartrobismuthate is toxic. The majority of rabbits injected intravenously with more than 0.005 gm. of either of these drugs per kilogram of weight did not survive.

The experiments to determine the therapeutic active dose of the bismuth preparations were conducted by intramuscular injections. The animals treated had well developed scrotal chancre, the serum from which disclosed many motile spirochetes under the dark-field microscope, or in lieu of a chancre there were many large nodes palpable in the testes, the serum obtained from puncturing these nodes containing many motile spirochetes in each microscopic field.

The results following the administration of the therapeutic active dose of arsphenamin, that is, 0.006 gm.24 per kilogram of body weight injected intravenously in rabbits with active syphilitic testicular lesions, was taken as a standard in determining the therapeutic active dose of the bismuth preparations. These results (Fig. 5 shows the gross result) are: Before treatment the dark-field examination of the surface of the

24. The curative dose of arsphenamin is about 0.012 gm. per body weight injected intravenously.
chance or, in its absence, of serum obtained from puncturing testicular nodes, showed many motile spirochetes in each microscopic field. Twenty-four hours after treatment the dark-field examination showed only a few slightly motile or nonmotile spirochetes and many agglutinated organisms in each field. Dark-field examinations on subsequent days were negative. Grossly, the chancre or the nodes were appreciably smaller the following twenty-four hours and gradually lessened in size until complete involution occurred within eight days. There was no recurrence of testicular or scrotal syphilitic lesions during the following two months.  

It was determined that the therapeutic active dose of sodium and potassium tartrobismuthate in aqueous solution and in olive oil and potassium tartrobismuthate in aqueous solution was at least 0.05 gm. per kilogram of body weight; it was 0.15 gm. per kilogram for bismuth trioxid. When this amount of the respective drugs was injected intramuscularly, the results obtained conformed in a general way to the foregoing standard, except that twenty-four hours after the injection more motile spirochetes were seen in the dark-field than are present twenty-four hours after an intravenous injection of 0.006 gm. of arsphenamin. However, dark-field examination conducted on subsequent days were negative, and the syphilitic lesion involuted within the specified time. This can doubtless be explained by the different methods employed in administering the bismuth preparations.

The maximum tolerated and lethal doses of the bismuth preparations were determined by injecting intramuscularly into normal rabbits increasing amounts of the respective drugs. The maximum tolerated dose  

25. In some animals, active syphilitic lesions recur after this period.
26. The majority of rabbits after receiving the maximum tolerated dose of the bismuth preparations lost from 300 to 400 gm. in weight during about two weeks following the injection. After this time the weight gradually increased up to about the weight before treatment.
27. There was one exception to this; one animal died after an injection of 0.15 gm. per kilogram; however, all other animals injected survived this dose, and none of the animals injected with doses of 0.2 and 0.25 gm. died.
The maximum tolerated dose of potassium tartrobismuthate was about five times the therapeutic active dose; with an oil suspension of sodium and potassium tartrobismuthate, it was four times the therapeutic active dose; with an aqueous solution of the same drug, it was two and one-half times the therapeutic dose; and with bismuth trioxid in olive oil, it was a little more than two and one-half times the therapeutic active dose.

Since the recorded therapeutic active and maximum tolerated doses of mercury and of arsphenamin are based on the intravenous administration of these drugs, their spirocheticidal action cannot be compared accurately with that of bismuth. According to Nichols, the maximum tolerated dose of mercuric chloride when injected intravenously into rabbits is 0.001 gm. per kilogram; the therapeutic active dose in syphilitic rabbits is 0.003 gm. per kilogram. The therapeutic active dose of arsphenamin injected intravenously into syphilitic rabbits is about 0.006 per kilogram; the maximum tolerated dose is about 0.1 per kilogram.

The aforementioned therapeutic active and maximum tolerated doses of sodium and potassium tartrobismuthate in aqueous solution and in oil suspension are about the same as reported by Sazerac and Levaditi. The therapeutic active and maximum tolerated doses of the other two bismuth preparations studied have not to my knowledge been studied and reported by others.

THE HERXHEIMER REACTION AFTER BISMUTH ADMINISTRATION IN EXPERIMENTAL SYPHILIS

Occasionally after the intravenous injection of the therapeutic active dose of the arsphenamins in syphilitic rabbits with active testicular lesions, the testicles become considerably enlarged and the scrotum edematous. The organ becomes two or three times its size before treatment. This reaction occurs within twenty-four hours after the first treatment and subsides in a few days. This phenomenon doubtless represents what may be regarded as a local Herxheimer reaction, as it is in all probability a reaction due to the lysis of spirochetes by a powerful spirocheticidal drug.

Such a reaction was observed in this study appearing forty-eight hours after an intramuscular injection of 0.05 gm. per kilogram (therapeutic active dose) of potassium tartrobismuthate. The testis enlarged to about three times its size before treatment (Fig. 6), although the reaction appears within twenty-four hours after an intravenous injec-


29. In a personal communication, Dr. Wade Brown concurs with me in this opinion.
tion of arsphenamin, its occurrence forty-eight hours after an intra-muscular injection of potassium tartrobismuthate can be explained by the different method of administering this drug.

The occurrence of this reaction after bismuth treatment doubtless furnishes additional evidence that bismuth exerts a powerful spirochetidal action.

SPIROCHETICAL ACTION OF BISMUTH INUNCTIONS IN RABBIT SYPHILIS

It was observed by Levaditi that the oral administration of sodium and potassium tartrobismuthate in syphilitic rabbits did not exert a notable spirocheticidal action. By rectal administration, its spirochet-

![Fig. 6.—Considerably enlarged testis and edematous scrotum of syphilitic rabbit, which occurred forty-eight hours after an intramuscular injection of 0.05 gm. per kilogram of body weight of potassium tartrobismuthate.](image)

icidal action was greater. He also observed that 33 per cent. of this drug in ointment form exerted an active spirocheticidal action when applied locally.

In this study, experiments were conducted on rabbits with active syphilitic testicular lesions to determine whether bismuth administered in the form of inunctions exerted a spirocheticidal action. Bismuth trioxidil was employed in 2 gm. each of benzoated lard and petrolatum. Varying amounts of the drug per kilogram were used. One side of the animals treated was shaved and the ointment rubbed in for twenty
minutes. It was observed that 0.5 gm. of bismuth trioxid per kilogram administered daily in inunctions for five consecutive days 30 exerted a spirocheticidal action which conformed to the standard adopted in studying the bismuth preparations, except that the dark-field examination the day following the initial inunction disclosed many motile spirochetes in each microscopic field; the examination on the third and fourth days showed a few nonmotile organisms. 31 The syphilitic lesion, however, was completely involuted by the eighth day.

**COMPARATIVE VALUE OF THE BISMUTH PREPARATIONS STUDIED; COMPARISON WITH ARSPHENAMIN AND WITH MERCURY**

The comparative value of the bismuth preparations employed in this study, so far as the therapeutic active and maximum tolerated doses in syphilitic and in normal rabbits are concerned, has already been discussed. The comparative value so far as the percentage of bismuth is concerned, has likewise been given. It should be noted that although the ratio between the therapeutic active and maximum tolerated dose of potassium tartrobismuthate was greater than that of sodium and potassium tartrobismuthate and bismuth trioxid, and that it contained more bismuth than sodium and potassium tartrobismuthate, yet it was not more therapeutically active in the treatment of rabbit syphilis.

It has not yet been possible, owing to the relatively short period of our observations, to determine the comparative value of the bismuth preparations in the treatment of syphilis. As noted in the foregoing and further shown in Cases 2, 3 and 4, the three preparations employed appeared to exert equal spirocheticidal action.

The use of an oil suspension of sodium and potassium tartrobismuthate is to be preferred to an aqueous solution by virtue of it being less painful. This advantage also applies to bismuth trioxid, which was injected in olive oil.

One injection of bismuth trioxid produced less immediate effect on an active syphilitic lesion than one injection of the same amount of the other two bismuth preparations. This can doubtless be explained by the delayed absorption of this drug, since it is insoluble, whereas the other preparations are soluble. For the same reason, suddenly appearing stomatitis and other untoward reactions following the use of bismuth trioxid, although not observed in this study, is a theoretical possibility. The end result of treatment with bismuth trioxid appeared to be the same as with the two other preparations, that is, about the

30. After receiving this treatment the animal lost 300 gm. in weight.
31. Larger amounts up to 1 gm. per kilogram of bismuth trioxid did not influence the rate of disappearance of spirochetes in the dark-field examination.
same total amount of bismuth trioxid was required to effect the disappearance of syphilitic lesions and to cause positive Wassermann reactions to become negative, as was required with the two other preparations.

The results of the studies herein reported have left no doubt as to the spirocheticidal action of the bismuth preparations employed. This action is greater than that of mercury but less than that of arsphenamin, although a clinical comparison of the spirocheticidal action of arsphenamin with that of bismuth cannot accurately be made, since arsphenamin is administered intravenously in a much larger amount than is bismuth which is administered intramuscularly.

As to its spirocheticidal action, bismuth can be placed about midway between mercury and arsphenamin. In this regard, Milian compares the therapeutic activity of arsphenamin, bismuth and mercury in this way: The therapeutic activity of arsphenamin is represented by the figure 10, bismuth by the figure 7 and mercury by the figure 4.

ADVANTAGES OF BISMUTH THERAPY AS COMPARED WITH ARSPHENAMIN THERAPY

Space will not permit a detailed discussion as to the advantages of bismuth therapy in human syphilis as compared with arsphenamin therapy.

The advantage of having another active antisyphilitic drug in the treatment of human syphilis is obvious. Bismuth therapy is particularly advantageous in the treatment of syphilitic patients who are hypersensitive to arsphenamin so that the use of the latter drug is restricted or contraindicated, or when for other reasons arsphenamin cannot be administered.

Another possible advantage of bismuth in the treatment of syphilis which is of considerable importance, although based on theoretical considerations, concerns the occurrence of neurorecidive following the use of arsphenamin. The baneful action of irregular or lapsing treatment with arsphenamin is well known. Such treatment greatly increases the incidence of early neurosyphilis. Ehrlich's explanation of this phenomenon is perhaps the one generally accepted. He explained the occurrence of neurorecidive on an immunologic basis. He pointed out that "In these patients the greater number of spirochetes are destroyed by the powerful spirocheticidal action of arsphenamin. So rapidly is this accomplished that the usual tissue immunity which develops as a result of contact between parasite and host is lacking; as a result a small focus of spirochetes in the tissue of the central nervous system which may escape the action of salvarsan develops in the susceptible
host with great rapidity and severity.” In other words, a few injections of arsphenamin and the cessation of all other treatment inhibit the consummation of immunologic responses of the host to the parasite, and doubtless produce a condition analogous to that existing in the primary incubation period, in which there are spirochetes and no immunologic reaction.

Bismuth, on the other hand, by reason of less energetic spirocheticidal action than arsphenamin and perhaps by virtue of intramuscular administration, does not, in all probability inhibit immunologic reaction of the host to such an extent as it is believed that arsphenamin does. One would, therefore, expect a lessened incidence of early neurosyphilis following irregular and lapsing treatment with bismuth.

SUMMARY

This report is based on an experimental study of bismuth as a spirocheticidal drug in rabbit syphilis. The relation between the therapeutic active dose and the lethal dose is discussed; and the clinical results from the use of bismuth in the treatment of fifty syphilitic patients in the three stages of syphilis, the majority of whom presented a cutaneous manifestation of the disease. The bismuth preparations employed were the French preparation of sodium and potassium tartrobismuthate in aqueous solution and in olive oil, potassium tartrobismuthate in aqueous solution and bismuth trioxide in olive oil and by imunctions.

The chemistry of the bismuth tartrates is discussed.

All of the bismuth preparations employed in the study were administered intramuscularly. Intravenous administration is positively contraindicated. The doses of the bismuth preparations employed ranged from 0.1 gm. to 0.2 gm., the interval between injections ranged from every other day to every fourth day. The total amount of the bismuth

32. An analogous phenomenon has been produced in experimental syphilis as shown in the work of Brown and Pearce (The Resistance for Immunity] Developed by the Reaction to Syphilitic Infection, Arch. Dermat. & Syph. 2: 675 [Dec.] 1920). The spontaneous occurrence of generalized syphilis in rabbits following testicular inoculation is exceptional. Brown and Pearce have shown that the primary testicular reaction plays an important defensive role in preventing generalized syphilis in the rabbit. They succeeded in generalizing syphilis by suppressing this local primary tissue reaction. The administration of succurative doses of spirocheticidal drugs was one method of suppressing this local reaction.

33. It is interesting to recall that the older syphilologists awaited the appearance of secondary manifestations of syphilis, not only for diagnostic purposes, but in order not to interfere with the orderly progression of the disease as it concerned the consummation of immunologic responses.
preparations employed that can be well tolerated in a specified time cannot be stated arbitrarily. In this study, this amount ranged from 1 gm. in exceptional cases, to about 2.5 gm. The majority of patients will perhaps tolerate about 2 gm. in one month without developing any untoward reactions.

Untoward reactions of bismuth therapy in syphilis are given. A foul breath and a gingival blue line, which forecast the appearance of stomatitis, are particularly stressed.

Lesions of primary, secondary and tertiary syphilis were involuted after a total administration of the bismuth preparations employed, in amounts ranging from 0.3 gm. to 1.5 gm.

The four plus Wassermann reaction of patients in early secondary and late secondary stages of syphilis became negative, in the majority of cases, following a total administration of about 2 gm. of the bismuth preparations employed. Other patients, however, required 3 gm. or more before the Wassermann test became negative. The four plus reaction of primary syphilis became negative after a lesser amount of the drug, and was somewhat proportional to the duration of the chancre. The four plus Wassermann reaction of tertiary syphilis required varying amounts of bismuth treatment and cannot be stated arbitrarily. In two patients in the early stage of syphilis, there was an early recurrence of a positive Wassermann reaction after the cessation of treatment.

The antisyphilitic effect of bismuth is noted for some time after the administration of the drug.

The pain and local reaction following an injection of the bismuth preparations was variable. An aqueous solution of sodium and potassium tartrobismuthate was more painful than an oil suspension. Potassium tartrobismuthate was injected with a local anesthetic—butyn—the pain after injection was negligible. Injections of bismuth trioxid in olive oil were not painful.

Knowledge of the distribution of bismuth and its elimination when injected intramuscularly is reviewed.

The employment of 50 per cent. bismuth inunctions in the treatment of human syphilis exerted a feeble spirocheticidal action.

The observations of Sazerae and Levaditi on the spirocheticidal action of bismuth in experimental syphilis was confirmed. The therapeutic active and maximum tolerated doses of the bismuth preparations studied in syphilitic and normal rabbits are given. Bismuth applied in the form of inunctions to syphilitic rabbits exerted a spirocheticidal action.

It was not possible in the brief duration of the clinical study to determine the comparative value of the bismuth preparations employed. The three preparations appeared to exert equal spirocheticidal action in
the treatment of human syphilis. So far as its spirocheticidal action is concerned, bismuth can be placed about midway between mercury and arsphenamin.

Bismuth therapy is particularly advantageous in the treatment of syphilitic patients who are hypersensitive to arsphenamin so that the use of the latter drug is restricted or contraindicated. Neurorecurrence, appearing after irregular and lapsing treatment with the arsphenamins is briefly discussed. Bismuth, by virtue of its exerting a less energetic spirocheticidal action than arsphenamin, does not in all probability inhibit the immunologic reaction of the host to such an extent as it is believed arsphenamin does. One would, therefore, expect a lessened incidence of early neurosyphilis (neurorecidive) following irregular and lapsing treatment with bismuth.

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BISMUTH IN THE TREATMENT OF SYphilis *

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In January, 1922, Levaditi and Sazerac \(^1\) reported a series of observations on the treatment of syphilis by the various bismuth salts. The possible usefulness of bismuth had been suggested to them by an earlier paper of Sauton and Robert \(^2\) on the prophylaxis and treatment of spirochetosis of fowls by bismuth salts.

Levaditi and Sazerac's experiments included a series of tests on rabbits for toxicity and spirocheticidal action, and a few observations on the treatment of human syphilis. In their preliminary work, they examined the action of a number of bismuth salts, including the citrate, lactate, subgallate and a quadruple salt referred to as potassium sodium tartroabismuthate. In regard to toxicity, they found in general that the soluble salts were more toxic than the insoluble and far more toxic when injected intravenously than when injected subcutaneously. Of all, the tartroabismuthate was the least toxic. If suspended in oil and injected into the muscles, 400 mg. per kilogram of body weight was found to be well tolerated. The same salt given by the same route in an alkaline aqueous solution was well borne in doses of 50 mg. per kilogram, but invariably fatal in doses of 200 mg., whereas when injected intravenously, 10 mg. killed the animal in three days.

For determining spirocheticidal power, they used rabbits infected with human syphilis and also with *Spirochacta cuniculi*. They found that doses of 100 mg. of tartroabismuthate per kilogram caused a disappearance of the spirochetes in twenty-four hours and healing of the lesions on the second or fourth day. In one animal observed for four months, there was no relapse.

In early active human syphilis they found that intramuscular injections caused prompt involution of the lesions, disappearance of the spirochetes and reversion of the Wassermann reaction from positive to negative. In rabbits, cures were also obtained by intravenous injection and improvement by local inunction. Administration by mouth or by rectum was ineffective. On account of the toxicity of the soluble compounds, especially when given intravenously, they recommend for trial in human cases intramuscular injections of quadruple salt.

Simultaneously with this paper of Levaditi and Sazerac there appeared a clinical report by Fournier and Guénot \(^3\) on the use of the latter preparation in about 200 cases of syphilis. They reported that chancres were as rapidly improved by bismuth as by any other form of treatment and disappeared entirely.

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\(^1\) From the Department of Bacteriology, Columbia University, the Medical Clinic of the Presbyterian Hospital, and the Department of Medicine, Columbia University, College of Physicians and Surgeons.

in a few weeks. They also found a prompt conversion of a positive Wassermann reaction to a negative, the reaction remaining negative during the period of observation. In cases of secondary syphilis, the skin and mucous membrane lesions healed about as rapidly as with arsenicals. In some instances, they noted a temporary exacerbation of the symptoms (Herxheimer reaction). In the secondary cases also the Wassermann reaction cleared up satisfactorily. In cases of late syphilis, the cutaneous and periosteal lesions healed with the same rapidity, although in some instances the serum reaction was unaffected.

They observed no serious toxic effects. The majority of the patients showed a bluish line along the border of the gum similar to that seen in lead poisoning.

Fig. 1 (Rabbit Bi7).—Treated with tartrobismuthate, 100 mg. per kilogram. A, extensive induration and large ulcers before treatment; B, induration gone and ulcers nearly healed eighteen days after treatment; C, normal appearance six weeks after treatment.

Fig. 2 (Rabbit Bi9).—Treated with tartrobismuthate, 25 mg. per kilogram. A, moderate induration and large ulcers before treatment; B, induration gone and ulcers nearly healed two weeks after treatment; C, normal appearance four weeks later.

and in a number of cases gingivitis or stomatitis developed, in the production of which the bacillus and spirillum of Vincent seemed to be involved. They reported that the stomatitis was improved by local administration of the quadruple bismuth salt, and was probably produced by the secretion of bismuth in the saliva as a sulphid which was not spirochetcidal. In a few cases, they noted a temporary polyuria and albuminuria, but never any persistent evidence of disturbed renal function. The chief inconvenience was the pain
at the site of injection, which was similar to that caused by insoluble preparations of mercury. They were able to find bismuth in the blood, cerebrospinal fluid, the saliva, the bile, sweat and urine of patients under treatment.

Another brief clinical report by Marie and Fourcarde on the treatment of syphilis of the nervous system with bismuth appeared in the same number of the *Annales*. They say frankly that their patients were observed for too short a time to admit of definite conclusions in this type of case. Most of them were suffering from advanced general paresis. In these no symptomatic or serologic change was noted. On the other hand, in a few patients with vascular or nerve root lesions or with gumma of the central nervous system, there was prompt and definite improvement.

More recently the action of other bismuth preparations has been studied, none of which appears to be much more effective than the salt originally employed, but which are claimed to cause less pain and consequently to permit of somewhat larger dosage. Levaditi and Sazerac reported in April that suspensions of bismuth element also had a satisfactory curative effect on rabbits. Fournier and Guénot soon after reported on the effect of this preparation on human cases, and their findings that primary or secondary lesions disappeared after two or three injections, that the drug was well borne and that it had a striking effect in clearing up the Wassermann reaction.

Since the appearance of these reports, the French journals have carried many brief communications in regard to the treatment of syphilis by various bismuth preparations. At the first congress of French speaking dermatologists and syphilographers held in Paris in June, 1922, there were thirteen separate reports on this subject from various clinics in France, Spain, Brazil, and Denmark, all of which reported striking therapeutic results from the use of this drug.

Fig. 3 (Rabbit As4).—Treated with neo-arsphenamin, 15 mg. per kilogram. A, extensive induration with two ulcers before treatment; B, induration gone and ulcers healed eighteen days after treatment.

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One report has come from Germany by Müller, who states that the curative effect of the tartrobismuthate is as rapid as that of arsphenamin. Sedlak of Prague has reported favorable results in a series of seventy-six cases treated with arsphenamin and bismuth combined.

The only report that has as yet been found in American journals is one by Villemin of Nice, in which he gives a brief review of the subject and a report of his own experiences, with quinin bismuth iodid.

The work of these various observers seems to have established that bismuth possesses curative powers in syphilis. Its practical value in the treatment of the disease in man will have to be determined by long and careful observation. So far, there appears to have been little interest in the subject in this country and a report of a brief experience in its use may be of value. Some statement of facts concerning it seems to be especially necessary since manufacturers are already distributing circulars in which they describe with typical commercial optimism the curative powers of their particular preparations of bismuth.

The forms of bismuth which have been given clinical trial are:

1. The sodium and potassium tartrobismuthate which is sold under various trade names. The method of preparation is given on page 749. It contains about 50 per cent. of bismuth. The dosage for active cases recommended by Fourner and Guénot is from 0.2 to 0.3 gm. injected intramuscularly two to three times a week, reaching a total of 2 to 3 gm. during the first month. After this first series treatment is continued by the injection of 0.2 to 0.3 gm. once a week. In sensitive patients, the dose may be reduced to 0.1 gm.

2. Bismuth element in fine suspension, which has also been given trade names, prepared by reduction of the quadruple salt. The detailed method of


Fig. 4 (Rabbit Bi6).—Treated with tartrobismuthate, 100 mg. per kilogram. A, extensive induration and moderate sized ulcers before treatment; B, induration gone and ulcers nearly healed two weeks after treatment.
preparation has not been published. It is recommended by Fournier and Guénot in doses of 0.15 to 0.2 gm. injected intramuscularly twice a week for a series of ten to twelve injections. This introduces nearly twice as much bismuth as their dosage for the quadruple salt.

(3) Quinin bismuth iodid. We have not been able to find a statement of its chemical composition or method of preparation, but the substance is probably similar to that thrown down in Léger's test for bismuth. It is said to contain 30 per cent. of the element. The course of treatment recommended by Villemin consists of intramuscular injections of from 0.2 to 0.3 gm. every two days for twelve injections.

(4) Colloidal bismuth. The method of preparation is not described. It is advocated by Galliot, who employs intravenous injections of 8 c.c. increasing the dosage to 24 c.c. three times a week, followed by weekly injections of from 16 to 20 c.c. Galliot was impressed by the therapeutic action of this preparation, although the actual amounts of bismuth introduced are small, 0.013 gm. being the maximum dosage.

Grenet and Drouin have reported results of experiments with a compound of phenol and bismuth.

Bismuth hydroxid and other preparations have also been used, but no conclusive observations have been reported. In fact, the only preparations as to the value of which detailed evidence is yet available are the first two mentioned.

PREPARATION

The observations which we wish to report concern only the quadruple salt first recommended by Levaditi. It was prepared by the following method described by Cowley:

\[
\begin{align*}
\text{Bismuth subnitrate} & \quad 70 \text{ gm.} \\
\text{Sodium and potassium tartrate} & \quad 64.5 \text{ gm.} \\
\text{Nitric acid (specific gravity, 1.430)} & \quad 57 \text{ c.c.} \\
\text{Sodium bicarbonate} & \quad 57 \text{ gm.}
\end{align*}
\]

Mix the nitric acid with an equal volume of water and dissolve the bismuth subnitrate. Add the Rochelle salts dissolved in a little water and then the sodium bicarbonate also dissolved in water. Heat to expel carbon dioxide, filter and wash the precipitate until the filtrate no longer gives a test for nitrates. The product is an amorphous white substance which turns brown on overheating or exposure to light. It has a peculiar mortar-like consistence which makes it difficult to grind to a fine smooth powder or to obtain a smooth suspension in oils. Dr. J. H. Mueller kindly assayed one of our preparations and found it contained 54.2 per cent. of bismuth.

For the treatment of patients we have tried 10 and 20 per cent. suspensions. The formula which we are using at present is

\[
\begin{align*}
\text{Sodium and potassium tartrobismuthate} & \quad 10 \text{ gm.} \\
\text{Anesthesin} & \quad 10 \text{ gm.} \\
\text{Coconut oil} & \quad 80 \text{ gm.}
\end{align*}
\]

Dosage: One to two c.c. equal to 1 or 2 decigrams.

In order to form an opinion as to the efficacy of this substance it seemed advisable to compare its action in syphilitic rabbits with that of drugs which are known to be effective in human syphilis. We selected as representative substances for this comparison neo-arsphenamin and mercuric salicylate. The rabbits were infected with a strain of *Spirochaeta pallida* isolated from human spinal fluid by Nichols in 1912. On this occasion, we obtained it through the courtesy of Dr. Wade H. Brown.

For some of our observations we employed rabbits inoculated into the scrotal tissue in such a way as to produce large ulcers, changes in which were easy to observe and to record photographically. As such lesions are hyperemic and often secondarily infected, it is occasionally difficult to demonstrate the spirochetes even when the disease is progressing. Consequently, other tests were made on animals inoculated into the testicle so as to produce deep nodular lesions with a poor blood supply in which the spirochetes can be demonstrated more regularly when present. Frequently these animals also developed ulcers at the site of puncture by the inoculating needle or by extension from a testicular lesion.

In treatment, the neo-arsphenamin was dissolved in distilled water and injected into the ear vein; the bismuth and mercury salts were suspended in olive oil and injected into the erector spinae muscles.

**Fig. 5 (Rabbit C2).—Untreated control for Bi4, Bi6, Bi9 and Hg3.**

A, large scrotal ulcers six weeks after inoculation; B, four weeks later, ulceration extending; C, eight weeks later, scrotum nearly destroyed.

We had previously studied this same strain of spirochetes in passage through rabbits for three years and were familiar with the course of untreated lesions. Indurated testicular lesions of the type used frequently heal spontaneously, but involution is slow and hardly to be confused with the abrupt softening observed in successfully treated
animals. The cutaneous ulcers are more persistent and frequently progress until the entire scrotal tissue is destroyed. In these experiments, each lot of animals inoculated were treated one or two at a time, and the untreated members of the group served for a while as controls for those treated. On account of the persistence of the lesions, however, it seemed safe later to use these controls as test animals. Only a few were held untreated throughout the experiment. The course in two of these is shown in Figures 5 and 6. The only spontaneous cure observed occurred three months after the other rabbits of the same set had been tested.

**EFFECT IN MAXIMUM DOSAGE**

Our first effort was to compare the action of the three drugs used in maximum dosage.

![Fig. 6 (Rabbit C1).—Untreated control for Bi7, As2, As4 and Hg2. A, six weeks after inoculation; B, eight weeks later, ulceration extending.](image)

For the sodium and potassium tartrobismuthate we started from the statement of Levaditi and Sazerac that 400 mg. per kilogram was nontoxic for a rabbit. In our preliminary tests, a normal rabbit which was given 200 mg. per kilogram died in six days, and one which received 100 mg. survived, so that we selected the latter amount as our maximum dose. Further experience showed that this was probably more than could safely be given.

For neo-arshpenamin Castelli gives 300 mg. per kilogram as the tolerated dose, and we used one half this amount—150 mg.

For mercuric salicylate no experimental data were available, and we selected an amount which gave no immediate toxic symptoms—30 mg. per kilogram.

The effects of such injections are shown in Table 1.

<table>
<thead>
<tr>
<th>No.</th>
<th>Period Since Inoculation</th>
<th>Condition Before Treatment</th>
<th>Dose per Kilogram</th>
<th>Condition After Treatment</th>
<th>Last Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI 1</td>
<td>4 months</td>
<td>1.5 cm. ulcer left scrotum; spirochetes numerous</td>
<td>100 mg.</td>
<td>1st and 3d day, spirochetes 0; 5th day, induration diminished; ulcer healed in 4 weeks</td>
<td>8th week, normal</td>
</tr>
<tr>
<td>BI 2</td>
<td>4 months</td>
<td>1 cm. nodule in left testis; two ulcers, 1 cm. in right scrotum; spirochetes present</td>
<td>100 mg.</td>
<td>2d day, spirochetes 0; 5th day, ulcers beginning to heal</td>
<td>5th week, lesions improved</td>
</tr>
<tr>
<td>BI 3</td>
<td>2 months</td>
<td>1 cm. nodules on right and left scrotum; spirochetes numerous</td>
<td>100 mg.</td>
<td>1st and 2d day, spirochetes 0; 5th day, induration diminished; 4th week, testicles normal</td>
<td>4th week, normal</td>
</tr>
<tr>
<td>BI 4</td>
<td>5 weeks</td>
<td>Large ulcers on both scrotum with underlying nodules in testes; spirochetes numerous</td>
<td>100 mg.</td>
<td>1st, 2d and 3d day, spirochetes 0; 3d day, induration diminished</td>
<td>2d week, dead; ulcers nearly healed</td>
</tr>
<tr>
<td>BI 5</td>
<td>4 weeks</td>
<td>Moderate sized ulcers on both scrotum; spirochetes numerous</td>
<td>100 mg.</td>
<td>1st day, few spirochetes; 2d day, none; 6th day, induration gone, ulcers improved; animal killed on account of injury</td>
<td>6th week, improved</td>
</tr>
<tr>
<td>BI 6</td>
<td>7 weeks</td>
<td>Diffuse induration in both testes with scrotal ulcers; spirochetes present</td>
<td>100 mg.</td>
<td>3d day, spirochetes 0; 4th day, induration diminished</td>
<td>3d week, dead; ulcers nearly healed</td>
</tr>
<tr>
<td>BI 7</td>
<td>6 weeks</td>
<td>Large ulcers on both scrotum; spirochetes present</td>
<td>100 mg.</td>
<td>1st week, ulcers improved, induration nearly gone; 7th week, entirely healed</td>
<td>13th week, normal</td>
</tr>
<tr>
<td>BI 8</td>
<td>4 weeks</td>
<td>Small nodule in right testes; hydrocele of left scrotum; spirochetes present</td>
<td>100 mg.</td>
<td>2d day, spirochetes 0; induration diminished; 1st week, gained 30 gm.; 4th week, normal</td>
<td>13th week, normal</td>
</tr>
<tr>
<td>BI 9</td>
<td>7 weeks</td>
<td>1.2 cm. ulcers on both scrotum; spirochetes present</td>
<td>25 mg.</td>
<td>4th day, ulcers healing</td>
<td>4th week, normal</td>
</tr>
<tr>
<td>BI 10</td>
<td>5 weeks</td>
<td>Two nodules in left testis; large mass in right testis with ulceration of scrotum; spirochetes present</td>
<td>5 mg.</td>
<td>3d day, spirochetes 0; induration diminished; 12th day, induration gone; 3d week, ulcer healed</td>
<td>11th week, normal</td>
</tr>
<tr>
<td>BI 11</td>
<td>5 weeks</td>
<td>Large mass left testis with 1.2 cm. scrotal ulcer; nodule right testis with small scrotal ulcer; spirochetes present</td>
<td>2 mg.</td>
<td>3d day, spirochetes present; induration diminished; 6th day, spirochetes 0; 10th day, ulcer healed; 5th week, induration gone, small ulcer in scar, spirochetes 0, probably due to secondary infection</td>
<td>5th week, normal (?)</td>
</tr>
<tr>
<td>BI 12</td>
<td>5 weeks</td>
<td>Diffuse induration of both testes; spirochetes numerous</td>
<td>2 mg.</td>
<td>1st day, spirochetes present; 3d day, spirochetes 0; induration diminished; 19th day, induration gone</td>
<td>19th day, normal</td>
</tr>
<tr>
<td>BI 13</td>
<td>6 weeks</td>
<td>Hard nodules both testes with infiltration of scrotum and beginning necrosis on right; spirochetes present</td>
<td>2 mg.</td>
<td>5th day, spirochetes 0; 4th week, nodules gone</td>
<td>6th week, normal</td>
</tr>
<tr>
<td>BI 14</td>
<td>4 weeks</td>
<td>Induration and positive puncture three weeks after inoculation; at time of treatment edema of testes; spirochetes 0</td>
<td>2 mg.</td>
<td>1st and 5th day and 5th week, spirochetes 0; 7th week, developed nodules containing spirochetes</td>
<td>7th week, positive lesion</td>
</tr>
<tr>
<td>BI 15</td>
<td>6 weeks</td>
<td>Diffuse infiltration of right testis and scrotum; large ulcer on left scrotum; spirochetes numerous</td>
<td>1 mg.</td>
<td>4th day, 6th day and 3d week, spirochetes present; lesions steadily progressing</td>
<td>2d week, ulceration extending</td>
</tr>
<tr>
<td>No.</td>
<td>Period Since Inoculation</td>
<td>Condition Before Treatment</td>
<td>Dose per Kilogram</td>
<td>Condition After Treatment</td>
<td>Last Observation</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------</td>
<td>-----------------------------</td>
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<td>---------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>As 1</td>
<td>2 months</td>
<td>Nodules in both testes; spirochetes present</td>
<td>150 mg.</td>
<td>1st day, spirochetes 0; 6th day, induration diminished</td>
<td>9th day, dead; lesions improved</td>
</tr>
<tr>
<td>As 2</td>
<td>6 weeks</td>
<td>1.5 cm. ulcers on both scrotum</td>
<td>150 mg.</td>
<td>7th day, ulcers healing; 10th day, induration gone; 18th day, completely healed</td>
<td>18th day, dead; lesions healed</td>
</tr>
<tr>
<td>As 3</td>
<td>4 weeks</td>
<td>Diffuse induration of left testis and nodule in right; spirochetes numerous</td>
<td>150 mg.</td>
<td>1st and 5th day, spirochetes 0; 7th day, induration gone</td>
<td>7th day, dead; lesions healed</td>
</tr>
<tr>
<td>As 4</td>
<td>6 weeks</td>
<td>Large mass in right testis with two small scrotal ulcers</td>
<td>15 mg. 7th day, induration diminished; 10th day, induration gone; 18th day, ulcer healed</td>
<td>13th week, normal</td>
<td></td>
</tr>
<tr>
<td>As 5</td>
<td>5 weeks</td>
<td>Diffuse induration of right testis with 3.5 cm. scrotal ulcer; spirochetes present</td>
<td>6 mg.</td>
<td>1st day, spirochetes present; 3rd, 5th and 7th day, spirochetes 0; 21 day, induration diminished; 18th day, induration gone; 4th week, ulcer healed</td>
<td>4th week, normal</td>
</tr>
<tr>
<td>As 6</td>
<td>5 weeks</td>
<td>Several nodules in right testis; 0.5 cm. ulcer on left scrotum; spirochetes numerous</td>
<td>3 mg.</td>
<td>3rd day, spirochetes present; 7th day, spirochetes 0; 12th day and 21 day, spirochetes present; slight improvement during first week after which lesions steadily progressed</td>
<td>4th week, ulceration and induration extending</td>
</tr>
<tr>
<td>As 7</td>
<td>8 weeks</td>
<td>Large nodules in left testis; spirochetes present</td>
<td>1.5 mg.</td>
<td>3rd day and 1st week, spirochetes present; lesions progressed without interruption</td>
<td>3rd week, induration and ulceration extending</td>
</tr>
</tbody>
</table>

**MERCURIC SALICYLATE SERIES**

| Hg 1 | 2 months | Induration of both scrotum; spirochetes present | 30 mg. | 1st and 2nd day, spirochetes 0; 4th day, dead; induration slightly diminished | 4th day, dead; lesions slightly improved |
| Hg 2 | 6 weeks | 1 cm. ulcer on left scrotum; 0.5 cm. ulcer on right scrotum with marked induration | 30 mg. | 6th day, animal dead, induration diminished and ulcer nearly healed | 6th day, dead; lesions improved |
| Hg 3 | 5 weeks | Large ulcers on both scrotum; spirochetes present | 30 mg. | 1st and 2nd day, spirochetes 0; 6th day, animal very ill, ulcers healing | 13th day, dead; ulcers nearly healed |
| Hg 4 | 7 weeks | Induration of right scrotum with small ulcer; spirochetes present | 15 mg. | 5th day, animal dead of enteritis and tubular nephritis; induration gone, ulcer healed; 4th week, relapse, induration marked, spirochetes present; 6th week, induration gone, spirochetes 0, animal much emaciated, killed, no evidence of enteritis or nephritis | 5th day, dead; lesion healed |
| Hg 5 | 7 weeks | Induration of left testis with small scrotal ulcer; spirochetes present | 6 mg. | 5th day, spirochetes 0; induration diminished, ulcer healed; 4th week, relapse, induration marked, spirochetes present; 8th week, no evidence of enteritis or nephritis | 8th week, normal after relapse |
| Hg 6 | 5 weeks | Diffuse induration of both testes, with beginning periods of scrotum; spirochetes present | 3 mg. | 5th day, spirochetes 0; 9th day, induration slightly diminished but ulcer developed in scrotum, this extended until in 8th week scrotum were completely destroyed; from 11th day on spirochetes present | 9th week, lesions extending |
| Hg 7 | 5 weeks | Large ulcers on both scrotum; spirochetes present | 1.5 mg. | Ulceration extended without interruption to complete destruction of scrotum in 3 weeks | 9th week, lesions extending |
After a large injection of bismuth, the organisms disappeared promptly from the lesions and were not found later than the first day after treatment. Deep nodules were perceptibly softened on the second to fifth day and not palpable after a week or ten days. In large scrotal ulcers, repair was much slower. A lessening of the underlying induration was apparent in from four to five days, after which a conical slough was gradually separated. The ulcer then contracted, and in two weeks all that remained was a small superficial defect covered by a thin crust. This, in some cases, persisted for several weeks before healing was complete. Healing required more time than in the rabbits tested by Levaditi and Sazerac, a discrepancy which might well be accounted for by differences in the character of the lesions.

The immediate effects of neo-arsphenamin and mercury were indistinguishable from those of bismuth. Such differences in reaction as were noted during the first week seemed to depend more on the character of the lesion than on the drug used.

Rabbits Bi 7 and As 2 had lesions which matched well. One was treated with bismuth and the other with neo-arsphenamin; their condition at first progressed closely in parallel. The rabbit treated with arsphenamin died on the eighteenth day with the lesions completely healed, at which time only a minute linear ulceration remained on one side in the animal treated with bismuth.

It soon became evident that the doses used were too large. The animals treated with mercury died in from four to thirteen days; those given neo-arsphenamin, in from seven to eighteen days. Of the rabbits treated with bismuth, one died in five days, one in two weeks, and one in three weeks; but four survived as long as they were kept under observation.

**THE CURATIVE DOSE**

These experiments sufficed to show that bismuth as well as the other drugs was spirochetidal and had a curative effect. In order to form some idea of their relative value, it was attempted to determine the smallest curative dose of each of the three substances. For our purpose, we defined this dose as the amount necessary to cause spirochetes to disappear and active lesions to heal. The question as to whether the complete sterilization of the animals was achieved, we have not yet attempted to answer. This did not, however, seem essential to our first purpose, which was to compare in animals the action of bismuth with that of drugs of known efficacy. That healing of the active lesions did not mean permanent cure is indicated by the course of Rabbit Bi 14. At the time it was given bismuth, this animal had no apparent lesions. It received 2 mg. per kilogram—a dose which healed active lesions in other rabbits—but five weeks later it developed a transitory testicular nodule containing active spirochetes. Observations
on the effect of smaller doses are also summarized in the table. In this series, 2 mg. per kilogram of the tartrobismuthate were curative in the sense stated. Larger doses also gave cures, but half of this amount (1 mg.) gave no definite improvement.

Of the rabbits treated with neo-arsphenamin, those given 6 mg. or more per kilogram were cured. One receiving 3 mg. showed slight temporary improvement with subsequent progression of the lesions. A dose of 1.5 mg. had no perceptible effect. This result is in approximate agreement with Castelli's finding of 11 mg. as the minimal curative dose.

With mercuric salicylate, doses of 15 and 30 mg. caused prompt regression of the lesions but were fatal to the animal. Three and 1.5 mg. had no effect. Rabbit Hg 5, given 6 mg., showed temporary cure with prompt relapse. It appears, then, that only a transitory curative effect is obtainable by single injections of this compound.

It is evident from the results in this series and their comparison with the observations of others that there is wide individual variation in the tolerance of rabbits for these drugs. We cannot yet speak with accuracy of a "maximum tolerated dose," or of the fraction of this which is curative. It seems clear, however, from these experiments that the bismuth salt has a curative effect in amounts well below those which are toxic and that in this respect it is comparable to neo-arsphenamin and definitely superior to mercuric salicylate.

TREATMENT OF HUMAN CASES

As soon as we had confirmed for ourselves the conclusions of Levaditi as to the effectiveness of bismuth in the treatment of syphilis in rabbits, we proceeded to test its action in human cases.

Dosage.—It was attempted to give the dosage recommended by Fournier and Guénot, 0.2 gm., three times a week. With our first preparations, however, the pain at the site of injection was so great that we could not hold patients to this dosage for more than one or two weeks. Later we obtained smoother suspensions which were better tolerated. The discomfort following these is hardly greater than that caused by mercuric salicylate, but it would not be easy to continue injections of an insoluble mercury preparation three times a week over a long period. For inactive cases, we have tried to give only from 0.1 to 0.2 gm. once a week and have been able to hold patients fairly well to this restricted program. From later reports it would seem that bismuth element causes less disturbance than does the quadruple salt, and it is to be hoped that more frequent injections of this can be given and better results obtained. We first selected a few patients with active lesions the course of which was easy to observe.
REPORT OF CASES

Case 1.—Primary syphilis. The patient was a young negro with a chancre on the preputial mucous membrane just back of the corona. The ulcer was 1 cm. in diameter with base and border typically indurated. The left inguinal nodes were about 1 cm. in diameter and hard. Dark-field examination showed numerous spirochetes. The lesion was said to have been present only a week. There was no exanthem or general adenopathy, but the Wassermann test was four plus with alcoholic antigen and two plus with cholesterin antigen. In one week, after three injections of 0.2 gm., the chancre showed slight improvement and the Wassermann test was four plus with alcoholic antigen and 0 with cholesterin antigen. In four weeks, after three more injections of 0.2, 0.1, and 0.1 gm., the lesion was entirely healed, and the Wassermann test was negative. The patient disappeared from observation for the time being, but was seen again after a lapse of three months. There was no sign of recurrence, and the Wassermann test was negative.

Case 2.—Primary and secondary syphilis. A young negro had had a chancre of the lower lip for five weeks (Fig. 7). The entire lip was distended with edema and infiltration, and the cervical nodes were greatly enlarged. There was general adenopathy, a maculo-papular eruption on the trunk, mucous patches on the scrotum, and the patient seemed sick and apathetic. He had applied a mercury dressing to the lip, and dark-field examination was negative, but the Wassermann test was four plus with both antigens. In one week, after three injections of 0.1, 0.2, and 0.2 gm., the chancre was somewhat smaller, and the exanthem and mucous patches had disappeared. The infiltration of the lip persisted, but a month later, after three more injections of 0.2 gm., the lesion healed, leaving a thin bulging scar without induration. The cervical nodes were still enlarged. The Wassermann test was negative. Five more weekly injections were given, after which the patient abandoned treatment for nine weeks and then returned with a practically normal lip and a negative Wassermann test.

Case 3.—Secondary syphilis.—A young negress had a pronounced papulo-pustular (varioliform) syphilid which had been present for three weeks and which had not improved after one arsphenamin and three mercury injections. The Wassermann test with alcoholic antigen was three plus and with cholesterin antigen, four plus. In two weeks she received six doses of 0.1 gm. As she was very thin, we resorted to injection in the interscapular and deltoid regions, which caused serious discomfort. There was slight improvement in the eruption, and the Wassermann test was one plus with alcoholic antigen, and two plus with cholesterin antigen. She was then put on weekly injections, and in two weeks only a pigmented pattern of the former rash remained; in five weeks
the Wassermann test was negative. After an interval of three months without treatment, no trace remained of the eruption, and the Wassermann test was still negative.

Case 4.—Secondary syphilis. A negress had a pronounced grouped papular (corymbiform) syphiloderm of one week's duration and mucous patches in the vagina. Her Wassermann test was four plus with both antigens. She received

two injections of 0.2 gm. in three days and did not return for four weeks. The eruption had then vanished, her malaise had disappeared, and her blood reaction was negative with alcoholic antigen, and one plus with cholesterin antigen. After this she took weekly treatments with fair regularity for three months during which time tests varied from negative to one plus. Her last Wassermann test, one month after stopping treatment, was negative, and there was no evidence of relapse.
Case 5.—Tertiary syphilis. This patient had appeared in the clinic a year before with a serpiginous syphilid of the shoulder and a four plus Wassermann test. He had refused treatment, and during the year the eruption had spread until it covered most of his trunk (Figs. 8 and 9). His primary infection occurred eight years before, and he had received a few injections of arsphenamin before the outbreak of the tertiary skin lesions. He was given three injections of 0.2 gm. during the first week, followed by three weekly injections of the same amount. At the end of the month, the eruption had practically cleared, leaving only the depigmented pattern of lesions. The blood reaction was still strongly positive. Before treatment, it had been four plus in 0.005 c.c. (one twentieth the standard amount) and after treatment it was four plus in 0.01 c.c. (one tenth the standard amount). We have been unable to trace the patient since.

Fig. 9 (Case 5).—Four weeks after treatment.
COMMENT

Other cases with cutaneous lesions responded fairly well to the bismuth injections. Two patients with late periostitis were influenced slowly, the pain persisting for from two to four weeks. One, however, who continued the treatment irregularly for eight months eventually achieved a negative Wassermann reaction.

These cases were sufficient to convince us that in human cutaneous syphilis bismuth has a curative action like that demonstrated in rabbits.

The effects were so similar to those of arsphenamin treatment that it is impossible to form a definite opinion as to the comparative merits of the two drugs from a small series of cases. It seemed to me and to others who watched these patients that Cases 2 and 3 would probably have cleared up more rapidly under intensive arsphenamin treatment, but it is impossible to be certain of this. Surely no other drug in such small amounts could have given a more striking effect than was seen in Case 4. As compared with the results obtained with mercury before the introduction of arsphenamin, the cure in all the early cases was rapid. The evidence seems sufficient to indicate that the effect of bismuth in early active syphilis is comparable, though perhaps slightly inferior, to that of arsphenamin, and definitely superior to that of mercury. This conclusion is supported by our animal experiments and by the clinical reports published by others. It applies, of course, only to the immediate effect, as we know nothing so far of the late results.

Concerning the action of bismuth in syphilis of the viscera or of the nervous system, we have nothing to report as yet.

EFFECT ON LATENT SYPHILIS

As we already have in arsphenamin a cure of proved efficiency in early active syphilis, and as there is so far no evidence to indicate that bismuth possesses any great advantage over it except cheapness, it
seemed of more importance to try to learn something of the effect of the new agent on patients with latent syphilis, a class of patients in which the older methods of treatment are so often unsatisfactory. As an indication of the progress in such cases, we are dependent almost solely on the Wassermann reaction, and for the present we can make a preliminary report only on the effect of treatment as measured by this test.

The results so far obtained in thirty-one patients with strongly positive Wassermann reactions (+ + + + or + + + +) are shown in

![Chart showing Wassermann reaction results](image)

Fig. 10.—Strongly positive Wassermann reaction reduced to negative. In this and the following charts, A indicates arsphenamin; SA, silver arsphenamin; M, mercuric salicylate (gray oil); B, sodium potassium tartrobinbismuthate. The figures indicate the number of injections given. The continuous line indicates the Wassermann reaction with plain alcoholic antigen; the broken line indicates the Wassermann reaction with cholesterin reinforced antigen. The arrow indicates the beginning of bismuth treatment.

![Chart showing Wassermann test results](image)

Fig. 11.—Wassermann test uninfluenced by arsphenamin and mercury weakened by bismuth.

Table 2. Of these, twelve had had no previous treatment, seven had had one course of eight injections each of arsphenamin and mercuric salicylate, and twelve had taken two or more such courses. Twelve patients whose Wassermann tests on beginning bismuth treatment were only weakly positive—in most instances as the result of previous treatment—are entered separately. The clearing up of such cases by any method is a long and arduous task, and it is rather soon to expect
decisive results from the bismuth treatment, but in only one have we succeeded in changing a four plus to a negative reaction (Fig. 10), and this result may be only temporary. A number of patients gave a weakened reaction after their first series of bismuth injections and then had a relapse in spite of subsequent treatment. There were, however, several cases in which considerable treatment with arsphenamin and mercury had exerted no apparent influence, but which showed the first break in their series of four plus reactions after taking bismuth (Figs. 11 and 12). There were also one or two that had relapsed to a weak positive after previous treatment who seemed more definitely influenced by bismuth (Fig. 13). It is recognized that such results are

![Fig. 12.—Wassermann test uninfluenced by arsphenamin and mercury weakened by bismuth.](image1)

![Fig. 13.—Weakly positive Wassermann test reduced to negative after bismuth.](image2)

by no means conclusive, but they suggest that bismuth may prove useful in the treatment of some of these resistant cases.

**TOXICITY**

Of about fifty patients so far treated, two have developed a stomatitis which subsided promptly on interruption of the injections. With the exception of this, we have noted no toxic effects. One patient developed an abscess in the buttock which was probably due to faulty technic, and another showed a swelling from which a clear mucoid fluid was evacuated. A similar reaction was noted by Fournier and Guénot. Frequent examination of the urine has shown no evidence of renal injury. Many of the patients have gained weight and improved in general nutrition under treatment.
CONCLUSIONS

The experiments reported on rabbits show that sodium and potassium tartrobismuthate has marked spirochetidal power and a curative action on syphilitic lesions in these animals; that in single injection it is about as effective as neo-arsphenamin and more effective than mercuric salicylate.

The observations on early active human cases show that it accomplishes at least a temporary apparent cure.

Its effect on latent cases suggests that it may be useful in the treatment of those which are resistant to other drugs.

These results are in general agreement with those reported by others and indicate that we have in bismuth a new and powerful antisyphilitic agent. There is as yet no reason to suppose that it will replace other drugs, the efficacy of which has been proved by long experience; and at present the treatment of syphilitic patients by bismuth alone is justifiable only in an attempt to appraise its therapeutic value.

Further study of its clinical effect is much needed, but it seems reasonable to hope that better results will be obtained by combined treatment with arsphenamin and bismuth, and probably with mercury also, than by any of these drugs used alone.
LICHEN NITIDUS

H. E. MICHELS0N, M.D.
MINNEAPOLIS

Lichen nitidus is now well established as a dermatologic entity. Space is devoted to this disease in the recent editions of dermatologies by Brocq, Joseph, MacLeod, Ormsby, Pusey, Stelwagon and Sutton. In his excellent monograph on tuberculosis of the skin, includes lichen nitidus.

One needs only mention the articles of Pinkus and Arndt in Germany, Kyrle in Austria, McDonagh in England and Sutton in America. Occasional cases are demonstrated before the dermatologic societies; Trimble showed a case in New York in 1920; Ballan not long ago exhibited such a case before the Vienna Dermatological Society. However, examples of the condition are rare enough to warrant adding a study of a recently observed case to the existing literature.

REPORT OF A CASE

H. E. J., a medical student and hospital intern, married, whose family history was negative, and no near or distant relative of whom had had tuberculosis, said that in the summer of 1919 he spent two months working on a farm.

He harvested barley, and his wrists were often scratched. On returning from the country, he noticed that the palmar surfaces of both wrists were covered with numerous small, slightly elevated, reddish papules. The eruption itched slightly but not sufficiently to cause him to scratch. Scrubbing the wrists caused the papules to redden. A few similar papules appeared over the malar eminences of both cheeks. One per cent. of salicylic acid ointment was applied.

which caused complete disappearance of the eruption on the face; it has not recurred. After violent rubbing, some of the papules on the wrists became very red, even hemorrhagic. The individual papules could be dislocated from their bed by scratching with a sharp scalpel. The seat of the papule would ooze for a short time from several minute points—not from one central point.

The lesions had not reappeared on the face, while the papules on the wrists had remained comparatively stationary. At times the eruption was more

Fig. 1.—View of wrist showing characteristic lesions.
This was usually after a period of service in the operating room, when the hands were subjected to brisk scrubbing daily. The salicylic acid ointment, although bringing about a disappearance of the papules on the face, had no effect on the eruption on the arms. The Pirquet test was negative.

There was nothing in his personal history, past or present, which in any way had any bearing on his cutaneous condition. A painstaking inquiry concerning tuberculosis revealed no positive evidence. He had gained weight during the past two years, and at no time was he underweight. His wife was well. She had never been pregnant. The Wassermann reaction on the patient's blood was negative.

Examination revealed a well-developed, well-nourished man. His general physical examination was negative. There were no palpable glands, and the mucous membranes were free from abnormalities. The skin condition was confined strictly to the palmar surfaces of both wrists. Here were noted numerous pinhead sized, round or conical, slightly elevated reddish yellow to normal skin colored papules. The papules were distinctly discrete; at no point were they confluent. The summit of the more conical papules seemed to be capped with a minute vesicle. On glass pressure, the papules almost disappeared, remaining as mere grayish opalescent specks. With a tissue needle, the individual lesions could be teased out of their seat, leaving a shallow oozing depression. The papules were palpable, and at no time was softening noted. They were evenly distributed. There was no tendency to grouping or configuration. There was no scaling or verrucous formation, neither was there any secretion or crusting. The papules glistened, but they did not exhibit the silvery sheen of minute psoriasis-papules or even that of lichen planus lesions. No dell formation was noted; in fact, the very center of the papule seemed slightly elevated. Subjectively, the patient was hardly aware of their presence, although they did itch slightly when irritated. He was under observation at varying intervals for three years. During this time the eruption changed little.

Fig. 2.—Cuboidal shaped mass of infiltrate, with thin walled roof and considerable edema. Low power magnification.
The primary eruption can well be described as the characteristic lesion produced by this disease, for the lesions change little. The condition once seen and identified, especially if examined histologically, leaves such an indelible impression that when the observer sees cases in the future, he will have little difficulty in establishing their identity. The individual lesions in the various cases described in the literature are identical. Only in the number and distribution of the papules do the cases vary. In our case, there were about eighty papules on each wrist. No other part of the integument was involved. Most of the male cases described had lesions on the shaft of the penis and even on the glans. Only three cases have occurred in females. The palmar surfaces of the wrists are also frequently involved. It is worthy of note that only in the female cases was the distribution quite wide. In these three cases, there was a rather general exanthem-like eruption.

The individual lesion is a small papule about the size of the head of a pin—the size is not variable macroscopically. All of the papules in our case were of about the same size. Parounagian\textsuperscript{16} exhibited the only case that I have found in which the lesions were reported to be not uniform in size. No biopsy was made, so the diagnosis was not certain. In none of the reported cases were large papules described. The shape of the papule varies a little. Some of them are polygonal in outline, but the majority are round or conical. All are sharply demarcated, and there is no surrounding halo or zone of altered skin.

The surface is smooth, with the exception of a few of the lesions, which show a slightly elevated center like a minute superimposed vesicle, but this observation is not substantiated microscopically. There is no exudation, hence no crusting. The color varies from a light flesh color to a pale pink, and a number of the papules, especially at the periphery of the involved areas, are of the same color as the surrounding skin and are barely visible to the naked eye. Macroscopically, there are no follicular papules. There was no tendency to configuration or grouping in the present case; although both arms were involved, the arrangement was not symmetrical. The lesions were most profuse at the center of the wrists, gradually thinning out at the sides and up the forearm.

Under glass pressure, the papules resembled minute lupus nodules, only their color was gray, and they appeared like small grains of sand which were pressed into the skin by the diascop. The individual lesions could be dislocated from their bed with a needle or scalpel. This would leave a minute oozing depression, but small dewdrops of serum did not collect as they do when the scales are removed from a small psoriasis vulgaris papule.

The patient said that, in the interval since he had first noticed the eruption, some papules had disappeared without leaving a trace. There were no scars or pigmentation.

The condition must be clinically differentiated from lichen planus, lichen scrofulosorum and verruca juvenilis.

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Fig. 4.—Infiltrate mass almost surrounded by elongated rete pegs. Low power magnification.
Lichen planus papules are usually more variable in size. There is a tendency to grouping or formation of figures. The color is lilac or purplish, while, if the glans alone is involved, annular arrangement is the rule, and the color of the papules is of a porcelain white. Arndt observed one case of lichen nitidus in which there were lesions on the buccal mucous membrane, but this is the only case recorded. Lichen planus papules are often delled and have a distinct sheen. Then, too, lichen planus is prone to produce an itching, sometimes quite marked.

Verruca juvenilis differ from lichen nitidus in that the surface of these eruptions is distinctly warty, and they are easily removed with a curet; also their color is usually a light or dirty brown. Their dis-

![Fig. 5.—Tip of egg shaped infiltrate mass completely surrounded by epidermis. Low power magnification.](image)

tribution is wide, while the number of individual lesions at any one location, as, for instance, the palmar surface of a wrist, is smaller than the number of lichen nitidus lesions, and the individual lesions are less sharply defined and more variable in size.

Lichen scrofulosorum, even of the plane type, usually occurs in children with frank tuberculosis. It always tends to group and is decidedly scaly and perifollicular. Lichen scrofulosorum histologically shows a variable picture. It is seldom of a typical tuberculous structure. The predominating feature is a perifollicular infiltrate containing many lymphocytes, few if any giant cells, and a few epithelioid cells. Caseation rarely, if ever, occurs. In the plane type of lesion which usually occurs in the vicinity of the perifollicular type, the infiltrate is
deeper in the corium than in lichen nitidus. The infiltrate does not penetrate the epidermis. It is not so sharply outlined and is not so uniform.

The relation of this eruption to tuberculosis has concerned all authors. Pinkus mentioned the similarity of the histologic structure. Kyrle made animal inoculations which were negative. His patient gave a marked tuberculin reaction. Lewandowsky \(^\text{17}\) observed two patients who later developed frank tuberculosis. He also observed a patient who had a plaque of undoubted lichen scrofulosorum on the arm and lichen nitidus on the penis. Bachrach \(^\text{18}\) reported a case occurring in a patient who had pulmonary tuberculosis. He searched for tubercle bacilli but found none. Reines \(^\text{19}\) adds his negative findings to those of other observers, but he cites the case observed by Lier,\(^\text{20}\) who found acid-fast granules in a microscopic preparation; he also cites the case of Königstein, in which the patient reacted positively to old tuberculin. The fact that lichen nitidus may remain unchanged for years and that the seat of

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predilection is the shaft of the penis (an area remarkably free from other forms of tuberculosis of the skin) are points against a relationship to tuberculosis. Balkan's recent patient reacted positively to old tuberculin.

Zingale, in an extensive review of forty-six cases in the literature and from a study of his own case, finds indications of a relationship to tuberculosis in many cases.

**HISTOLOGY**

For microscopic examination, an area of skin 4 cm. by 2 cm. was excised from the wrist. The tissue was hardened in formaldeyde and alcohol, serially sectioned (about 400 sections) and stained with hema-

toxylin eosin, Weigert's elastic tissue stain, and by Ziehl-Nielsen's method for tubercle bacilli. Another block was sectioned sagittally (about sixty sections).

From the serial study we ascertained that the shape of the infiltrate mass varied considerably. The majority of the masses were cuboidal with well-rounded corners. Some of the masses were distinctly egg-shaped or Zeppelin shaped with the points completely surrounded by epidermis. From the sagittal sections we noted that the infiltrate mass

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was just about as wide as it was deep, and that the upper surface was flatter than the lower surface. From the lower surface, cords of infiltrate often penetrated deep into the corium.

We found a few lesions in which the sweat duct penetrated the infiltrate, and a few that were about the pilosebaceous follicle, but the majority of the lesions were independent of the ducts.

Under a low power lens, the lesions appeared as a cuboidal mass of closely packed cells lying between the corium and the epidermis, but present more at the expense of the epidermis into which the mass had been pushed, leaving only a thin epidermal covering consisting of three or four layers of the stratum granulosum and a frayed, or in places, thickened stratum corneum, but there was always an epidermal roof present. In preparations in which the infiltrate was cuboidal in shape, the rete pegs were not much altered at the boundaries of the mass; but in the egg-shaped or spherical lesions, especially at the extreme ends, the interpapillary pegs were much elongated, and even fused with the peg from the other side. Professor Kren 22 called my attention to the fact that he had noticed that the epidermal elongations frequently surrounded the infiltrate mass, and he considered this quite characteristic of lichen nitidus.

The lesion itself consisted of closely packed cells, the type and arrangement varying somewhat in individual lesions. There were many deeply staining small round cells, which were irregularly scattered throughout the lesion. Epithelioid and fibroblast cells also were present in considerable numbers. Edematous masses of connective tissue forming a sort of a reticulum ran throughout the mass. Although the infiltrate was dense, the individual cells were distinct, because of an edema which was present in all the sections examined. Giant cells, of the Langerhans type, were rare in our case. Only a few of them were found, and they seemed to be of no importance in their relation to the other cells. No plasma cells were seen nor was caseation noted. The sections stained for organisms revealed no tubercle bacilli or other bacteria.

The histologic findings were in the main identical with the findings in other reported cases.

CONCLUSIONS

In conclusion, we may state that the characteristics of lichen nitidus are:

1. The lesion is a sharply defined granulomatous mass of various shapes made up of small round cells, epithelioid cells, fibroblasts and giant cells in varying numbers.

2. The lesion is always entirely beneath the epidermis.
3. There is no necrosis.
4. Causative organisms have not been identified as yet.
5. Clinically, the lesions more closely resemble minute lichen planus papules.
6. The lesion produced by the plane type of lichen scrofulosorum is the one which most closely resembles lichen nitidus histologically.
7. In our case there was no positive evidence of tuberculosis.
OBSERVATIONS ON DERMATOMYCOSIS IN PORTO RICO

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For about three years I have been particularly on the alert for cases of dermatomycosis at our skin clinic in San Juan, Porto Rico, and in all dermatoses in which any of the lesions seemed suspicious, no matter what the rest of them looked like, scrapings were taken and examined. The number of positive findings has been surprising, and it is worth while noting a few interesting characteristics which have been found to be common to many of the cases, in the hope that they may throw some light on their diagnosis.

The following histories are taken from my clinic cards.

REPORT OF CASES

Case 1.—A. D., 17 years old, a high school student in San Juan, reported to my office on Nov. 9, 1921. He complained of an almost generalized eruption from which he had suffered for more than a year. The itching was most annoying, sometimes desperate. He said the eruption had started in the groins. No treatment had given complete relief.

Inspection showed an eruption which covered most of the skin from above the umbilicus to the feet, both at the front and back, and a large portion of the left half of the neck. The individual lesion was a variously-sized circinate patch of hyperemia, with well defined, fairly infiltrated, active borders and a regressive scaly center. The magnifying glass showed that the borders were made up of small papules or vesicopapules. In some places, the lesions had enlarged and coalesced in such a way that extensive regions were covered, acquiring an altogether new aspect, as may be seen in Figures 1, 2 and 3.

The examination of the scrapings under the microscope revealed abundant typical mycelium. Cultures failed.

The diagnosis of dermatomycosis was made, and the possibility of a generalized tinea-cruris was suggested; but we were not able to confirm this theory scientifically on account of the failure of the culture.

Antiparasitic treatment was begun on November 12, and the eruption had completely vanished at the end of two weeks.

Case 2.—A man, who lived near the town of Rio Piedras, 43 years old, a professor, who was married and had children, came to see me on Sept. 18, 1920, complaining of a generalized skin trouble, with a most intense pruritus compelling him to scratch almost continuously. The disease had lasted fifteen months, and treatment had given no relief.

Examination revealed an extensive patchy eruption which was more generalized than that in Case 1, the only regions actually free being the face and the head. The individual lesion resembled that in Case 1. It consisted of a hyperemic, circinate patch with well defined, infiltrated papulovesicular borders, with a clearer portion at the center. Coalescence occurred, in some places forming larger lesions, but there was a greater tendency to form discrete
patches, so that numerous variously-sized spots could be seen all over the body. There were severe scratch marks all over. The character of the individual patch was so typical of a dermatomycosis that a diagnosis was made at first sight. Scrapings were taken and examined to confirm the diagnosis.

Treatment with Whitfield's ointment was begun on the day of examination, and the eruption disappeared in less than a month.

Fig. 1 (Case 1).—The eruption covers most of the skin from above the umbilicus to the feet, both at the front and back.

COMMENT

There was a striking similarity in general between the eruption in Cases 1 and 2. The isolated lesions corresponded closely in their characteristics; the distribution showed a marked tendency to generalization; and pruritus was a most annoying symptom in both patients.
They had suffered continually in the same way for a long time without relief, while antiparasitic treatment brought about a cure in a few weeks.

Case 3.—F. M., a Porto Rican by birth, 36 years old, unmarried, came to see me on June 25, 1922. He had lived in the near island of Santo Domingo for the last five years and returned to Porto Rico for the purpose of treatment of

![Image](https://example.com/image)

Fig. 2 (Case 1).—In some places the lesions are enlarged and have coalesced in such a way that extensive regions are covered, acquiring an altogether new aspect.

an extensive eruption from which he had suffered for the last sixteen years. He worked as a clerk in a sugar factory; he had a healthy appearance, and there was no pathologic condition in his previous history except this disease.

The eruption was discrete in some places; there were small patches on the back of the thorax, neck, face and eyebrow. But the greater part of it was more diffuse and covered most of the skin from the waist down.
The discrete lesions consisted of groups of small papulovesicles forming patches of varying sizes, with irregular, but definite, rounded borders and some scaling throughout. They were of a bright color and moderate infiltration. Itching was troublesome.

The rest of the affected skin, which was by far the most extensive, (abdomen, buttocks, thighs, legs, etc.) revealed a continuous dermatitis of subacute type with moderate scaliness all over, a fair number of scattered papulovesicles and

Fig. 3 (Case 1).—(An enlarged portion of Figure 2.) The individual lesion is a variously-sized circinate patch of hyperemia with well defined, fairly infiltrated, active borders and a regressive scaly center.

scratch marks here and there. A careful examination revealed, though not clearly, a definite festooned border which limited the eruption upward. Downward the disease faded insensibly into the normal skin in some places. There was maceration between the toes.

In this patient, pruritus was particularly desperate, interfering seriously with his sleep at times. The disease had been present for the last sixteen
years, with alternating exacerbations and remissions, but he had never been free from it during that period.

The typical fungus was found in great numbers, and three weeks of treatment with Whitfield’s ointment was sufficient to bring about the complete disappearance of all the lesions.

COMMENT

The cases described are three good examples of a type of dermatomycosis which we have observed in Porto Rico, whose differential features are a tendency to generalization and a marked troublesome pruritus, other symptoms being identical with those of the regular fungous dermatoses. During a long period of observation at the New York Skin and Cancer Hospital and the skin clinic of the Bellevue Hospital, we did not find any dermatomycosis as extensive and pruriginous as those we were dealing with in Porto Rico; and yet we encounter these cases at our clinic with relative frequency. Perhaps the tropical climate exerts some influence on the clinical appearance of this disease.
BIOLOGIC REACTIONS OF ARSPHENAMIN

V. ITS REACTIONS WITH PLASMA PROTEINS AND CERTAIN HYDROPHILIC COLLOIDS AND THE RELATION OF THESE PROCESSES TO THE PHENOMENON OF PROTECTION *

JEAN OLIVER AND ETHEL DOUGLAS
SAN FRANCISCO

It has been found that when arsphenamin is mixed either in vivo or in vitro with blood, marked changes occur in the properties of certain of the proteins of the plasma.† The fibrinogen becomes incoagulable to both heat and thrombin. Preliminary experiments have shown that these proteins are in no sense "destroyed," as they may be precipitated by carbon dioxid along with the arsphenamin. These phenomena are similar in nature to the changes in the properties of the globulins when acted on by alkali, and although it has been shown that the hydroxyl ions are not alone responsible for these alterations in our experiments, it may be that arsphenamin reacts in an analogous way with the proteins. If such were the case, a union of protein and arsphenamin would occur. The present study is an examination of this possibility.

Closely related to the main object of this study is the phenomenon of protection against agglutination of red blood cells by arsphenamin, which the proteins exhibit. In a previous communication, 2 we have shown that this protection results from a prevention of the binding of arsphenamin by the red cells and also by preventing the action which electrolytes exert on the absorbed arsphenamin. These are the two essential parts of the process of agglutination by arsphenamin. 3 One general theory of colloid protection holds that there is a union between the active substance and the protecting material, so that the former is no longer able to react with other parts of the system. In

* From the Department of Pathology of the Medical School of Leland Stanford Junior University.
† This investigation has been made with the assistance of a grant from the Committee on Therapeutic Research, Council on Pharmacy and Chemistry, American Medical Association.
fact, Robertson gives this phenomenon of "masking" as one method of demonstrating protein compounds. Other theories will, however, explain equally well the "protection," so that we have accepted the "compound formation" theory only as a working hypothesis and have examined the processes for further evidence. As other colloids "protect," some of them to a higher degree than protein, certain representatives of this class, gum arabic and egg albumin, have been included in our experiments.

The possibility that arsphenamin may form a compound with plasma proteins has been suggested before. The only experimental evidence with which we are familiar, pointing toward such a conclusion, is that of Young, who showed that in mixtures of arsphenamin and plasma the arsphenamin dialyzed out slowly or not at all. This work was based on Nierenstein's experiments, who previously had shown that atoxyl and other arsenicals behave in this way on dialysis.

METHODS

In all the experiments, unless otherwise noted, the disodium salt of arsphenamin in 2 per cent. aqueous solution was used, prepared by the standard method of the United States Public Health Service. The plasma was obtained by the usual method from rabbits and oxalated to a 1:1,000 sodium oxalate content. The solutions of gum arabic and Merck's egg albumin were prepared with distilled water, filtered and used soon after preparation.

In most of the experiments, the presence of arsphenamin in the precipitates was shown by the quantitative determination of arsenic. This was done by Sanger and Black's modification of the Gutzeit method. Before the actual determination, the organic material was destroyed in the usual way with a mixture of sulphuric acid and nitric acid. In the graphic charts of the experiments, the ordinates are formed by the actual experimental results of the arsenic determinations. The mercuric chlorid strips were pasted on coordinate paper and reduced by photography to one half their actual size.

EXPERIMENTAL

REACTIONS WITH ARSPHENAMIN

In Vivo Experiments.—A rabbit was given 0.27 gm. per kilogram of disodium arsphenamin intravenously. At the end of the injection dyspnea developed, and convulsions and death followed. The blood

was collected from the inferior vena cava. The red cells were found agglutinated and the plasma incoagulable. Five cubic centimeters of this blood were centrifuged, the plasma and cells separated, and the latter washed two times with a great excess of 0.9 per cent. salt solution. Both plasma and cells were then treated with strong acid, and the arsenic content determined. Figure 1, $E$ and $F$, show the result. The greater part of the arsenic was found in the plasma, but a considerable amount was bound to the agglutinated red cells.

![Figure 1](image)

**Fig. 1.**—Arsphenamin-plasma in vivo. $A-D$, the arsenic content of the proteins of the plasma precipitated by various reagents from the blood of an animal which had received a large intravenous injection of arsphenamin and which died as a result of agglutination of its red cells. $E-F$, the arsenic content of the cells and plasma of 5 c.c. of blood. The charts are photographs of the mercuric chlorid paper strips from the Gutzzeit apparatus showing the actual experimental determination of the arsenic, reduced to one half their original size. The arsenic appears as a brownish discoloration.

The plasma from the incoagulable blood was distinctly opalescent and of a greenish yellow tint. On heating to 58 C. for twenty minutes, no precipitation of fibrinogen (globulin) occurred, and the opalescence cleared slightly. Five cubic centimeters were now
OLIVER-DOUGLAS—ARSPhENAMIN

diluted to 50 c.c. with distilled water and carbon dioxide passed for
ten minutes. A heavy yellow precipitate was caused. This was
collected by centrifugalization, washed two times with boiling alcohol 8
and the arsenic content determined. Figure 1. C shows the arsenic
content of the precipitate. As will be shown later, the arsphen-
amin may be removed from the precipitate by washing repeatedly
in boiling alcohol, leaving the bulky portion of protein behind as a
pure white sediment. This is in marked contrast with the yellow
precipitate of arsphenamin which results from the passage of carbon
dioxide through its solution, as this dissolves completely in the first
treatment with alcohol.

The arsphenamin may also be precipitated with the protein by
acidification of the yellow opalescent plasma. Three drops of normal
hydrochloric acid were added to 5 c.c. of such plasma, and a copious
yellow precipitate appeared. This was washed twice with boiling
alcohol and its arsenic content determined as shown in Figure 1. D.

In the two precipitations detailed above, the precipitant acts on
both the arsphenamin and the protein of the plasma. In the case of
carbon dioxide, this action is of about equal degree in regard to both
the arsphenamin and the globulin, while in the case of hydrochloric
acid, the action is in most part on the arsphenamin. If the amount of
hydrochloric acid used above is added to normal plasma, it produces
little more than an opalescence by a precipitation of the proteins. The
greatly increased bulk of the precipitate in the arsphenamin plasma of
the previous experiment would therefore seem to indicate that a con-
siderable amount of combined protein is also carried down along with
the arsphenamin by the action of the acid.

Results affording a more certain interpretation may be obtained,
however, by precipitating the protein by reagents which have no action
on the arsphenamin. Alcohol is especially adapted for this purpose, as
arsphenamin is soluble in it. The method of alcohol precipitation
has, moreover, been extensively used for the demonstration of protein
compounds with various substances (Simon 9). Acetone, in which
arsphenamin is less soluble but which does not precipitate it in the
concentration used in these experiments, may also be used in the same
manner.

An equal volume of absolute alcohol was added to 5 c.c. of the
opalescent arsphenamin plasma. A heavy yellow precipitate appeared,

8. A standard method of washing was used throughout all the exper-
iments. The precipitate was covered in a test tube with ten times its bulk
of absolute alcohol, vigorously shaken and brought to a boil in a water bath.
Boiling was continued for about five minutes with repeated shakings and the
precipitate collected again by centrifugalization.

which was washed twice in boiling alcohol and its arsenic content determined. A considerable amount of arsenic was found in the precipitated protein (Fig. 1, A).

Much the same results were obtained by precipitating the proteins with an equal volume of acetone. The yellow precipitate was found after washing to contain a considerable amount of arsenic (Fig. 1, B).

The arsenic of the arsphenamin was therefore bound to the protein which was precipitated by a substance in which arsphenamin is soluble. The instability of this union is shown by the fact that the arsphenamin may be removed by treatment with boiling alcohol, in which it is soluble. Three equal portions of arsphenamin plasma were precipitated with equal volumes of absolute alcohol and collected by centrifugation. The first was quickly rinsed in five volumes of alcohol to remove the adherent supernatant. The second was washed ten times in boiling alcohol, while the third was extracted for thirty hours with boiling alcohol in a Soxhlet apparatus. Figure 2 shows the effect on the arsenic content of the precipitates. The amount of arsenic will therefore depend on the amount of washing, and if this is continued long enough, it practically all may be removed. It is for this reason
that standard conditions of washing were used in all the experiments. The significance of this removal of arsphenamin by a solvent in relation to the nature of the compound formed, and the similar properties which are shown by protein compounds with salts of heavy metals, will be discussed later.

In Vitro Experiments.—The same experiments may be performed with blood or plasma to which arsphenamin has been added in vitro. The findings of these experiments are given briefly, as they are identical with those already detailed. If 0.5 c.c. of arsphenamin is mixed with 5 c.c. of blood, the latter becomes incoagulable, and the plasma has the same yellowish opalescence as is observed after the administration of the drug in vivo. If the cells and plasma are separated, the former are found to have bound considerable arsenic (Fig. 3, E and F). Heating such plasma to 58 C. for twenty minutes produces no globulin precipitate, but carbon dioxid produces a bulky precipitate of globulin and arsphenamin (Fig. 3, C). The addition of 4 drops of normal hydrochloric acid has the same effect (Fig. 3, D).

![Diagram](image-url)
Both alcohol and acetone, which do not precipitate arsphenamin, produce a precipitate of protein which contains considerable arsenic (Fig. 3, A and B). All of these, if washed sufficiently in boiling alcohol, lose the greater part of their arsenic.

Certain additional experiments may be performed in vitro which are impossible in vivo. A tube containing 5 c.c. of plasma and 0.5 c.c. of arsphenamin was heated to 58 C. for twenty minutes; no precipitate of globulin appeared. When, however, the temperature was raised to boiling, the albumins formed a solid coagulum. Another 5 c.c. of plasma to which 1.5 c.c. of arsphenamin were added showed a marked delay in the development of the coagulum on boiling, and a third portion of 5 c.c. containing 2 c.c. of arsphenamin was still fluid after boiling for twenty minutes. This is in keeping with the general instability of the globulin fraction of the plasma as contrasted with the more stable albumin.

The other additional in vitro experiment bears a relation to the precipitation of protein and arsphenamin by acid. If 0.5 c.c. of a 2 per cent. solution of arsphenamin dihydrochlorid, that is a solution to which no sodium hydroxid has been added, is added to 5 c.c. of plasma, a heavy yellow precipitate results. This yellow precipitate is soluble in an excess of either acid or alkali. After washing twice in boiling alcohol, a considerable amount of arsenic remains bound to the precipitate. This arsenic may be removed completely by extraction with hot alcohol, leaving a large bulk of protein.

The experiments detailed above lend weight to the theory that there is a union between the arsphenamin and the plasma proteins both in vivo and in vitro. At the pH of the blood, this compound is not completely soluble, as it produces an opalescence of the plasma. In such a plasma the globulins can no longer be coagulated by heat, though the albumins may be. Lowering the pH by the addition of acid throws down a precipitate in which both arsphenamin and protein are contained. This compound may also be precipitated by alcohol or acetone in which the arsphenamin is soluble.

Many investigators have accepted such evidence as demonstrating the existence of protein compounds with various substances. But the possibility remains that the precipitated protein "adsorbs" the arsphenamin during the process of its precipitation. Such an explanation was given by Dony-Hénault for the occurrence of manganese in alcohol precipitates from colloidal laccase solutions. He found that any salt present in such a solution was carried down in the precipitate of colloid.

It is difficult to disprove such a possibility in our experiments, and we shall content ourselves for the present with the demonstration that under similar conditions inorganic arsenic is not carried down in any large amount when the proteins are precipitated from plasma. In a later publication we will undertake to demonstrate by other methods that the compound exists before the precipitation occurs.

Fig. 4.—Sodium arsenate-plasma in vivo. A-D, the arsenic content of the protein precipitates from the plasma of a rabbit which had been given an amount of sodium arsenate containing an equal amount of arsenic as in the experiment illustrated by Figure 1. Comparison with Figure 1 shows that only traces of inorganic arsenic are bound by the proteins. E-F, the partition of arsenic between the cells and plasma. Contrast the trace bound by the cells with the large amount of arsphenamin bound in Figure 1.

REACTIONS WITH SODIUM ARSENATE

A sodium arsenate solution was prepared which equaled 2 per cent. disodium arsphenamin in its arsenic content. With this solution, the experiments detailed above were repeated, and the various precipitates tested for the presence of arsenic.

In Vivo Experiments.—A rabbit was given sodium arsenic solution in a dose containing as much arsenic as was given in the form of
arsphenamin in the previous experiments. There was no observable reaction on the part of the rabbit. Blood drawn from the ear vein clotted in the normal time and manner. The animal was then bled into sodium oxalate solution. Five cubic centimeters of this blood were centrifuged, the cells removed and washed twice in 0.9 per cent. saline and the arsenic content of them and of the supernatant plasma determined. Figure 4, E and F, show that practically all the arsenic was in the plasma and that only a trace was bound by the cells.

Five cubic centimeters of the clear plasma were heated to 58 C. for twenty minutes. A heavy precipitate of globulins appeared. This was washed twice in hot alcohol, in which sodium arsenate is only slightly soluble. The determination of arsenic showed only the faintest trace (Fig. 4 A). Similarly, 5 c.c. portions of plasma in which the proteins were thrown down by carbon dioxide, alcohol and acetone, washed in boiling alcohol and tested for arsenic, showed only the faintest traces (Fig. 4, B, C and D). Acidification with 4 drops of normal hydrochloric acid produced no frank precipitate, but only an opalescence, so that no analogous experiment to that done with arsphenamin plasma and acid could be performed.

The administration of a considerably larger amount of arsenic in the form of sodium arsenate produces no change in the experimental results. The experiment described above was repeated, using six times the amount of sodium arsenate. No immediate reaction occurred in the animal, its blood coagulated normally, heat threw down the globulins and no greater traces of arsenic were found in various protein precipitates than in the experiment just described.

In Vitro Experiments.—The results of the in vitro experiments may be briefly summarized, since blood treated with sodium arsenate in the test tube gave identical reactions with the blood of an animal which had received an intravenous injection of it. The blood clotted promptly, the arsenic was not fixed to the cells but was contained only in the plasma, the globulins were coagulated by heating to 58 C., and precipitates of the proteins of such a plasma by carbon dioxide, alcohol and acetone showed only traces of bound arsenic (Fig. 5, A, B, C, D, E and F).

The evidence accumulated thus far may be summarized as indicating that a union of arsphenamin and the proteins of the plasma occurs under physiologic conditions of acidity (pH 7.5), which results in an alteration of the properties of certain of these. The arsphenamin is also bound to the red cells when it is present in sufficient concentration to cause the agglutination of these elements. Under the same conditions, no evidence was found that would indicate that inorganic
arsenic is bound by either plasma protein or red cells. The reaction between the arsphenamin and the plasma or cells is therefore specific to a greater degree than the criticism of Dony-Hénault would indicate.

INFLUENCE OF pH ON THE REACTIONS IN PLASMA

In former studies on the effect of arsphenamin on agglutination of red cells and on the coagulability of the blood, it was found that the pH of the medium in which the reaction occurred influenced the course of the reaction to a decided degree. And it is well known that the formation of compounds between amphoteric colloids and various substances is greatly altered by variations in acidity. Loeb's studies of gelatin compounds with either the cation or the anion of salts depending on the reaction of the medium in relation to the isoelectric point of the colloid, may be cited as an example of the importance of this factor. At the present time we intend to study this point.

only briefly, and hope to return to a general consideration of the influence of hydrogen and hydroxyl ions on the reactions of arsphenamin in all the phases that we have thus far studied.

The experiments were performed by using 2 per cent. arsphenamin solution and an arsenic-equivalent solution of sodium arsenate. Two series of four tubes were prepared, each containing 5 c.c. of plasma. The acidity of each series was regulated by the addition of hydrochloric acid and sodium hydroxid so that the final pH in them was 1.4, 4.9, 7.5 and 9.8. To one series was added 0.5 c.c. of arsphenamin and to the other 0.5 c.c. sodium arsenate solution. The addition of these two reagents produced no observable change in the pH of the mixtures, as the buffer substances of the plasma were capable of controlling such a variation. An equal volume of absolute alcohol was

Fig. 6.—Effect of hydrogen-ion concentration. The effect of the H-ion concentration on the arsenic content of the proteins precipitated by absolute alcohol from plasma to which arsphenamin had been added (A-D) and to which an arsenic-equivalent solution of sodium arsenate had been added (E-H). Note the contrast between the amounts of the two substances bound at the physiologic pH 7.5.
added to each tube of the two series; arsphenamin plasma and sodium arsenate plasma. The resulting precipitates were washed in the usual way in boiling alcohol, and the arsenic content determined. Figure 6 represents the results. Arsphenamin was not bound by the plasma at a \( p_H \) of 1.4 and only slightly bound at 4.9. At 7.5 (physiologic reaction) a large amount was bound, and there was some increase in this amount at 9.8 (Fig. 6, A, B, C and D). Sodium arsenate was not bound at 1.4 or 4.9 and only a trace at 7.5 (physiologic reaction). At 9.8 a small amount was found in the precipitate (Fig. 6, E, F, G and H).

**COMMENT**

The experiment shows that there is an increasing degree of binding by plasma of both arsphenamin and sodium arsenate as the alkalinity of the medium increases. It also shows that the binding of arsphenamin is not due to the alkalinity of the disodium salt alone, as under the same degree of hydroxyl ion concentration a relatively large amount of arsphenamin was bound as compared with the small amount of inorganic arsenic.

**EXPERIMENTS ON THE RELATION OF BINDING TO PROTECTION**

The final experiments were carried out to determine whether binding of arsphenamin by plasma proteins could be considered the cause of the protection which plasma affords against agglutination of the red blood cells by arsphenamin. It has been shown that a similar protection is afforded by other colloids,\(^2\) so that it must first be determined whether these substances also bind arsphenamin.

In these experiments the method of alcohol and acetone precipitation of the colloid solutions containing arsphenamin and sodium arsenate in the same proportions as the previous experiments with plasma was used. A priori, it is likely that if compounds of colloid and arsphenamin occur, the binding of the arsphenamin will vary with the H-ion concentration of the medium, so that this point was determined in the same experiment.

Two series of four tubes each containing 5 c.c. of a 3 per cent. gum arabic solution were prepared, and the reaction adjusted by the addition of hydrochloric acid or sodium hydroxid to \( p_H \) 1.4, 5, 8 and 9.8. The gum solution as prepared with distilled water normally has a \( p_H \) of from 4.5 to 5. To one of the series was added 0.5 c.c. of a 2 per cent. arsphenamin solution and to the other a similar amount of arsenic equivalent sodium arsenate solution. Equal volumes of absolute alcohol were then added, and, to aid the process of flocculation, a few drops of electrolyte in the form of potassium chlorid solution. These precipitates were then washed twice in boiling alcohol in the usual
manner, and their arsenic content determined (Fig. 7). It will be observed that the gum arabic binds the arsphenamin in larger amounts as the alkalinity of the solution increases. In comparison with the binding by plasma proteins (Fig. 6, A, B, C and D), it will be noticed that greater amounts are bound at all degrees of alkalinity by the gum, and also that it binds a considerable amount at pH 1.4, at which figure none was bound by plasma. The decrease in the amount bound at the

![Fig. 7.-Effect of hydrogen-ion concentration. A similar experiment showing the arsenic content of gum arabic precipitated from its solution which contained arsphenamin (A-D) and an arsenic equivalent amount of sodium arsenate (E-H).](image)

high alkalinity was observed in several experiments. Sodium arsenate is also bound to a greater degree than by plasma proteins (Fig. 6, E, F, G and H), but to a lesser degree than is arsphenamin, except at high degrees of alkalinity. Another variation with the binding of sodium arsenate by plasma is that whereas the latter does not bind at its "normal" pH (7.5), gum arabic does (pH 5).

Similar experiments were performed with a 3 per cent. solution of Merck's egg albumin. The results may be summarized as follows:
Arsphenamin is "bound" to a lesser degree than by plasma proteins. The reaction increases with alkalinity. Sodium arsenate was "bound" to a lesser degree than arsphenamin, and a small amount at the normal $p_H$ (6).

**COMMENT**

It is therefore evident that these other colloids, which exhibit the phenomenon of protection in common with the plasma proteins, also "bind" arsphenamin in a similar manner as do these substances.

In the following experiments a direct comparison was made between the relative binding of arsphenamin by these various substances and their relative protecting abilities, for it is known that the latter properties vary considerably.²

Plasma was diluted with 0.9 sodium chlorid solution until its protein content was approximately 3 per cent. Gum arabic and egg albumin also were prepared in 3 per cent. solution. With these solutions dilutions were made and added in agglutination tubes to a mixture of washed red blood cell suspension and arsphenamin. The amount of the latter was the optimum agglutinating dose. After incubation at 37 C. for one hour the readings were made. The degree of protection is shown in Table 1.

The relative protective power of the three substances is shown in the tenth column of the table. Gum arabic protects four times as effectively as albumin, and plasma twice as well.

Five tenths cubic centimeters of arsphenamin were added to 5 c.c. of the solutions used in this experiment. The colloids were precipitated by absolute alcohol, washed twice in boiling alcohol and their arsenic content determined. Figure 8 shows the result. The relative values of these amounts is given in column 11 of Table 1. It will be noted that there is a close parallelism between the ability of the substances to bind arsphenamin and their protective power.

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**TABLE 1.—RESULTS OF EXPERIMENTS WITH COLLOIDS EXHIBITING PROTECTION**

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<th>Value of Arsenic Bound</th>
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* 0.25 c.c. colloid dilution + 0.25 c.c. arsphenamin solution + 0.25 c.c. red cell suspension.
Protection and binding are evidently closely related. Can it be demonstrated that this relation is due to the protection being the result of the binding? The following experiment demonstrates that this is the case.

Five cubic centimeters of 0.03 per cent. arsphenamin in isotonic sucrose solution were added to 5 c.c. of 25 per cent. suspension of red cells and a final 5 c.c. of isotonic sucrose solution added. Another tube contained 5 c.c. of the same arsphenamin solution and 5 c.c. of cell suspension, and in addition 5 c.c. of plasma. Both tubes were incubated for two hours at 37 C. The cells in the tube without plasma agglutinated, while the cells in the tube which contained plasma were protected against this process. The cells in both tubes were removed by centrifugation, washed twice in isotonic sucrose solution and the washings added to the original supernatant fluids. The proteins of the supernatant containing the plasma were now precipitated with

Fig. 8.—Binding and protection. The arsenic content of precipitates from 3 per cent. solutions of gum arabic, plasma and Merck's egg albumin containing equal amounts of arsphenamin. The arsenic content decreases in the proportion of 4, 1.5 and 1. Table 1 shows that the protection against agglutination by arsphenamin afforded by these substances decreases in a corresponding degree.
absolute alcohol and washed twice in the usual manner in boiling alcohol. The cells from both tubes, the supernatant of the agglutinated tube and the precipitated protein from the tube which had been protected by plasma, were now all tested for arsenic. Figure 9 shows the results. The agglutinated cells of the unprotected tube had bound a large amount of arsphenamin (Fig. 9, 1), and some arsphenamin remained free in the supernatant fluid (Fig. 9, 2). In the tube in which no agglutination had occurred, due to the protection by the plasma present, the unagglutinated cells had bound no arsphenamin (Fig. 9, 3). The arsphenamin was found bound to the proteins of this protecting plasma (Fig. 9, 4).

![Figure 9](image)

Fig. 9.—Method of protection. The method by which plasma protects its red cells from agglutination by arsphenamin. 1-2, a suspension of red cells, free of plasma, to which arsphenamin was added with a resulting agglutination of the cells. Arsenic is found in the plasma (1) and also bound to the agglutinated cells (2). 3-4, a similar suspension of red cells but containing plasma, to which arsphenamin was added, and in which no agglutination occurred due to protection. The protected unagglutinated cells are free of arsenic (3), but the proteins precipitated from the protecting plasma contain it (4).

Protection in this experiment was evidently due to a union of the arsphenamin with the proteins of the protecting plasma instead of with the red cells of the suspension. This union with the cells has been shown to be the first step in the process of agglutination of them by this substance.
If reference is made to Figure 1, E and F, it will be recalled that when arsphenamin is injected into an animal in such an amount that death results from in vivo agglutination of its red cells, a considerable amount of the arsphenamin is found bound to the agglutinated cells. It may be asked whether the lack of agglutination following therapeutic doses is due to a protection by the plasma proteins. The following experiment shows this to be true.

One and one-half cubic centimeters of 2 per cent. arsphenamin solution was injected intravenously into a 1,500 gm. rabbit. This equals 0.02 gm. per kilogram, approximately twice the usual therapeutic dose. Following the injection the animal was bled into oxalate.

Fig. 10.—Protection in vivo. Showing protection of red cells in vivo by the plasma of the blood when small doses of arsphenamin are given intravenously. The arsenic is found only in the plasma, bound to the proteins, while the red cells are free from it. Contrast with Figure 1, E-F, in which such a large dose of arsphenamin was given that the proteins were “saturated” and the excess arsphenamin was bound by the red cells with a resulting agglutination of them, and death of the animal.

There was no agglutination of the red cells. Ten cubic centimeters of this blood were separated into cells and plasma by centrifugalization. The cells were washed twice with 0.9 per cent. physiologic sodium chlorid solution, and the washings added to the supernatant plasma. The arsenic content was then determined in both cells and plasma.
Figure 10 shows that the plasma contained all the arsphenamin where the previous experiment showed that it was fixed to the proteins, and that the protected red cells were entirely free of arsenic.

Protection in vivo from therapeutic doses is therefore due to a union of the arsphenamin with the plasma proteins instead of with the red blood cells.

It will be remembered that it has been demonstrated that the coagulating properties of the globulins of the plasma are affected by low concentrations of arsphenamin, while a considerable concentration is necessary to alter these properties of the albumins. Does the relative degree of these changes bear any relation to the degree of binding of arsphenamin by the two proteins?

If the change which is produced by arsphenamin in the coagulating properties of the two substances is the result of a union of the arsphenamin with the protein bodies, since protection results from

| TABLE 2.—RESULTS OF EXPERIMENT *
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* 0.25 c.c. colloid dilution + 0.25 c.c. arsphenamin solution + 0.25 c.c. red cell suspension.

The original sample of plasma had been kept in the icebox during the preparation of the fractions and had precipitated slightly. This doubtless explains its lower protective power as compared with the globulin fraction.

this union, that protein whose properties are most affected should protect to a greater degree. If globulin should protect against agglutination more markedly than does albumin, we could infer that it unites with arsphenamin to a greater degree than does albumin, and it would be highly likely that for this reason the anticoagulating effect of the arsphenamin is more pronounced in its case. This point was investigated in the following way:

Fifteen cubic centimeters of plasma were half saturated with ammonium sulphate and the precipitate removed. The clear supernatant was precipitated by saturation with finely powdered ammonium sulphate. Both precipitates were dissolved in 15 c.c. of distilled water and dialyzed to remove the excess salts. The globulins precipitated during this procedure and were redissolved by adding a small amount of sodium chlorid. The two preparations now contained the globulins and the albumins of the plasma in their original concentration. Dilutions of these two preparations were made, as well as a series of
dilutions of the original plasma. Portions of these were added in agglutinating tubes to arsphenamin solution and to a suspension of red cells and incubated at 37 C. for one hour. Table 2 shows the results.

This experiment shows the relative protective value of the proteins of the plasma. The globulins are the bodies most actively concerned in the process, for they bind arsphenamin to a greater degree than do the albumins, and in the whole plasma they first react with arsphenamin, forming compounds which do not coagulate on heating. A further addition of arsphenamin has been shown to be required before the union with this excess arsphenamin affects the coagulability of the albumins.

SUMMARY AND DISCUSSION

The globulins of the plasma are rendered heat incoagulable by the addition of arsphenamin. The precipitate of these incoagulable proteins by a reagent in which arsphenamin is soluble, such as alcohol, contains the latter substance bound to the protein. It may be removed from the proteins by prolonged extraction in hot alcohol. Similarly an increase in the hydrogen-ion concentration will precipitate out a combination of arsphenamin and protein, or the same result may be accomplished by the use of "acid arsphenamin" instead of the disodium salt. The amount of arsphenamin bound by the protein increases with the alkalinity of the medium in which the reaction occurs. None of these reactions occurs in normal plasma to which inorganic arsenate has been added. The precipitated proteins do not bind this arsenic at the normal pH of the blood, though at high degrees of alkalinity, some is bound.

These same reactions occur in vivo when arsphenamin or sodium arsenate is injected intravenously. The proteins of the plasma and the cells of the blood bind arsphenamin, but not arsenates.

Other hydrophilic colloids bind arsphenamin. Gum arabic binds both arsphenamin and arsenate to a greater degree than do the plasma proteins, while egg albumin is less active in this regard. The pH affects the degree of binding in a similar manner as was observed in binding by plasma proteins.

Binding of arsphenamin by these hydrophilic colloids and the protection against agglutination of the red blood cells by arsphenamin are parallel processes. The parallelism is due to the protection being a result of the binding of the arsphenamin by the colloid, thus preventing a union of the arsphenamin with the red cells, a process which is necessary for the occurrence of agglutination. The globulin fraction of the plasma proteins protects against agglutination to a greater degree than the albumin fraction. Since protection is due to binding, it may be inferred that the globulin binds the arsphenamin to a greater degree, and this will explain the changes in its heat coagulation properties by concentrations of arsphenamin which are too low to affect the properties of the albumins.
When arsphenamin is administered in vivo, a union occurs between this substance and the plasma proteins, in particular the globulins. Little, if any, arsphenamin reaches the red cells, and they are in this way protected from the agglutinating action of arsphenamin. If a large enough dose is given, however, the protecting proteins may be "saturated" and free arsphenamin is bound by the cells. Agglutination of them may result and an acute reaction followed by death occurs.12 The blood of such an animal does not coagulate, as the arsphenamin fibrinogen complex is not coagulated by thrombin.3

There is a striking similarity between the action of alkali on the coagulation of protein by heat and the action of arsphenamin. The explanation of the mechanism of the action of the alkali as given by Pauli 13 and Erb 14 will also explain the lack of heat coagulation which arsphenamin causes. According to these investigators, if the protein is heated in alkaline solution, no coagulation results, because the protein, acting as an acid, has formed a soluble salt with the metal ion of the alkali. In acid solutions the same lack of coagulation by heat is due to the proteins forming a similarly soluble salt with the acid radical ions. At a certain range of \( p_H \), however, these salts are insoluble and appear as a precipitate. Pauli 13 has shown that such soluble salts are formed with most of the bases, potassium, sodium, lithium, and the ammonium ion \((NH_4^+)\). Of special interest to us is the demonstration by Spiro 15 that organic bases have the same property. Cholin, pyridin, anilin, orthotoluidin and even such weakly basic substances as urea and urethane form soluble salts with protein and so hold it in solution when heated.

To this last list may be added arsphenamin. The "salt" which it forms with plasma proteins is soluble at certain degrees of alkalinity, and the amount formed increases with the alkalinity of the medium. Heating such a plasma produces no flocculation if the \( p_H \) is one at which the compound is soluble. At the \( p_H \) of the blood it causes an opalescence, and if the alkalinity is still further lowered by the addition of acid, the compound is precipitated. The precipitated compound may be dissolved in either acid or alkali. Previous experiments have also shown that under the same conditions this compound of arsphenamin and fibrinogen (globulin) is not coagulated by thrombin.3

Our experiments afford no evidence as to the nature of the complex formed between the arsphenamin and the colloids. For this reason we have used the general terms "compound" for the substance

formed, and "binding" or "union" for the process. No field of bio-
chemistry is more disputed than that which is concerned with the
nature of protein compounds with various substances. "Adsorption"
and "chemical" union, are held by the two separate schools best to
explain the nature of the substance formed. To many, a complex
one of whose elements may be removed by the action of a simple
solvent, would seem best explained by the assumption that the union
is a loose one due to capillary attraction. Such a physical "adsorp-
tion" might explain the union of arsphenamin and protein. But such
evidence is not accepted by those who hold that these compounds are
"true" chemical compounds. The criticism of Robertson 19 on these
matters may be consulted by the reader.

Whatever the nature of the arsphenamin protein compound, its
reaction with a solvent of one of its fractions is the same as that shown
by the compounds of protein with salts of heavy metals. Galeotti 17
has shown that the silver content of the compound formed in the
precipitation of protein by silver nitrate varies with the amount of
washing to which the precipitate has been subjected.

The compounds of arsphenamin and protein described in this study
are doubtless the same formations which have been studied in vitro
by various observers as "arsphenamin precipitates." Joseph 18 has
shown that "acid-arsphenamin" is precipitated in the blood stream, and
Danysz 19 has claimed that the in vivo formation of such precipitates
would account for acute reactions following the injection of alkaline
arsphenamin. Schamberg and Kolmer 20 have pointed out, however,
the importance of the $p_H$ of the medium in which the reaction occurs,
and have shown that with disodium arsphenamin no "precipitate"
forms in serum. Much of the conflicting evidence concerning the
occurrence of these "arsphenamin precipitates" in vitro is probably
due to a lack of control of the $p_H$, either by using insufficiently neutral-
ized arsphenamin solution or by allowing carbon dioxide absorption
from the air by the serum to alter its original neutrality.

CONCLUSIONS

1. The plasma proteins, especially the globulins, form compounds
with arsphenamin both in vitro and in vivo. The arsphenamin con-
tent of these compounds varies with the H-ion concentration.

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ing Intravenous Injections of Arsenphenin and Neo-Arsphenamin. Arch.
Dermat. & Syph. 1:235 (March) 1920.
2. Under physiologic limits of H-ion concentration, only traces of inorganic arsenic are bound.

3. Other hydrophilic colloids, such as gum arabic and egg albumin, react in a similar way with arsphenamin and inorganic arsenates.

4. The protection afforded by hydrophilic colloids against the agglutination of red blood cells by arsphenamin is due to the union of the former with the latter, thus preventing the binding of the arsphenamin by the cells. This is the physiologic method of protection which operates after the administration of therapeutic doses.

5. The change in the coagulating properties of the plasma proteins after the injection of arsphenamin may be explained by the assumption that the compound with arsphenamin is soluble at certain H-ion concentrations.
A NOTE ON THE PROPHYLAXIS OF SYphilis FROM THE WRITINGS OF DANIEL TURNER, M.D. (HONORARY), YALE, 1723.

J. E. LANE, M.D.
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The historians of Yale—Dexter and Stokes—in their studies of the lives and achievements of the graduates of their alma mater, have gone over the ground so thoroughly that one may reasonably have little hope of success in picking up any gleanings left behind them. It was my interest in the early history of syphilis and dermatology which led me by accident to the discovery of the fact, not previously noted, that Yale's first Doctor of Medicine, Daniel Turner, and the notorious dermatologist and syphilographer—the Dirty Old Daniel of Wadd—were one and the same person.

You are familiar with the details of his gift of books and of how, in the words of Jeremiah Dummer, the Yale authorities did themselves "great honour" by conferring the diploma on him, and you may agree with me in thinking that when Turner's bust is placed in Yale's Hall of Fame, the postscript of the letter which accompanied his gift deserves to be placed under it, engraved on a tablet of "eternal bronze" as a sample of unadulterated brass:

If your worships consider me worthy of the doctoral degree of Yale Academy and have the diploma sent me, I shall receive it not only as a sign of your gratitude, but I shall consider it an honour as much as though it had been conferred by another university, though of greater note.

Farewell most learned sirs and
may your academy flourish.

As my interest in the early history of syphilis led me to the discovery of the fact just referred to, so more recently, while reading some of the early history of the prophylaxis of syphilis, I again accidentally ran across an accomplishment in that field with which Turner's name is connected, and which gives him another claim to fame.

Some of the early attempts at venereal prophylaxis were curious, but I shall refer to only one. The first mechanical preventive is attributed to the inventive genius of Fallopius, and was published in

* Read at the meeting of the Beaumont Medical Club, Hartford, Conn., March 10, 1922.
his book, "De Morbo Gallico," which was printed in 1564, two years after his death. I will quote part of Chapter 89, as it makes a fitting and interesting introduction to my subject.

It seemeth to me that I have accomplished naught if I tell you not how one who beholds a most beautiful siren and cohabits with her, though she be infected, may be kept safe from the Gallic decay and pox. I have ever been of this opinion that there be a method of prevention, that ulcers arise not from contagion of this sort. But what is that method? I have said that this decay originates from the communication of diseased corpuscles which are drawn through the pores of the glans and produce disease; and therefore it is necessary that at once we purge this disease from the glans; but if it be absorbed through the pores, though we bathe the penis with wine or with water, nevertheless we cannot rub it away; as this happens often in protected and weak glans. How then are we to proceed? I have been of the opinion that we should apply something that hath the power of penetrating the skin and of dissipating matter, or of drawing it out, or of drying it up, and so defeating it by its own nature; therefore I have sought out this cure. But since it behooveth us to well dispose the minds of whores, we may not bring with us from home an ointment: Wherefore I have invented a linen cloth imbued with the cure which can conveniently be carried, since nowadays you wear such ample thigh clothes that you may have with you an entire apothecaries shop. As often therefore as one will cohabit, let him wash (if he can) his privy part or wipe it with a towel; afterward let him take the linen cloth prepared to match the size of his glans; finally when he cohabits let him place it over the glans and let the foreskin come down over it. If he can wet it with spittle or with wine, it is well; however it makes no difference; if you are afraid that the disease may originate in the middle canal, you should have a fold of this linen and place it in the canal. I have tested one thousand, one hundred cases and I swear by immortal God that none of them received infection. It is to be noted however in passing that any form of clean linen cloth has such preservative power as nothing else: (add to this that new soft cotton well beaten, wrapped around the glans well washed, is a marvelous preservative: and when anyone has dashed his timber against the Gallic rocks, let him behold it after removal; he will see that bloody fold infected with a yellow, white or gray color). Therefore let a man ever wrap his glans with a small linen cloth for four or five hours, and this is not distasteful to the women, but nevertheless the method of a prepared cloth is the very best. Its preparation is as follows:

R
Rad. Gentian. Aristol. long. temuis. rotundae a 3 j
Pulv. Santal. alb. rub. lign. Aloes a 3 j
Fol. Scord. Sonchi Beton. Scabios. Tormentil. a Mj & ss
Scob. Guaj. 3 j
Squame aeris 5 j
Praecipit. pp. 5 iss
Vini Malvatici opt. potentit lb iss
Aq. Sonchi aq. Scabiosae lb j
Assumitur Vinum & Aqua, & in his infunditur scobs Guaj.

per 24 H oras.
Dein adduntur reliquâ omnium & bulliunt simul ad Consumptionem medicatâ, deinde collatâ Decoctum, & exprimuntur medicamenta diligentissime, In hoc Decocto perturbato maceratur per noctem pannus linteus purissimus, deinde sicatur in umbra, & hoc sit tribus vicilibus: Ter enim, aceramus, ter etiam sicamus. Postea paramus frusta ad proportionem propriae Glandis, & semper habentur in Marsupiolo, vel in cavo illius partis femoralium, que Brachetta dictitur.

In spite of Fallopins' great reputation, and even in spite of his swearing "by immortal God" that none of the one thousand, one hundred cases in which he tested his appliance received infection, some of his successors in syphilology have been inclined to question his veracity. I feel that we are not radical in assuming that at least he probably did not have one of our modern, efficient follow-up systems at his disposal.

As no more efficient appliance appeared on the scene for a hundred and fifty years, we will skip the intervening period and turn our attention to Turner.

In his book on "Syphilis," published in 1717, the following passage is found. (I quote from the second edition, London, 1724, page 82, as the first edition was not accessible.)

The sin of Whoring (if our very polite Age will allow me the Expression) is become so epidemical and spreading, that to humour the Votaries, who are both more forward and frequent in paying their Devoirs at Venus's Temple, than any other; and consequently under Necessity of an often Penance, which we must needs think very cloying to the other Appetite: We have those who pretend to have found out a Preservative, taken beforehand; but that Fallacy being detected, and carrying too much of Contradiction in the Thing itself, to take Place: (unless with very few of the shorter-sighted) Another soon after, set up for the Cure without any Physick at all, (a special Bait for an old surfeited Sinner) only by the external or local Application: Yet here, if we duly consider the Nature and Subtily of Poisons (and our Disease is no other than the Result of a Venenum sui generis) together with that of the animal Compages; which is either tubular or vesicular, permeable as well as perspirable in all its Parts: We shall find but little Safety in relying upon these pretenses. For were the whole Duct of the Urethra, an open Canal upon the Dorsum Penis: (as it lies incompast and arch'd over, as it were by the nervous Bodies thereof) and that also the undoubted Seat of the first Taint: Nevertheless without the internal Prescription, we should, I fear, be at a loss to secure many of our Patients, by the sole Use either of the best Preventions, Defensive or other topical and chirurgical Applications whatever; we frequently see this, in some simple or slight Frettings on the Prepuce, but much more in Chancres, where although the Remedy has immediate Access to the Part, and the Ulceration is digested, deterged, and cicatrized by mercurial Applications; (and 'tis rare that any other will avail) yet if the Patient trust only to this Part of Regimen, 'tis odds if some time after he be not forced upon taking much more Medicine, and of undergoing a severer Discipline, than he need have done at first: Not to mention oftentimes the Difficulty, if not the Impossibility of healing some of these Ulcers, without the internal Assistance.
However, if the Method answer (as I believe it neither does nor will) I shall be far from grudging the Gentleman even a Patent (if he can obtain it) for the sole Propriety in this way of Practice.

Whether the Physician took the Hint from the Quack, or the Quack from the Physician, is not worth disputing; the Bait being like to catch Fools, the Secret has since multiply'd: and Dr. Sharp, as well as the Wolverhampton Surgeon, with two or three others behind the Curtain, stand Candidates with Dr. C——n, for the Glory of the Invention.

As to the Preservative in general, I have this only to add farther, that whether any such Thing be possible or not, I shall not take upon me absolutely to determine. But when a certain Gentleman tells us, That it will become every Man to be modest, when at any time a Method of preventing may be recommended upon due Experience: I can't further forbear enquiring, whether we may expect the Discovery from a modest Man; or what Reward even a common moral Man will deem him worthy, (without consulting Casuists) that shall first publish it to the World? And indeed when it is revealed, I leave every honest Man to judge of the Consequence; though I think there is no great Danger of such an Invention. The Condom being the best, if not the only Preservative our Libertines have found out at present; and yet, by reason of its blunting the Sensation, I have heard some of them acknowledge, that they had often chose to risque a Clap, rather than engage cum Hastis sic clypeatis.

This passage contains the first known reference to the condom in literature. The book from which it is taken was published a few years before Turner received his Yale degree, and was one of those he sent as a gift to the College. I wonder whether the Reverend Timothy Woodbridge, who conferred the degree, had carefully read the book.

The word is here spelled "condum," and tradition has had it that the article was named after a physician of the same name, or Condom, or Condon or Conton. The medical dictionaries I have consulted, which give the word, say that it is "A corruption of Conton, the name of a physician who first suggested the use of it. He lived in London in the middle of the eighteenth century." This explanation has probably been copied from the Sydenham Society's "Lexicon." It appears that this explanation is a gratuitous assumption for which Swediaur and others were responsible, for careful researches have failed to reveal any physician of this name living in England at about that time. Those who may be interested in the details of the growth of this legend and of the history of the subject are referred to the article by Le Pileur, to which I am indebted for most of the details here given.

My purpose at this time is simply to call attention to another of Turner's almost unknown claims to fame. There are many other entertaining episodes in his medical career and writings. If leisure permits, I may, in the distant future, be able to study him in more detail;

to sketch his progress; to enumerate his disputes with his colleagues and to compare his own estimate of himself with the estimate his contemporaries formed of him.

The story would be interesting and the purpose laudable; for the achievements of Yale's First Doctor of Medicine should not be consigned to oblivion.
INTRAVENOUS INJECTION OF GLUCOSE IN THE TREATMENT OF DERMATOLOGIC CONDITIONS

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Experience teaches us that many skin conditions are cleared up by treatment of a general condition, as they are related to disorders of metabolism. With this in mind, Scholtz and Richter, for the first time, used hypertonic solutions of glucose intravenously in the treatment of dermatologic conditions, basing their method on the theory of osmosis. They first treated exudative conditions. Later, believing that glucose might produce excitation of cellular protoplasm, they extended the treatment to other conditions, such as dry eczema, psoriasis, Dühring's disease, pemphigus, Hebra's disease and several kinds of pruritus. Covisa and Bejarano of Madrid obtained good results in treating mercurial erythrodermia, pemphigus foliaceus, chronic eczema, hemorrhagic purpura and leukemia.

I am convinced that diathetic skin conditions should be treated with drugs causing general changes of metabolism; in other words, general, not local, treatment should be used. As I am in charge of a service of skin diseases and syphilis in which 1,000 patients are treated every month, I had an opportunity to try this method. About seventy injections of a 59 per cent. solution of glucose were given at intervals of three or four days, from 16 to 30 c.c. being used for each injection. This treatment was well tolerated.

I failed to obtain results in the treatment of Hebra's disease, in Wilson's dermatitis exfoliativa, in Dühring's disease, in psoriasis and eczema; but I obtained good results in several kinds of pruritus, including anal and vulvar, which are particularly resistant to other therapeutic measures. I agree with Covisa and Bejarano that glucose causes improvement in edema of the legs due to varices or ulcers.
BROMIN ERUPTION BY PLACENTAL TRANSMISSION

JOSEPH P. COSTELLO, M.D.

A bromin rash occurring in the new-born as a result of the administration of large doses of bromids to the mother in late pregnancy is a rare or unique condition. It means that bromin can go through the placenta and have its effect on the unborn child.

In December, I was called to St. Ann's Hospital to see a child born of an eclamptic mother. The child had never been nursed from the breast of the mother, nor had it been given any drugs. Its food consisted of Eagle Brand milk.

The following history was obtained: During the latter part of the mother's pregnancy large doses of bromids had been taken by her, but at no time did she show a bromin rash. The mother's Wassermann reaction was negative. Three days after birth a rash appeared about the eyes of the infant, gradually involving the arms, hands and thighs, with isolated patches on the lower part of the abdomen. A description of the lesion was made by the late Dr. Hardaway as follows: "An acne-like papulopustular and pustular eruption about the arms, legs and lower part of the abdomen. A few of the lesions are discrete, the others confluent. The papular lesions are studded with pustular points. There is a certain resemblance to smallpox, but the character of the lesions taken as a whole and the distribution, together with the history of bromids being given to the mother, makes the diagnosis of bromoderma a most plausible one."

A sample of the patient's urine was obtained and examined by Harry Bristow, professor of chemistry at St. Louis University, who reported that he found a definite trace of bromin in the urine. After two weeks the rash began to disappear and has not recurred. So far as I have been able to review the literature, this is the first case of bromin eruption occurring in an infant as a result of transmission of bromids through the placental circulation.
Abstracts from Current Literature


In three families under the author's observation, all members contracted syphilis, and all developed some form of neurosyphilis. Each contracted syphilis from a different source and at widely separated dates. This occurrence can best be explained on the basis of familial predisposition. Clinical and experimental evidence now available does not settle the question as to the existence of a neurotropic strain of Spirochaeta pallida.


Besides reviewing the published reports on Kolmer's new technic, the authors cite their own experience with it based on more than 4,000 tests in more than 400 cases.

A false positive reaction with the new technic has never been encountered. The authors report a case of leprosy in which the older three antigen tests gave a four plus reaction, the Kolmer test being negative. They also found it more sensitive than the older technics. Its sensitiveness is shown by the longer time required to obtain a negative Wassermann reaction after the institution of treatment, the quicker return from negative to positive following a period of latency, and the earlier appearance of the test in primary cases. The Kolmer test was often positive in tertiary cases when the usual three antigen technics gave negative reactions.

Schamberg and Greenbaum regard the Kolmer test "as an invaluable advance in the serologic study of syphilis."


No matter what the underlying condition, hemorrhagic purpura is always due to a numerical decrease of blood platelets. The life of a blood platelet in the blood stream is only a few days. In view of these facts, it is logical to use frequently repeated transfusions of whole unmodified blood. Three cases are reported in which this treatment was carried out with satisfactory results.

Michael, Houston, Texas.


Extract doses which are too small compared with serum or liquor doses are likely to furnish incorrect positive results. The liquor Wassermann reaction must be made with negative and positive liquor controls.

Ahlswee, Buffalo.
IRRITATION OF THE SKIN AND ITS USE. HAMMER, Dermat. Wehnschr. 75:969 and 996 (Sept. 30 and Oct. 7) 1922.

The irritability and susceptibility of the skin to the various types of irritation is considered broadly, and also the effect of continued irritation. The value of irritation, external or internal (the latter chiefly through the use of arsenic) is described, when applied at suitable times in suitable cases.

HYPOSUSCEPTIBILITY OF THE SKIN OF A NEVUS TELANGIECTATICUS AGAINST ACUTE ECZEMA. L. WAELSCH, Dermat. Wehnschr. 75:982 (Sept. 30) 1922.

In a patient, aged 58 years, an extensive eruption did not involve a large nevus, but stopped short at its borders. By way of investigation the author applied 50 per cent. croton oil in olive oil to the skin of another patient with a similar nevus, the nevus being exempt in the ensuing dermatitis.

ANSWER TO DELBANCO'S OBSERVATIONS ON NOURNEY'S IMMUNITY-TREATMENT OF THE VENEREAL DISEASES. NOURNEY, Dermat. Wehnschr. 75:985 (Sept. 30) 1922.

In reply to Delbano's recently published criticism, the author once more argues in favor of his theories as to the efficacy of autogenous serum injections in the treatment of gonorrhea and syphilis.

CONTRIBUTION TO THE QUESTION OF DIFFUSE SKIN INFILTRATION IN THE SECONDARY STAGE OF SYPHILIS. EVENING. Dermat. Wehnschr. 75:993 (Oct. 7) 1922.

In a woman, aged 44 years, with mucous patches in the mouth and a positive Wassermann reaction, there was a diffuse erythematous circumanal infiltration with rhagades, which responded at once to injections of neo-arsphenamin, scars persisting. This must have been a case of acquired rather than of congenital syphilis, similar to the two reported by Savnik (Arch. f. Dermat., vol. 136), showing that diffuse skin infiltration and rhagades may occur in acquired syphilis as well as in the congenital type.

NECROPSY FINDINGS IN A CLINICALLY CURED CASE OF LEPRO. PÄUL UNNA AND ALFRED PLAUT, Dermat. Wehnschr. 75:1013 (Oct. 14) 1922.

A sailor, aged 59 years, had contracted leprosy of the mixed type, probably in 1902 while in the Malay archipelago. He also had syphilis of thirty years' duration. In 1913, the case was diagnosed and treatment started, iodids being employed at first, and subsequently chaulmoogra oil derivatives, mostly parenterally. In 1919, the active manifestations had vanished, and no organisms could be found in the nasal secretions. This apparently cured state persisted until 1921, when the patient became jaundiced and died. At necropsy, the only evidence of leprous infection was seen in the ulnar nerve, in which the bacilli were found. There was optic nerve involvement, also probably leprous. However, from a public health standpoint, the case had been cured, for the contagious foci had been eradicated.

CONTRIBUTION TO THE SUBJECT OF CUTIS VERTICIS GYRATA. HUGO HECHT, Dermat. Wehnschr. 75:1035 (Oct. 21) 1922.

With the aid of a photograph, the author describes the case of a man, aged 39 years, the left side of whose scalp is involved. Part of the malformation was at the site of an injury sustained twenty-three years previously.

In a woman, aged 62 years, the skin of both legs contained osseous nodules, demonstrated clinically, roentgenologically and microscopically. Speculating as to their origin, the author supposes the cause to have been diminished tissue nutrition brought about by the atheromatous narrowing of blood vessels in this region. A necrosis of subcutaneous fat cells ensued, the necrotic masses becoming calcified.

SYPHILITIC BILIRUBINEMIA AND ITS TREATMENT BY MEANS OF LINSER'S MIXED INJECTIONS. F. W. Kloeppel, Dermat. Wchnschr. 75:1065 (Oct. 28) 1922.

Citing six of his cases as illustrations, the author reaches the following conclusions: 1. Bilirubinemia appearing in a fresh syphilitic infection or during the first half of the course of treatment is usually syphilitic in origin, especially when the reaction of Van dem Bergh is negative or retarded. 2. In such a case energetic antisyphilitic treatment is indicated. 3. Mixed injections of an arsphenamin and a mercurial product are to be recommended. The author used neosilver arsphenamin or neo-arsphenamin mixed with mercuric chlorid.

THE HISTOGENESIS OF TAR CARCINOMA. R. Bierich, Dermat. Wchnschr. 75:1081 (Nov. 4) 1922.

Having applied tar to white mice, the author found that on an average hyperkeratosis ensued forty days after the first application, epithelial hyper-trophy after eighty days, and epithelium after 131 days, with slight variation. If the tar applications were discontinued during the stage of epithelial hyper-trophy, epithelium followed at the usual time. During the pre-epitheliomatous stage, the underlying connective tissue cells became swollen, the proportion of elastic tissue increased, and the number of mast cells was augmented. These dermal and epidermal premalignant changes seemed to be due to the action of the tar itself; they may also be produced by other agents, such as arsenic or roentgen rays. When the epithelium appeared, these changes vanished. When tar and arsenic were both used, the reaction was increased, and the development of epithelium was delayed until the one hundred and eighty-eighth day, which would seem to indicate that the earlier changes are protective in nature.

GOLDHYDROSOL AND THE COLLOIDAL GOLD REACTION IN THE CEREBROSPINAL FLUID. W. Prosch, Dermat. Wchnschr. 75:1085 (Nov. 4) 1922.

The various types of reaction are discussed, and the use of a proper gold solution advised, in which the particles are uniformly 25 microns in their linear dimension, with the correct electrolytic content and hydroxyl-ion concentration, in order that false negative results and irregular curves may be avoided.


The author separated the heads from the bodies of the lice, ground them with quartz and mixed them with physiologic saline or other agents. He
found that the fresh extract was hemolytic, while the extract made from the enteric glands was coagulant to human blood. The various theories of the formation of maculae ceruleae are reviewed. Hematoidin rather than pigment deposits is held to be causative, for the maculae disappear within two weeks, which would be impossible in the case of true pigment.

IS GUIDO BACCelli THE CREATOR OF INTRAVENOUS THERAPY, ESPECIALLY IN THE CASE OF SYPHILIS? W. SCHONFELD, Dermat. Wchnschr. 75:1110 (Nov. 11) 1922.

It is often said that Baccelli, in 1893, or Landerer, in 1882, was the first to employ intravenous therapy, but the author finds that it had been used previously both on the European continent and in England. There is a record of its use, probably by Fabritius, in 1665, in the treatment of syphilis, good results having been reported as following the injection of guaiac mixtures containing scammonium.


The author reports four cases of this infection, all in women between 40 and 75 years of age, the first being a diabetic patient with plaques in the genitocrural region resembling those due to trichophytosis, and in addition scattered pustules on the thighs; in the second patient the lesions were about the toes, in the third, there were genitocrural plaques and in the fourth, both the genitocrural and mammary regions were involved. As diagnostic criteria, the author calls attention to the clinical picture, presenting diffusely scattered or closely grouped, often ring-shaped pustular efflorescences, resembling intertrigo; the typical clusters (not chains) of spores among the mycelia, found after potassium hydroxid has been added to the scales; the cultural characteristics on beer wort agar and on Sabouraud's mediums, fully developed within ten days.

A CASE OF NEVIFORM ANGIOKERATOMA. H. BOCKHOLT, Dermat. Wchnschr. 75:1132 (Nov. 18) 1922.

A single small tumor, apparently present since birth or very early childhood on the penis of a patient, aged 22 years, was excised and showed the histologic characteristics of the angiokeratoma of Mibelli. The author considers it a true nevus.

THE HEMOLYTIC COMPLEMENT OF BLOOD, ESPECIALLY IN SYPHILIS. B. VON LANDMANN, Dermat. Wchnschr. 75:1134 (Nov. 18) 1922.

The author has found that in early syphilis there is a rather infrequent slight diminution of complement; in paralysis the diminution is commoner and more appreciable. The disappearance of complement occurs mostly in vitro, but at times it is detectable very soon after the blood has been taken. The protecting action of the blood clot when the serum is heated to 37 C. is due to materials present for the most part in the blood corpuscles, but also in the plasma. In the destruction of complement the intermediate stage is more active than the end stage, as is demonstrable by a twenty-four-hour incubation of the serum at 37 C., followed by a half hour's inactivation at 56 C.
CONTRIBUTION TO THE CASUISTICS OF MYCOSIS FUNGOIDES.

E. Wellmann, Dermat. Wchnschr. 75:1149 (Nov. 25) 1922.

A man, aged 48 years, who had had the disease for at least one year, presented many tumors, none of which were ulcerated, and there was a generalized lymph node enlargement. The histologic picture at first suggested that of lymphosarcoma, but was really typical of mycosis fungoides. Through a filter of 2 mm. of aluminum a full erythema dose of roentgen rays was given to the nodules, and the affected skin elsewhere received one-half of an unfiltered erythema dose. Six weeks after the institution of this treatment nearly all of the tumors had vanished, and there was no more itching; the lymph nodes were still enlarged.

STATISTICS CONCERNING VENEREAL DISEASES IN MARRIED PERSONS. L. Volgr, Dermat. Wchnschr. 75:1153 (Nov. 25) 1922.

At the author's clinic the percentage of syphilis in married men is about 23, in married women, about 22. Other statistics are given, and the need of careful treatment and family observation is urged.

INFLAMMATORY CYSTIC CHANGES IN THE SWEAT DUCT ORIFICES IN A SCARLATINIFORM ERUPTION. A. M. Schoch, Dermat. Wchnschr. 75:1169 (Dec. 2) 1922.

In a youth dying with acute polyarthritis and endocarditis, on the final day there had appeared a generalized scarlatiniform eruption with small vesicles scattered here and there. Microscopic search revealed degenerative changes in the epidermal cells adjoining the sweat ducts, with cyst formation and signs of slight inflammation. There was no visible change in the sweat glands themselves. In the basal cells of the epidermis there were peculiar changes in the cytoplasm, not resembling those seen in scarlatina. Three excellent colored plates illustrate the microscopic findings.

PURPURA HEMORRHAGICA WITH HEMATURIA AND FATAL PULMONARY HEMORRHAGE AFTER THE ADMINISTRATION OF NEO-ARSPHENAMIN. F. Callomon, Dermat. Wchnschr. 75:1197 (Dec. 9) 1922.

An apparently robust man, aged 25 years, with no history of hemorrhagic manifestations, was given 0.15 gm. of neo-arsphenamin, and after a week, 0.3 gm., two injections of mercury salicylate having also been given. Immediately after the second arsenical injection, small hemorrhagic punctae appeared, and within a few days death ensued. At necropsy, hemorrhagic areas were found in all parts of the body except the intestines. The number of blood platelets was distinctly increased.


The author reviews the literature and describes a case in which the administration of silver arsphenamin was followed by the appearance of an eruption almost similar to lichen planus, with the linear and garland-like arrangements of the papules and suspicious lesions in the mouth. However, in the opinion
of the author, the color of the lesions was too brightly erythematous, and the duration of the outbreak too short to warrant a diagnosis of true lichen planus. Ther was no biopsy examination.

METABOLISM AND SKIN DISEASES. I. CHOLESTERIN. E. PULAY, Dermat. Wchnschr. 75:1236 (Dec. 23) 1922.

The author found a hypercholesterinemia in seborrhea, urticaria, pruritus, eczema, prurigo, psoriasis, rosacea, erythema nodosum, xanthoma, lupus erythematosus and other skin conditions, but the significance of its presence is not clear. Its function may be that of a protector.

CONTRIBUTION TO OUR KNOWLEDGE OF MORPHEA GUTTATA. E. Piek, Dermat. Wchnschr. 75:1253 (Dec. 30) 1922.

A woman, aged 46 years, had grouped lesions on the abdomen, buttocks and thighs, of a few months' duration. Histologic study showed the presence of collagenous hypertrophy. The author classifies the condition as true seceroderma.

THE CURE OF STAPHYLOGENIC SYCOSIS BY CATAPHORESIS. F. Winz, Dermat. Wchnschr. 76:3 (Jan. 6) 1923.

In nine out of ten cases of stubborn sycosis of years' duration, the author, by means of cataphoresis, was able to bring about a cure in from four to twelve weeks. At first, in each case, a 10 to 20 per cent. aqueous solution of ichthiol was used, with exposures of ten to fifteen minutes' duration about every second day, the current strength being 5 to 10, or even as high as 20 milliamperes. When the outbreak had been soothed somewhat by this means, diluted Lugol's or Gram's solution was substituted, with a current strength of about 5 milliamperes and exposures lasting from three to five minutes, until a cure was brought about.

THE TREATMENT OF PEMPHIGUS. J. Iser, Dermat. Wchnschr. 76:8 (Jan. 6) 1923.

The author describes the course of pemphigus foliaceus as it occurred in a young Jewish medical student, with a fatal termination within two months in spite of attempts at treatment. He also recounts the case of an old man whose pemphigus vegetans was apparently cured by small doses of neoarsphenamin, later reinforced by quinin and tryptafortin. For the treatment of pemphigus vulgaris, the arsphenamins, quinin, serum and tryptafortin are recommended.


The author illustrates his brief review of the subject with six excellent photomicrographic plates showing the fatty changes in the liver and kidney following the administration of large doses of potassium arsenite solution (Fowler's solution) and neo-arsphenamin to dogs and rabbits.

In over 500 cases the author compared this new method with those of Wassermann, Sachs-Georgi and Meinicke, finding it very valuable, giving non-syphilitic results only rarely, and being quickly carried out.


At the clinic in Dusseldorf, this method has been thoroughly tried and found apparently worthless.


The author recommends the use of the ultraviolet light with an intranasal applicator.


In incipient syphilis, before the appearance of the eruption, the author has found the occurrence of hematogenous infection of the central nervous system in 7.8 per cent. of cases, a pleocytosis being the most common sign, a positive globulin reaction occurring only one-fourth as frequently, and a positive Wassermann reaction never occurring in the fluid. During the exanthematic stage of the disease, one third of the cases showed changes in the spinal fluid, pleocytosis being the most frequent finding, and its occurrence in proportion to that of globulin and a positive Wassermann reaction in the fluid being as 37:12: 5:14. A papular eruption is much more likely to be accompanied by spinal fluid changes than is a macular eruption, in the ratio of 17 to 7. In the stage of early recurrences, pleocytosis, globulin and a positive Wassermann reaction were observed commonly and with about equal frequency, a pathologic fluid being especially likely to be found in cases of syphilitic alopecia and leukoderma. In the early latent cases, pathologic changes in the fluid are seen less often, pleocytosis being infrequent, while a positive Wassermann reaction occurs more often; the globulin reaction accompanies organic nerve disturbances.

METABOLISM AND SKIN DISEASES. II. CALCIUM. E. PULAY, Dermat. Wchnschr. 76:81 (Jan. 27) 1923.

In various dermatoses, including the commoner ones, the calcium-ion concentration and the calcium content of the blood were estimated, and found to vary somewhat from what had been expected. This would perhaps indicate that the colloidal side of the question is of great importance, and that much may depend on the calcium content of the tissues.

THE TREATMENT OF SYPHILIS WITH BISMUTH. J. GUSZMAN and M. POGANY, Dermat. Wchnschr. 76:125 (Feb. 10) 1923.

Using a 10 per cent. suspension of the bismuth salts in olive oil, the author treated twenty-one patients, most of whom presented active secondary lesions; and the results were encouraging. He states that the drug may be used simul-
taneously with the arsenicals and mercurials, but he has seen no great benefit arise from this combined therapy. It now seems that this new medication may be ranked with mercury and close to arsenic.

CUTANEOUS IRRITATION AFTER THE APPLICATION OF MOIST CELLULAR DRESSINGS. E. Schauke, Dermat. Wchnschr. 76:137 (Feb. 10) 1923.

Sulphuric acid derivatives incorporated during the manufacture of the dressings seemed causative, so that they can no longer be used except with extreme care.

EXPERIENCES WITH LINSER'S MIXED ARSPHENAMIN-MERCURY TREATMENT. O. Ebel, Dermat. Wchnschr. 76:105, 133 and 158 (Feb. 3, 10 and 17) 1923.

If the dosage be sufficient and the interval between courses not too great, the author considers this form of treatment the most effective. His minimum dose of neo-arsphenamin for women is 0.45 gm., with 0.02 gm. of mercuric chlorid, a total of 4 to 5 gm. of the arsenical drug being the minimum requirement for the completion of the first course. After a vacation which must not exceed eight to twelve weeks, a second course totaling 3 gm. is given. Injections may be given once or twice a week with apparent safety.

HYPERKERATOTIC ERUPTIONS ACCOMPANYING GONORRHEA AND THEIR RELATIONSHIP TO PSORIASIS. Buschke and Langer, Dermat. Wchnschr. 76:145 (Feb. 17) 1923.

An old gonorrheal infection in a young woman was accompanied by a polyarthritis and a hyperkeratotic and pustulocrustaceous eruption of the axillae, chest, feet, umbilical and genital regions. Sections showed no organisms. This condition is rare in women. Discussing its etiology, the authors say that the skin may be congenitally predisposed to eruptions of this type.

PARKHURST, Toledo, Ohio.


The author discusses Riecke and Unna's conception of the etiology of psoriasis. He describes two cases which support Unna's theory that psoriasis and seborrhoea are two branches of the same diseased trunk. A female patient with pronounced seborrhoeic eczema of the scalp developed, during the course of treatment, several isolated typical patches of psoriasis.


In mild cases, painting with a 1 or 5 per cent. solution of chromic acid is advised, also overnight application of salicylic powder. In obstinate cases, large doses of hard roentgen rays are recommended.


The author describes a new disease picture under the name of edema cutis proprium. He develops a new theory of the pathogenesis of edema, basing his deductions on the therapeutic results obtained in a case in which he elim-
imated every trace of sodium chlorid from the food of the patient. Pathologic tissue alterations of the skin disturb the metabolism of the cutis cells, thereby causing retention of colloids and the accumulation of sodium chlorid, which causes increased retention of water.

NERVE PARALYSIS AND NERVE STIMULATION WITH REGARD TO THE DEVELOPMENT OF TROPHIC TISSUE ALTERATIONS.


In the pathogenesis of vasomotor and trophic disturbances, a stimulation of the nerve is generally the causative factor, seldom a paralysis of the nerve. This is proved by many trophic disturbances which were caused by neuromas and which disappeared on surgical removal of the neuroma. A pathologic stimulation increases the tonus in the sympathetic region. In a case of vasomotor—trophic neurosis, the author effected complete cure by periarterial sympathectomy.

METHOD FOR OBTAINING THE "WASSERMAN SUBSTANCE."


The antigen—syphilis serum is prepared first. The deposit is dissolved in 1.7 per cent. sodium chlorid. The solution is then placed on a suitable colloid filter, through which only the "Wassermann substance" passes. This substance, obtained by filtration, can at any time be bound by antigen whereby complement is permanently used up. The substance therefore has all the qualities of a genuine amboceptor, in the sense of Ehrlich. The choice of the correct filter caused considerable difficulty and retarded an earlier publication of this process by Wassermann.


While ultraviolet rays have a direct chemical effect in the superficial skin layers only and only influence the system indirectly, the visible rays penetrate the skin, are absorbed by the blood and are thus beneficial to the entire system. The best light sources are those in which the composition is nearest that of the sun's rays; that is, the electric arc light.

MULTIPLE TUBERCULOUS ABSCESES OF THE SUBCUTANEOUS TISSUE CONCOMITANT WITH TUBERCULOUS ARTHRITIS.


In a man, aged 47, the author found the rare coincidence of multiple pustular tuberculous lesions in the skin with tuberculous arthritis. Acid-fast bacilli were found in the blood and tubercle bacilli in the pus. As a mixed infection with ordinary cocci was excluded, this case proves that the tubercle bacillus can cause genuine pustular inflammations. The macroscopic and microscopic picture of the skin differed entirely from that of the cold abscess. The polymorphonuclear leukocytes were increased to 75 per cent.


It is not only the liberated alkali which causes irritation, but the soap as such has a certain cell damaging influence, as the author proved by hemolytic experiments. He recommends the use of "over-fatted" soaps.

In order to ascertain previous to irradiation a possible hypersensitiveness to roentgen rays as found in some patients, the author advises a trial exposure to quartz light for two minutes at a distance of 50 cm. on a surface of 5 by 2 cm. in the infraclavicular region. Six hours later, the erythema which is provoked is examined with the capillary microscope. The "normal" skin would then show slightly dilated vessels, a slight increase of the blood-current and increased blood contents of the capillaries. These symptoms are most pronounced in nephritis, syringomyelia, diabetes, urticaria, exophthalmic goiter, and Raynaud's disease. Trial irradiation is indicated wherever hypersensitiveness to the roentgen rays could be expected.

CONTRIBUTION TO THE SERODIAGNOSIS OF SYPHILIS BY A NEW METHOD. Bruck, München med. Wehnschr. 69:569, 1922.

To 0.2 c.c. of inactivated serum (56 degrees in thirty minutes) in a test tube, the author adds 0.8 c.c. of a salt solution and 0.2 c.c. of a well shaken extract suspension. The tube is then shaken and immediately centrifuged for twenty minutes. The mixture then appears clear with a thin film on the surface. Careful shaking (in positive syphilitic serums) then causes this film to form a characteristic, macroscopically visible flocculation, while negative serums do not flocculate but turn homogenously turbid. The advantages of this method are: 1. The incubator and agglutinoscope are not necessary. 2. The result can be read within thirty minutes. 3. It is clinically equivalent if not superior to the Wassermann reaction. 4. The turbid extract allows the use of the same constant dilution of extract.


Preliminary treatment with acetic acid and liquor formaldehydi followed by staining with a 1:1,000 solution of neo-arphenamin and after treatment with a 1 per cent. ammoniated silver nitrate solution gives an excellent picture of Spirocheta pallida. The method is superior to Fontana's, as the pallida is not swollen and appears thin and normally delicate.


In caffein the author believes that he has found an agent which enables us to force more arphenamin into the spinal canal than ordinarily enters it. Caffein causes an elective constriction of the mesenteric vessels, thereby altering the distribution of the blood in the system and leading more blood to the skin vessels and the central nervous system. Sack holds that the large quantities of arphenamin which shortly after injection are found in the liver, kidneys and intestines have practically no effect on the spinal cord and the meninges. If caffein can block the blood supply to these organs, arphenamin can have its effect at other places. Sack injects 0.2 gm. caffein subcutaneously ten minutes before each arphenamin injection. A report on the practical results cannot yet be given.

The author examined ninety-eight cases of erythema of the abdominal skin, using a magnification of 103. The results obtained show that in a large number of cases a skin erythema dose weakens the vasoconstrictors, while some vessels appear to be destroyed entirely. After three skin erythema doses, the vessels on the same skin surface are considerably diminished in number. The walls of the capillary vessels also lose their elasticity. The blood current did not appear to be influenced. Hence the histologic alterations cannot be due to a disturbance of the circulation.

CHRONIC UNIVERSAL ARGYRIA AFTER INTRAVENOUS AND ORAL ADMINISTRATION OF COLLARGOL. Tobler, Schweiz. med. Wchnschr. 52:774, 1922.

The author reports a case in which the bulk of the silver was found in the glomerules of the kidney and the hepatic arteries. He believes that silver arsphenamin by accumulation could also cause a universal argyria.

INFLUENCE OF VARIOUS KINDS OF LIGHT ON BLOOD PRESSURE. KIMMERLE, Strahlentherapie 13:299, 1922.

Irradiation with the electric arc light causes a more rapid decrease of the blood pressure than can be obtained by the ultraviolet rays.

GENERAL INDICATIONS FOR ROENTGEN-RAY TREATMENT OF MALIGN TUMORS. Schmieden, Strahlentherapie 13:431, 1922.

If possible, carcinoma should be operated on and prophylactic irradiation should follow. The employment of energetic irradiation once before every operation is gaining in importance. Carcinoma of the face should, for cosmetic reasons, be treated by irradiation. Sarcoma should, as a rule, receive the same treatment.


Epinephrin increases the secretion of the glands of the skin.


The author used a new medium for cultivating tubercle bacilli to great advantage. It consists of a 5 per cent. suspension of yolk of egg in distilled water, to which an alkali is added until the solution clears up.

Ahlswede, Buffalo.
Society Transactions

CHICAGO DERMATOLOGICAL SOCIETY

Annual Meeting, Jan. 17, 1923

HAROLD N. COLE, M.D., PRESIDING

ARSPHENAMIN DERMATOSIS TREATED WITH SODIUM THIOSULPHATE. Presented by Dr. Mitchell.

A Chinaman, aged 25 years, who received his first injection of arsphenamin on Jan. 4, 1923, developed a bright red papular eruption the day following the third injection of 0.4 gm. He had been treated with daily intravenous injections of sodium thiosulphate since January 10, with complete healing.

DISCUSSION

Dr. Pusey asked whether the result of treatment in this case was as brilliant as one had been led to expect that it would be.

Dr. Mitchell said that he had had an opportunity to study only a few of these cases. He had only had three cases in the syphilis clinic. The patient presented was first treated with intravenous injections of sodium thiosulphate on January 10, and at that time the eruption appeared red and had the characteristics which would lead him to believe that it was an arsphenamin dermatosis. It might have been a toxic eruption due to something else, but apparently it was an arsphenamin process. With the beginning of treatment the eruption promptly subsided, and it was apparently a brilliant result of the treatment advocated by McBride and Dennie of Kansas City.

Dr. Sweitzer said he had three cases, two in women and one in a man. They were all severe, particularly the one in the man, the skin being involved from head to foot with lesions probably ½ inch (6.35 mm.) thick all over. He was irrational for a number of days, but the skin was now normal, although he had expected the patient to die. The result of treatment was satisfactory. Whether the improvement was due entirely to treatment or whether these patients would have recovered without it, was a question. The treatment was probably a factor, and he thought the sooner it was instituted the better.

Dr. Ravitch asked whether it would not be a good plan to give injections of sodium thiosulphate before giving the arsphenamin.

Dr. Conrad said he had had only one case in St. Louis in which he gave the sodium thiosulphate with good results. They did not seem to get as many of these cases as he had read of in other parts of the country. On an average, they probably gave from seventy-five to a hundred doses each week in the clinic, and they had had only this one case during the last five years. The result of treatment was remarkable. He thought the earlier the cases were seen, the better would be the results.

Dr. Stokes said if any results were to be expected, one should give frequent large doses of the thiosulphate; 0.45 gm. every three or four days would not be very effective. The administration of 0.75 or 1 gm. every day would be more likely to produce results. They had had one case which promised to
be severe since Dr. Dennie presented his paper, and the patient would probably have died if she had not been given the drug. The exfoliation was milder, and the course was less severe.

Dr. Stokes said he believed the medical profession should be warned about conclusions on these cases. Many of them clear up irrespective of what is done, and sometimes irrespective of what is done they continue in an unfavorable course. He believed this method was undoubtedly an aid in the treatment of these cases, but thought there was a reason for not giving the drug as a prophylactic as the sulphur would neutralize both the toxic and the therapeutic effect. If given in connection with arsphenamin, it would diminish the efficiency of that therapy.

Dr. Grindon agreed with Dr. Stokes that one should not be in too much of a hurry to argue from good results, and related two cases in point. A man in early life had had a sore but had had no symptoms since. He secured a Wassermann test and at the same time had his wife's blood tested. She had never had a symptom of any kind, but while the husband's blood was negative, his wife's gave a four plus reaction. A physician in another city gave her a series of weekly arsphenamin injections. After the eleventh dose she developed a skin condition. When Dr. Grindon first saw her the condition was extreme. The entire body was covered with bullae and scales, except the tip of each elbow and the palms. She had an acute nephritis with all the symptoms that go with it. He prescribed diluents, a nonprotein diet and consolidaion, and expected her to die. About three months later she walked into his office perfectly well.

He recently was called to see a case in consultation. The patient had received three doses of arsphenamin within a week. He did not know the dosage. She developed an exfoliative dermatitis and seemed at first to be quite ill. He was considerably alarmed about the case but under purely symptomatic treatment she made a good recovery.

Dr. Grindon believed that while unquestionably Dennie's treatment was well worthy of examination, one should not jump at conclusions. He asked whether any one knew anything about McDonagh's intramin.

Dr. Cole said that in Cleveland they had seen several of the cases of post-arsphenamin dermatitis and had obtained good results with Dennie's treatment. He believed that when one saw a patient show such marked improvement immediately after the drug was used, one must conclude that it had some definite value. One patient came in two months after the characteristic exfoliative dermatitis had started. She was given 40 c.c. of the 1 per cent. solution of sodium thiosulphate, and within twenty-four hours was so much improved that she presented an entirely different picture.

Dr. Pusey said he was very much in doubt as to whether the chemical explanation of the treatment was correct. He thought the general view was that this was a real addition to therapy. He knew some conditions disappeared of themselves, but his experience with arsphenamin dermatoses was that they were very difficult to treat and that they did not usually get well. The results reported from the Dennie treatment seemed to him to be exceedingly interesting, and he believed the remedy was worthy of thorough trial.

Dr. Senear said he had talked with Dr. Lespinasse about the Dennie treatment, and he told him that some years ago a genito-urinary specialist in Cincinnati spoke of treating tuberculous with a dose of mercury which would ordinarily be fatal, following it with sodium thiosulphate, and the patients tolerated the mercury well.
Incidentally, Dr. Senear had treated one patient whom he saw six weeks after the dermatitis began, and within six days the skin was practically clear. Unfortunately, the patient had had pneumonia previously, and died a day or two later from a respiratory infection.

Dr. Mitchell said he had been interested in the possibility of continuing treatment in patients who were susceptible to arsphenamin. A patient was referred to Dr. Ormsby some time ago because of this susceptibility. This patient was a thin woman with tabes. They had attempted to give arsphenamin and to protect the skin by giving injections of sodium thiosulphate, but they were not successful in that the eruption appeared despite the injections. They were now experimenting with the Chinaman, intending to demonstrate whether or not he was susceptible. They intended to give a minute injection without thiosulphate protection, and if it showed no symptoms, they would decide that it was not an arsphenamin dermatosis. If he showed symptoms, they would resume the sodium thiosulphate. Dr. Mitchell said he believed this was an important point to work out. If these patients were susceptible, they would probably always be so, but if they could be protected by this means, the treatment could be continued. Otherwise it would have to be stopped.

PITYRIASIS RUBRA PILARIS. Presented by Dr. Beeson.

A man, aged 37 years, was beginning to show improvement under thyroid medication. The trouble began three years before with reddening and thickening of the palms. The characteristic horny papules appeared soon thereafter on the backs of the fingers and hands. Later, the soles also showed thickening and fissuring. The trunk, scalp and face have always been free. At the time of presentation, pathognomonic lesions were present on the backs of the fingers and wrists, while the nails showed a decided thickening. Blood chemistry findings were negative.

A CASE FOR DIAGNOSIS. Presented by Drs. Pusey and Senear.

A man, aged 26 years, had a disorder which had been present for about a year, when he first noticed a dark patch in the right malar region. That patch had enlarged, while others had appeared below it, and smaller patches had developed on the opposite side of the face. There was slight itching and tingling when the lesions were covered with perspiration. The patient said that he never took laxatives and that no cosmetics had been used except bay rum and cold cream. The tonsils and teeth had been treated once or twice with silver nitrate, but not until after the pigmentation had begun.

At the time of presentation, there were a number of irregularly outlined slate-colored patches which involved the bearded region on each side of the face.

DISCUSSION

Dr. Senear said the patient stated when he came in that he had never taken any laxatives, but today some one had called his attention to the fact that the man said he had been taking phenolax wafers; and the patient admitted that he took them occasionally.

Dr. Ravitch said he believed the condition did not look like a phenolphthalein eruption, but that it resembled an argyria. He believed the man might have received injections of argyrol for a urethritis or possibly for some eye trouble.
Dr. Pusey said he did not believe the fact that it had been discovered that the patient had taken a few doses of phenolphthalein made much difference. The man had patches of gray infiltration down in the skin. They might be due to phenolphthalein, but he did not know of any such phenolphthalein eruption. The lesions were about the color of argyria, but that does not occur in small, circumscribed patches, unless it is caused by the injection of silver. The man would undoubtedly have known if silver had been injected into the jaws. He had thought of Goeckerman's cosmetic pigmentation, but it did not seem to be that condition either. He asked for suggestions because the case was, in his experience, unique. It was similar to a case seen by him and Dr. Ormsby a few years ago, which had ended in death from malignant disease.

Dr. Sweitzer said that Dr. Michelson had recently presented a case of phenolphthalein eruption before the Minnesota Dermatological Society, and the appearance of that patient was just like that of the man under discussion. He thought it would be interesting to give this man some doses of phenolphthalein to ascertain whether it would cause some more lesions.

Dr. Goeckerman said the eruption did not impress him as the type of dermatitis he had seen caused by the use of cosmetics. He had seen three or four other cases since he had reported the first ones, and in all of them they had found mercury in the cosmetic used. They now had six cases, but this one did not impress him as being like any of theirs.

Dr. Senear said there was a definite lichenification and definite scaling, and these had been present before any treatment was used. They had observed the patient for several months, and there had never been any change. The man was intelligent, and there was no history of any preceding erythema. Neither did the pigmentation correspond with this. Silver nitrate had been used in the treatment of the patient's teeth, but Dr. Senear thought the condition was not argyria, nor did he believe it to be a phenolphthalein eruption.

Dr. Ormsby said that about a year ago a patient from Michigan was presented before the Society. The pigmentation in that case was of about the same shade as that in the patient shown, but was much more extensive. A biopsy was made and the pigment found to be in the corium. There was no sign of other trouble at that time. Acanthosis nigricans was discussed, but there was no sign of this other than pigmentation. That patient gave a history of having taken sodium bicarbonate in large doses for three years in the treatment of a gastric ulcer. Within the past three months, this patient had died of an internal malignant growth. Dr. Ormsby thought the condition was probably a peculiar pigmentation which was induced by an internal malignant disorder.

MACULO-ANESTHETIC LEPROSY. Presented by Drs. Eisenstaedt and Zeisler.

A Chinaman, aged 38 years, from the South Sea Islands, who had been in Chicago one year, had a lesion confined to the right forearm, which was said to be of five months' duration. It was a popular eruption spreading peripherally, with an ulcerating border. The ulnar nerve was thickened, and there was anesthesia in the area supplied by it, with atrophy of the interossei.

The patient complained of shooting pains in the arm. Examination revealed no lepro bacillus from the nose; the biopsy was negative for lepro bacilli, and
the Wassermann reaction was also negative. A blood count showed 80 per cent. polymorphonuclears and 4 per cent. small mononuclears.

Treatment had consisted of chaulmoogra oil with ammoniated mercury, 5 per cent., on the arms.

**DISCUSSION**

Dr. Stillians said they never had been able to find the bacillus in this case, but the condition cleared up on antileprosy treatment.

Dr. Pusey said he was willing to admit that it was probably leprosy, but he wanted them to find the bacillus. They had found the Chimaman, and that was the first step toward the diagnosis of leprosy when there was something on the skin. He did not wish to accept the diagnosis of leprosy unless the bacillus was found. Without seeing the organism, he believed that this was an unusual case of leprosy.

Dr. Crutchfield said they had twenty-five to thirty cases of leprosy under treatment all the time, and their trouble was not to find the organism. They give the patients ethyl-esters and chaulmoogra oil for several months and then try not to find the bacilli. He thought it very unusual not to find the organism in cases of true leprosy, either in the nasal secretion or the biopsy.

Dr. Menage said that he often saw cases with typical lesions in which it was not possible to find the organism, and at the State Home such cases had been accepted on their merits as clinical cases of leprosy without the organism being demonstrable. The older the lesions become, after a variable period of maturity, in some cases (the macular type particularly), the more difficult is it to find the organism. He had at present a case of this nature. Dr. Ormsby saw this patient with him last year, a perfectly typical case of the disease, but at no time could organisms be found. The patient had a typical macular anesthetic patch on her arm; the absence of the organism under those circumstances, in the South did not make them hesitate to accept the diagnosis as correct.

Dr. Lain said he had had under observation for two years two cases of leprosy in the same family. All of the secretions showed the organism in one case. The other, a sister of the boy, had the anesthetic type, as typically as the case presented at the meeting, but they could not find the organism in this case. Both of the patients improved under chaulmoogra oil treatment.

EROSIO INTERDIGITALIS BLASTOMICETICA. Presented by Dr. Mitchell.

A woman, aged 60 years, who was first seen Sept. 22, 1922, at which time the lesions had been present on the webs of the fingers of the left hand for two months, was treated with 2 per cent. copper sulphate solution and four exposures of ½ unit of roentgen rays.

At the time of presentation, the lesions were completely healed.

**DISCUSSION**

Dr. Mitchell said that in discussing this type of case he repeatedly had emphasized the fact that the disorder resisted therapy. The first patient he saw he had had under observation for a long time. That patient was an obese Jewess who was given aid by several charitable organizations, who had had much matrimonial trouble and therefore perhaps did not carry out the treatment thoroughly. There was evidence that she had used Whitfield's oint-
ment or chrysarobin or potassium permanganate, for the lesions were either macerated or stained, showing some use of these agents. In the case presented, the patient was careful and wanted to get well. She carried out the treatment thoroughly with copper sulphate, and the lesions healed entirely. Two other patients had made great improvement under treatment with wet dressings of copper sulphate. In other cases, it might be that tincture of iodin or chrysarobin or Whitfield’s ointment would lead to cure. He wished to modify his statement concerning the marked resistance to treatment by saying that the first patient may not have carried out her treatment properly.

DERMATITIS EXFOLIATIVA. Presented by DRS. ORMSBY and MITCHELL.

A woman, aged 36 years, stated that she had suffered with mycosis fungoides for several years and had been treated successfully for that disorder. Four months before, she was persuaded to take the so-called Abrams' treatment. This included injections of a so-called serum. Shortly after these injections the present symptoms developed. The entire cutaneous surface became red, swollen and edematous. This was followed by general scaling. The scales varied in size at different times.

When first seen, the entire surface, including the scalp, was erythematous and covered with scales. The ankles were edematous. The abdomen was distended and examination revealed much fluid. The pericardium likewise contained fluid. The entire cutaneous surface was constantly moist from exuding fluid. The blood findings showed signs of anemia. Hemoglobin was 60 per cent.; red cells, 3,410,000; white cells, 9,600. The urine was normal, except that it was reduced in amount. (A chemical examination for arsenic was negative.) The fluid intake was ten times greater than the urinary output. No sensation other than chilliness was present.

DISCUSSION

Dr. Zeisler said that he had taken care of this patient for about nine years. She had had typical mycosis fungoides but was kept comfortable by roentgenotherapy. During the last year, she became worse under this treatment and arsenic, but she had never shown any symptoms of exfoliative dermatitis. At present she had symptoms of generalized exfoliative dermatitis and was water-logged.

Dr. Ormsby said he believed that, it might be of interest to state that when this patient was given the Abrams' treatment she was not in a very bad condition, but she had had the trouble for a long time and was persuaded to take the injections. Knowing that arsenphenamin produced such an eruption, he sent an inquiry to the physician concerning the character of the treatment. He replied that he would not use arsenphenamin, and that he had employed "autohemic" treatment. The woman had ascites, and her intake of fluid was ten times as great as her output. Her urine was reduced, but her body was constantly bathed with fluid, so that evidently the fluid that was lost was excreted in that way. Her entire body was involved in the dermatitis, with the exception of about 4 square inches.

A point to consider was whether the condition might be an erythroderma as a part of her mycosis fungoides. Her blood picture showed nothing at present. He supposed the "autohemic" injections could not produce the condition, but he thought it strange that it appeared so soon after the injections were given. The chemist could find no trace of arsenic in the urine now.
ARCHIVES OF DERMATOLOGY AND SYPHILIOLOGY

Dr. Stillians said the treatment was originated by a quack in Chicago who was willing to teach the method to any one for a consideration of several hundred dollars. So far as known, he took a small amount of blood from the patient, separated the serum, heated it and then diluted it greatly and injected a small portion intravenously. Whether this would cause a violent toxic disturbance or not, he did not know.

Dr. Engman said he was once much distressed by a patient who was treated by the Abrams' method, because the physician who treated this patient had thoughtlessly pushed the wrong button. He pushed the tuberculosis button, when the patient had syphilis.

LUPUS VULGARIS. Presented by Drs. Ormsby and Mitchell.

A youth, aged 16 years, who had had lesions on the neck, left arm, hand and both feet since 2 years of age, had lesions which began as a "boil" on the left foot; the bones then became involved, and an operation was performed. Subsequently, the bones about the left hand and wrist became similarly involved, and in 1915 another operation was carried out. Since that time the left elbow had been fixed at a right angle. At the time of presentation, there was a small active sinus in the left hand.

The patient had received roentgen therapy, and later radium was administered. About one year ago, he was given a series of intravenous injections, probably of arsphenamin. These were followed by intramuscular injections, possibly of mercury. No history of tuberculin injections could be elicited.

When presented, there was a typical area on the right side of the neck which extended from the lobe of the ear to the clavicle and from the midline in front to the midline on the nuchal. There was also a large area on the ulnar side of the left hand, which involved both the dorsal and palmar surfaces. There was a small sinus at the base of the left little finger. There was a large area of scarring and bony deformity in and about the wrist. There was a large patch on the lower outer surface of the left upper arm and scattered nodular patches on the left forearm. Various bony depressions were present about the dorsum and ankle of the left foot, and there was a large area covered with silver scales on the posterior half of the sole and heel of the left foot.

A CASE FOR DIAGNOSIS. SPRUE (?). Presented by Dr. Ravitch.

A boy, aged 11 years, consulted his family physician in December, 1919, because of herpetic lesions in the mouth. The lesions were cauterized, with unfavorable results. A Wassermann reaction at that time was said to be faintly positive, but subsequent tests were all negative. The patient was given intense arsenical and mercurial treatments, without results. His condition had grown worse in the last year, and he had been referred to Dr. Ravitch several weeks previously by a pediatrician, who claimed that similar lesions were found around the rectum, which disappeared on withdrawal of carbohydrates from the diet and the addition of plenty of vegetables and fruit juices. Smears and sections were taken from his mouth for examination, with negative findings, except for a few Monilia albicans. Sprue was suspected.

DISCUSSION

Dr. Lain said that he was reminded of a case he had recently seen, in which an accurate and yet, at the time, seemingly far-fetched diagnosis of pemphigus was made by Dr. Stokes and Dr. Goeckerman. This patient had
visited the Mayo Clinic twice, and the second time the diagnosis of pemphigus was made with no lesions present except those on the mucous membrane. Dr. Lain was sure the diagnosis was correct and thought the lesions in this child's case suggested the same diagnosis. The cultures had been negative in the case he referred to.

Dr. Driver said he was interested in the case because of the possibility of erythema multiforme. He asked whether salicylate had been used in the treatment.

Dr. Cole said he had not thought it was a case of erythema multiforme but considered the suggestion good.

Dr. Weiss asked about the possibility of scurvy in such cases.

Dr. Eisenstaedt said that he saw this patient seven or eight months before, when he was under the care of Dr. Abt. The pediatricians went over the case from every possible angle but could arrive at no diagnosis. The only positive finding at any time was shortly after his entrance to the hospital when the organism of thrush was found. Treatment had apparently been of no avail, and no improvement had occurred. The condition had been present for three years, going from bad to worse. There were no lesions about the rectum when he saw the child, although there was a history of similar lesions in that locality. There was distinct loss of mucosa with an exudate down to the gingival margin and involving that, also on the buccal mucosa.

Dr. Zeisler asked whether it could be an infection with an organism of the monilia group.

Dr. Ravitch said that the same lesions were found around the rectum, but on the carbohydrate-free diet and fruit juices those lesions had disappeared, while those in the mouth had persisted. No definite diagnosis had been made, but some pediatricians believed it was a case of sprue.

**GRANULOMA PYOGENICUM (RECURRENT).** Presented by Dr. Zeisler.

A boy, aged 7 years, whose disorder had been present for one year, had a pedunculated vascular nodule on the back of the neck, which had been removed twice and had occurred each time. The histology was typical of granuloma pyogenicum.

Specimens were shown under the microscope.

**PROGRESSIVE IDIOPATHIC ATROPHY.** Presented by Dr. Waugh.

A woman, aged 40 years, who had worked in factories for many years, had a disorder which had been present about two years, beginning on the lower extremities and later involving the hands and arms. The skin presented a bluish red atrophic and wrinkled appearance, with slight branny scaling in places. Practically no subjective sensation was present.

**DISCUSSION**

Dr. Eisenstaedt called attention to the marked injection of the conjunctivae and asked whether this was a part of the condition.

Dr. Waugh said he believed that the conjunctivitis was not a part of the disorder. The woman did a great deal of hard work in dusty factories, and he considered the eye condition due to mechanical irritation.
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He thought the blood picture was of special interest and said that the patient was shown in Dr. Herrick's clinic, where a careful blood examination was made and an extremely marked polycythemia was found, the red count being eight to eleven million and the hemoglobin about 70 per cent. The medical staff was much surprised in reading the laboratory findings on the blood. The patient had improved considerably on potassium iodid treatment. Dr. Waugh thought it might be of interest to know that the medical men had endeavored to find a disturbance of some of the glands of internal secretion, but they had not arrived at any definite conclusion.

LUPUS ERYTHEMATOSIS OF THE SCALP. Presented by Dr. Stillians.

An American school teacher, aged 31 years, in March, 1922, first noticed two dime-sized bald spots. Since then four others had appeared. There was no sensory symptom.

Examination showed sparse hair, characteristic of seborrheic alopecia. There were six completely bald spots, without scales of broken hairs, 0.5 to 1.5 cm. in diameter. The skin of these spots was smooth and contained many telangiectases. The largest of these areas was slightly depressed below the general level of the skin. Under the diascopc the skin looked white, with many brown spots corresponding to the follicles.

RAYNAUD'S DISEASE. Presented by Dr. Waugh.

A man, aged 31 years, whose disorder was of five months' duration, first noticed a temporary ischemia of the skin when his hands were placed either in cold or warm water. The color was quite pale, and the hands were lifeless in appearance; this condition would persist for ten or fifteen minutes, when the normal color would return. During the last five months, superficial painful erosions had appeared on the tips of several fingers.

DISCUSSION

Dr. Waugh said the case was interesting because of the rapidity with which the disease had developed. The man had come into the clinic recently after he had noticed for a short time that on placing his hands in either hot or cold water they would become like the hands of a corpse within a few minutes. This feeling persisted along the course of distribution of the ulnar nerve for half an hour. An internist saw the man with him and suggested the possibility of Raynaud's disease at that time. The patient soon developed the painful ulcers over the tips of the fingers. The patient had incised one or two of them, thinking there was retained pus because of the pain.

NEUROTIC EXCORIATIONS. Presented by Dr. Jaconson (by invitation).

A Polish laborer, aged 36 years, had a disorder which had been present for two years. It began as an itching sensation all over the body. He received internal medication, but the itching persisted, appearing in one place on some occasions and at other times in several places; it would remain for a minute or two, then suddenly disappear and reappear in different spots. When general, the itching was often accompanied by chills. The skin would feel hard in places, and the patient had been in the habit of rubbing raw potatoes over the itching areas, which relieved the sensation somewhat. He said that he had noticed peculiar sounds in the skin at different places; these sounds
would come on three or four times a day, sometimes once a day or once in two or three days. He complained also of a painful tongue. The joints on moving had a cracking sound. He had been scratching himself, leaving scars all over the body, especially on the hands, face and legs.

The patient denied venereal disease. He had been troubled with vomiting and sour stomach, without relation to the taking of food, for the last two years and was bloated at times. He had had some diarrhea and nocturia for two or three weeks.

**DISCUSSION**

Dr. Pusey said he believed this was a case of neurotic excoriations.

**CHRONIC ULCERATING GRANULOMA OF GROIN.** Presented by Dr. Oliver.

A man, who was presented at the annual meeting in 1922 (reported in Arch. Dermat. & Syph. 5:790 [June] 1922), with an extensive ulcerating granuloma which involved the abdominal wall, groin and penis, while in military service in Italy had been cut and torn by contact with barbed wire entanglements, and the wounds had become infected. Smears were negative for Donovan bodies and Ducrey bacilli; the Wassermann reaction was negative. The condition resisted all treatment, including prolonged immersion in water, cautery, curettage, injections of arsphenamin and tartar emetic, iodoform and argyrol applications. On Oct. 25, 1922, the lesions were covered with full strength radium plaques screened with rubber, which were allowed to remain for twenty minutes. Considerable reaction occurred, but there was marked improvement. This treatment was repeated on December 8, and the patient was presented to show the results of radium therapy.

**DISCUSSION**

Dr. Stokes said he believed the radium therapy which achieved such an exceedingly successful result in this case should be credited to Dr. Irvine. Dr. Irvine had suggested to him that the effect of very small doses of radium might be beneficial in the case Dr. Stokes presented at the annual meeting in 1922. Consequently, he used a 20 mg. plaque, two minute applications around the lesion, and to his astonishment the lesion healed. If this was a real contribution to the therapy of these exceedingly persistent ulcers, the credit should certainly go to Dr. Irvine.

Dr. Waugh said he had had a similar case last summer. A man with a definite syphilitic history developed an ulcer on the left thigh about six months after the primary lesion. This progressed to the size of a dinner plate. Arsenphenamin and mercury had no effect on this large ulcer, although the other symptoms of syphilis cleared up. The ulcer was dark red, quite painful and tender. The patient was put on tartar emetic intravenously, beginning with ¼ gm. and increasing to 1 gm. every other day. He received thirty-five injections, and when last seen the ulcer had healed at least 50 per cent. The patient had returned home, but Dr. Waugh thought there was no doubt that the tartar emetic therapy had helped.

Dr. Oliver said that this man was shown last year and up to October 25 the ulcer was still open. He was put in a warm continuous bath and given arsphenamin, tartar emetic, and an iodoform pack was used in the ulcers. At the October meeting of the Society he talked with Dr. Stokes, who gave him
the valuable suggestion from Dr. Irvine concerning radium therapy. Following that he used a full strength radium plaque for twenty minutes. There was a definite response to this treatment, and a remarkable improvement followed. He felt that the credit was due to Dr. Stokes and Dr. Irvine.

EPITHELIOMA ON LUPUS VULGARIS SCAR. Presented by Dr. WAUGH.

A man, aged 49 years, had a scarring lesion which had been present for forty-five years. The lupus vulgaris had been most acute during childhood and youth and had been treated in several of the German clinics. The lesion, which was active at the time of presentation and the size of a half dollar, began as a small papule in the center of the lupus scar eight months previously and had gradually increased in size. The family and personal history were negative with the exception of this disorder.

The patient had received two erythema units of roentgen-ray ten days before.

DISCUSSION

Dr. Waugh said the case was interesting because the lupus was still active after forty-five years and because of the development of the epithelioma on the lupus scar. The patient had received one treatment with the roentgen ray, 2 units having been given about ten days previously, which had reduced the lesion fully 50 per cent.

A CASE FOR DIAGNOSIS. Presented by Dr. WAUGH.

A Russian girl, aged 17 years, whose disorder was of one year’s duration, complained of pain and tingling at times in feet and hands and of an eruption which was aggravated during cold weather. Most of the lesions were papules and nodules; at times a few vesicles would appear on hands and fingers. The skin of the feet, legs, hands and arms was bluish-red. The ears were not involved. The Wassermann reaction was negative; the family history was negative, except that the patient was ill for three weeks four years ago with what was said to be typhoid fever.

DISCUSSION

Dr. Foerster said he believed it was a case of lupus pernio or lupus erythematosus.

Dr. Grindon said he believed one should know the girl’s condition as a whole. In speaking of lupus pernio, a French writer says these patients are “fish-like individuals,” or, as our fathers would have said, of a lymphatic temperament. This patient’s feet were cold; there was marked venous congestion of her legs and a slow circulation. She was just the type of person in whom one would look for lupus pernio. From the appearance of the girl’s finger tips alone, he would have called it a case of lupus erythematosus, but the forearm patches were rather more like lupus pernio.

Dr. Lain said he was particularly interested in this case, first because of the dermatologic phase, but more especially because of the possible etiology. The girl was anemic and had a rather septic appearance which suggested the possibility of some septic process. He had noticed several carious teeth, and in addition to that the tonsils were greatly enlarged and there was cervical adenopathy, both deep and superficial, on both sides of the neck. He believed that there might be some localized foci of infection as an etiologic
factor. He had seen patients with similar cases show marked improvement or recovery under ordinary methods of treatment when these lesions were taken care of.

Dr. Lieberthal said that he saw this patient six months before. At that time the forearms were involved, showing deep blue discolorations, but there were no lesions on the fingers. He would have expected the condition to disappear during the summer and to appear during the winter, but this was apparently reversed. The lesions on the fingers, the papulonecrotic lesions, were unquestionably of a tuberculous nature.

Dr. Ravitch said that he could understand the girl because he spoke Russian. She was extremely nervous and said that she had had the disease for more than a year.

Dr. Waugh agreed with the diagnosis of lupus pernio. He thought some of the members would recall a patient shown two years ago at the annual meeting, a young man who presented an atrophy of the lobes of both ears with discoloration of the nose and of the hand. He also had two patches of lupus erythematosus on the face and presented the plaques on the hand, but not a vesicular eruption such as this girl had. On the lower extremities the condition was much more marked than on the upper extremities in the present case. When she came to the clinic, there was a peculiar mottled appearance almost to the waist line.

PAGET'S DISEASE. Presented by Dr. McEwen.

A woman, aged 40 years, whose disorder was of seven years' duration, said that when first noticed there was present a small scale covered area about the size of a ten cent piece. This had enlarged gradually by peripheral extension to the size of half a dollar. The lesion was rather dark red, always dry, scale covered and the margin slightly elevated. The family and personal history and the Wassermann reaction were all negative. A biopsy confirmed the diagnosis of Paget's disease.

DISCUSSION

Dr. Wilk said he believed it was undoubtedly an example of Bowen's type of epithelioma. Some of the sections did not show any carcinomatous infiltration, but Dr. Butler and one or two others, including himself, found definite carcinomatous infiltrations.

Dr. Waugh said there was no question about the case being one of Paget's disease.

DERMATITIS REPENS. Presented by Drs. Ormsby and Mitchell.

A man, aged 30 years, whose disorder had been present for eight years, had been presented at the last three annual meetings of the Chicago Dermatological Society and was shown again at this time to demonstrate the slight change in the condition in spite of constant treatment during the year.

DISCUSSION

Dr. Grindon said that he had been successful in the treatment of some of these cases with Stelwagon's treatment, 10 grains of resorcinol to an ounce of saturated boric solution, mopped on freely for ten minutes at a time and then dusted with boric acid.
PARAPSORIASIS LICHENOIDE (BROCQ). Presented by Dr. Waugh.

A man, aged 30 years, who had been seen by Dr. Waugh the first time the day before presentation, had an eruption which first developed on the arms, legs and thighs six months before, and more recently in the lumbar region. He had been in the Soudan region of Africa for three years previous to six months ago. The lesions had persisted since their appearance without any cessation. There was no subjective sensation. The eruption was of retiform character: the lesions being mostly pea or dime size, flat, slightly scaling, some faintly pink, others a pinkish yellow or almost the normal color of the skin.

DISCUSSION

Dr. McEwen said he believed it was a case of parapsoriasis.

Dr. Foerster said he believed it was an example of the pityriasis lichenoides chronica (Juliusberg) type of parapsoriasis. There were a number of papules and a peculiar collodion-like scale.

Dr. Senear and Dr. Mitchell agreed with Dr. Foerster.

Dr. Waugh said he was interested in the rapid development of the disorder and the spreading over the trunk and extremities. He asked for suggestions as to therapy that might be beneficial, and recalled a case that was under Dr. Ormsby's care several years ago, in which nothing seemed to have any effect.

Dr. Mitchell asked whether Dr. Waugh remembered the effect neorobin had in that case. The result of treatment with this preparation was apparently remarkable. The patient was to come in to have a photograph taken to show the cure, but when he reappeared his condition was just the same as before.

Dr. Foerster said he had heard that such cases of Brocq's erythroderma were treated with the Alpine lamp, with good results.

He called attention to the fact that the man had a supernumerary nipple and said that when he was on a medical advisory board and examined 2,980 drafted men, he found seventy-one with supernumerary nipples, of which six were multiple, and the remainder single.

EXTRAGENITAL CHANCRE. Presented by Dr. Senear.

A man, aged 42 years, a farmer, late in December, 1922, burned his tongue with a hot spoon. He said that the tongue was denuded over a considerable area. One week later, a nodule appeared on his tongue, reaching its greatest size within a short time. Since then it had gradually decreased in size until it was about half its original diameter. There had been no glandular enlargement. The lesion was painless. About ten days before presentation, he developed a maculopapular eruption over the upper part of the body, unaccompanied by pruritus. The Wassermann reaction was reported strongly positive on February 10. There was no previous history of syphilis, but he had had an attack of gonorrhea twenty years before. There had been no exposure through intercourse for three years, but early in January he attended a party where kissing games were played. The man had burned his tongue in eating
an oyster from a spoon in which it had been cooked and about ten days later attended a "kissing party." The chancre developed one week after this exposure.

**DISCUSSION**

Dr. McEwen said he believed it should be borne in mind that it was possible that neither the oyster, the spoon nor the kissing was the source of the infection.

Dr. Foerster was interested in the fact that the lesion was on the dorsum of the tongue, half an inch (1.27 cm.) back of the tip. It was an unusual location for a lingual chancre, and he believed the injury had something to do with providing the site for the lesion. Ordinarily, lingual chancrees are found on the tip of the tongue.

Dr. Mitchell said they had recently seen a man aged 84 with a primary lesion on the tip of the tongue. He had made a practice of kissing every woman or girl who would permit it.

**CONGENITAL ICHTHYOSIFORM ERYTHRODERMA.** Presented by Dr. Oliver.

An infant, aged 4 months, weighed 9 pounds and 11 ounces (44 kg.) at birth. The skin was red, shiny and scaling, the hands flexed and the fingernails clawlike. The epitrochlear glands and spleen were not palpable. The Wassermann reaction was negative on the blood. The mother's blood Wassermann reaction was negative; the spinal fluid Wassermann reaction with cholesterolized antigen was ++++; the Lange and globulin tests were negative; there were 13 cells.

**DISCUSSION**

Dr. Foerster said he believed it was a case of ichthyosiform erythroderma, and said the mother's hands were distinctly hyperkeratotic.

Dr. McEwen agreed with Dr. Foerster, but he said that he was impressed with the fact that this case was a case in which incompetent diagnosticians had rushed to the treatment of syphilis on insufficient evidence and had thereby brought about complications in the matter of making a correct diagnosis which would require a long time to remove. He was encountering these cases of wrongly diagnosed "syphilis" constantly and thought the situation had a distinctly serious aspect.

Dr. Oliver said the syphilis department had never been in the hands of the dermatologists at the Children's Hospital. He did not see the child under discussion until it had been under treatment for two months. He understood the diagnosis of syphilis had been made on the appearance of rhagades about the mouth and the exfoliation of the palms and soles, rather than on any conclusive evidence.

**IDIOPATHIC MULTIPLE HEMORRHAGIC SARCOMA (KAPOSI).** Presented by Dr. Waugh.

An Italian, 73 years of age, had lived in America for thirty-seven years. His disorder had been present for about two years. A vesicular eruption was first noticed on both lower extremities; about one or two months later the bluish red, nodular lesions developed. There were about 100 on each leg.
between the knee and the ankle, principally on the anterior surface. Subsequently, lesions appeared on the arms, chest and thighs. None of the lesions had disappeared. They had always been painless; most of them were about the size of a pea, although a few were larger. The skin below the knees was hard, infiltrated and more or less edematous. The lesions on the arms were discrete, elevated, rather dark red, infiltrated areas; fifteen of these lesions which were slightly scaling were situated on the left arm and hand. There was no subjective sensation.

**DISCUSSION**

Dr. McEwen said he believed the condition was Kaposi's sarcoma.

Dr. Mitchell said this was his impression from the clinical picture, particularly the lesions on the legs.

Dr. Foerster said he had not seen the sections, but he believed it was a case of multiple hemorrhagic sarcoma.

Dr. Waugh said he believed there was no question about the correctness of the diagnosis. The sections he showed were secured from a lesion that had been present for a little more than a year, and he had not secured a section from a later lesion. The section presented corresponded quite well with the condition as described. The elastic tissue was practically absent, and the blood and lymph spaces greatly dilated with intracellular infiltration around the vessels. There was not as much round cell infiltration as in some instances, and he said he would make an effort to get another section from the lower extremity. Dr. Ebert had been doing histological work.

**EROSIO INTERDIGITALIS SACCHAROMYCETICA.** Presented by Drs. Senear and Wien.

A woman, aged 56 years, about eighteen months before presentation injured the skin in the fourth interdigital space with a nail. The wound healed in about five days. About six weeks later she noticed a small lesion from which she squeezed water. This disappeared, but it recurred at intervals until two months ago, when the skin became macerated and red and caused some distress.

A 2 per cent. solution of copper sulphate, as advised by Dr. Mitchell, was employed, and improvement was rapid until about one week before presentation, when the condition again became acute.

**DISCUSSION**

Dr. Mitchell said this case was not as well defined as usual, but this was probably due to the fact that the lesion had largely cleared up.

Dr. Senear said that when he first saw the patient she had the characteristic lesion with the overhanging edge about it. This had nearly cleared up under treatment. He was interested in the therapeutic effect. The copper sulphate had worked well, in spite of the fact that there had been some recurrence, which he thought was due to the fact that the patient had her hands in water much of the time.

**DISSEMINATED SCROFULODERMA.** Presented by Dr. Oliver.

A boy, aged 11 years, had had the disorder for three years. The eruption extended over the face and body.
DISCUSSION

Dr. Foerster said he had made a diagnosis of scrofuloderma, but, he thought the condition could very well be taken for syphilis. He believed, however, that all other disease processes could be ruled out, and that the diagnosis would lie between tuberculosis and syphilis. He was in favor of tuberculosis, largely because of the peculiar scar with a bridgelike formation on the left cheek, and he believed no condition except scrofuloderma produced the kind of bridgelike scarring with an overhanging of the margins, that was present here at both the upper and lower borders.

Dr. Pusey said he was inclined to think it was a case of syphilis. Part of it was superficial in the subcutaneous tissue; it had a striking tendency to annular arrangement, and it did not correspond to the picture of the annular lupus which is sometimes seen. He agreed that the lesions on the cheek were like those of scrofuloderma, but those on the arm did not look like scrofuloderma or like lupus. As Dr. Foerster had said in talking over the case, it was easy for syphilis to simulate tuberculosis but hard for tuberculosis to simulate a syphilid, and he thought the boy had syphilis.

Dr. McEwen said he did not think it was syphilis, because of the hypertrophic type of scarring and because were it syphilis, probably during the three years' duration there would have been some period when it would have been more or less healed. The boy looked healthy, did not have the teeth of a congenital syphilitic and did not give a history of eye trouble. He did not consider it a case of scleroderma but believed it was of tuberculous nature. In his opinion, blastomycosis would have to be excluded carefully.

Dr. Senear said that when he looked at the lesion on the arm mentioned by Dr. Pusey, he thought it was a case of syphilis. Then Dr. Foerster called his attention to the bridgelike scar, but he was still more inclined to a diagnosis of syphilis. He could not see any typical yellow color, but there was some slight suggestion under the diascopic.

Dr. Oliver said he had seen the patient only once before, but he thought the case so interesting that he presented the boy for the consideration of the Society. His impression was that it was a tuberculous condition of some type, but he was openminded, and he would have a Wassermann test made. (Since the last meeting the Wassermann test had been made and found negative).

Dr. Mitchell said he believed if one were looking at the lesion on the right arm in a moulage without knowing anything about the case one would accept it as syphilitic, and this was also true of the one over the right nipple. As to the appearance of congenital syphilis, the boy had no more signs of pulmonary tuberculosis than of syphilis. He might have acquired syphilis. He had seen such cases from time to time, and they had histories in the office of quite a number of acquired cases in children. The lesion on the left arm might well be a mycotic process, but those on the right chest and right arm were difficult to differentiate from syphilis.

Dr. Oliver said the lesion on the right cheek was soft and velvety, with no suggestion of syphilis. The patient had used ointments prescribed by the family physician.

Dr. Eisenstaedt said he felt much as Dr. McEwen did, that the case was of tuberculous nature, but he did not exactly follow the definition of scleroderma. The large, hypertrophic scar was suggestive of blastomycosis with the peculiar puckering, and he agreed that this would have to be ruled out.
A CASE FOR DIAGNOSIS. Presented by Dr. Senear.

A girl, aged 17 years, presented an eruption which had been present on the trunk and extremities for the last eighteen months, varying in intensity but never clearing up entirely. Itching was severe at times, and the intensity of the eruption and the itching were greater at night.

On the trunk and extremities was a generalized eruption of annular, reddish-brown lesions, varying from the size of a split pea to that of a half dollar. Many of the lesions were slightly elevated and covered with thin, adherent scales. There was no dermatographism. The patient had "chilblain circulation" with livedo reticularis of the arms and legs.

DISCUSSION

Dr. Waugh said he did not think the case was a seborrheic dermatitis or chronic urticaria, but he did not know what it was.

Dr. Pusey said he thought it was necessary to exclude a seborrheic dermatitis, but he did not know what the condition was.

Dr. Ravitch suggested tricophytosis.

Dr. Foerster said there was evidently some follicular involvement, but he did not know what it was.

Dr. Mitchell said that if he might be permitted to coin such a phrase, the case suggested an unresolved pityriasis rosea.

Dr. Senear said he was interested in Dr. Mitchell's suggestion because some cases of "unresolved pityriasis rosea" had been reported, but he thought the distribution did not look like that disorder. He had recently read the report of a case of tricophytosis that was similar to this, and the patient afterward developed typical tricophytosis cruris. He had tried to secure some scales from the lesion, but it had been impossible to do so.

Two or three years ago, Dr. Pusey and he had a case somewhat like this one, and Dr. Foerster suggested at that time that it was an urticarial type of dermatitis herpetiformis, which proved to be correct. The picture in this case did not look like that, but because of the intense itching he had thought of that possibility.

TUMORS (?) Presented by Drs. Senear and Weber.

A colored girl, aged 17 years, for the last few years had noticed small tumors appearing over the trunk and hips. No subjective symptom was complained of.

Over the trunk and upper part of the arms were a number of tumors varying in size from that of a split pea to that of a walnut. They were soft and readily reducible through a herina-like opening in the skin. Over the upper part of the trunk, there were a number of flattened, slightly elevated patches, which had not as yet assumed the round or oval dome shape of the tumors.

DISCUSSION

Dr. Foerster said he thought it was an example of Buzzi-Schweninger type of tumor formation, to which Dr. Pusey had called attention in this country. The distinctive lack of resistance of the skin to pressure as observed in this condition, was pronounced in Dr. Senear's patient. The fact that it occurred in a colored person was of interest. Dr. Foerster said he did not recall having seen the disorder reported in the literature as occurring in other than white patients.
Dr. Mitchell said he believed Dr. Foerster was probably correct in his opinion. The lack of resistance was against the diagnosis of Recklinghausen's disease, although the pigmentation was rather characteristic of the disorder suggested.

Dr. Pusey said that at the time he reported his case two years ago there was only one case of the Buzzi-Schweninger type in the literature, and he believed there were few at the present time.

Dr. Senear said he thought it was a multiple benign tumorlike new growth. The lesions over the shoulders were much like those in Dr. Pusey's case. He had thought of Recklinghausen's disease because of the pigmentation, and because the patient was not very bright; a sister three years younger was much brighter. A similar case had been presented in New York as a Buzzi-Schweninger type, and Recklinghausen's disease had been taken into consideration. Several members commented on the lack of pedunculation, stating that the latter was not necessary in Recklinghausen's disease. He said he would make a further study of the case and report later.

Dr. Oliver said he had a girl under observation who had one large tumor on the heel, and she was now developing areas of pigmentation. Dr. Finnerud had seen the patient, and a diagnosis of Recklinghausen's disease had been made.

Dr. Mitchell said that in his war work he saw many cases of Recklinghausen's disease, and he had found that lowered mentality was not often associated with the condition.

Dr. Waugh said he thought it was a case of Recklinghausen's disease with the typical areas of pigmentation and the soft tumors.

A CASE FOR DIAGNOSIS. Presented by Dr. Senear.

In a colored boy, aged 7 years, lesions had appeared on the arms, legs and trunk ever since infancy, always being more numerous in the spring and summer. The patient said that there was no itching, but the father said that during infancy it had been necessary to tie his hands to prevent scratching, and that he still scratches the lesions at times.

The trunk and extremities were covered with a number of pinhead to split pea sized papular lesions, some with vesicular or crusted centers. A number of superficial scars were present as a result of the involution of old lesions.

The Pirquet test was positive, while roentgen ray and physical findings in the chest were suggestive of tuberculosis.

DISCUSSION

Dr. Stillians said he thought the condition was a papulonecrotic tuberculid.

Dr. Pusey agreed.

Dr. Mitchell said he could not come to any conclusion. The lesions were rather suggestive of lichen urticatus. If the patient had had any vesicular patches from time to time, he believed it might be that disorder, particularly as it was aggravated in the spring and summer months. Aside from that, he could come to no conclusion. It might be dermatitis herpetiformis, although he had never seen that in a negro.

Dr. Waugh said he thought it was lichen urticatus, and he believed the skin was more likely to show infiltration in the colored race in such cases than in the white.
Dr. Senear said that the apparently positive findings of tuberculosis reported by the pediatric department made him think that it might be a tuberculid. The first time he saw the patient the lesions were capped with a white vesicle. The intense pruritus and seasonable exacerbation seemed to suggest lichen urticatus. The scarring, which was rather more extensive than usual in such cases, might have been the result of scratching.

NEW YORK DERMATOLOGICAL SOCIETY

Regular Meeting, Jan. 25, 1923

W. B. Trimble, M.D., President

POIKILODERMA ATROPHICANS VASCULARE. Presented by Dr. H. H. Whitehouse.

S. M., a woman aged 34, married, Bohemian, a housewife whose father and mother, two brothers and and six sisters were living and well, said she had never had any diseases. She began menstruating at the age of 18 and menstruated regularly every three weeks. She married at the age of 21, and had never been pregnant.

Her present condition began thirteen years ago on the anterior surface of the right shoulder as a small area about 2 inches (5.08 cm.) in diameter. From the patient's description, it was similar to mycosis fungoides. Several months later the lesion became larger, showing some reticulation, telangiectasia and areas of atrophy resembling a roentgen-ray dermatitis. Eight years later other similar lesions appeared on the chest, abdomen and back, going through the same process as the previous one on the shoulder with more marked atrophy, pigmentation, reticulation and telangiectasia. The condition covered the greater part of the chest, abdomen and back, with the exception of an area about 2 inches in diameter around the nipples and a small part around the navel, which was normal. There were two areas on the back over the scapulae, about the size of a hand, which were red and scaly and showed more telangiectasia and atrophy than any other area on the patient's body. The reticulation was not plain. The most typical areas on the anterior surface of the body were above and below the breasts, and were about the size of a palm. Atrophy, telangiectasia and reticulation were definite here. The patient, had had an ulcerated area about 2 inches wide and 3 inches (7.62 cm.) long on the right side of the neck, for the past three years. The ulcer had a smooth, shallow base, thin ragged edges, not indurated, and it healed under ichthyol ointment. About a year ago, lesions appeared on the arms and legs, which resembled mycosis. These became red and indurated, and in a few days faded, leaving pigmentation, and recurred at short intervals. The face and mucous membranes were free, as were also the palms and soles. There were symptoms of burning and soreness, particularly in the larger patches.

The patient was healthy, about 5 feet, 8 inches (172.72 cm.) tall, and weighed about 140 pounds (63.5 kg.). She seemed more or less depressed at times. She said that ten years before, in Budapest, all the patches disappeared within two weeks following the use of some drops.

Biopsy: There was marked acanthosis with papillary prolongation of the derma, extending almost to the horny layer, which showed increased vascularity
with some small round cell infiltration, which was also present in the superficial derma. There was some pigment in these regions. The stratum granulosum was prominent, and there was some parakeratosis with moderate hyperkeratosis. If mycosis fungoides, the process was at a stage before there was thinning of the epidermis from pressure.

Roentgen-ray examination revealed a normal chest and pituitary body. The urine analysis and blood count showed no abnormalities. Chemical analysis of the blood revealed 100 mg. of glucose per 100 c.c. of blood, 0.47 mg. of creatinin, 4.3 mg. of uric acid, and 7 mg. of urea nitrogen.

The patient was in the hospital for thirteen weeks, leaving on Aug. 19, 1922. Since her discharge she had received roentgen-ray treatment every fortnight, applied to the back and neck, without any apparent effect. There had been four such applications.

**DISCUSSION**

Dr. Lane said that with the small number of cases so far reported it was impossible to draw a sharp line as to what should be included under the name of poikiloderma. There was great variation in appearance, and while this case was markedly different in many respects from his own, he felt that it was nevertheless an example of poikiloderma. As compared with his patient, there was here much less pigmentation, atrophy, and telangiectasia, while the inflammatory signs were greater. The reticulation so often noted was present here only about the breast.

Dr. Highman said it was a privilege to have had the opportunity to see so remarkable a case. He imagined that histologic study would show an inflammatory process in the capillaries and destruction of the elastic tissue, a group of changes suggestive of what occurs in typical discoid lupus erythematosus.

Dr. Lane replied that the histologic examination had shown two stages of the disease, an inflammatory and an atrophic. The inflammatory stage was manifested by perivascular round cell infiltration and dilatation of the superficial vessels, and alternate increase and diminution or absence of pigment; the atrophic stage by flattening of the papillae, degeneration and disappearance of the elastic tissue and atrophy of the collagen bundles. The histologic report given by Dr. Whitehouse fitted as a description of the inflammatory stage of the disease, and the clinical appearance of most of the lesions in this case indicated that such was the case.

Dr. Highman said that with the clinical picture of poikiloderma went the pathologic picture seen in essential telangiectasia plus the atrophic changes of scleroderma. Clinically, the case suggested a relationship with lupus erythematosus, although telangiectasia was more marked, while some of the lesions suggested the fixed erythema group. It would be interesting to know whether poikiloderma might not be classified as a fixed erythema going on to more marked atrophy than is usually observed in erythema perstans. This might be a process leading to a final picture more distinctly advanced than that seen in erythema perstans. It was unique, and from its distribution one would expect a toxic process or a focal infection to explain it. This disease was closely related to the other essential telangiectasia, such as purpura annularis, angiomata serpiginosum, and similar diseases.

Dr. Wise said that the two cases that he had seen were much more advanced. Dr. Lane's case showed advanced atrophy, and there were also ulcerations. He believed that the diagnosis as presented was the most likely one, as other diseases could be excluded.
Dr. Howard Fox said that from his recollection of the subject, cases of this disease resembled roentgen-ray burns with telangiectases, pigmentation, etc. As this patient showed no pigmentation, it was not the picture of a roentgen-ray burn, and in that respect did not accord with the description of the disease. He thought the suggestion of lupus erythematosus should be seriously considered.

Dr. Whitehouse said that the diagnosis might well be accompanied by a question mark; some of the features varied so from those of cases that had been reported that it was hard to be dogmatic. One of the anamnestic features of this case, if true, was interesting and was not evident in any of the others; namely, the patient's statement that in Budapest, ten years ago, it entirely disappeared in two weeks while she was taking some drops. So far as he understood, poikiloderma was a progressive disease and never disappeared. This patient had the ulcer on the neck which had lasted for two years—whether it was due to traumatism or not, he did not know. As to the subjective symptoms, she had the same dryness of the skin to which Dr. Lane had referred, and was very uncomfortable unless it was kept greased, but it lacked the essential pigmentation shown in most such cases, and the distinct well marked features of a roentgen-ray atrophy. It was his intention to study the case further, and he hoped to be able to make a further biopsy. With regard to the discussion of the other reported cases, as Dr. Lane had brought out in his paper and during the discussion that followed, it was considered very probable that poikiloderma was of toxic origin. Some likened it to diffuse idiopathic atrophy, and there was much difference of opinion. Lupus erythematosus as a possible diagnosis was mentioned by some. The condition did not seem to have anything to do with Majocchi's or Schamberg's disease, as persons with both of those recovered, while those with this disease did not.

Dr. Highman asked what finally happened to poikiloderma.

Dr. Lane replied that three patients so far had died. The patient in the first case reported died of generalized tuberculosis. This was an early case of poikiloderma. Ormsby's patient died of sarcomatosis. The patient in his own case, not yet reported, died a few months ago of Hodgkin's disease. In all reported cases of poikiloderma, the condition grew progressively worse. Few of them had been followed for long, or at least there were few such reports in the literature.

KAPOSI'S SARCOMA. Presented by Dr. Wise for Dr. Fordyce.

1. M., a dentist, aged 45, born in Russia, gave a past history of pneumonia and typhoid fever, but denied venereal disease. The present eruption began four years before, on the hands. Since that time the patient had received forty injections of sodium cacodylate and eight roentgen-ray treatments, with slight improvement, although the disease had continued to spread. Roentgenograms of the lungs had shown areas of calcification suggesting healed tuberculosis. There were two pea-sized violaceous nodules on the left pinna and a quarter-sized linear, violaceous infiltrated lesion on the flexor surface of the right arm. The palm showed violaceous, slightly infiltrated, ill-defined lesions; and on the dorsum of the hand, especially on the knuckles, the lesions were more sharply defined and arranged in plaques giving the appearance of pernio. On the shins were numerous, pea-sized pigmented nodules, and on the outer and inner aspects of both feet there were sharply defined, violaceous scaly and
infiltrated plaques formed by a coalescence of nodules. The patient was under filtered roentgen-ray treatment at the Vanderbilt Clinic, and was receiving sodium cacodylate injections.

**DISCUSSION**

Dr. Howard Fox asked what treatment the patient had received, and was told that the man had received filtered doses of roentgen rays, which had proved more efficacious than the unfiltered radiation. He said that he had compared the effect of filtered and unfiltered roentgen rays in a case of Kaposi's sarcoma, and he had obtained better results when filtered radiation was used.

**PHENOLPHTHALEIN ERUPTION.** Presented by Dr. Wise.

G. H., a man, aged 25, single, a teacher, presented a particularly interesting case because he had been taking a cathartic which contained phenolphthalein for one year, without any sign of an eruption, but he did have an eruption after taking other medication. On Aug. 22, 1922, he received an arsphenamin injection for a primary syphilitic sore on the penis. After that he received five arsphenamen injections at five day intervals, intravenously, without any sign of an eruption. The day after the last of these, he was given one mercuric salicylate injection in the buttocks, and the following day the skin presented a typical, generalized phenolphthalein rash, which became more marked after the second injection of mercury. He now presented twenty-five to fifty cent piece sized macules which were brownish and violaceous, scattered over the face, trunk and extremities.

**DISCUSSION**

The diagnosis was not questioned.

**NAEVUS PIGMENTOSUS ET LINEARIS.** Presented by Dr. Howard Fox.

M. B. S., a mulatto 11 months of age, born in the United States, presented areas of pigmentation on both buttocks which had been present from birth, and also on the left buttock a linear nevus that had been present, according to the mother's statement, for six months. The pigmented area on the left gluteal region was dark brown, while that on the right side was of a lighter shade. The linear nevus consisted of a patch 4 inches (10.16 cm.) long by one-half inch wide (1.27 cm.), consisting of rough, slightly scaly, pin-head sized papules, which showed some evidence of scratching.

**DISCUSSION**

The diagnosis was accepted by all.

Dr. Howard Fox called attention to the presence of itching which at first seemed to throw some doubt on the diagnosis of a linear nevus. He had previously, however, treated an adult patient with rather extensive linear nevus who had complained of considerable itching.

**PITYRIASIS ROSEA WITH MARKED FACIAL INVOLVEMENT.** Presented by Dr. Trimble.

H. W., a girl, aged 14, born in the United States, had had the condition for three weeks. It began on the abdomen. Within a few days after the first appearance of several lesions on the abdomen, the eruption spread rapidly,
involving the arms, back, neck and face. The lesions were about the size of a
ten-cent piece, somewhat thickened, scaly and numerous. The condition bore
some resemblance to seborrheic eczema, although the foregoing diagnosis was
thought to be the correct one.

**DISCUSSION**

**DERMATITIS HERPETIFORMIS.** Presented for Dr. Williams by Dr.
Traub.

M. C., an Italian woman, aged 22, had been married for two years. During
this period she had had two miscarriages, and was three months pregnant when
the rash for which she was presented first appeared. Her past history, except
for some nervous disorder—either chorea or epilepsy—and mild anemia, was
negative. The eruption had existed for eight months, beginning on the hands
and arms and spreading shortly to the body and later to the legs. The itching
had been intense. At first the rash was papular, but three months ago vesicles
and then bullae appeared. The lesions showed a decided tendency to grouping.
The healed areas showed a marked pigmentation and some scarring. The active
lesions consisted of papules and papulovesicles to small bullae; some of the
latter seemed to arise from the normal skin, while others had a decidedly
erythematous base. The patient’s general health was slightly, if at all, impaired,
notwithstanding her statement that she had had a fever reaching 103 F. at
irregular periods since the onset of the trouble. The Wassermann test was
negative one month before. No biopsy had been made.

**SARCOID OF BOECK (MULTIPLE BENIGN MILIARY LUPOID).** Pre-
sented by Dr. Wise.

J. N., aged 28, a colored woman born in Hayti, married, and a housewife,
five years before had been treated at the Vanderbilt Clinic for a seborrheic
dermatitis of the scalp and buttocks. The present eruption was of five months’
duration and involved her face, chest and elbows. There were numerous pea-
sized cutaneous nodules on the backs of her elbows; the skin over these
nodules was normal in color. On the mid-sternal region, there was a small
atrophic area surrounded by a few violaceous red papules. One violaceous-red,
scaly patch, about three-quarters of an inch (1.9 cm.) in size, was located on
the bridge of her nose; two patches of similar size and appearance but infiltrated
were present on each cheek. Several Wassermann tests were negative, but
the microscopic picture of the excised lesion was characteristic.

**DISCUSSION**

The diagnosis was accepted without dissent.

**NEUROTIC EXCORIATIONS.** Presented by Dr. Wise. (Previously shown
at the Academy of Medicine).

J. L., aged 47, a single man, born in this country, a salesman, had had the
condition for fifteen years. The present eruption was of six weeks’ duration.
On the trunk and extremities, there were numerous brown and pigmented
macular lesions. The beard region showed numerous papulovesicular lesions,
pinhead to pea sized, some of them indurated. A few papules were present on
the scalp and on the back of the neck. The man had had syphilis eight years before, and had received one course of treatment. He had had several negative Wassermann tests since. He admitted picking at the lesions, and was observed doing so, but Dr. Wise said he was not sure that this was the true explanation for them. A biopsy was not permitted.

**DISCUSSION**

The diagnosis was accepted.

**ADENOMA SEBACEUM.** Presented by Dr. Highman for Dr. Rulison. (Previously shown in 1922).

After four Kromayer lamp treatments the patient was given compound white lotion in increasing strengths for three months, with improvement. During two months preceding the second presentation, the patient received one-fourth skin unit \((\frac{M}{4})\) doses of roentgen rays at weekly intervals. He was shown because of the apparent improvement under roentgen-ray treatment.

**DISCUSSION**

Dr. Howard Fox said he believed that the result of the Kromayer light treatment was better than that from electrolysis. The latter method had left some small depigmented scars.

Dr. Rulison asked whether any one had had any success in treating such cases with the roentgen ray. He was inclined to believe that the tiny papillomatous growths in this case had decidedly decreased in size since the use of the roentgen ray.

Dr. Wise said that Dr. McKee had tried the method, and he said it was not successful.

Dr. Highman referring to the relative benefits of the roentgen-ray and the Kromayer light, said that the latter had unquestionably done more good. Theoretically, he did not understand why the roentgen ray should be of value, and he was inclined to believe that it might be harmful. Nevertheless, if radium could cure, as it did some of the angiomatous types of nevus, there seemed to be no reason why roentgen rays should not be of some benefit in a telangiectatic process which was evidently a congenital anomaly.

**ARSPHENAMIN DERMATITIS OF LICHEN PLANUS TYPE.** Presented by Dr. Highman.

S. C., aged 27, a clerk, born in the United States, first presented himself for treatment about two years before for an early syphilitic infection, which was treated with arsphenamin and mercury. The specific infection was now four and one-half years old. In May, 1922, a lichenoid eruption developed on the flexor aspect of the arms, appearing as minute papules which did not itch. The eruption had persisted ever since, without disturbing the patient in any way. The case was presented as that type of lichenoid eruption which occurred in connection with arsphenamin therapy, or which might be merely a coincident eruption. The Wassermann test was now negative.

**DISCUSSION**

Dr. Wise said that the diagnosis of lichenoid eruption as a result of arsphenamin treatment seemed the most likely. The condition was not lichen nitidus, for in that dermatosis the color of the papule was the same as the
normal color of the skin in white people. In the negro, it was a little lighter. It greatly resembled a case of lichen planus following the use of arsphenamin, a report of which Dr. McCafferty had recently published.

Dr. Howard Fox agreed with Dr. Wise.

Dr. Whitehouse said that these lichenoid eruptions following arsphenamin medication were unusual.

Dr. Highman said he did not know just how to classify the condition. The eruption appeared after vigorous antisyphilitic treatment. The presence of the eruption was first observed by Dr. Rulison, and since May it had somewhat increased in extent. The patient received his last arsphenamin injection in November, 1922. There was no itching as in lichen planus. Dr. Towle had shown a case at the American Dermatological Association that seemed so typically like lichen planus that those who had not examined it carefully were astonished when the belief was expressed that it was a lichen-like form of arsphenamin dermatitis. Dr. Highman said he had held to his belief that it was lichen planus until Dr. Greenwood of Boston showed him the slides. Later, Dr. Towle had told him that histologically it had proved to be lichen planus. Some of the specimens from Dr. McCafferty's case showed typical lichen planus. Dr. Highman said he had heard of some cases of lichen planus that disappeared under arsphenamin treatment but in general this treatment was not effective. It would not be surprising if now and then lichen planus developed in patients who had received arsphenamin. He was inclined to feel that if arsphenamin were responsible for this picture, it would develop more frequently, considering how often it caused other skin reactions. He did not believe that this was a case of lichen nitidus. Tentatively, and until a histologic study of the case could be made, he would regard it as lichen planus in some way related to arsphenamin, but he could not consider it an example of cause and effect.

PSORIASIS ON PATCHES OF ALOPECIA AREATA. Presented by
Dr. Howard Fox.

Dr. Fox reported an unusual condition recently seen in a school girl (E. M.), 12 years of age. She presented typical psoriasis of moderate intensity, situated chiefly on the elbows, knees and scalp, and alopecia areata consisting of three patches varying in size from that of a fifty-cent piece to that of a silver dollar. Both of these diseases had appeared almost simultaneously eleven months previously. The alopecia had disappeared under treatment and had reappeared within the last month. Scattered over the scalp was a moderate number of psoriatic lesions, while on the largest patch of alopecia were situated two typical red and scaly lesions of psoriasis about a quarter of an inch in diameter. This case was recorded on account of the well-known tendency of alopecia areata to be free from any scaling, even when present on a scalp affected by seborrhea or other scaling diseases.

REPORT ON CASE FOR DIAGNOSIS. ULCERS OF THE PENIS.
Presented by Dr. Howard Fox. (Previously presented before the New York Dermatological Society on Oct. 24, 1922.)

A. B., an Italian laborer, aged 44, since the last presentation had developed a new ulcer on the penis, similar to the others from which he had suffered. He
was given three injections of neo-arsphenamin, 0.09 gm., at about weekly intervals, beginning December 5, 1922. At the end of three and a half weeks the ulcer had entirely healed, no local treatment being used. Up to Feb. 1, 1923, there had been no new lesions. A histologic examination of a piece of tissue from one of the ulcers excised under local anesthesia was made by Dr. D. L. Satenstein, who reported as follows: "Granuloma. Histological diagnosis not possible. It might well be syphilitic or tuberculous. There is a dilation of the vessels of the upper cutis and a general edema and increase of fibroblasts throughout. The walls of the deeper vessels are hyperplastic. There is a perivascular infiltration composed of plasma epithelioid and round cells and occasional giant cells. New vessels are present, but in no relation to the infiltration. There is no special tubercle formation. The vessel changes suggest syphilis. The cytology of infiltration suggests tuberculosis."

Dr. Highman reported a dermatitis caused by handling English ivy, which he will report in full later.

MINNESOTA DERMATOLOGICAL SOCIETY

Regular Meeting, Feb. 7, 1923

JOHN M. ARMSTRONG, M.D., Presiding

LUPUS ERYTHEMATOSUS. Presented by Dr. C. D. Freeman.

Miss S., aged 20, had an eruption which was first noticed on Sept. 15, 1922, consisting of pin-point to lentil-sized bright red papules; some were covered with scales. These lesions were limited to the forehead, cheeks and nose, and were marked on the upper eyelids. There were no subjective symptoms. Her condition was better than at the first appearance. About January 1, similar lesions appeared on the hands and feet.

DISCUSSION

Dr. Butler said he was of the opinion that Dr. Freeman's case was one of the varieties of lupus erythematosus described as the telangiectatic type. He made this diagnosis from the flat erythematous nonscaling patches, which, on close inspection, seemed to be due to new vessel formation.

Dr. Gager said that two years ago last October or November, at one of the meetings, he showed a case of lupus erythematosus of the lower lip involving the mucous membranes, and the diagnosis was concurred in by all members of the Society. He treated the man for a long time under the violet light, also with general radiation. The patient was faithful, and Dr. Gager was able to keep the skin constantly tanned. The lesion healed entirely, and the man has had no recurrence; Dr. Gager suggested the same method of treatment in this case. The lesion itself disappeared in about a year.

CARCINOMA OF THE TONGUE. Presented by Dr. S. Sweitzer.

A man, aged 50, showed a crateriform ulcer on the tip of his tongue. Section showed carcinoma. Three months before, he burned his tongue on a cigaret. The patient was syphilitic.
PSORIASIS OF THE PENIS. Presented by Dr. D. D. Turnacliff.

The patient, aged 30, had on the dorsum of the shaft of the penis, extending back to the pubis, a descreet papular pruritic eruption, coalescing in older areas. Ointments had been used so that all scales were removed, but on the extensor surface of the left forearm there was one papule with an oily scale and pin-point bleeding when the scale was removed. The lesions on the penis had been present for the last year.

DISCUSSION

Dr. Butler said that he disagreed with Dr. Turnacliff’s diagnosis of the case. The lesions were, in his opinion, violaceous in color; there was little scaling; the patches were made up of coalesced papules; and the itching was intense. He said that while psoriasis does occasionally itch, this usually occurs in the generalized variety. The patient presented no lesions on the other parts of the body. Dr. Butler believed it was a case of lichen planus.

Dr. Freeman said he believed this was a case of lichen ruber planus.

Dr. Armstrong said he favored a diagnosis of lichen planus.

Dr. Michelson said he favored a diagnosis of psoriasis vulgaris. He said that as the patient had been using an ointment, he would like to see him at the next meeting after he had refrained from using the ointment for one week.

ALOPECIA UNIVERSALIS. Presented by Dr. Michelson.

A boy, aged 11, experienced complete loss of hair of the scalp, eyebrows and eyelids; even the lanugo hairs were not visible. Alpine sun therapy had made no change in the boy’s condition. It had been employed for the last five weeks.

DISCUSSION

Dr. Freeman said that he was once interested in a medicolegal case almost similar to the one presented by Dr. Michelson. The patient was working in a factory and was struck by a belt. About two months later, she developed an alopecia universalis. In the testimony, the theory of shock following injury as a probable cause in these cases was advanced and evidently carried considerable weight, as the jury gave the plaintiff a verdict of $2500. About a year later, the patient’s brother came to Dr. Freeman with a typical alopecia areata without any history of shock or injury.

ALOPECIA AREATA—CANITIES. DERMATITIS HERPETIFORMIS. Presented by Dr. Michelson.

A man, aged 34, a cook, had been seen at varying intervals for past two years for typical outbursts of dermatitis herpetiformis. At the last attack, five months ago, he had grouped crescentically arranged vesicles which itched intensely, situated in the scapular regions, on the arms, face and scalp. Accompanying this attack, he had alopecia areata. His hair previous to the alopecia was dark brown. It has now returned, but is much more sparse than formerly and snow white.

Dr. Michelson said he thought the case of the man with the dermatitis herpetiformis associated with alopecia areata was of special interest because both of these conditions may be due to some glandular disturbance.
LOCALIZED SCLERODERMA. Presented by Dr. Turnacliff.

This case had been presented one year ago at the February meeting in St. Paul, at which time the patient had four or five areas from 1 cm. to 5 cm. in diameter, which were glossy white and boardlike with purplish margins. The condition extended up the outer side of the leg, as if following the course of a nerve, to about the height of the greater trochanter of the femur. New lesions formed, and all increased in size and coalesced, forming a large plaque 3 by 8 inches, with several smaller areas above it.

From April to July, the patient received thyroid extract, 1 gm. a day, with no change until September when the lesions spread to their present size. In October, the patient had whooping cough, and when seen again on December 10 the lesions were beginning to involute, until there were only islands of scleroderma scattered through the purplish involuting lesions.

POSTEROSIVE SYPHILOID OF SILVESTER AND JACQUET. Presented by Dr. Sweitzer.

A girl, aged 5, presented grouped circinate papules on the buttocks. Some itching was present. The eruption was diagnosed as an inflammatory condition. It was a typical napkin eruption, and had a certain resemblance to a grouped syphilid.

DISCUSSION

Dr. Michelson said that the dermatitis of Jacquet may be either one of two types: first, an intertrigo type, which usually occurs in ill-kept children; and second, a nodular or urticarial type. This is the type which is most likely to be confused with syphilis. Adamson wrote a splendid article on these conditions some years ago. Both types are resistant to treatment and may last for two or three years.

Dr. Olson said that Leiner described the same condition many years ago, and called it erythema gluteale. The exciting cause is probably the streptococcus.

Dr. Butler said that this seemed to him like an acute inflammatory condition (diaper dermatitis). There were no nodules that he could see or feel, and the skin showed inflammatory rather than infiltrative changes.

PERIADENITIS MUCOSA RECURRENS NECROTICA. Presented by Dr. Michelson.

A man, aged 22, a student, said that for last three years he had had recurrent attacks of "sore mouth." He thought they were associated with the state of his digestion.

The mucosa of the lower lip and buccal mucosa were covered with a thin yellowish-white adherent deposit. In the region of the angles of the mouth, there were several jagged, shallow, painful ulcerations. Under potassium chlorate mouthwash, the condition improved greatly, but the patient said this had occurred before only to be followed by a relapse. Diligent search for thrush-fungi and Vincent's organisms proved negative.

DISCUSSION

Dr. Irvine said he thought the question of lupus erythematosus ought to be considered in the question of diagnosis. It is almost impossible to make a
diagnosis of lupus erythematosus limited to the mucous membranes. He said it usually extended over the lips, but he could see no reason why it should not appear on the mucous membranes alone; and this case appeared to him to be like cases of lupus erythematosus when the diagnosis is unquestioned.

Dr. Sweitzer said that the condition as diagnosed is supposed to start with a deep-seated nodule that breaks down and ulcerates. He thought the possibility of lupus erythematosus and various fungi would have to be considered.

Dr. Michelson said that this condition is really a deep-seated chronic aphthous stomatitis. In different diagnosis one must consider: (a) Lichen planus. This is ruled out because there were no distinct papules. (b) Psoriasis mucosa oris. This is a rare condition and by most authorities is supposed to be a misnomer, for they state that psoriasis is a disease of cornifying cells, and the mucous membrane has no cells which can cornify. (c) Leukoplakia was ruled out because of the lack of thickening. (d) Lupus erythematosus should involve the vermilion border of the lips, and one should find some cutaneous lesions. All search for causative organisms was negative.

Dr. Olson said that the history and appearance of the lesions pointed to a possible diagnosis of herpes buccalis. He said that herpes buccalis resembled an ordinary herpes simplex, but often was atypical.

TRYCHOPHYTOSIS BARBAE. Presented by Dr. Breen.

A. T., aged 28, a farmer, referred Dec. 19, 1922, on November 30, while at the soldiers' hospital in St. Paul, noticed a red spot on the right cheek. Two days later it had spread over the whole bearded region. He could not sleep on account of the pain. Examination revealed a swollen face and eyes almost closed. The whole bearded region was covered with pustules, superficial and deep; there were several large plaques sharply margined and raised. The microscope showed the trychophyton. The case was presented because of its extreme severity and rapid spread. The organism was demonstrated.

A CASE FOR DIAGNOSIS. Presented by Dr. Klein.

A man, aged 30, had lesions which first appeared on the left buttock five years ago while the patient was working as a cowboy on a ranch. Since then it had spread over the entire buttocks and was rather sharply defined. The border was covered with a heavy scale, and in the center there appeared some crusted areas which occurred on scar tissue. The Wassermann test was negative. At 13 years of age, he had had some glands of the neck incised, which probably were tuberculous. Neo-arsphenamin and mercury did not alter the character of the lesions, and I am inclined to believe that this is a case of lupus, in spite of the rapid development.

DISCUSSION

Dr. Michelson said he believed this was the most striking case that had been shown before the Society for five years. His diagnosis was lupus vulgaris verrucosus. Against nodular syphilis was the fact that there were numerous lesions recurring within the scar, and in favor of tuberculosis was the fact that the patient had scars on his neck of previous suppurating glands which were operated on, and that the lesions had existed for such a long time with so little ulceration. He also had a fistula-in-ano.
Note.—Microscopic section made by Dr. Michelson and reported at next meeting showed typical lupus tubercules.

Dr. Butler said that Dr. Klein's history of the case threw a new light on the situation. His first diagnosis was lupus vulgaris, but the patient was 30 years of age, and he said it is extremely rare to find lupus vulgaris beginning after the age of puberty. The area of skin involved (all of the buttocks) would require many years if it were lupus. Dr. Butler said he had never heard of lupus vulgaris covering such a large area in five years.

Dr. Klein said that arsphenamin and mercury given intravenously had had no effect on the lesions except perhaps to make some of the areas become a little more dry; some of the lesions in the center were decidedly crusted, showing that this was an exudative process. The scars on the neck, he thought, were probably from old scrofuloderma and not at all shaped like those found in syphilis. He was inclined to believe that this was a skin tuberculosis—probably of the verrucous type—in spite of the short duration of the process.

Dr. Irvine said he believed it was a fairly good general rule that lupus of the skin starts by the twelfth year. However, he recalled a case shown before the Dermatological Association in Chicago in a man 60 years of age, that was of this same type. Serpiginous lesions occurred in a large area over the chest, and spread rapidly, and in only five or six years they reached a large size. Some of the other members at that meeting also described somewhat similar cases in adult life.

Dr. Armstrong said that in his hospital practice several years before arsphenamin treatment became general, he had seen several cases of tubercular syphilis fully as large as this. In one case the whole abdomen and chest were involved. In that case, however, the condition did break down and at the time the patient entered the hospital was infected with maggots.

Dr. Freeman said he believed this to be a case of lupus vulgaris verrucosus, or tuberculous verrucosus cutis, not syphilis. He said there were a dozen areas of recurrence in scars which is characteristic of lupus vulgaris verrucosus but which is never seen in syphilis.

Lichen Planus with a Zoster-Like Distribution. Presented by Dr. Butler.

The involuting patches showed the distribution of a herpes zoster dorsalis. There was no history of a preceding zoster.

Acrodermatitis Chronica Atrophicans. Presented by Dr. Michelson.

Both upper and lower extremities were involved in a woman, aged 52. There was no history of preceding scleroderma. Clinically, this was a textbook picture of the condition. Microscopically, section showed extreme thinning and atrophy of the epidermis.

Erythroderma Pityriasique En Plaque Disseminee. Presented by Dr. Sweitzer.

Miss M., a woman, aged 68, presented a scaly patchy eruption of sixteen years' duration. Clinically, it looked like mycosis fungoides; the section resembled erythroderma of Brocq.
DR. AGER said he would like to ask why at this stage of the disease, having had it for sixteen years, the woman had not developed tumors. He still thought it was mycosis fungoides.

DR. BUTLER said, with respect to Dr. Gager’s statement, that there are four well-defined stages of mycosis fungoides. In the first, or premycotic stage, a biopsy is of no avail, as it shows nothing diagnostic of the disease. The histologic picture is found in the stage of infiltration, or better still in the tumor stage.

DR. MICHELSON said he felt the question was whether or not we were dealing with a case of Brocq’s disease. The lesions had been present for a good many years, with no retrogression or further development. Dr. Michelson made a microscopic section that showed almost complete lack of infiltration, the changes being those slight ones which are so commonly associated with Brocq’s disease. He thought, nevertheless, that one would have to be guarded in his prognosis.

DR. IRVINE said he thought it difficult to get away from the clinical picture of mycosis fungoides. He could feel these lesions when he passed his finger over them, and he recalled one case in which the areas were large and well marked but could not be felt. There was some infiltration, he said, and it might depend on whether the microscope showed it sufficiently characteristic to make a diagnosis.

ERYTHEMA INDURATUM. Presented by DR. SWEITZER.

Miss F., aged 60, had brown, indurated lesions on the lower part of the legs. Some scarring from older lesions was present. On the toes were small papules, and there was circulatory disturbance.

BASAL-CELL EPITHELIOMA OF THE MORPHEA TYPE. Presented by DR. MICHELSON.

A man, aged 47, a furniture-finisher, said that for the last four years he had had a shallow, progressively enlarging, crusted ulcer situated on his right temple. He had used various ointments. The lesion was about the size of a silver dollar. It had a definite rolled pearly border elevated about 0.5 mm. As the border had advanced, scarring had occurred. Section revealed a typical basal-cell epithelioma. Dr. Michelson intended to treat the patient with radium.

DISCUSSION

DR. ARMSTRONG said that this case corresponded with the one shown by Dr. Sweitzer some time ago, except that in Dr. Sweitzer’s case the condition was much more extensive.

KERATOSIS PILARIS. Presented by DR. MICHELSON.

A man, aged 19, had numerous follicularly situated horny plugs situated over the triceps muscle and anterior thigh areas. The case was demonstrated because of the extraordinary extent of the involvement.

The case was of especial interest because the condition had to be differentiated from lichen spinulosus. In this case, the papule with the plug in the center was absent; merely the horny follicular plug was present.

D. D. TURNACLIFF, Secretary.
FRAMBESIFORM SYPHILID. Presented by Dr. F. D. Weidman.

E. H., a white man, aged 24, a chauffeur, had had a chancre five months before presentation. He received prompt treatment by mercury injections, but discontinued treatment before completing the course. The Wassermann test was now four plus. The present eruption developed one month ago and consisted of yellowish red patches of superficial infiltration attaining the size of a palm. The margins of the lesions were crusted, not unlike a seborrhoeic dermatitis, while the center of many showed a soft red "tumor," some of which were superficially ulcerated. They were located mostly on the trunk, although a few smaller ones occurred on the face. The patient had marked epitrochlear and cervical gland enlargement.

DISCUSSION

Dr. Schamberg said he believed this type of syphilis was more common since arsphenamin had come into use, because of the usually insufficient treatment. He regarded the condition as a late secondary syphilis due to insufficient treatment.

ADENOMA SEBACEUM. Presented by Dr. Joseph Klauder.

D., a girl, aged 13, presented pinhead sized papules varying in color from yellowish white to brownish red, involving the cheeks and nose. The surface of some of the lesions was vascularized. The patient was subnormal mentally. Her father, who was also shown, also presented lesions of adenoma sebaceum. The same condition was present in his brother, his father and the latter's brother. The females of the family, other than the patient, were unaffected.

DISCUSSION

Dr. Schamberg said the condition is quite commonly found in the institutions for mentally defective children.

Dr. Freeman said that tuberous sclerosis of the brain often is associated with adenoma sebaceum.

ERYTHEMA INDURATUM AND SYPHILIS. Presented by Dr. Greenbaum for Dr. Schamberg.

A woman, aged 28, had several ulcerations on the legs, which she said were due to the breaking down of previous lumps. There were numerous scars on the legs, due to the former presence of similar lesions over a period of three or four years, which the patient said developed during the winter months and healed during the summer. When the patient came to the clinic, she had a four plus Wassermann reaction. During the course of neo-arsphenamin treatment, the lesion over the left tibia developed, first as a nodule and then as an ulceration, which seemed to indicate definitely that we were dealing with two conditions.
DISCUSSION

Dr. Joseph Klauder said the condition might be a fixed arsphenamin eruption similar to phenolphthalein eruption.

Dr. Weidman asked how one could exclude Bazin's disease.

Dr. Schamberg said it seemed to be a case both of erythema induration (Bazin's disease) and syphilis. Syphilis favors the development of tuberculosis.

MULTIPLE SEBACEOUS CYSTS. Presented by Dr. F. D. Weidman.

F. B., a colored man, aged 40, with advanced pulmonary tuberculosis, had subcutaneous nodules which had been present from twenty to thirty years. In view of an evident phthisis pulmonaris, it was felt that Darier-Roussy sarcoid had to be excluded. Sections were imperfect, but no tuberculous architecture could be made out.

NEUROTIC EXCORIATION. Presented by Dr. Henry Decker.

J. C., a man, aged 65, during June, 1921, while working as a box-maker in a glass factory at Millville, noticed that his face began to itch and burn excessively. He rubbed the areas which itched and noticed that blisters formed, ruptured and became crusted, and when the crusts dropped off or were removed, a scar remained. The condition gradually became worse and involved his pubic region around the site of his truss-pad. This necessitated the discontinuance of wearing the truss and also caused him to stop work. During December, 1922, the patient came to the office. At that time he had several bullae on his neck and forehead with almost symmetrical scarring in front of each ear. Ointment prescribed made the itching worse. A lotion prescribed at a subsequent visit had almost the same effect. During January he was given \( \frac{1}{3} \) of a skin unit dose of roentgen-ray to both sides of the face and the public region. This controlled the itching for a period of three weeks, and as a result the patient has no new lesions. His Wassermann test was negative. His urine, on one examination, was clear, acid in reaction, with a specific gravity of 1.015, and was negative for albumin and sugar.

DISCUSSION

Dr. Schamberg said he believed this to be a case of erythema bullosum sycosiforme with bleb formation.

WHITE SPOT DISEASE. Presented by Dr. Patricia Hart-Drant.

S. M., a white woman, aged 26, fractured her skull in October, 1921. She recovered and returned to work in February, 1922, and in April she noticed spots in the left inferior clavicular region, which in size and color appeared as discrete silvery scales. In several months these lesions became confluent, extending upward to the supraclavicular region. The area now appeared white and glossy with cross hatching. There was practically no induration. Six months after the appearance of the lesions, pigmentation occurred above the area. Since November the lesions had increased rapidly, appearing on the back, abdomen and over the sternum and thighs. No subjective symptoms preceded the first lesions, but the patient complained of slight itching on undressing, and preceding the appearance of new patches. The medical history was negative. The Wassermann test was negative.
SOCIETY TRANSACTIONS

DISCUSSION

Dr. Schamberg said he considered this a borderline case, between a morphea and white spot disease.

Dr. Herschler said he believed it was a case of white spot disease.

Dr. Corson said he believed it looked more like a morphea, the violaceous edge being suggestive.

ONYCHIA SYPHILITICA. Presented by Dr. Greenbaum.

M. B., a woman, aged 38, said that all nails were involved at the same time, about five months before. The nails of seven fingers developed a painful condition at the “overhang,” with subsequent ridging and dull appearance of the nails as seen at presentation. There was no history of miscarriages. The patient had been married for three years, and the Wassermann reaction was four plus.

SEBACEOUS ADENOMA. Presented by Dr. C. K. Dengler.

S. F., a boy, aged 9, an epileptic child, whose mental condition was subnormal, had typical lesions of sebaceous adenoma on the cheeks and nose.

FIBROMA MOLLUSCUM. Presented by Dr. Patricia Hart-Drant.

E. C., an Irish girl, aged 26, presented tumors scattered over almost the entire body and associated with pigmentation. She said they had always existed. The tumors were not painful and varied from small superficial, elevated masses, very soft in consistency and covered by apparently normal skin, to more deeply seated tumors which were fairly firm in consistency and vascular. The pigmentations ranged from diffuse freckle-like blotches to patches several inches in diameter. The patient seemed normal mentally. The Wassermann test was negative. Biopsy showed soft fibroma with nerve trunks and some hyaline degeneration.

MYCOSIS FUNGOIDES. Presented by Dr. Weidman.

Sam G., an Italian, 42 years of age, had had the disease for eight years. The same patient was shown before the Society two years ago, with universal reddening and thickening of the skin, palmar keratosis and ungual dystrophy, and a general adenopathy. The inguinal nodes were the largest, then the cervical, axillary and epitrochlear nodes. There had never been any cutaneous infiltrations or tumors up to that time. Itching and chilliness were marked. His white cell count at one time reached 30,000, and the lymphocytes 60 per cent. The number of eosinophils was normal. The liver and spleen were not enlarged. Lymph nodes were excised and a hyperplasia of lymphocytes was found which would not of itself justify a diagnosis of lymphatic leukemia but which excluded Hodgkin’s disease. His whole body was fractionally irradiated (seventeen treatments) in two courses, the courses being twenty-one days apart. All this appertains to conditions two years ago. Since that time his blood cell count has dropped, but he has not improved otherwise. After the courses of treatment twenty-three blood counts have been made. The lowest red blood cell count was around 4,000,000; hemoglobin, 62 per cent; but both have averaged well. Before stating the white blood cell findings, a new series of roentgen-ray treatment must be described. This time the cervical and inguinal nodes were
treated; each three times at intervals of three to four weeks. This happened a year ago and consumed five months. His white blood cell findings were: before treatment, 19,300; after the first treatment, 25,600; after four treatments, 7,900. Thereafter it has swung consistently around 8,000 (six counts). The differential counts were: before irradiation, 65 to 77 per cent. of lymphocytes; during irradiation, around 45 per cent. of lymphocytes, but falling as low as 13 per cent.; after irradiation, 25 per cent. of lymphocytes, but falling as low as 9 per cent. Eosinophils ranged between 6 and 10 per cent., the number only occasionally being normal. During the last week eczematoid infiltrative patches appeared on the back. They were not like those of parapsoriasis, but appeared edematous and the skin surface was wrinkled. The patient did not feel itchy, but was still chilly; otherwise he felt well.

Review and Summary: The course appeared much like that of leukemia cutis, except that the blood count did not reach the usual levels. Obviously, it could not be quite called an aleukemic leukemia. The recent infiltrations could be conceived just as well of leukemic as of mycosis fungoides production, and up to the time of examination of sections of them the presenter did not feel justified in making a diagnosis. Dr. Schamberg always contended this was a case of lymphatic leukemia.

CASE FOR DIAGNOSIS. Presented by Dr. Patricia Hart-Drant.

P. M., a colored woman, aged 29, presented white circumscribed blotches varying in size from that of a pea to that of half a dollar, occurring on the arms—particularly on the upper arms—and on the thighs. She first noticed these lesions in September, 1922, appearing on the arm as grayish spots which gradually turned white. The skin was smooth with no signs of erythema or scaling. There were no subjective symptoms. The medical history was negative. The Wasserman test and urinalysis were negative. The blood count revealed: leukocytes, 4,800; red blood cells, 4,480; hemoglobin, 85 per cent. The differential count: polymorphonuclears, 64 per cent—small, 20 per cent.; large, 16 per cent.

DISCUSSION

Dr. Schamberg said he considered the depigmentation due to a squamous dermatitis, a superficial inflammation resulting in partial loss of pigment.

DERMATITIS FACTITIA. Presented by Dr. Joseph Klauder for Dr. Weidman.

A woman, aged 50, born in America, was a tabetic patient. She had mental symptoms and was probably a taboparetic. She presented sharply circumscribed excoriated lesions, of variable size. The distribution was across the upper part of the back and the external surface of both upper extremities. A few lesions were present on the forehead, on the legs and about the center of the lower portion of the back. In some areas, the lesions were grouped, and some were serpiginous in outline. There were also associated scars and pigmented areas which doubtless represented the site of involuted lesions.

DISCUSSION

Dr. Weidman said the lesions suggested prurigo nodularis.

Dr. Greenbaum said that syphilis must be considered as a likely diagnosis.

Dr. Shamberg said it was a classic picture of neurotic excoriations and not a feigned eruption.
MULTIPLE TELANGIETASIA IN PATCHES (ANGIOMA SERPIGENOSUM?). Presented by Dr. F. D. WEIDMAN.

J. W., a white man, 65 years old, had chronic heart disease. He said that the condition did not develop until thirty years before. There were two patches of lesions, each about the size of the palm. The one over the right flank consisted of closely and uniformly-placed telangiectasis of the common cavernous, senile type. Those in the second patch, located over the left side of the abdomen, were mostly made up of fine points recalling cayenne-pepper points; on pressure the red color was largely discharged and a faint brown pigmentation appeared. The points sometimes composed short lines, but none was ever definitely serpiginous or annular. The legs showed varicose veins. There was a patch of solid hyperpigmentation of chronic eczema rubrum on the left leg, and on both legs finely punctate pigmented marks like those of Schamberg's disease. The patient said the changes in the leg were fourteen years old, that is, subsequent to the abdominal changes. The Wassermann test was negative. The one patch on the abdomen may have the significance of the commonplace senile telangiectasia in an exaggerated form, but not the second; and as it would be illogical to consider the two patches as unrelated, the presenter preferred to interpret them as acquired effects—most likely constitutional, but not necessarily syphilitic, as in Stokes' more extensive case.

NECROPSY FINDINGS IN A CASE OF XANTHOMA TUBEROSUM PREVIOUSLY REPORTED. Presented by Dr. WALTER FREEMAN.

The patient was shown at the meeting of Nov. 15, 1921. At that time he presented multiple yellow nodes in the skin over the body and extremities, following especially the distribution of the sebaceous glands, the creases of the palms, and the lips and eyelids. In addition he was greatly jaundiced, had a large hard liver, multiple defects in the skull, and diabetes insipidus. The blood cholesterol was about 400 mg. per 100 c.c.

The boy was not benefited by his stay in the hospital and failed to improve later, although he was able to play about the house. He died rather suddenly about Dec. 1, 1922.

On external examination, only a slight change from the condition present when he was exhibited here was found. The xanthomatous nodules were perhaps somewhat larger in some areas. There was severe jaundice. The gall-bladder was filled with clear colorless bile, and the hepatic ducts blocked by a large yellow fibrous mass in the hilum of the liver. There was much adult fibrous tissue with scattered xanthoma cells. There was a considerable increase in the perilobular connective tissue in the liver, with here and there xanthomatous formations. The lungs presented yellow fibers and streaks running in all directions. Histologic examination showed xanthoma cells following the trabeculae, together with some evidences of chronic inflammation. There was no true consolidation. The heart, spleen and kidneys showed no important lesions. The lymph nodes showed characteristics of hemolymphatic alteration. There was a tumor about 12 mm. in diameter in the tuber cinereum extending down the infundibulum into the pituitary gland. The surface was bright yellow, the rest dark green. Under the microscope, there was found much fibrous tissue with xanthoma cells, fat and cholesterol crystals. A similar condition affected the pineal body. The tumors in the skull showed replacement of the normal bone by heavy strands of fibrous tissue interspersed with xanthoma cells, cholesterol clefts and crystals, and foci of lymphocytic infiltration.
ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY

DISCUSSION

Dr. Schambberg said that both he and Dr. Riesman had shown cases of xanthoma in diabetes.

John B. Ludy, Secretary.

NEW ENGLAND DERMATOLOGICAL SOCIETY

Quarterly Meeting, Feb. 14, 1923

Loretta Joy Cummins, M.D., Presiding

FOLLICULITIS ULEYTHEMATOSA RETICULATA. Presented by Dr. Casselberry.

A school girl, 11 years old, had an eruption on both cheeks which started when she was 2 or 3 years old. It had continued to spread somewhat. She showed a symmetrical eruption which had the appearance of white raised lines running into each other and forming a network or reticulum. Between these were pinkish depressions with horny plugs of epithelium at their bases. On the cheeks, the reticulum and the plugs were coarser than near the ears and neck. A few milia were seen about the eyes and a few comedones on the reticulated edges. Sulphur and salicylic acid in varying strengths had been used, with the result that many of the horny plugs disappeared and stopped forming. The skin was much softer but the medication did not have much influence on the atrophy or scarring. Suggestions for treatment were requested.

DISCUSSION

Dr. Boardman asked whether the Kromayer light would not peel off the eruption a little.

Dr. MacDonald remarked that he had had good success with a girl who had had a burn with a resulting atrophic scar and a fine raised periphery, which had been trimmed down with trichloracetic acid.

Dr. Lane said that he had been interested in trying out trichloracetic acid on the edges of slight depressions similar to the ones seen in this case. He had read of Dr. Wise's results in the treatment of smallpox scars and had immediately painted around the periphery with 100 per cent. trichloracetic acid, then a narrow strip with 50 per cent., and still farther out with 25 per cent., thus beveling it off so that it would not cast so much of a shadow. Careful application would probably reduce the shadows cast in this case.

A CASE FOR DIAGNOSIS. Presented by Dr. Sawyer.

A woman, 61 years old, married, the mother of fourteen children, had an eruption which began between the shoulders and persisted for some time, later appearing elsewhere on the body, so that she now showed areas on the back, chest and face. There were a number of rather firm white atrophic areas, rather sharply marked off, in these locations. The itching was intense and worse at night.

DISCUSSION

Dr. Perry remarked that it seemed to him a case of morphea of a rather unusual type.
Dr. Greenwood said that Dr. Lane and he had recently seen a case which was a picture of this one. At first it had seemed to be a morphea, but they agreed that the presence of those horny plugs indicated a diagnosis of atrophic lichen planus. In addition, in their particular case there were typical papules of lichen planus. The case presented did not show any. He believed it to be an atrophic lichen planus. His patient had received a solution of potassium arsenic (Fowler's solution), and he had used the Alpine lamp, which had resulted in great relief.

Dr. Blosser remarked that it seemed to him to be a case of scleroderma.

Dr. Lane said that he would add a word in regard to Dr. Greenwood's case. He thought that the articles in the literature were quite striking as to the presence of the horny plugs, and the absolute whiteness, with the horny plugs, would make it a case of lichen planus atrophicans rather than scleroderma.

LICHER PLANUS ATROPHICANS. Presented by Dr. Lane.

A Jewish woman, 60 years old, a housewife, had had an eruption for eight months. The areas appeared first on the back and gradually spread over the shoulders and chest, with considerable itching. She presented a great many small white atrophic areas which in places, especially on the chest, coalesced to form larger similar areas. In one place on the epigastrium, also on the arm, there were fairly typical lesions of lichen planus.

LUPUS ERYTHEMATOSUS. Presented by Dr. Swartz.

A young woman showed lesions on the face of four months' duration and following a sunburn, according to her story. She showed a typical butterfly type of lupus erythematosus on the face, and the case was presented to show the results of treatment. She will be given silver arsphenamin intravenously, because it has been used with success in some cases. The case will be shown again later.

PROBABLE SYPHILITIC ADENITIS. Presented by Dr. Lloyd.

A young man came to the outpatient department on January 31 with a lump on the right side of the neck. The tuberculosis clinic failed to find any evidence of tuberculosis, and the throat department stated that while the tonsils were not normal they thought the tonsils were not sufficiently at fault to cause the condition in the neck. The routine Wassermann test was returned as positive. More intensive questioning indicated that his paternal ancestor was at fault. He had received two injections of arsphenamin, resulting in a considerable decrease in the size of the glands.

DISCUSSION

Dr. Boardman said that he had a patient who presented marked syphilitic glands which responded quickly at first to treatment, but which finally were reduced to about half the size and remained stationary. The gland finally suppurred and surgical treatment was required.

Dr. Lloyd remarked that Dr. Mallory stated that he had never seen what they both believe is syphilitic degeneration of the glands, but they have seen glands which have been enlarged in the late secondary or early tertiary periods and which have yielded to antisyphilitic treatment.
SECONDARY SYPHILIS. Presented by Dr. Lloyd.

A boy, aged 15 years, had secondary syphilis. The port of entry was not clear. He had had a tonsillectomy in July, 1922, at one of the Boston hospitals and he said that he had had a discoloration in the neck for about four months. He also had well marked glands in the neck, which I believe were not the result of degeneration but of infection, and also well marked glands in the axillary and inguinal regions. The pigmentation on the neck and the condition on the trunk interested us particularly. We had recently seen another case in which it was perfectly logical to assume that the infection was in the throat. There was no history of any primary lesion, and yet the cervical adenitis, which was marked, pointed to the throat.

DISCUSSION

Dr. MacDonald cited a case at the Carney Hospital which was almost similar to this—that of a woman aged 36 years, who had had large tonsils, with a positive blood test. Under antisyphilitic treatment the tonsils shrank, and there was almost nothing left of them.

Dr. Sprague told of a patient who had developed primary lesions and who had been treated outside the hospital, who was also told that he did not need any more treatment until he had a rash. He later had secondary lesions on the tonsils, which were removed. The man came back to the hospital in an unfortunate condition as a result of the operation.

A CASE FOR DIAGNOSIS. Presented by Dr. MacDonald.

A woman, aged 55 years, had had symptoms for five months. The lesion was situated anteriorly and laterally on the tongue at the level of the anterior pillars of the fauces. The lesion was a reddish, papillomatous eruption with no subjective symptoms except a "raw feeling as if the skin was off." It was traversed by numerous small vessels which disappeared posteriorly on the surface of the anterior pillars of the fauces. The patient had had her present tooth-plate for three years. It had never given her any trouble. The Wassermann test was negative. The family history was negative.

DISCUSSION

Dr. Lee remarked that the condition seemed more like hypertrophy of the normal tissue. He said that he did not think that it was distinctively a new growth but rather an inflammatory condition.

Dr. Greenwood said that he agreed. At the Huntington Hospital, during cancer week, they saw many similar cases.

Dr. Blaisdell said he believed that near the junction of the throat and the base of the tongue were several distinctly jelly-like papules suggesting that it was a lymphangioma circumscripta.

Dr. Lloyd remarked that the right side of the tongue seemed normal, the only abnormality noted being a slight increase in the red color about each pillar.

TINEA FAVOSA. Presented by Dr. Swartz.

Four children of one family, all American born, had tinea favosa. The oldest girl being 16 years old, had had the condition for nine years, and she
had gone to school without missing a day. These patients were shown because they had been missed by the school inspectors and because the children are all American born.

ADENOMA SEBACEUM. Presented by Dr. Cummins.

A woman, 22 years old, had lesions which developed when she was 16 years old, gradually increasing in size and number. She showed a great many small, rounded, yellowish-white and white papules, rather thickly studded over both lower lids. A few were now developing on the upper lid. There was some question whether this was xanthoma or adenoma sebaceum.

DISCUSSION

Dr. Lane said that on the same day this girl came into the clinic there was an elderly man there with a definite adenoma sebaceum, and when these two cases were seen together they looked very much alike. He believed this was a case of adenoma sebaceum.

Dr. Casselberry said that he believed the location of the lesions was very much against adenoma sebaceum. While he thought they could not be called chamois colored, they were not the slightly pink color seen in adenoma sebaceum. He thought it was more apt to be a xanthoma, although not a particularly marked case.

ALOPECIA AREATA (?) Presented by Dr. Swartz.

A boy with oval, semibald areas in the occipital region, four years ago had had a similar condition which partially cleared. Last summer there was a recurrence, and he now had fifteen or twenty semibald, smooth areas, without any signs of scaling or redness. He had used no medicine. Cultures were negative.

DISCUSSION

Dr. Greenwood said he believed the diagnosis was between an alopecia areata and a pseudopelade.

Dr. Lee remarked that the amount of scaling seemed to favor an inflammatory condition rather than an ordinary alopecia areata.

EPITHELIOMA OF THE NOSE, SHOWING THE RESULT OF RADIUM TREATMENT. Presented by Dr. Greenwood.

This man came to the clinic in August, 1922, with the entire tip of the nose eroded, the edges elevated and firm, with considerable crusting. It was apparently a steadily growing basal cell epithelioma. He had been treated with our half strength applicators, used at the first treatment with a 1.2 mm. brass filter, for six hours. On the second treatment, the time was five hours with the same filtration. So far as can be seen the lesion is completely healed.

DISCUSSION

Dr. Blaisdell remarked that it took six or seven different applications, of six hours each to cover the whole nose. It seemed to point out that no matter how large the ulceration or how deep, there is no difficulty in healing a lesion over the bony surface. We never see a chronic ulceration over the bridge of the nose.
ARCHIVES OF DERMATOLOGY AND SYPHILIOLOGY

Dr. Lane remarked that a similar case was under treatment in the roentgen-ray room, in which the lesion was nearly healed. In this case, 12.5 mg. needles, unscreened, had been used rather than the plaques.

SECONDARY SYPHILIS. Presented by Dr. Lloyd.

A man, whose lesions have been present for six months, was shown, not on account of the difficulty of diagnosis, but because it is rather unusual to have such marked lesions. He gave a history of infection about six months before. There was a widespread eruption of large flat papules and smaller follicular lesions, often grouped together to form large areas. He had had two injections of arsphenamin, with a fair amount of improvement. It had been rather curious to see the larger flat papules disappear slightly faster than the smaller follicular lesions.

A CASE FOR DIAGNOSIS. Presented by Dr. Towle.

A blacksmith from Newfoundland entered the ward with two lesions one on each leg, symmetrically placed, surrounded by a fiery red zone, covered with bullae and vesicles. The lesions were quadrilateral and not rounded. The duration of the condition was fifteen months. There was some itching when the lesions first appeared. There had been some question as to whether this was an erythema multiforme.

DISCUSSION

Dr. Oliver said that at the present time the condition looked more like psoriasis or eczema.

Dr. Macdonald said he believed the diagnosis was eczematoid dermatitis.

Dr. Blosser said that the condition had a distinctly artificial look.

Dr. Casselberry said that it was not possible to make a diagnosis at the present time and that he could not see the bullae which were spoken of. He believed it was necessary to be more or less careful when one sees bullae or vesicles on the left side of the body where a person can reach them with the hands.

Dr. Greenwood said that the psychiatrist had been over this man and that there was nothing in his mental condition to warrant a diagnosis of fictitious dermatitis. There was no history of taking drugs internally.

A CASE FOR DIAGNOSIS. Presented by Dr. Towle.

The fourth and fifth in a series of seven children were presented for diagnosis. The mother had had no miscarriages, and there had been no stillbirths. The last child died at the age of 9 months from pneumonia, with a questionable patch of similar nature on one cheek. The skin lesions appeared at about the age of 9 or 10 months in the younger and at 3 years of age in the older, the faces and hands being involved at the same time, with the condition slowly progressing. Ectropion had been present in the older for only about 2 months. The condition was always worse during the summer. Both children had lateral pendulum nystagmus. The urine was negative for hematoporphyrin and the Wassermann and Pirquet tests were negative. Their foreheads, cheeks, the backs of both hands and also forearms were covered with a thin, atrophic, rough, slightly pigmented skin. These areas faded gradually into the surrounding skin.
DISCUSSION

Dr. Lane remarked that he saw these children when they first came in and he thought that the actinic element was in some way responsible for the condition. There were certain areas on the side of the forehead in the older child in which the atrophy suggested a lupus erythematosus, but the distribution of the rest of the lesions on the areas exposed most to sunlight, was much more in favor of the condition being due to some actinic element. He believed that the condition should be placed in the xeroderma pigmentosa group, perhaps the erythematous stage.

Dr. Lee said he believed that the whole picture indicated a scleroderma.

Dr. Perry said he also believed the condition was scleroderma.

CONGENITAL SYPHILIS AND PSORIASIS. Presented by Dr. Lloyd.

A young woman with congenital syphilis presented herself about six months ago. She received numerous injections of arsphenamin and improved to a certain degree. She had had a rest period, and the arsphenamin treatment was started again four weeks before, and after she had received two injections she began to have a much roughened skin which looked like the beginning of arsenical dermatitis. It proved, however, to be a definite, generalized, acute type of psoriasis.

DISCUSSION

Dr. Lane told of a recent similar acute psoriasis which had cleared up under generalized ultraviolet light treatment.

Dr. Macdonald told of similar cases treated with ultraviolet light at the Carney Hospital.

LATE SYPHILIS. Presented by Dr. Swartz.

A married woman, 23 years old, with one child living and well, who had had no miscarriages, began to have chapped lips, which gradually grew worse and spread to the chin, about six months ago. There was definite thickening of the lip. Redness extended down on the skin, and there were a few irregular macular lesions on the chest. The Wassermann test was strongly positive.

DISCUSSION

Dr. Lloyd remarked that this case was a practical example of the type in which there is a full amount of interstitial thickening right in the muscular tissue of the lip.

ST. LOUIS DERMATOLOGICAL SOCIETY

Regular Meeting, Feb. 14, 1923

Richard S. Weiss, M.D., Presiding

A CASE OF LICHEN PLANUS HYPERTROPHICUS. Presented by Dr. Richard Kring.

A. K., aged 18, gave a history of having had typhoid fever in September, 1919, at the age of 15. He was confined to his bed for six weeks, and then developed phlebitis, his legs being swollen from the foot to the knee. In
November, 1920, he had an eruption on both legs, with large, pustular lesions and some destruction of the tissue. He now has infiltrated plaques of various size on the right leg, covered with dense adherent scales; some of the lesions are circinate. There is the same type of lesion on the left leg, also several lesions on the buccal surface. His father and mother are living. The patient has had the usual diseases of childhood; he has had no venereal disease. The Wassermann test and urinalysis were negative.

DISCUSSION

Dr. R. H. Davis said that he supposed all present had arrived at the diagnosis in this case, observing the hypertrophic condition presented. He stated that in his opinion it was undoubtedly hypertrophic lichen planus. All present concurred in this opinion.

EPIDERMOMYCOSIS OF THE HANDS. Presented by Dr. A. H. Conrad.

A man, aged 44, a clinic attendant and "first-aid worker," had an eruption on both hands. He had had a similar attack in August, 1922, when he was seen by Dr. Weiss during Dr. Conrad's absence. At that time, he also had large vesicles on his feet. The lesions on his hands lasted about six weeks. The present trouble began February 5, with a large number of small vesicles between the fingers and a few in the palms of the hands. Three days after, the entire surface of the hands became involved. He now presents a large number of small vesicles with a crusting of the first and second fingers of the right hand and an exfoliation of the palms of the hands. When Dr. Conrad saw him on February 8, after applying a modified Whitfield salve, he came back in two days and showed great improvement in the lesions between the fingers and palms, but the lesions were very much more numerous on the back of the left hand. The case was presented on account of the rapid spread of the condition in contradistinction to the great majority of cases in which the lesions remain in their respective location for a great length of time.

DISCUSSION

Dr. McIntosh said that he believed it was a case of pompholyx.

Dr. R. H. Davis said that perhaps it was a case of epidermophytosis.

Dr. Brockelmann said that he believed it might be a trade dermatitis.

Dr. Kring concurred in his opinion.

Dr. Greiner diagnosed the condition as pompholyx.

Dr. Weiss concurred. He said that when he saw the patient last summer, he called the condition an epidermophytin infection. Now, however, as the eruption had come on so suddenly, with acute edema of the hands and fingers and with deep-seated vesicles in the palms and vesicles over the backs of the hands, it seemed to him that it should be called pompholyx. He said he had seen a number of patients with these cases who recovered quickly on a non-protein diet, and that Dr. Engman had had the same experience.

Dr. Conrad said he was of the opinion that it was a mycotic infection as the lesions were typical, being between the fingers. When he first saw the patient, the lesions on the left hand were superficial, not as deep-seated as in cheiropompholyx. He called attention to the rapid spreading of the eruption.
The patient improved very much under treatment for a mycotic condition, which was a modified Whitfield salve, after which he returned in a few days, showing great improvement. If the condition were cheiropompholyx, the treatment would not have been as effective. Dr. Conrad said this was the reason that he considered mycosis, the patient having had previous attacks, one on the hands and one on the feet.

Dr. Weiss said that he believed that the disease which we have been calling "pompholyx" really belonged to the erythema group. The symptoms seem to be caused by an intestinal protein poisoning. By removing the protein products from the intestinal tract, the source of the poisoning is removed, and the patient improves. There have been a number of cases cited in these meetings in which an attack of pompholyx could be provoked by a large protein meal. Then, in the natural course of events, by discontinuing the protein or by diminishing it, the source of the poisoning would disappear from the intestinal tract, and the patient would soon show improvement. The effect of medicine on the skin in this type of disease should be discounted, for the mere fact that a person improves is not an evidence per se that the salve has been the curative agent.

Dr. R. H. Davis remarked that it is true that we have epidermophyton cases that arise quite suddenly and which are as suddenly cured.

Dr. Weiss agreed that he had seen a number of such cases.

Dr. Conrad said that the reason he had counted on the diagnosis of epidermophyton was because of the superficial condition of the vesicles. He said that in cheiropompholyx they are underneath the deeper structures and not superficial, and that close observation of the lesions under discussion—especially that on the back of the left hand—shows that they are superficial.

A CASE OF RECURRENT LUPUS ERYTHEMATOSUS AFTER SEEMINGLY COMPLETE RECOVERY FOLLOWING AN ATTACK OF TYPHOID FEVER. Presented by Dr. A. H. Conrad.

A woman, aged 23, a billing machine operator, whose family history was negative, except that her uncle had tuberculosis, had had the usual diseases of childhood and typhoid fever in 1918, the illness lasting three months. The present trouble consisted of an eruption on the nose which began about eight years before as a small bite on the back of the neck. This spread over the entire back of the neck up to the hairline, the lesion attaining a size of 4 inches (10.16 cm.) in diameter. This remained for about one year. About three months after the lesion had made its appearance on the back of the neck, the patient noticed a similar lesion on the forehead just above the nose. This then spread down on the nose and on both cheeks on a line with the wing of the nose. At this time the patient was seen by one of our physicians who made a diagnosis of lupus erythematosus. Carbon dioxol was used, with some good results. After a slight reaction, following the application of the carbon dioxol, which caused the face to swell, the patient became alarmed and discontinued treatment. After the lesion had been on the face for about two years, she contracted typhoid fever. She was very ill, having a high temperature, and was in bed for three months. During the latter part of her illness, the lesion became much smaller. During her convalescence, the lesion disappeared entirely. The patient said that there was no eruption on her face from early in 1919 to the latter part of 1920, at which time the lesion again became
apparent at the present site, and it has remained practically the same size for the last one and a half years. She now presents an area about 1½ inches (3.81 cm.) in diameter on the bridge of the nose, which is rough in appearance and touch, somewhat infiltrated, and dark reddish-purple. On the left cheek near the nostril is some scarring, which was the site of a former lesion.

**DISCUSSION**

Dr. Weiss said that the fact that a lupus erythematosus disappears under parenteral protein treatment was well demonstrated by Drs. Engman and McGarry, when cases of long standing cleared up after injections of typhoid vaccine. Many of them recurred. This case cleared up on autogenous typhoid organisms and a recurrence was to be expected.

Dr. Conrad remarked that the patient gave a history of having had lesions on the back of the neck. He said he did not believe that this was a lupus erythematosus, but something entirely different. The lesion at the present site has been there for a long time, an indefinite period, but it seemed to him that it did not grow any larger, was not very deep, but rather superficial in comparison to some that he had seen. He asked the opinion of those present in regard to treatment of such a lesion with acetic acid.

Dr. Weiss replied that he had tried a few cases with some success on a mixture of equal parts of phenol and lactic acid, as suggested by some one in the *British Journal of Dermatology* a few years ago. He said he believed that the roentgen ray and radium offer the best chance of recovery, although with a small lesion, carbon dioxide might bring good results.

Dr. R. H. Davis said that he had also used carbon dioxide with benefit.

Dr. Conrad said that Dr. Mook had used carbon dioxide on two or three occasions, followed by a severe reaction causing swelling of the face, which so alarmed the mother of the patient that she discontinued the use of the carbon dioxide.

Dr. R. H. Davis remarked that in the use of carbon dioxide near the eyes, unusual swelling was likely to occur.

**A CASE FOR DIAGNOSIS.** Presented by Dr. Richard Kring.

H. C., a woman, aged 20, single, engaged in housework, had an eruption on the forearms and backs of the hands. The patient's father was living; the mother died of cerebral hemorrhages. The patient had had the usual diseases of childhood, several attacks of tonsillitis, also attacks of appendicitis and pneumonia. Urinalysis was negative; the Wassermann test was negative. The present condition had existed about one year. The eruption was itchy at night. It was in the form of minute papules, polygonal in shape, with shiny tops, and flat. The lesions on the arms were crusted, papular—of the same type as the lesions on the legs. There were no lesions in the mouth.

**DISCUSSION**

Dr. Greiner said that when he saw the case some months before, the lesions on both forearms and limbs were typical of a lichen planus. It appeared to him that the lesions had been undergoing a change, that the case was now resulting in psoriasis, at least that is what it appeared to be. He remarked that he had never before seen lesions undergo such a change as in this case.
Dr. Conrad said that on close inspection it was seen that some of the lesions were almost typical of lichen planus, although the aspect of the case in its entirety was that of psoriasis.

Dr. R. H. Davis said that he had seen some cases some years ago which, like this case, had appeared to be lichen planus at first and had passed through successive periods, at one time looking like lichen planus, and then again like psoriasis, and ending in an "erythrodermie pityriasique en plaques disseminées."

Dr. Weiss said he believed that it was a typical psoriasis, judging from the appearance of the lesions on the limbs.

Dr. Kring said that this case in the beginning looked like lichen planus, having undergone a marked change.

A CASE FOR DIAGNOSIS. Presented by Dr. Richard Kring.

Mrs. T., aged 55, a widow, engaged in housework, complained of itching ankles, which she scratched. A vesicular and pustular eruption then developed; also several ulcers on both legs. The skin was red; there were some crusting and scaling. On both popliteal spaces there were dry, somewhat large scaly patches which were itchy; they were spreading gradually and had a sharp line of demarcation on the border. The ulcers on the limbs had healed, leaving scars. There was mild ichthyosis of the skin. The urinalysis and Wassermann test were negative.

DISCUSSION

Dr. Greiner remarked that he had no comment to make other than to say that he had watched the case from time to time for about three months. The patient seemed to be improving gradually. She had come under observation about a year before, and had been a patient in the clinic for about a month. Then she disappeared and did not return until about a month ago, at which time she was very much worse than when presented.

Dr. R. H. Davis said that the condition looked like a neurodermatitis, but that he merely mentioned this as a suggestion and would like to know the method of treatment in this case.

Dr. Greiner replied that the patient had had no internal medication—merely local treatment.

Dr. Weiss observed that one might guess at the course of events in this case. The patient had had some lesions which healed, leaving scars in some instances. The scars interfered with the return flow of the circulation. There was mild edema of the limbs in proportion to the scarring, and hence lowered resistance of the skin. Then there were itching and scratching and therefore traumatic dermatitis. As a result of the injury due to itching and scratching, various salves were applied, some probably irritating, and as a further result of the scratching and application of the salve, there would naturally be an increase of eczema due to the extreme rubbing. The final result would be lichenification, which is what the patient's condition looked like to him.

Dr. Conrad said that he did not agree with Dr. Weiss. If the patient's ankles were observed, raised dark red lesions could be seen, not entirely to be accounted for by the explanation given.

Dr. Weiss then referred to a case presented at the previous meeting showing a more or less similar condition, which Dr. Engman included in his classi-
Follicular infection and constant irritation will produce a peculiar raised border in such cases. Dr. Engman had recommended an application of 5 per cent. pulverized rhubarb in petrolatum, rhubarb containing a small percentage of chrysarobin which is helpful in such conditions.

Dr. R. H. Davis said that he believed Dr. Weiss' suggestion an ingenious one, probably accounting for a good deal of the skin condition, although there were some points about it which were puzzling. One point was the almost perfect symmetrical distribution which could not be accounted for by the scratching. He said that in his experience, these symmetrical distributions had either an arteriosclerotic or a neurotic basis. The arteriosclerotic type was usually found in old people, and ended in a sharp line below the knees. This woman had a peculiar symmetry, not like that resulting from itching and scratching. Dr. Davis said he thought that there was in this case a neurotic basis.

Dr. Greiner said that he would like to add that the patient had a mild ichthyosis. She had also had an attack of double phlebitis in both limbs, with chills and fever and high temperature.

Dr. Weiss remarked that under those circumstances, the condition of edema and symmetry could be explained.

Dr. Kring remarked also that the patient was very neurotic, and that he thought neurosis had something to do with it.

A CASE FOR DIAGNOSIS. Presented by Dr. Richard Kring.

Mrs. C., aged 50, married, was presented on account of lesions on the eyelids, which began at the age of 17 and continued to grow. The patient had had seven children, four of whom are living. Menstruation began at the age of 12; menopause occurred at 40. The patient had backaches and rheumatism, neuritis in the right knee and pyorrhcea. The pains disappeared on removal of the teeth. She was also operated on for hernia. The patient's general health was good. The lesions on the eyelids were chamois colored, soft to the touch, irregular in shape, and were distributed on both upper and lower lids. Urinalysis was negative as to sugar and albumin; the Wassermann test was negative. (The patient said that her daughter, 17 years of age, had one small lesion on one of her eyes.)

DISCUSSION

Dr. Kring suggested xanthoma palpebrarum as a diagnosis, which was accepted without further discussion.

A CASE OF RECURRENT PITYRIASIS ROSEA (?). Presented by Dr. A. H. Conrad from Dr. Engman's Clinic at Washington University.

This patient was presented at the previous meeting of the St. Louis Dermatological Society because of a profuse papular eruption. The consensus of opinion was that it was a case of pityriasis rosea—Dr. Grindon dissenting. The child had steadily improved up to about twelve days before, when there were only a few stains and excoriations left. Ten days before, he began to break out again, and he again had a more or less generalized crop of papular lesions, from 3 to 5 mm. in diameter, yellowish-red, with slightly scaly tops, and raised 1 or 2 mm. above the surface, sparsely scattered on the posterior
aspect of the trunk, more thickly on the anterior aspect, and thickly on the neck, with a few on the face. The soles were free. There were scattered papules in the palms, rather deep but not of the same color.

**DISCUSSION**

Dr. Greiner said that after hearing the history of the case and seeing the lesions, he believed it dermatitis herpetiformis.

Dr. Krung said that he had not thought of dermatitis herpetiformis, as this is usually associated with a good deal of itching, the formation of vesicles and sometimes pustules and small crusts—but that he would not venture a diagnosis.

Dr. Tobias said that it looked to him like a dermatitis from some obscure cause that could perhaps be tested with proteins.

Dr. Weiss remarked that it was peculiar that the lesions had left pigmentation. When he first saw the patient, he was of the opinion that the condition was pityriasis rosea, but he could not find any typical plaques. With the present recurrence a number of plaques were seen that were more or less typical, and in addition there were several lesions on the palms—which was not unknown in pityriasis rosea. He believed that if it were a pityriasis rosea, it was at least a second attack, instances of this sort being found in the literature. One instance was reported in a discussion on pityriasis rosea in the proceedings of the American Dermatological Association, 1913, Dr. Dyer reporting that he himself had had an attack of pityriasis rosea after taking a Turkish bath, and that some weeks later, on revisiting the Turkish bath, he had another attack. Dr. Weiss concluded that the case under discussion was a recurrent attack of pityriasis rosea with unusual features.

Dr. Conrad remarked that it seemed to him like a possible recurrent attack, some plaques being typical of pityriasis rosea, the only puzzling feature being the discoloration or pigmentation which some of the lesions had left.

**A CASE OF DIFFUSE SCLERODERMA (SCLERODACTYLIA TYPE).**

Presented by Dr. Norman Tobias.

J. S., aged 37, married, born in the United States, said that the condition began in 1917 as a numbness, followed by a thinning of the skin of the fingers, and about one year later by stiffness, pigmentation and glossiness of the wrists and contracture of the fingers with pigmentation of the neck. The toes and feet also became involved at this time, but to a lesser extent. The condition soon affected her mouth, which appeared smaller and stiff; her lips thinned; her nose shrunk in size, and the lobules of her ears became atrophic. In 1918, she entered the Barnes Hospital and remained there for six weeks; she received "hip injections" and a biopsy was made. Since then, her condition had gradually extended to its present degree. Physical examination revealed a generalized scleroderma of the hands, forearms and face especially, with a mild involvement of the neck and lower extremities. There was a characteristic pinched expression of the face and a lack of expression in speaking. Deep fossae were present in the submaxillary regions (tonsillectomy was performed at the age of 13, in 1918, at the Barnes Hospital). The right lobe of the thyroid gland had been enlarged since adolescence. The chest showed pigmentation and telangiectasia. The abdomen was pigmented, there was a thick abdominal wall. The thighs were well developed. The reflexes were negative. The blood pressure was: systolic 80, diastolic 62; urinalysis and the Wassermann test were negative.
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DISCUSSION

Dr. Tobias said that this patient did not remain long enough under treatment to have any blood or urine tests made, but, as Dr. Weiss had suggested, he had attempted to find arsenic in the urine, as reported in the literature on the subject. If arsenic can be found in the urine later, sodium hyposulphite will be administered as a therapeutic measure. Roentgenograms of the hands will be presented at the next meeting of the Society.

A CASE OF POSSIBLE SUPERINFECTION. Presented by Dr. A. H. Conrad from Dr. Engman's Clinic at Washington University.

A colored man, aged 45, a laborer, applied to the Medical Clinic on Oct. 29, 1922, complaining of a pain in the left breast. The diagnosis at that time was aortitis, aneurysm in the arch of the aorta. The patient gave a history of having had a chancre fifteen years before; there was no history of an eruption. The Wassermann test was +++++ on Oct. 27, 1922. He was immediately put on a course of intramuscular injections of 15 minims of mercuric chloride and potassium iodid. He received twenty-two of these injections given at intervals of three days. Two days after the last injection, January 31, he received 0.05 gm. arsphenamin. On January 28, he had an itching sensation at the site of the present lesion, with a slight excoriation. This continued to grow larger, and now was about 1 cm. by 8 mm., was roughly oval in shape, and somewhat indurated. The lesion was covered with a dirty, grayish discharge, and the left inguinal gland was somewhat enlarged. Dark-field examination of the spirochetes was negative.

VIENNA DERMATOLOGICAL SOCIETY

Session of June 22, 1922

Dr. Oppenheim, In the Chair

DISSEMINATED PUSTULAR LICHEN SCROFULOSORUM. Presented by Dr. Kren.

The eruptions along the back and the nates first suggested pustular syphilis. The pustules were partly grouped and based on a nodular infiltration. The Wassermann reaction was negative; the Pirquet and intracutaneous reactions with old tuberculin were positive.

TOXICODERMA DUE TO INDIAN HEMP. Dr. Porias.

Cannabis indica contains an alkaloid cannabis and resin. Either of these can cause a toxicoderma. In the case presented, the patient, who had been handling hemp, developed an erythoderma over the face and scalp. Removal of the causative factor affected a rapid regression of symptoms.

ERYTHRODERMA SOLARE ON AN EXTENSIVE VITILIGO OF THE SCALP. Dr. Porias.

The erythema showed a sharp margin against the pigmented skin of the face. Small patches of vitiligo within the unaffected part of the face also showed small angiectiases and erythematous alterations.
ARSPHENAMIN DERMATITIS WITH DAMAGE TO THE CORNEA.  
Dr. Kumer.

In a patient who had received 8 injections of neo-arsphenamin, a dermatitis developed simultaneously with a keratitis superficialis punctata of the left eye. The latter developed into an ulcer, with subsequent cicatrisation.

ATYPICAL SCROFULODERMA FOLLOWING THE INJECTION OF A NEW TUBERCLE BACILLI EMULSION. Dr. Arzt.

At the site of injection, nodules developed which had a tendency to break down and discharge a puslike secretion. Histologic examination revealed a chronic inflammatory process, the nodules containing epithelioid and giant cells. The picture very much resembled that of scrofuloderma.
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