Dermatological Society; the spots had been present on the forehead seven years. We had a discussion in regard to the diagnosis. I thought it was xanthoma; others thought it verruca planum.

UNCINARIASIS IN THE SOUTH, WITH SPECIAL REFERENCE TO MODE OF INFECTION.*

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In this paper I shall attempt to present some additional light on the mode of infection in uncinariasis or hookworm disease. The views as presented before this Section a year ago¹ have been confirmed, not only by my own observations, but also by those of physicians in different sections, who, after reading the article in THE JOURNAL, have written to me regarding the disease as it exists in their sections.

DISTRIBUTION AND PREVALENCE OF THE DISEASE.

It has been my fortune to see cases of the disease from all of the coast states in the south, from Virginia to Texas, inclusive, with the exception of Mississippi, but reports received from that state show that it is prevalent there as well. While my observations have necessarily been confined principally to my own state, yet the evidence indicates that the disease is equally as prevalent in all our southern states. I do not believe that there is any section of any extent in these states that is free from it. It seems as if the entire country was literally saturated with it. It is found on the highlands as well as the lowlands, and on the mountains as well as on the seaboard.

RELATION BETWEEN UNCINARIASIS AND GROUND ITCH.

I have previously called attention to the close relationship which I observed to exist between uncinariasis and ground itch, presenting clinical evidence that uncinariasis is always present in all cases which have had ground itch within eight years; that uncinariasis is rarely, if ever, present in those who have not had ground itch within that time; that of members of the same family, living under exactly the same conditions, those who have had ground itch within this time also have the uncinariasis, and vice versa; also that the severity of the disease and the number of parasites are almost invariably in direct proportion to the number of attacks of ground itch.

While the principal object of this paper is to report some experiments of placing the larvæ on the skin to artificially produce the disease, I wish first to make a few general remarks regarding the symptoms and diagnosis of uncinariasis.

SYMPTOMS.

No one set of symptoms can be put down as diagnostic of uncinariasis, as they vary with the amount of infection and with different individuals. For convenience, I have classified the disease under three types:

First. Mild cases, which have had only one or two attacks of ground itch, and therefore have only a small number of the parasites of the intestines, not sufficient to produce any diminution in the corpuscles and hemoglobin.

Second. The medium type of cases, which have usually had two or more attacks of ground itch, and have a much larger number of the parasites in the intestines, sufficient to produce a reduction of the corpuscles and of the hemoglobin, but which is not perceptible on inspection of the patient, but is readily shown by the blood examination.

Third. The severe type of the disease; those cases about which so much has been said in the past, and which have had numerous attacks of ground itch, and which usually have several hundreds of the parasites in the intestines and present all the symptoms of extreme anemia, which is readily recognized without the blood examination, and which is oftentimes so great as to interfere with the development of the individual.

We can not draw a sharp line separating these three types, but I make this classification for the sake of convenience in considering the prevalence of the disease, and also to draw attention to the fact that those cases which can be suspected from the symptoms of profound anemia are not so numerous as the other two types combined.

In cases of the first or mild type, there are practically no symptoms by which the disease can be suspected. There is no interference with the appetite and digestion which might not be attributed to other causes, no reduction in the hemoglobin, and the patient feels strong and vigorous, as the body is able to nourish a few of the parasites without taxing its reserve power.

In cases of the second type, there may be various symptoms of interference with digestion, and while the patient usually says that he feels fairly well and superficial inspection may not show any decided anemia, yet the blood examination will show the reduction in the constituents of the blood.

In the third or severe type, the patient presents all the appearances of profound anemia. The skin has a yellow parchment appearance, mucous membranes are blanched, the sclera shows clear white through the conjunctiva in which no blood vessels can be made out. The face is bloated and expressionless and the skin over the exposed parts often appears to be much thickened, and feels dry and rough. The patient may be greatly emaciated, but this may be hidden by edema. The patient is very weak, and if he attempts violent exercise quickly becomes exhausted and short of breath. There is a decided systolic murmur, and the blood examination shows a decrease of from 50 per cent. to 90 per cent. in hemoglobin, and the red corpuscles may be as low as 1,000,000, or even less. The appetite is capricious, perverted, and there may be nausea and headache. The perversion of the appetite may be shown in a fondness for meal, clay, sand, or other substances.

Many physicians have written to me regarding the habit of dirt eating as being the mode of infection of the disease. When I first discovered the disease in my section, this view naturally presented itself to me, as it had been mentioned in connection with the old-world parasite, but on careful investigation I found that children were sometimes falsely accused of eating dirt simply because they presented this appearance of profound anemia which is seen in those who acknowledge the habit of dirt eating. Also I found that those

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who do eat dirt usually select a special kind of clay on the side of some bank, and which is remote from any source of infection with the larvæ. This fondness for dirt is simply the perversion of the appetite produced by the disease, and has nothing to do with the production of the disease.

The food is usually bolted down in large masses which may pass through the alimentary canal undigested.

In this severe type of the disease the patient sometimes becomes so weak that he is scarcely able to drag himself about the house, and there is general edema, which is especially marked about the feet, legs and abdomen. He may remain in this condition for some time, and then begin to gradually improve, or he may gradually get worse and worse until he dies. These cases have puzzled the physicians in the past, as they were unable to account for the cause of death. When this bloated stage is reached, life seems to hang by a mere thread, but many cases which have recovered from the disease give a history of having passed through this condition.

DIAGNOSIS.

A positive diagnosis of the disease can only be made by finding the eggs of the parasite in the stools of the patient.

In the mild type of cases there is absolutely nothing in the appearance of the patient that would lead one to suspect the presence of the disease, and there are no diagnostic subjective symptoms; in cases of the second type this is almost equally as true. At best, you may be able to detect a slight paleness of the mucous membranes, but of course this does not make a diagnosis.

The severe type presents all the symptoms which we may find in all cases of profound anemia, but these symptoms vary somewhat with the severity of the attack, and there is nothing positively distinctive about this anemia which separates the disease from the profound anemias due to other causes. If anyone should stake his reputation on his ability to differentiate the severe type of this disease from profound anemia due to other causes he would be sure to come to grief.

There is an important point on which I wish to lay great stress. Where one finds one case of the severe type of the disease, one will find a much greater number of the mild and medium types. The severe cases are far in the minority, and represent only a small proportion of the great mass of cases of all types of the disease. Usually one does not find more than one case of the severe type in one family, and yet all the other children may be infected, and not be suspected on account of having the mild or medium type and not presenting any pronounced symptoms. Too much stress has been laid on the severe type to the almost entire exclusion from consideration of the milder types, with the result that the physicians are not on the lookout for the disease unless they see these symptoms of severe anemia. The symptoms presented in these severe cases, however, are simply the conditions which would be found in any profound anemia due to other causes, and are not diagnostic of the disease.

Until recently all these cases of extreme anemia, delayed development, parchment skin, etc., have been called malarial cachexia, and treated as such, but now, as soon as a physician gains some knowledge of uncinariasis he is prone to call all these cases hookworm disease, and proceeds blindly to dose them with thymol.

and then is surprised because he does not always get results. The pendulum always swings from one extreme to the other, but eventually it will settle on rational middle ground.

While it is true that the doctor who makes a snap diagnosis and calls every case of profound anemia uncinariasis, will be correct in the majority of instances on account of the prevalence of the disease, yet he will be surprised at the number of times that he is mistaken and his treatment of no avail. This being the case, no doctor is warranted in indiscriminately prescribing the large doses of thymol without first being sure of his diagnosis; and especially so in view of the fact that a positive diagnosis can be made with such ease and accuracy.

THE DISEASE NOT CONFINED TO THE LOWER CLASSES.

While this is a disease of the country and not of the city, and is most commonly found among the lower classes, yet I find it occasionally in the better classes and in the cities, and often in the most unexpected quarter. Every physician must be always on the alert if he would be sure that no case slips through his hands undiagnosed, and which may be disguised by an attack of some other disease.

This applies not only to physicians in the south, but also to those in other sections of the country who encounter patients who have lived in the south. It is the joy of every boy, whether rich or poor, to go barefoot in the summer and to paddle about in the mud, and many who live in the cities spend their summers in the country, and while there contract ground itch, and in this way have the mild or medium type of the disease.

PRECAUTIONS IN REGARD TO THE USE OF THYMOL.

Every physician in treating this disease must bear in mind that 5 grains is ordinarily considered to be the maximum dose of thymol, and that in administering 30 grains he may be giving a toxic dose. In the old world, death occasionally follows the administration of this large dose, and therefore, it behooves physicians in this country to be extremely cautious in the administration of this drug. The treatment should be modified to suit the individual case, and every precaution taken against bad results. No physician in this country wishes to be the first to have a death from the administration of thymol, and no physician is warranted in giving thymol without first making a positive diagnosis.

HATCHING THE EGGS OF THE UNCINARIA.

To hatch the eggs of the uncinaria, I have found that the best plan is to employ a Petri dish with a snugly fitting top. Place in this a small amount of soil, just sufficient to cover the bottom of the dish, and add to this soil the feces containing the eggs of the uncinaria. The feces should first be rendered semi-liquid with water, so as to facilitate thorough mixing with the soil. On adding a small amount of the feces to the soil and thoroughly mixing it, the odor of the feces will disappear, leaving only an odor of damp earth. The feces are added gradually until a faint odor of the feces remains, but this will disappear in a day or so (Fig. 1). To facilitate the rapid hatching of the eggs, there should be just sufficient moisture in this mixture to keep the soil damp. If too much moisture is present, the lid of the dish may be left off for an hour or so to allow the excess of moisture to evaporate. It is necessary to replenish the moisture every two or three days by adding a few drops of water at a time. If there is

not too much moisture, and the soil is thoroughly mixed with the feces, all of the eggs will hatch in about twenty-four hours. Otherwise some of the eggs will not hatch until several days after the first larvæ appear. Figure 1 shows Petri dishes with soil containing larvæ.

OBJECT OF USING PETRI DISHES FOR HATCHING EGGS.

By employing these Petri dishes we can watch the hatching of the eggs and the development and habits of the larvæ. This is done by inverting the dish and placing it under the 2/3 objective of the microscope.

One can watch the eggs hatch and observe the larvæ traveling about in the soil by their sinuous motion, and in the same way working their way across the open spaces on the bottom of the dish. These open spaces may seem to the naked eye to be free from water, but with the microscope we can make out a thin film of

Fig. 1.—Petri dishes containing soil with larvæ of uncinaria.

moisture, just sufficient to preserve the vitality of the larvæ and favor their locomotion.

APPEARANCE OF THE YOUNG LARVÆ.

When the egg hatches, the small larva which emerges seems to consist principally of esophagus and stomach, the other end of the organism being short in proportion. At this time the larva is very sluggish under all conditions, and no amount of disturbance seems to arouse it. For the next three or four days it grows very rapidly, this growth being most marked in the posterior half of the organism. Also at this time the first sheath appears, and with it the organism becomes extremely lively at times, especially if disturbed. Whether it is necessary to disturb the larvæ to produce this animation I am at present uncertain, but I am sure that some-

times very little motility is displayed by the organisms while in the Petri dish, yet if placed on a slide they will begin squirming about at a lively rate. This rapid movement will last from a few minutes to half an hour or more, and then they will lie perfectly still for a corresponding length of time with their bodies perfectly straight, after which they resume their lively motions. When lying still, one who is not familiar with this trait would suppose them to be dead, but close observation will readily differentiate them from the dead larvæ.

When placed in a drop of water on the slide there is a tendency to migrate to the edge of the drop, where they squirm about as if trying to get beyond its confines. The larvæ may be kept alive in the Petri dish for three or four months. After keeping them for some time, however, I noticed that there was a diminution in the number present in the soil, and was somewhat puzzled to know what had become of them, as I was unable to find sufficient remains of dead larvæ to account for the decrease. Recently some of the internes at the Grady Hospital called my attention to the fact that on examining some cultures which I had left at the hospital, they had observed great numbers on the underside of the lid of the dish, and that in a good light they could faintly make out these larvæ with the naked eye. I found both these reports to be true. The precipitation of moisture can readily be seen on the under surface of the lid of the dish, and on examining this the larvæ can be made out; some moving around, while others are perfectly still in the resting stage.

SOME OBSERVATIONS OF THE LARVÆ.

If larvæ three days old are placed in a drop of water on the slide, it will be observed that while their motility is something wonderful as they thrash about in the water, yet they are unable to make any progress because the water does not offer sufficient resistance to their sinuous movements. However, if placed in a thin layer of soil (so that they can be easily seen with the microscope), their sinuous movements give them wonderful speed with the foothold which they gain by zig-zagging between the grains of sand or particles of earth.

As they dart about it may also be noticed that when they encounter anything which blocks their progress that the head remains more or less fixed against one point, and the violent motion of the body gives the appearance as if it were trying to force its way. If the larvæ are in water their most vigorous efforts produce very little effect on the obstruction, but if there is sufficient soil against which they can brace the body, as it were, they sometimes brush aside the obstacle, or force their way through small openings.

Bearing these observations in mind it can readily be seen that it would not be easy for the larvæ to force their way into the ducts of the glands when they are applied to the skin in water, but if they are applied mixed with soil, their power of penetration would be greatly increased.

Ground itch nearly always starts between the toes. When a barefoot person steps in mud it is forced up between the toes where the skin is thin and tender, and the pressure of the adjacent toes holds the soil in direct contact with the skin, and the conditions are thus made favorable for the passage of the larvæ from the soil to the skin.

VITALITY OF THE EGGS AND DEVELOPMENT OF THE LARVÆ.

In determining how these larvæ get into the body it

is necessary for us first to know where they exist in the natural state. To ascertain this we begin with the passage of the egg from the adult worm. We find that this parasite is practically confined to the human family; that when matured it is located in the small intestines; that the eggs are discharged from the body in great quantities with the feces, and that these eggs hatch when mixed with damp soil. However, if these eggs become dried their vitality is destroyed; they are also killed by freezing. When the eggs do hatch we find that this takes place in about twenty-four hours if the weather is warm, but more time is required if the weather is cool.

As before stated, the larvæ are very sluggish when first hatched, but gradually become more active, especially if the temperature is favorable, and are extremely lively by the time the first sheath appears; but they again become sluggish and inactive if the temperature is lowered, and a freezing temperature kills them.

WHEN GROUND ITCH IS CONTRACTED.

From a consideration of these facts we would naturally deduce that, if they do gain access to the body by way of the skin, this must take place during warm rainy weather, or in places where the ground is constantly moist. If a careful clinical investigation of cases of ground itch is made, it will be found that it always occurs as a result of wading about barefoot in the mud, and especially if it has been raining for more than a day previously.

SYMPTOMS OF GROUND ITCH.

The first symptom of true ground itch is an itching, usually between the toes, and this becomes more and more intense until it is excruciating. Children often cry all night during an attack. The itching begins immediately after wading in the mud, and small hyperemic spots or macules are noticed at the points of irritation, and these macules appear to be slightly elevated, but hardly reach the distinction of papules. These macules rapidly change to vesicles, which may become confluent, forming large blisters, and at the same time there is usually considerable swelling in the underlying tissue. The vesicles are usually ruptured, presenting a raw oozing surface. This condition may last only a couple of weeks, or it may last several weeks; it may involve only a small area, or it may cover both feet, and the patient be unable to walk about for the time being.

CHANCES OF INFECTION.

The next point to be considered is, what are the chances for human beings to come in contact with the larvæ? If all the feces of people who have the parasite in their intestines were destroyed, then there would be no possibility of the eggs hatching, and reinfection or infection of others would not take place. From a study of the habits of the people we find in the country and in small villages that the feces, instead of being passed into receptacles and carried away, are deposited about indiscriminately on the ground, very often near the house and even in the yard. In many instances, if all the eggs passed in the feces of the people living in one house (usually most of the members of a family have the disease) should retain their vitality and hatch out, then the soil of such premises would be swarming with the larvæ, and everyone barefoot would be almost sure to come in contact with the larvæ every time they stepped on the ground. However, when we remember that all eggs and larvæ are destroyed when they become dried or frozen, we would not anticipate

any danger of infection from the larvæ except when the ground is kept moist in warm weather, and therefore, the feces which furnish infection are only those which are passed just preceding rainy weather in the summer. Nature provides for the production of countless numbers of the eggs at all times, so that when a favorable time presents itself there is sufficient material for the propagation of the species.

PROPHYLAXIS OF THE DISEASE.

If we thus understand just what conditions are necessary for the completion of the life cycle of the parasite, and can interpose a complete obstruction or break in the chain at one point, then we can readily prevent the disease. As all the evidence points to the view that these larvæ pass into the system through the skin of the feet, and that this takes place only during periods of rainy weather or from damp soil; then if we protect the feet so that they can not come in contact with the soil, we can thus prevent infection. To attempt to change the habits of these people and to control the deposition of the feces is not a feasible undertaking, as any one who is familiar with the conditions well knows. It is much more practicable to teach the people that ground itch is not such a simple disease as they suppose, but that it has serious results, and if they once

Fig. 2.—Eruption on the wrist produced by larvæ of the uncinaria.

realize this they are more apt to see that the feet are protected in rainy weather. If this is thoroughly carried out, other precautions are superfluous.

EXPERIMENTS WITH THE LARVÆ ON THE SKIN.

Soil containing larvæ twenty-four hours old was placed on the back of the wrist of a patient and allowed to remain one hour. No effect was produced and no disturbance of the skin followed.

When these same larvæ were four days old the soil was again applied to the wrist, covering an area about two inches in diameter, and allowed to remain one hour. The soil was bound on the wrist with gauze bandage. Within a few minutes after being applied the patient complained of a slight itching, but I thought this might be due to the irritation produced by the grains of soil being bound on the wrist. However, within eight minutes after being applied he complained of a decided stinging sensation as if produced by very fine needles, and this persisted during the time the soil was in contact with the skin, but subsided somewhat afterward. On removing the soil the area covered by it was found to be decidedly reddened in spots, and these spots or macules appeared to be slightly elevated. The macules persisted, but the patient said that he did not experience any inconvenience during the balance of the day; the next morning, however, he found that he had scratched it during his sleep, and I found that the epithelium had been scratched from some of the spots, which were now so elevated as to resemble papules, and the entire area was decidedly swol-

len. The wrist was wrapped with gauze bandage so as to prevent the patient from scratching it.

The second morning the patient reported that the itching had been so severe during the night as to seriously interfere with his sleep, and on removing the bandage the area was found to be much swollen and covered with vesicles.

The third morning the patient reported that his sleep was again disturbed by the itching, but that it was not severe during the day. The swelling had increased and involved the back of the hand.

The fourth morning the swelling had extended to the fingers, and inflamed streaks appeared above the wrist, running around to the middle of the flexor surface of the forearm and slightly tender on pressure. Axillary glands were somewhat enlarged and tender. The epitrochlear was not involved. There was very little swelling above the wrist. The itching was still troublesome, but temporary relief was obtained by placing it in very hot water.

On the fifth-day the vesicles were much enlarged and confluent. Some had ruptured and saturated several layers of the gauze bandage with the serum. The itching was still constant, but not so intense. The swelling of the hands and fingers greatly increased. No increase of tenderness of the axillary glands or redness of the middle of forearm.

On the sixth day the tenderness and swelling were less marked.

By the seventh morning the vesicles had begun to dry up, and from this time on the swelling subsided rapidly and was all gone by the twelfth day. (Fig. 2.)

With the exception of the disturbance caused by the itching and swelling, the patient said he felt all right. During all this time it was noticed that there was very little tenderness over the infected area.

On the eighth day the patient developed a severe pharyngitis, tongue heavily coated, pulse rapid, headache, aching of body and limbs, temperature 102, complete loss of appetite, very weak; said he felt very much like he had the grip.

Patient was in bed twenty-four hours and after that his condition returned to normal, except that his appetite was not very good and he complained of an uneasy feeling about the stomach. His appetite improved rapidly, but he complained for three or four weeks of his digestion being bad, and during this time the patient said he would be waked early every morning by a dull, sickening ache about the stomach. After the fourth week all these symptoms disappeared.

I was in doubt as to whether this pharyngitis had any connection with the infection. However, I recall that in working with the parasite found in the dog, that in administering the larvæ in capsules to a patient, that one of the capsules broke in his mouth and for several days afterward he was troubled with a severe tonsillitis and pharyngitis.

At the time the soil was placed on the wrist of the patient the stools were carefully examined, and twice a week thereafter. The examinations were negative until the middle of the seventh week, when the eggs of the uncinaria appeared in the stools. This was the middle of April, and the patient was still passing the eggs the first of June. The preliminary report of this case was presented before the meeting of the Georgia Medical Association in April.

Following this experiment a small bit of soil containing larvæ, also a drop of water with larvæ were placed at different points on the skin of the patient to determine whether any difference could be noticed in the effect of the larvæ under the two conditions. In eight minutes the patient complained of the stinging sensation at the point where the soil had been placed. The soil was immediately removed and the skin was found to be reddened and the itching continued. Thirty-five minutes after the drop of water was placed on the skin the stinging sensation was felt at that point. It took nearly five times as long for the larvæ in the water to gain a foothold. It was also noticed that the eruption appeared only around the edge of the drop where the water had begun to evaporate and had deposited a thin layer of sediment, and this had acted apparently as so much soil in giving the larvæ a foothold.

This is in accord with previous conclusions that the larvæ would not pass readily from water into the skin.

Again, on a patient who applied for circumcision a small bit of soil containing larvæ was placed on the prepuce. The patient seemed to have an idea that it was some medicine preparatory to the operation, as nothing was said to him about it, and in four minutes he remarked that the prepuce felt as if a fly was crawling over it, and a minute or so later said that it felt as if needles were sticking in it. On removing the soil the slightly elevated macules were present as in the other cases. After circumcision the prepuce was hardened, infiltrated with celloidin and sectioned, but I failed to find the larvæ. I was unable to account for not finding the larvæ, and the experiment was repeated recently with like result on the patient, and the tissue is now being infiltrated with paraffin, and report will be made later.

To obtain some idea as to how rapidly the larvæ migrated toward the skin, some soil containing larvæ was placed on the skin and allowed to remain four minutes and then removed and spread out on a slide and examined under the microscope. No larvæ were found in the soil, and the skin was then placed under the low power and was found to be covered with the larvæ at the point covered by the soil.

The larvæ used in the experiments which were successful were from four days to four weeks old.

This is the first report of a successful attempt with the parasite in this country to produce the disease artificially, and demonstrates that the work of Looss holds good with the *Uncinaria americana*, and confirms the views previously presented by me as to the mode of infection of the disease.

DISCUSSION.

DR. H. B. WARD, Lincoln, Neb.—It is worthy of note that the time observed for the development of the larva in this species is almost the same as the time which was found for the development of the European form. The correspondence is all the more striking that we now believe there is a considerable difference between the two species; in fact, it is unfortunate that recent investigators are giving entirely different generic names to the two forms, European investigators agreeing that there is considerable difference between the European and the American form. It is difficult to explain the absence of larvæ from the skin in the experiment cited, and I should like to ask Dr. Smith whether he made sections of considerable areas, and whether he found in those sections no trace whatever of the larvæ and no modification of the skin. It is hard to believe that in the case of the skin manifesting the after-symptoms mentioned the larvæ should not have been in it. The European form was detected under experimental circumstances in the skin of a dog and also in the skin of man in a case of a member that was to be amputated and was experimented on immediately preceding the amputation.

DR. CLAUDE A. SMITH—In response to Dr. Ward's remarks I can not say just why I failed to find the larvæ in the sections of the skin. The sections presented a decided engorgement of the blood vessels with a tendency toward exfoliation of the outer layers of the epithelium. I was surprised not to find the larvæ, but I feel that this will be an easy matter in the future; just as at first I was unable to infect the skin with the larvæ. I first tried to infect the skin of a dog with the larvæ of the dog parasite, which are much more vigorous than the larvæ of the human parasite, but did not succeed. Now I find that I have no difficulty whatever in infecting the human skin with the larvæ of the human parasite. Any one can do this with the larvæ three or four days old if they will add just sufficient moisture to make sure of the contact of the soil with the skin. In making one of the experiments I found that some of the damp soil had accidentally dropped on the skin in places not intended to be inoculated, and no result followed, as there was not sufficient moisture to bring the soil in close contact with the skin. You will thus see on how small a point can depend the success of an experiment. I may find that the failure to find the larvæ in the first case

was due to some faulty technic in preparing the sections. However, as I had time to examine only one specimen before leaving home, I was hardly ready to make a report on this part of the experiments. The principal part of my paper was to report the artificial production of the disease by placing the larvæ on the skin, the finding of the eggs of the parasite in the stools being proof of the success of the experiment, in view of the fact that the patient did not have the disease previously.

LINEAR NEVI.

A FEW CLINICAL AND PATHOLOGIC CONSIDERATIONS IN REFERENCE TO NEVI IN PARTICULAR AND TO DERMATOLOGY IN GENERAL.*

M. L. HEIDINGSFELD, M.D.

CINCINNATI.

Inasmuch as the entire subject of nevi is still a dermatologic dark Africa, and linear nevus forms an intricate and obscure division, I will endeavor to confine myself in this paper to a few brief, chiefly histologic considerations, and their application to linear nevi in particular and dermatology in general. So many anomalies, e. g., pigmentations, albinism, hirsuties, angiomas, teratomata, keratomata, atheromata, port-wine stains, defects, etc., are included under the technical term nevus, that it is unfortunate that its original lay character should have acquired scientific value. Additional confusion has attended this unfortunate interchange of terms, by the fact that identical lesions escape classification if their distribution is general instead of limited, and that their development need not be coincident with birth, but months or even years after. Linear nevi not only share in the confusion which attaches itself to nevi in general, but that due to a verbose redundant terminology, replete with almost every variety of dermatologic phrase or term, such as nevus congenitalis, zoniformis, herpetiformis, linearis, papillaris, lichenoid, ichthyotic, eczematous, keratotic, pigmented, piliferous, hystrix, nigricans, papillomatous, verrucosus, etc., to suit almost every variety of clinical condition. This unfortunate redundant terminology has been rendered permissible by the great clinical variations which exist in individual instances; at the same time the general characteristics of the affection are so clean cut and definite, and stamp it so individually and unmistakably, that any great digression in nomenclature appears unpardonable. Additional latitude is likewise afforded by an equally variant histology, and though this special feature of the affection has not as yet been extensively elaborated, enough has already been produced to demonstrate that in this distinctly one affection many varieties of pathologic lesions are readily found, making its pathology when strictly interpreted as complex and unintelligible as the clinical history. With all this, nevus linearis is a dermatologic affection, *sui generis*, possessing a complete entity, and for the most part a very easily recognizable identity. With these characteristics it serves an interesting and instructive example of the foibles and weakness of present dermatology, namely, the tendency to individualize and thereby complicate, rather than generalize, and thereby simplify single types in classification; and secondly, the tendency to give to dermatologic histopathology a diagnostic rather than mere confirmatory value. In other words, there are many cases in dermatologic literature,

which are reported as special and distinctive types of affection, by authors who doubtless could readily find a place for them in the already overelastic nosology, if less attention were directed to individual traits and more to general description.

According to Morrow,¹ the distinguishing characteristics of linear nevus are: 1, Its linear disposition in the form of continuous or broken bands or streaks following the long axis of the limb or transversely on the trunk; 2, its unilateral disposition (with some exceptions); 3, papillary or verrucose character, constituted by a hypertrophy of the epidermal and papillary structures; 4, congenital origin, usually present at birth or several months afterward, rarely not before adolescence; 5, sensory disturbances, such as itching, and usually resulting from external irritation; 6, the affection may increase in extent, remain stationary, regress or undergo degenerative or malignant transformation. These features of the affection, gathered from the cases from

Fig. 1.—Case 1. Linear nevus, showing marked spontaneous regressive changes. Dendritic lesions. Photo Jan. 16, 1901.

the literature and from Morrow's own cases, present variations, and are by no means constant. In fact, the character of the affection is so distinctive that it requires but few of Morrow's characteristics to form a tripod on which the diagnosis can unmistakably and securely rest.

The following three cases, which were presented to the Cincinnati Academy of Medicine, Jan. 28, 1904, are briefly reported:

CASE 1.—(Fig. 1.) W. M., male, aged 20 years. The lesions are firm, hard, papular, somewhat elevated and keratotic, sharply circumscribed in character and brownish-red in color. They are sharply limited to the right half of the body, and are distributed in linear form directly over the great sciatic nerve, from its point of origin at the ischio-sciatic foramen, along its entire course, down the posterior aspect of the thigh, to its division into the internal and external popliteal branches. From this point it is distributed in broken segments along the internal popliteal nerve, over the posterior aspect of the calf of

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1. Morrow: New York Med. Jour., 1898.