Psoriasis, with special observations concerning its histo-pathology and aetiology.

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PSORIASIS

WITH SPECIAL OBSERVATIONS CONCERNING ITS HISTO-PATHOLOGY,
FOUND UPON THE EXAMINATION OF VERY YOUNG LESIONS.

INTRODUCTION.

Though Psoriasis is one of the most common diseases of the skin, and very widely distributed, yet when we read the descriptions given by the standard authorities on Dermatology, we cannot help being at once struck by the manifest conflict of opinion concerning almost everything connected with the disease. This is more particularly marked when we study the accounts of the histo-pathology, and aetiology, and as a natural consequence, opinions as to the details of the best methods of treatment differ widely also.

This work was therefore undertaken for the purpose of endeavouring to clear up some points in the histo-pathology, and if possible to determine at least the probable aetiology; and in order to aid us in arriving at logical conclusions with regard to the subjects under
discussion, we have added an account of the most approved methods of treatment and the symptoms and progress. For completeness' sake we have given also the prognosis and diagnosis.

Though we have found it necessary to make a critical résumé of what has been written upon the whole subject, taking in order the headings under which a disease is usually described, we wish to draw particular attention to that portion devoted to the histo-pathology and aetiology of the disease, and with regard to the latter especially to the discussion of the relative merits of the neurotic and parasitic theories of origin.
DEFINITION. Psoriasis may be defined clinically as usually a chronic, but sometimes a subacute disease of the skin, characterized by raised patches, occurring by preference upon the extensor surfaces, covered with glistening, white, imbricated scales, more or less adherent and situated on a red base.

HISTORICAL. The term psoriasis as used by Hippocrates did not indicate what we understand by it to-day. Evidently he limited it to scaly eruptions occurring upon the face and genital organs, and distinguished it from psora helcodes and psora leprodes.

Thus the name used by the Greek writers was applied in quite a different sense to that in which we use it (1).

According to Tenneson we do not know what signification the Greeks really placed on the term ψώρα or ψωριασίς and neither of these terms are found in Celsus. This author thinks it probable that Hippocrates classed the lesions of our psoriasis under the term lepra (λεπρα).

At a later date this term was used (lepra or leprosy) to translate the Hebrew word, (found in Levitians,

(1) Hebra. Diseases of the skin, pages 1 and 2.
Chapter 13 & 14) which included several contagious lesions quite different in nature from those classed under it by the Greeks (2).

(3) By the names Lepra, Alphos, Lichen, and Psora these writers described skin affections which only implicated the surface of the skin, and its whole thickness was not diseased; furthermore large numbers of scales were produced, and the complaint returned periodically. This description seems certainly to coincide with that indicated by our term psoriasis.

(3) Celsus mentions two diseases both of which are similar to it, e.g. his second species of "Impetigo" and "Alphos".

(3) According to Hebra the Arabian writers do not seem to have agreed as to what complaints the Greeks meant by Lepra and Alphos. Alsaharvius classes under the names "Morphoea" and "Albarees" scaly skin diseases. Serapion gives an account of a complaint (3) characterized by a pruriginous eruption accompanied with the production of branny scales, and at the same time the cuticle became rough and fissured.

A skin affection superficial in its nature with

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(2) Traité clinique de Dermatologie 1893, page 142. Tenneson.
no excoriations is mentioned by Hali Abbas under the term "Serpedo" or "Peligo". Chronic skin lesions resulting in extensive desquamation, are by some of these authors called "Usago".

From the thirteenth to the eighteenth century there does not seem to have been any better definition than that of Celsus (3). Through the middle ages the rational investigation of diseases of the skin, like the study of medicine generally, appears to have remained in almost the same state of advancement as it was left by the Greek, Roman and Arabian authors; and the physicians of that period obtained almost all their information from these sources.

They classed under Lepra all skin diseases having a loathsome appearance, obstinate in their course, and covering the whole of the body (4).

This definition probably included the elephantiasis of the Greeks - the true lepra (5).

Therefore at the beginning of the present century, there were three different lepras and these were often confounded with each other.

Willan at this date included a fourth disease

(3) Hebra, Diseases of the skin (Hilton, Faggé and Pye Smith's Translation) page 1 & 2.
(5) Tenneson Traité clinique de Dermatologie, pg 142, 1893.
under the name. He and Bateman divided the class of scaly affections into four kinds, viz. Lepra, Psoriasis, Pityriasis, Ichthyosis (6).

Psoriasis was again split up by Willan into two divisions viz. Lepra Graecorum, because he found circular patches, and a disease by this name was thus described by Paulus Aegineta; and the other variety he named Psora Leprosa which he was obliged to distinguish from Psora indicating Scabies, and hence to prevent any mistakes the former was called Psoriasis (7).

These leading divisions were subdivided into numerous species. Though we know that all this gave rise to unnecessary complications, yet to Willan belongs the credit of first drawing attention to this affection of the skin, and of having originally described it as a separate and distinct disease.

SYMPTOMS AND PROGRESS.

As to the question whether any constitutional symptoms accompany the outset, most authorities either ignore the question altogether or hold that there are none. "Bulkley (8) says "on the full and recent devel-

(6) Tenneson. Traité clinique de Dermatologie 1893, pg 143.
(8) Are eczema and Psoriasis local diseases of the skin or
opment of psoriasis there is more or less malaise prostration, and probably fever."

McCall Anderson (9) on the other hand most pointedly affirms "that Psoriasis is never accompanied by "febrile disturbance, unless after a chill or when irritation is excessive."

In our own experience we have never met with any patient who complained of fever or any other constitutional symptom at the commencement of the attack. Some itching often accompanies the eruption and hence the name. It first appears as small punctate red spots, slightly raised above the level of the surrounding skin; becoming pale on pressure, and at a very early stage exhibiting small scaly caps on their surfaces. These spots may be confined to one region of the body, or on the other hand may increase in number until almost the whole is covered. At this stage it is called "Psoriasis Punctata". Each spot has a tendency to enlarge, and also after a few days the collection of scaly material becomes more marked, and in the course of further development this scaly cap increases with the increase in size of the
original lesion and gives rise to what is described as a "mortarlike" appearance.

The next stage to "Psoriasis Punctata" is known as "Psoriasis guttata", which in still further evolution forms "Psoriasis Nummularis" or "Discoidean".

These diseased areas may join together, and lead to the formation of large irregular patches, ("Psoriasis Diffusa"), or, eventually cover almost the whole body, "Psoriasis Universalis".

On the other hand recovery may take place in the centre of the patch and the spreading continue at the edge, hence rings are formed and Psoriasis circinata results.

These rings joining, recovery takes place at the point of contact producing a more or less wavy pattern - Psoriasis Gyrata.

The disease may form rings and festoons from the first, apparently following the normal arrangement of the hair follicles (10).

On the parts of the skin where hair follicles are present, one, at least will almost invariably be found in each spot of psoriasis.

This ringed mode of development according to Crocker (11) is rare upon the limbs.

We have seen one case of Psoriasis Gyrata on the arms during eleven months' attendance at the outpatient clinique of the Hôpital St Louis, Paris.

This patient had had various attacks during the past six years.

There was very little thickening in the plaques even upon the elbows and knees, they were of a very much lighter colour than ordinary, and the scales were not abundant.

The upper arm on each side was covered with marked Psoriasis Gyrata.

When the crusts are heaped up and appear as conical masses, the condition is called "Psoriasis Rupoides.

This variety according to Tilbury Fox is Psoriasis modified by a strumous tendency (12).

Psoriasis empyoides is the term used when there is pus beneath the crusts. This condition is probably due to a secondary infection by pus cocei.

The disease according to Devergie may assume

an acute form, and in this the margin is less defined than usual, the scales do not collect in masses, are thrown off rapidly, and present a thin, papery appearance. The parts are hot, tender, irritable, and itchy, furthermore very little irritation produces discharge.

This is the form that he has named "Psoriasis eczémateux" (13).

From his description we think that the condition thus described was that of a chronic squamous eczema of a psoriasitic form and probably of a seborrhoeic type, during the course of which an acute inflammatory attack has supervened.

With these two latter exceptions there is never any discharge in psoriasis except as a result of secondary infection due to scratching etc.

Hyde (14) gives the following as the order in which the different regions of the body are most commonly affected:

1. The elbows and knees. 2. The sacral region.
3. The upper surface of the chest. 4. The scalp and face. 5. The abdominal surface and genitals.
6. The hands and feet.

The elbows certainly are the most common seats of eruption, but the statement of Sir Erasmus Wilson that "the disease is not psoriasis if it does not or never has appeared on the elbows" (15) is certainly not altogether true, for within a few days of the period at which this was written, we have seen at the outpatient clinic of the Hôpital St Louis two cases of undoubted early psoriasis - the one a boy of eleven years, the other a girl of sixteen, both of whom were attacked for the first time - in which the spots were scattered in almost every other part of election on the body except the elbows and knees.

McCall Anderson (16) mentions three cases where there was no manifestation on the elbow. In the first of these it was limited to the right scapula. The second case was that of a boy who had two small patches on the back; and the third that of a young man who exhibited two small spots, each the size of the palm of the hand, on the abdominal surface, which had existed for ten years unchanged, and the eruption was not, nor had it ever been in any other

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The disease, however, usually appears on these parts at first, and remains there for the longest period. In cases of doubt this is the position to look for the most typical lesions. The thick skin beneath the knee upon the extensor surface is after this the most frequent position.

Upon the sacral region the largest patches are often seen, and sometimes they are the most chronic.

The best examples of psoriasis circuata and gyrata, in our experience, occur upon the surface of the upper part of the chest.

Next in order comes the head, which in fact may be the only part attacked (17).

The plaques are usually very well defined, with thick whitish crusts, more adherent than usual and matting the hair together.

A noticeable feature of the affection in this situation, when it is extensive, is a margin extending some little distance from where the hair terminates and the formation of a band projecting beyond its border.

Hyde (18) says, that when the vertex is bald from physiological loss of hair, the patch usually lingers near the fringe of the hair left at the sides of the head and projects thence into the bald region. When the bald scalp is attacked the patches seldom bear scales, but the condition is that of dry erythematosous patches with fairly well defined margins. The colour is often much lighter than in other parts, and in this it resembles eczema, and sometimes leads to a difficulty of diagnosis from the latter (19).

The hair is as a rule not lost, though in exceptional cases complete permanent alopecia may result (20). This occasional loss of hair may be due to secondary microbian infection in the diseased area.

When psoriasis implicates the ear it has a tendency to invade not only the whole auricle but often spreads into the meatus, which becomes blocked up with exfoliated epidermis, and as a result the patient becomes deaf.

This deafness, however, unlike that of eczema

is only temporary. The face is far less frequently attacked than the trunk and limbs, and as a rule the scales are usually thinner and less abundant, besides the lesions are smaller than in the other localities before described; and in this part it is more likely to appear less characteristic and be confused with other skin affections on account of its unusual type. (21). The conditions here appear to be less favourable for its development, and cases are not unfrequent where the scalp and neck are markedly affected, whilst the face remains almost if not altogether free.

It is more easily and more rapidly cured in this situation than elsewhere (22).

The lesions are situated upon the cheeks, chin, nose, but avoid the parts near the mucous orifices.

**The abdominal surface and genitals.**

The comparative rarity of psoriasis of the abdominal surface bears out the rule of its predilection for the extensor surfaces.

We never see psoriasis of the abdomen which

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(22) Diseases of the skin. Mc Call Anderson. 2\textsuperscript{nd} Edit. 1894, page 381.
does not affect other parts of the trunk. (23). As one would expect, the plaques disappear at an earlier date under treatment from this situation than on other parts of the trunk. The genital organs are more rarely the seat of the affection, and when it occurs upon them it exhibits a more acute appearance than elsewhere being of a marked inflammatory type and looking more like a chronic eczema.

Hilton, Fagge and Pye Smith (24) state that in this position it usually has spread from the abdomen and thighs. This may be true for the majority of cases, but we have seen several at the clinic of St Louis' Hospital Paris, where lesions were present in this situation and existed upon other parts, and were sufficiently well marked to confirm the diagnosis, and there were none on the abdomen and thighs.

When the eruption occurs upon the scrotum, there is often considerable thickening and induration, sometimes accompanied by fissuring, and here there may be some discharge, owing probably to the warmth and moisture of the situation favouring secondary infection.

It seems to be a fairly general opinion that the labia share the immunity characteristic of parts situated around mucous orifices and are never attacked.

However, there is a model preserved in the Museum of St Louis' Hospital, Paris, (25) of one of M. Fournier's cases, which illustrates a case of psoriasis where the eruption has extended to the labia, vulva, and perinaeum. In the latter situation it resembles more a case of eczema or papular syphilis, though the diagnosis is easily confirmed by the well-marked lesions present on the abdominal surface and elsewhere. On the genital organs the papules resemble in a marked degree syphilitic lesions of a similar form (26).

The hands and feet are more rarely affected than any other part and certain authors maintain that these parts are never attacked alone (27).

Radcliffe Crocker, though admitting the rarity of the occurrence, quotes two cases (28) where it was present on these regions alone, and in one it was limited to the left palm.

Several cases of primitive psoriasis of the

(25) No 1125, General Collection.
nails, will afterwards be referred to.

In these situations (upon the palms and soles) crusts are rarely formed, but the superficial layer of the epidermis is greatly thickened and presents a worm-eaten appearance caused by the splitting of the tissues (29).

Fagge and Pye Smith, on the other hand, deny that there is, or at least say that there is little disposition to crack and that the soreness and irritation of eczema is absent (30).

The exfoliated epidermis has not its usual silvery appearance, and a certain tendency to assume a circinate form is always present (31).

The nails. The lesions in these situations are rare and almost invariably, though not always, secondary to an efflorescence elsewhere.

All the nails are seldom or never affected at once.

Occasionally the nails are for some time the

sole seat of the eruption (32).

True primitive psoriasis of the nails is, however, extremely rare.

Out of 616 cases of psoriasis L. Nielsen (33) did not observe a single well established case of the disease limited to this part, for in every instance the typical cutaneous eruption occurred elsewhere before it did in the nails.

Schultz quoted by the same author considers this localization as particularly frequent in old psoriasitic cases, but he understands by this psoriasis of the matrix.

Dr. Dubreuilh (34) is convinced that the affection can begin in the nails before there is any other cutaneous manifestation, and quotes the following cases in support of this view.

The two first were published by Dr. Méneau (de la Bourboule). A man of 60, an old rheumatic,

(33) L.Nielsen quoted by Dr.W.Dubreuilh, Travaux de la clinique de dermatologie 1895, page 107.
(34) Travaux de la clinique de dermatologie. 1895, page 107.
but who had never had any skin affection was attacked suddenly with acute psoriasis on all the nails of the hands and feet.

The second was that of a young girl of three and a half years who suffered from more or less accentuated lesions upon the nails of the fingers and thumbs.

The following case was observed by Dr. Dubreuilh himself:

The lesions were so typical that he was able to affirm their nature prior to the outbreak of the cutaneous eruption. The diagnosis was confirmed fifteen days afterwards by the appearance of a patch upon the thigh, which the mother attributed to the ointment used in the treatment of the nails.

The patient, a little girl six years old, was seen first on the tenth of January 1892. The disease affected the left thumb nail, and since this date it has extended to the first, second, fourth, and fifth fingers of the right hand.

In all the nails, the lesions had commenced by a loosening at the corner of the nail, at the junction of the free and lateral borders, sometimes
on both the latter; this continued to increase and extend more or less far along the free borders.

There had never been, and at the time there was not the slightest eruption on the body, and nothing on the feet or toe nails.

The disease may begin at the free border of the nail, the junction of the free and lateral borders, beneath in the nail bed, or in any other part; but usually at the free corner where the borders join.

The surface loses its smoothness, transparency and polish, becomes pitted, longitudinally and transversely striated, furrowed, thickened, and often owing to the accumulation of scales beneath, it is sometimes separated from the subjacent structures.

The colour likewise changes to a dirty brownish yellow, or even brown.

The disease may attack a strip of nail only, or, as it more often happens, extend over the whole.

All these characters may vary greatly in different cases, and when lesions do not exist elsewhere, it is often impossible to make a positive diagnosis (35).

(35) Traité des maladies de la peau, Gaucher 1895, Tome I, page 374.
Besides the above mentioned variations from the primary type, which are due to special situations and local conditions modifying the appearance of the disease, - e.g. when met with on the genital organs, palms, nails, etc, - atypical cases "per se" sometimes occur.

In rare and exceptional instances the disease may assume an acute form, either from the beginning, or in the course of a more chronic attack.

This phenomenon sometimes arises spontaneously and at others can be traced to some source of irritation during the course of treatment etc. The patches become vividly red, increase more rapidly in size, and the patient complains of sharp, itching, burning pain.

The scale formation is abnormally abundant, much and when formed they are cast off more rapidly than usual.

The general constitutional symptoms associated with this variety are well marked, and amongst them may be noted rise of temperature, headache, lumbar pains, together with gastric disturbance more or less pronounced.
This variety is termed by the French School "Psoriasis scarlatiniforme" (36).

Afterwards the complaint may follow one of two courses. Firstly it may assume, or resume its chronic condition, according to whether the acute phenomena have marked the beginning of the attack, or are the result of an acute exacerbation during a more chronic course; or secondly, on the contrary, it may degenerate into an exfoliative dermatitis.

In other cases the psoriasis undergoes a spontaneous cure. The scales fall off, and gradually cease to be renewed; the individual elements stop enlarging, the thickening and redness disappear by degrees until nothing is left but a very persistent pigmentation to indicate their previous existence.

It is necessary to mention here the aspect assumed when the plaques are situated in the articular folds. They rarely occur in this position, and but for the fact that there are always some lesions elsewhere, it would be impossible to diagnose them

(36) Traité des maladies de la peau, Gaucher page 369, Tome I 1895.
from a chronic eczema of a seborrhoeic type.

As a matter of fact, according to Gaucher, (37), Unna has confounded it with the latter.

The elements are of a more vivid red colour than usual, the skin is greasy and it may be even moist to the touch, crusts are formed and the scales are soft and of a dull white appearance differing markedly from the glistening aspect of the ordinary variety.

A similar type also occurs on the pubes.

Finally to quote Gaucher (38): "En somme, ce "psoriasis atypique des plis articulaires est une "éruption dénaturée par son siège, et par l'état "seborrhéique de la peau, qu'il faut néanmoins ratta- "cher au psoriasis, quand on trouve ailleurs, et no- "tamment aux coudes et aux genoux, des éléments de "psoriasis vulgaire."

which may be translated as follows:

This atypical psoriasis of the articular folds

is an eruption perverted by its situation and by the seborrhoeic state of the skin, but it is necessary to include it with psoriasis when one finds particularly on the knees and elbows, the elements of common psoriasis.

In old people not unfrequently the front of the chest is covered with yellowish gray branny scales, greasy to the touch (39).

In some cases when the eruption is of long standing it assumes a rough verrucous appearance, and even may degenerate into true warty growths.

This condition is more commonly seen upon the lower extremities than elsewhere.

In children the patches are not generally so well developed as in adults, and it does not spread over so wide a surface. We have very seldom seen any large patches in cases occurring at this period of life, even though the disease was of long standing, the type usually being of the guttate variety.

The face is more frequently and exclusively affected, and the elbows and knees often escape; fur-

thermore an hereditary history is more frequently to be obtained when the disease begins in early childhood (40).

Complications and sequelae.

The joint and other rheumatoid and neuralgic affections associated, according to Charles Bourdillon, with a certain percentage of cases of this disease are, if his views be accepted, the most curious and important of all complications.

These in most of the works on dermatology are either ignored altogether, or at the most are casually referred to as neuralgic pains and gouty or rheumatic affections, occasionally complicating psoriasis.

The above author (41) was the first, as far as we know, to give a detailed description of them and to his thesis we are indebted for many facts in the following description.

For convenience his term "Arthropathies" will

be used to indicate these joint troubles. Besnier (quoted by Bourdillon page 26) estimates the frequency of these complications at 5 percent of the whole of the cases of psoriasis and in ten per cent of the former, deformities of the joints are met with.

The percentage is greater in men than women, for out of thirty six cases under observation, twenty seven were men and nine women (42). Women, on the contrary are more often attacked by articular rheumatism. Like psoriasis itself the condition of life does not seem to affect its frequency, as it seems to occur indiscriminately amongst the rich and poor alike, thus differing from rheumatoid arthritis, which owing to its frequent association with poverty has been called "poor man's gout".

Exposure to damp and residence in the town or country, have no real influence; that of age is not precisely known - Bourdillon says that he has not seen the joint pains occur before 20 years of age, and that the period of onset varies in women from twenty to twenty seven, in men from thirty two to forty seven. (43).

Patients of all temperaments, and in all states of health exhibit an equal liability.

Personal and family histories of gout and rheumatism (articular or fibrous) are conspicuous by their almost invariable absence. In only two cases were family histories of either elicited.

Cold was very rarely assigned as a cause by the patients. Fatigue of all kinds, excess of work, functional abuse sometimes preceded the first onset, or, apparently provoked a fresh outbreak.

The nervous constitution, Bourdillon believes, favours its development, and he maintains that it occurs in persons of nervous constitutions and moreover that a family or personal history of actual nervous disease may be usually elicited.

In the majority of cases the psoriasis has existed for a certain time, sometimes for many years when the arthropathies have made their appearance.

Out of the thirty six cases quoted above, in twenty nine the psoriasis was the first manifestation noted, and in four the rheumatoid phenomena began at the same time as the skin affection, and we presume
that in three cases the former preceded the latter.

Frequently prior to the attack a psoriasis, hitherto discrete and limited to several parts of the body, seems to be imbued with a fresh energy. The various elements become more confluent and disseminated over the greater part, if not the whole of the external surface of the body. The character of the skin eruption may even materially change and the integumentary surface exhibit an uniform redness and be covered with very fine scales which are reproduced and cast off with astounding rapidity.

Bourdillon divides the arthropathies into two principal groups: In the first he includes true arthropathies where the lesions are established in the articulations and which present themselves in various aspects.

In the second he places those cases where the inflammatory element seems in a great measure to have given place to pain, and the articular surfaces are transiently and slightly affected.

The pain is very well marked extending along the course of nerve, muscle, etc.
Sometimes the only phenomena that attract the sufferer's attention are the shooting pains, spasms, subsultus, etc, with or without sensations of burning and smarting.

The author divides the true arthropathies, included in the first group, into those that are general and the partial.

In the former the lesions are of great intensity and invade most of the joints, while in the latter the number is limited to one or more.

In their onset the true arthropathies may follow one of two courses: firstly the invasion may be acute and very well marked from the beginning; secondly it may be insidious and so very gradual that the trouble is not noticed until it is well advanced. In the former event, possibly in the middle of apparently good health, or, perhaps when the standard is lowered by a chill or some moral disturbance, pain may arise without any appreciable cause in one or more joints, accompanied by redness, swelling, more or less malaise, and some fever.

In addition to these symptoms shooting pains, with or without involuntary movements are occasionally
complained of. In a considerable percentage of cases a fresh outbreak of the psoriasitic eruption may at this time appear.

With regard to the relative pre-disposition of the various joints, Bourdillon says, that the small articulations, especially the meta carpo phalangeal and the phalangeal of the index and middle fingers are more frequently affected than those of the others and are very often the first; but this is by no means always the case, for many times the pains begin in the vertebrae (lumbar or cervical), the shoulders, knees etc. It is therefore nearer the truth to say that any of the joints are capable of being attacked.

Speaking broadly the average order of frequency is as follows: 1. The meta carpo phalangeal joints. 2. The vertebrae. 3. The meta tarso phalangeal joints. 4. The wrists. 5. The ankles. 6. The knees, etc.

When the large joints are the ones implicated the pain is less acute, and the disorder less accentuated.

A remarkable tendency to localization may ex-
hibit itself. The disease may be confined to one region, at first often limited, invading sometimes only one limb, or perhaps in spite of existing as a generalized condition, attack this one with particular violence and obstinacy.

In the first exacerbations the number of joints invaded is often limited, but in the following the remainder are progressively affected, until at last even the temporomaxillary and vertebral joints do not escape.

Bourdillon draws attention to the fact that the hip joints possess a remarkable immunity, and very often they are found quite intact.

The number of existing diseased joints have quite as much relation to the intensity of the cutaneous eruption as to the number of previous arthropathic lesions.

The above mode of invasion, though not the more usual, yet on account of its acuteness and intensity is the more important.

The second one is more commonly met with, and is at first characterized by its more gradual onset
and by a sense of uneasiness more or less troublesome to the patient. Then pain is perceived which increases in intensity and generalizes itself little by little, and then febrile phenomena supervene.

The chief symptom that arrests the attention is the pain, which in some cases is slight and limited to one part, or on the other hand may be very intense and diffused. It is situated primarily in the articular interspaces, but may extend more or less, following the tendonous sheathes even to the extremities of the bones themselves.

This leads to an interference with the functions of the limbs, for as a natural consequence the patients place them in the position that best avoids dragging upon the tender capsule, ligaments, etc. The heat and redness are usually slight.

There is some increase of the synovial fluid, and also infiltration around the affected joints, which give rise to swelling extending above and below them.

The abnormal attitudes and displacements no-
noticed are due in part to muscular contraction, the degree of which is in proportion to the intensity of the disease.

The duration may extend over two, three, four months, or more.

The generalized variety is more stubborn than the partial.

When resolution takes place, it is very often only incomplete, and the respite is not unfrequently of very short duration. If the cases are slight, with a small number of diseased joints and proportionately discrete eruption, then the pain and difficulty of movement are the sole inconveniences; but, on the other hand, when the attack is general, loss of appetite, headache, and other constitutional symptoms are superadded.

The temperature may remain normal, though it often rises, and even attains a high degree.

Unlike subacute or chronic rheumatism, no rapid anaemia is noticed, and there is a marked absence of sweats; and on the contrary the latter may be suppressed altogether.
The quantity of urine passed daily is decreased during the course of any fever that may be present; but there is no albumen to be detected in it. The heart, together with the remainder of the circulatory and the respiratory systems is normal.

The digestive system is very slightly affected if at all, except in very intense cases.

Besides the symptoms directly connected with the joint affection, others exist resembling those that are produced by congestion of the spinal meninges.

Complaint is made of either continuous, or intermittent pains, situated in the limbs, intercostal spaces, and loins; sometimes sharp and lighteninglike, and at others of the girdle variety.

There may be cutaneous hyperaesthesia, restlessness, cramps, and even true muscular contractions; or, on the contrary, paresis, which may go on to paraplegia.

The attacks follow each other, new ones presenting characters identical with the preceding; the
pains recur and are more obstinate; the deformities increase or appear afresh, or perhaps are rather mere relapses, added to former lesions incompletely resolved.

In this manner the exacerbations succeed each other, their intensity increasing as the intervals between them decrease more and more.

In certain cases, the disease instead of exhibiting a progressive intensity, may be more intense at first and subsequently less painful and more localized in spite of the progress of the lesions.

The proportion in which they are produced depends upon the amount of transformation of the psoriasis from the ordinary variety.

It is no longer discrete, and limited to perhaps a few regions of the body, but installs itself with exaggerated persistency until at last it no longer subsides under the local application of remedies, but becomes inveterate though it may not necessarily be of long standing.

Perhaps even the general appearance of the disease is absolutely changed and an universal red-
ness usurps the place of the discrete localized plaques, while instead of the normal silvery scales, a diffuse exfoliation is noticed, resembling, if not identical with an exfoliative dermatitis.

In the cases classed under the heading of partial arthropathies, the lesions described are limited to a few joints, may-be those of one limb, hand, or even finger, and the attacks may be as variable in their severity as they are in the generalized variety. The diseased parts may, or may not be symmetrical.

Osteophytes and fibrous bands may be formed, or even true bony ankylosis sometimes occurs. Bourdillon designates the latter form "osseous arthropathy".

Muscular contraction is not unfrequently very prominent, so that in cases where the knee is affected the heel may be drawn up until it touches the tuber ischii.

Selerosis of the aponeurosis occurs, and especially often in the palmar fascia, the contraction leading to flexion of the fingers more or less evident.
In other cases the ligaments preserve their normal length. Crackling on moving the diseased joints is frequently perceived, but not unusually the alterations around and within them are so profound that the bones are fixed and resist all attempts to move them.

The signs of spinal irritation are associated with the partial as well as the general varieties.

There exists a certain number of cases where there is no evidence of actual inflammatory joint disease and which are characterized simply by pain.

To this condition M. Besnier has given the name of "psoriasis douloureux" (44).

It seems to occupy a position between ordinary psoriasis and the arthropathic variety.

The site of the painful sensation is at times the articulation, and the acuteness is often so great that the slightest movement is impossible because of the agony it causes the patient.

The volume of the joint is normal, or, if not, the increase is very slight. The synovial fluid is not

(44) Thèse de Paris, page 82, Bourdillon.
augmented and there are almost no inflammatory signs.

The condition is one of extreme joint hyper-aesthesia.

Other painful sensations may exist independently or combined with the above, following at times the course of the nerves and their branches.

Very commonly they may originate in the sciatic or intercostal nerves. They may simulate, in suddenness and rapidity of onset, lightening pains, and they often return at irregular intervals, even sometimes when the patient is asleep.

The pains may not in some cases be confined to, or exist in the nerve trunks, but affect muscular masses, and at times they are spread over the whole of a limb and seem to be situated in its very substance. This last variety resembles what has been described by Beau (45) as "melalgie", and this author states that it characterizes the last stages of tuberculosis. On considering carefully these joint affections or arthropathies and the various phenomena connected with them, one is at a loss whether to class

them as part and parcel of the later stages of psoriasis, or, on the contrary, to view them as complications.

These affections will be discussed further when the aetiology is considered.

As a rule an ordinary psoriasitic eruption, after it has disappeared, under treatment or spontaneously, leaves no traces of its existence behind, excepting of course, a temporary discolouration of the skin.

In some rare cases, however, cicatrices have been noticed. Bulkley (46) quotes a case of a woman, aged fifty years, who presented this unusual phenomenon. After the eruption had disappeared, cicatrices could be noticed upon the sites of the former spots, which, owing to their white colour, contrasted strongly with the brown of the rest of the skin.

Crocker (47) records a case where scaring followed the use of chrysarobin treatment.

The same author mentions another as being

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exhibited to the Dermatological Society in 1891, and in this case even keloid patches had developed on the site of what appeared to be an ordinary psoriasis, and they were not in any way connected with irritating treatment.

He refers also to a case described by Purdon, in which a similar condition was produced, and says that Besnier believed it to be caused by irritation during treatment.

Dr. Fox of New-York (48) describes a case in which the psoriasis left the skin at the affected area in a wrinkled atrophied condition. Commenting upon this, Dr. Robinson remarked that these white atrophied spots were due to a loss of connective tissue and some deficiency of elastic fibres. He had observed them in a number of cases in his experience, and they were permanent.

Permanent achromia may also be another sequela (49).

(49) Hallépeau quoted by Crocker. Disease of the Skin. 1893. page 223.
Vidal believed this to be only apparent, and the result of increased pigmentation around the plaque causing it, by contrast, to appear colourless.

An increase of natural pigment has been often recorded, and the sites of former lesions may assume various degrees of discolouration, varying from light to dark brown, and even, as in the extreme case depicted in Neumann’s Atlas, plate XXIX, may become black and merit the name of "Psoriasis nigra".

This pigmentation is generally attributed to the effect of the prolonged administration of arsenic, but Crocker maintains that it occurs in cases where no arsenic has been given (50).

Another rare complication is the formation of verrucous growths upon the patches.

This complication assumes extreme importance on account of a number of cases being recorded in which these warts assumed a malignant phase and degenerated into epitheliomata. Dr. James C. White (51) describes three of this sort.

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(50) Diseases of the Skin. 1893. Page 223.
(51) American Journal of Medical Science, January 1885.
A number of instances of the latter have been recorded, both following verrucous growths, and also without their intervention.

A very striking case is described occurring in the practice of Dr. Arbuthnot Lane (52).

The subject, a man, had suffered from psoriasis since his infancy, and at the time the observer first saw him, he was sixty years of age.

He had been treated with Fowler’s solution off and on, for many years.

On the back of his forearm, there was an ulcerated epitheliomatous area two inches in diameter, which was said to have commenced as a single nodule, afterwards three in all developed and in time united.

There was no glandular enlargement.

This growth was removed in April 1892, at a time where he was free from any eruption.

In March 1893 he was seen again, when three epitheliomata were observed upon the scrotum and perinaeum, situated one and two inches from each other respectively, in the antero-posterior plane.

(52) Lancet, 1894, page 407.
At this time he was covered with eruptions.

These growths were removed, and he was told to discontinue the arsenic.

During the same year two more growths appeared an inch in front of the most anterior of the last. In January, the twenty second, 1894, two others developed, one of these upon the site of the scar of one that had been previously removed.

Up to the seventeenth of February 1894, he had had eleven separate foci of malignant disease, but in only one of these did any occur upon the site of a psoriasis patch.

Mr. Hutchinson asked whether any abnormal condition preceded the malignant development, such as any corneous process.

He had seen cases where this peculiar condition on the palm and soles preceded the appearance of epitheliomata.

Mr. Hulke remarked that he had visited old copper mines in Devonshire, where workmen were employed in extracting arsenic from the refuse, and had investigated the condition of the employees; but though they were in a miserable condition as a
class, he could find no case of epithelioma having commenced through exposure to arsenic.

Weyl (53) quotes a case reported by Cartaz, where a psoriasitic patch upon the finger was transformed into carcinoma.

A sequela attributed by some to the administration of arsenic, by others to irritating external treatment, is dermatitis exfoliata or pityriasis rubra.

Crocker (54) states that he has known it follow the inunction of chrysarobin.

The ordinary psoriasis spots become a brighter red colour, commence to spread acutely, the squames are shed more rapidly and abundantly, and the whole appearance is of that which French writers term "psoriasis scarlatiniforme". The various processes are carried to a further degree until at last the lesions become general, and true pityriasis rubra develops..

As has been mentioned before, psoriasis of the ears sometimes leads to deafness.

(54) Diseases of the Skin, page 246.
This is the result of the purely mechanical process of plugging of the meatus with the accumulation of scales, and disappears when these are removed.

In old chronic indolent patches, owing to the thickening of the integument and the consequent loss of normal elasticity, fissures sometimes form, and if they are deep, may give rise to considerable pain.

This is the only example of true pain in the actual seat of eruption.

Neuralgias, headaches, etc, have been referred to under the heading of arthropathies.

**PATHOLOGY.**

**Histopathology.** During the six months, from January to August 1898, we were engaged under the direction of M. Sabourand, at the Laboratory of the "Ecole Lailler", Hôpital St Louis, Paris, in making investigations into the histo-pathology and microbiology of psoriasis. (55).

(55) The results have been published in the number of the "Annales de Dermatologie et Syphiligraphie" for November 1898.
The following is a résumé of the results of our researches with regard to the former.

As a preface to our study of the question, it would seem useful to first recapitulate the opinions set forth by the principal authorities on the nature and form of the histological lesions of psoriasis. The following are good examples of the views of two authors of repute.

W. Allan Jamieson (56) says that in his opinion, "psoriasis consists in an overgrowth downwards of the interpapillary layers of the rete, with a corresponding increase in the length of the papillary portion of the corium which separates them."

"The meshwork in this portion of the cutis is opened out and becomes oedematous, the vascular loops in the dilated tissue are more convoluted than in the normal condition, they are gorged with blood corpuscles - congested - and there is an exudation of leucocytes into the tissue around."

"The deeper parts of the corium are in the earlier stages unaffected, but in more chronic con-

"ditions some degree of oedema, of enlargement of 
" vessels, and eruption of lencocytes occurs there 
" also.

"The corresponding parts of the hair folli-
" cles participate in the like changes.

"At first the corneous layers of the epider-
" mis are little affected, but the continuance and 
" extension of the change in the rete and upper part 
" of the corium, induce a more rapid, but at the 
" same time more imperfect cornification of the epi-
" dermic cells. Thus hillocks of scales arise which 
" are deficient in cohesion, and being easily re-
" moved, the layer of the cylindrical cells is reached 
" and may be detached as a film exposing the bleeding 
" papillary bodies.

"The silvery hue of the scales is explained 
" as being due to the inclusion of air within and 
" between the loose, imperfect, spongy, horny mass."

Parallel to that of Allan Jamieson, it is 
necessary to place the brief description of the 
lesion of psoriasis given by M.L.Broq (57).

(57) Traitement des maladies de la peau. 2nd Edition, 
page 695.
"Sur des coupes histologiques, il est facile de voir que les couches cornées de l'épiderme ont subi un processus énorme d'hypertrophie, il en est de même du corps muqueux et de la couche papillaire.

Nous avons déjà dit que cette hypertrophie peut, dans certains cas chroniques, prendre un tel développement qu'elle devient visible à l'œil nu.

Les cellules de la couche cornée renferment des noyaux aplatis. Le stratum lucidum est conservé, mais le stratum granulosum a disparu, ou tout au moins a cessé de secrétérer l'éléidine de telle sorte que l'épiderme ne se kérisine plus.

Les couches superficielles du chorion présentent tous les signes d'une inflammation modérée; dilatation des vaisseaux, des follicules pilo-sebacés et des conduits sudoripares. Certains dermatologistes pensent que le processus morbide débute dans les couches superficielles des dermes, d'autres, au contraire, croient qu'il débute dans le corps muqueux de malpighi.

Auspitz est à cet égard on ne peut plus explicite - Le psoriasis n'est pour lui qu'une ano-
"malie du processus de cornification, c'est une
simple kératolyse."

This may be freely translated as follows:

"In histological sections it is easy to see
that the horny layers of the epidermis have been
submitted to an enormous hypertrophic process,
"together with the mucous bodies and the papil-
"lary layer. We have already said that this hyper-
trophy may in certain cases assume such a develop-
ment that it becomes visible to the naked eye.

The cells of the horny layer enclose
"flattened nuclii. The stratum lucidum is pre-
served, but the stratum granulosum has disap-
peared or at least has ceased to secrete ela
"of such a kind that keratinisation no longer
takes place in the epidermis.

The superficial layers of the corium pre-
sent all the signs of a moderate inflammation,
"dilatation of vessels, of sebaceous glands, and
"sudoriparous ducts.

Certain dermatologistes think that the mor-
"bid process begins in the superficial layers of the derma, others, on the contrary believe that it commences in the mucous bodies of malpighi.

"In the opinion of Auspitz - one cannot be more explicit - psoriasis is nothing more than an anomaly of the process of cornification - a simple keratolysis."

Thus comparing the opinions of Jamieson, Broq and Auspitz, we find that Jamieson concludes that there is eventually a total hypertrophy of all the elements of the skin, the primitive process being localized around the papillary bodies and extending at the same time to the surface (hyperkeratosis) and into the deeper parts (oedema of the corium).

Whereas Broq insists especially on the hyperkeratosis without being able to point out particularly the anatomical situation of the primitive lesion which in his opinion is either in the superficial layer of the derma or the mucous
layer of malpighi.

Lastly Auspitz sees nothing but an anomaly of the process of keratinisation joined to hyperkeratosis. Under these circumstances, it becomes extremely interesting to fix this disputed pathological point, and to know - not the lesion which accompanies chronic psoriasis - but on the contrary, to search for that one which is present in the nascent lesion.

The first trouble that can be perceived by microscopic examination - that is what we have attempted.

The interesting outcome of our observations is that these results are entirely different from those which have preceded them.

The conclusions drawn are based upon the microscopic examination of fifteen hundred sections of young psoriasis, furnished by six biopsies of nascent lesions, taken from six different individuals before they had submitted to any treatment.
We have also studied many hundreds of sections of psoriasis squames, young and old, a considerable number being taken from eight different subjects respectively.

All the observations which we have made with these various preparations agree with each other. So to begin with, we are able to affirm that the original lesion of psoriasis is always constant and identical in every case. We wish particularly to point out that our researches have been limited exclusively to the study of the VERY SMALLEST LESION and THE YOUNGEST, taken from cases of psoriasis in the EARLIEST STAGES of their development.

In adopting this plan, our object was to simplify this difficult study, and to ELIMINATE in one stroke, if possible, all LESIONS SECONDARY TO THE INITIAL ONE.

The descriptions we have quoted just now have not avoided this cause of error so important, very evidently they describe in the depths of the
skin and in the papillary body, lichenoid alterations later in date than the stage which we have studied.

The primordial and elementary histological lesion in psoriasis is essentially transitory, the secondary ones are, on the contrary, permanent; that is why these latter, though valueless, have been particularly described, whereas the primitive lesion has not been observed, because as it grows older, it is transformed and defaced.

The observation of the latter is of predominant and sole importance, and gives to the pathogenesis of psoriasis the enlightenment which the Clinic expects from the Laboratory.

At a little point of some twenty micromillimetres broad, an erosion occurs at the surface of the horny layer of the epidermis.

In this semi-cavity arrive one by one some fifteen, twenty, or one hundred leucocytes, or perhaps it would be more accurate to say that by their invasion they form the cavity.
They have come through the epidermis and are arrested immediately at the surface, scarcely covered in this almost superficial epidermic erosion by a thin layer of dislodged and disunited cells.
DESCRIPTION OF FIG. I.

Camera Lucida Verick, oil immersion 1/12, eyepiece n°.3 Leitz. Vertical section of the epidermis passing through the middle of a young lesion of psoriasis.

d. Epidermis.
f. Horny layer of Epidermis.
e.e.e. Migratory cells.
b. Collection of migratory cells in an erosion
of the horny epidermis - Initial lesion of psoriasis.

c. Sheets of exfoliated horny layers beneath a collection (a) of migratory cells anterior in date to the collection b.

Such is the first lesion of incipient psoriasis.

The beginning commences then NEITHER IN THE CORIUM, NOR IN THE PAPILARY BODY, NEITHER IN THE RETE MALPIGHI, NOR EVEN WITHIN THE THICKNESS OF THE EPIDERMIS, BUT AT THE SURFACE INCLUDED IN THE MOST SUPERFICIAL LAYER OF ITS WHOLE THICKNESS, AND EVEN ALMOST AT THE SURFACE OF THE HORNY LAYER ITSELF.

What does this beginning resemble? It is very exactly analogous (from an histological point of view) to the formation of a SMALL ABSCESS at the surface of the horny layer. (A collection of lenco-
cytes abnormally brought together in any point of the organism is the elementary lesion of an abscess.

The affirmation may appear extraordinary, but nevertheless the elementary histological lesion of psoriasis may be defined as an abscess of the horny layer of the epidermis, and for convenience of description, we will call it by this name.

Of course when speaking of an abscess, we do not mean to infer that there is any liquid contents; it is analogous to a dry abscess.

Following the first stage, two phenomena supervene simultaneously:

firstly the hypertrophy of the epidermic horny layer;

secondly, around the primitive lesion the repetition of a number of similar little lesions.

**THE HYPERTROPHY OF THE HORNY LAYER.**

Directly after the formation of the elementary lesion of psoriasis the horny layer hypertrophies beneath the minute epidermic abscess, it increases
in thickness, and by an exfoliative process pushes the abscess outside of the skin: This then is the mechanism of the formation of the squame.

In proportion as the abscess is pushed out by the accumulation of fresh layers of newly formed horny tissue from the situation in which it originally grew, the lencocytes perish, their protoplasm disappears, and the collection becomes reduced to a flattened litter of nucleii compressed between two strata of squames.

These are without doubt the groups of nucleii mentioned incidentally as existing in the thickness of the squames, by M. Broq in his description.

SECONDLY MULTIPLICATION OF THE ELEMENTARY HISTOLOGICAL LESION OF PSORIASIS.

Whilst the hyperkeratosis which removes the little original abscess farther and farther from its primary position, is in process, new similar lesions form around the first in fresh points, and one can perceive NEW LENOCYTARY COLLECTIONS SITUATED WITHIN THE HORNY EPIDERMIS.
These in their turn are imprisoned beneath the thickness of the preceding layer of horny tissue and are themselves pushed out by the process of hyperkeratosis which continues beneath them. The section of an old squame of psoriasis comprises therefore, included in its thickness, seven, eight, ten, or more successive layers of dead nucleii of polymnuclear lencocytes, limited and incased between as many superimposed strata of the horny layer.

Thus one may define the squame of psoriasis as a multitude of little dried abscesses included between sheets of exfoliated horny epidermis.
DESCRIPTION OF FIG.II.

Section of the skin covered with a squame of psoriasis.

The section viewed as a whole.


a. Normal Epidermis.

b. Normal Epidermis but seen in a slightly oblique section.

c. Papillae of the skin cut obliquely.
d. Collection of leucocytes in an erosion of the epidermic horny layer.

e. and f. Collections similar to the preceding but of a more ancient date, separated one from the other by strata of the horny layer.

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In every squame of psoriasis, old or young, one will always find these two elements which are essential constituents of it:

a.) Collections of dried up polynuclear cells contained between

b.) sheets of stratified horny layer.

Which is the first in date of these two elements?

We positively affirm that it is the collection of white blood corpuscles within the thickness of the horny layer.

In a psoriasitic lesion caught at its very origin, one sees easily in the substance of the un-
altered and intact integument the migration of migratory cells which direct themselves towards the point in the horny layer where they will eventually be arrested, and at this moment there is absolutely nothing else abnormal except that.

There neither exists hyperkeratosis nor vascular congestion (either dermic or papillary) nor anything else which resembles any lesion whatsoever.

Beyond this minute collection of migratory cells there is no alteration of the skin visible; on the contrary, even during the formation of the primitive abscess it is very remarkable to see how little part the neighbouring tissues take in the process.

At this epoch of its commencement the inflammatory process is localized in a minute superficial area of twenty micromillimetres square at the surface of the horny layer.
DESCRIPTION OF FIG. III.

Vertical section of a squame of psoriasis and the subjacent epidermis.

Camera lucida Verick. 1/12 oil immersion. Objective.

Ocular 3 Leitz.

a. Dermic papilla.

b. Epidermis.

c. Migratory cell in the thickness of the epidermis.
d. Sheets of exfoliated epidermic horny layer.

e. Collection of migratory cells (elementary lesion of psoriasis).

f. Polynucleated white blood corpuscles included between the sheets of exfoliated epidermic horny layer.

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Given the immense number of lesions possessing similar histological structure, and of which the microbian origins are demonstrated, the first idea that strikes the mind in following step by step the evolution of this minute lesion, is its microbian and external origin.

This lesion differs in nothing from a microbian abscess, except its localization so superficial that it is produced almost outside the organism.
It is perfectly certain that if one found existing in such a lenocytary collection a special and constant microbe, this fact would be perfectly consistent with those with which we have hitherto been familiar, and would not clash with any ideas that we have formed upon the pathology of similar lesions.

Nevertheless our researches, though they were long and patient, have remained without result upon this point. Not only were we unable to demonstrate in these little cellular collections any microbes that we could believe were the origion of the lesion, but furthermore we could not even shew that there were any microbes at all.

In the scrapings and disintegrated fragments of older scales were found sometimes microorganisms of rather uncommon appearance, at others many quite commonplace, but none of them were ever met with in the young abscess or in the compressed litters of nucleii which represented the older and dried ones.

It is necessary nevertheless to admit that,
though the microbian hypothesis is sustained by the nature of the elementary psoriasitic lesions such as we have described; this hypothesis, however, is not the only one admissible.

The effective presence of a microbe is not an essential condition for the existence of every collection of migratory cells.

The field of hypothesis is restricted but still remains open.

But to resume our former consideration of this subject, one can state that the preceding observers, having studied chiefly older, complicated, and degenerated psoriasitic lesions, have interpreted this particular one as a primitive trouble of keratinisation which has, or, formerly had its origin in the depth of the epidermis, or, even in the corium itself.

Now, when one studies the beginning of the lesions of psoriasis what one sees is entirely different.

One observes that the lesion first in date is
the formation of a minute intraepidermic abscess situated in an erosion of the horny layer, and with regard to the process of hyperkeratosis, this is visibly the result of the primitive abscess - it is a local defensive process which envelops the abscess, thrusts it out, and reconstructs the normal horny layer beneath it. But in the meantime the unknown germ of psoriasis exists in the substance of the reconstructed horny layer, it determines a new call of leucocytes, a new abscess identical with the first, and thus a psoriasis squames is the history of ten, twenty, thirty, or more similar lesions, superimposed and constantly reconstructed. PSORIASIS THEN IS NOT, AS HAS BEEN SAID, THE RESULT OF ONE DOES NOT KNOW WHAT - "VICE OF FORMATION" OF THE HORNIE EPIDERMIS. In the disease this "vice" of keratinisation is an essentially secondary one.

The primitive lesion of psoriasis is quite simply constituted by little miliary abscesses of the horny epidermic layer:

In conclusion I have to present my best thanks
to Dr. Sabourand in whose Laboratory and under whose direction these researches have been undertaken and worked out.

Concerning the secondary changes usually described as the chief pathological factors in the disease, viz. moderate dilatation of the vessels and cell exudation in the upper part of the corium, around the hair follicles and sweat ducts, increased thickness of the rete excepting over the papillae, apparent or real enlargement of the latter, with great lengthening of the interpapillary position, and extensive thickening of the horny layer:

These are exactly the phenomena one would expect from a local irritation leading to chronic inflammatory processes, and applied for a prolonged period.

We have noticed in sections of the older plaques several varieties of degeneration of cells.

In the corium "Mastzellen's cells of Erlrich" were frequently seen, and scattered here and there in the epidermic layer were a number of examples of "kario-kinetic degeneration".
In the sections of old psoriasis crusts affecting the horny layer, that form of cell degeneration described by Unna under the term of "balloon degeneration" was very often present in positions corresponding to the apices of the papillae.
MICROBIOLOGY.

Owing to the investigation into the bacteriology of the skin, being perhaps longer and more tedious than any research of the same sort, and the relatively short time we were able to devote to this subject, the results of our work in this respect are necessarily rudimentary. For the same reason, we were unable to thoroughly investigate the properties of the various microbes isolated, or even to isolate many that were found in the mixed cultures.

We do not wish to be inferred that we ascribe pathogenic effects in relation to psoriasis to any of them.

As we mentioned before, we failed to detect any microbe, specific or otherwise, in the primary lesion or elements of the diseased skin.

All the usual methods of staining were used, such as Gram with Weigert's modification, Ziehl or Ziehl Nøelsen (fuchsine phénique), with decoloration by a 2% solution of aniline, hydrochlorate.
and alcohol; also the ordinary method with acid; Löffler's blue, Thionine phénique, aniline blue, etc; but besides these various special methods were also employed such as immersion for twenty four, forty eight, or even sixty hours in an extremely faintly coloured solution of Thionine phénique, Methylene blue, Violet of Gentian, etc, and afterwards decolourising with a similar dilute solution of safranine (acid and ordinary) assisted by a small percentage of iodine dissolved in water or alcohol.

Notwithstanding that many hundreds of sections of the skin lesions of psoriasis were examined after being thus treated, microbes were only definitely found in the superficial parts of the hair follicles, and these were more often of a common variety and rarely noticed.

Occasionally within the diseased horny layer appearances were noticed which bore some resemblance to microbian growths, but if these were due to organisms of this description, they were so faintly stained and therefore so indistinct that no certain
conclusion could be drawn.

The squames were similarly treated and in them microbes were much more commonly demonstrated, though we could not positively affirm their existence within the fresh primary lesion or their compressed remains.

Many preparations made from the scrapings taken from the middle of the under surface of aseptically collected squames, and fixed with alcohol and ether, were examined; but at first we were not successful in demonstrating any bacteria, though after soaking them in distilled water for several hours, careful washing, and then prolonged staining, microorganisms were detected in almost every one.

We would suggest as an explanation of this that the possible presence of some substance, soluble in water, in the skin and also in the squames, prevents the microorganisms readily taking up the colouring matter.

The fact also that certain parts of the horny layer are much more lightly stained than others,
seems to point in the same direction (see plate III, c.c.).

We bring this explanation forward merely as a suggestion, for we have not investigated the subject sufficiently thoroughly to make any positive affirmation.

If this view is correct, it may account for the tubercle bacillus being so rarely demonstrated in Lupus Vulgaris, though its presence can almost always be detected by placing portions of the affected tissue in the peritoneal cavity of a guinea pig and thus producing a tuberculous in the animal.

With regard to the tube inoculations, two methods were used:

In the first, very young squames were aseptically collected and stored between sterilized glass slides.

Scrapings were taken as required (with every precaution to avoid contamination) from the centre of their under surface, and after reducing these to very fine powder, almost microscopic fragments were
taken and placed upon the surface of solid media.

The average number of inoculations made in each tube of this description was twenty.

Some six hundred were made in this manner with the result that growths were obtained in not more than twenty, and these were for the most part of a common variety, such as the micrococcus albus, staphylococcus and streptococcus pyogenes aureus, albus, and citreus, and in one case Sabourand's bacillus of alopecia was found.

The above results point to the comparative rarity of common microorganisms, at least in the centre of the under surface of the squames, and throw some doubt upon the statement so often reiterated that these lesions swarm with cocci, etc.

Tubes containing liquid media were treated in the same manner, and with them the results presented a considerable difference, especially when milk was used.

With the latter nine out of every twelve contained growths.
This may be accounted for by milk being practically a sebaceous secretion and "a priori" likely to afford a suitable soil for the growth of skin microbes.

Scrapings, blood, etc taken from the central portions of psoriasis plaques were also inoculated and used in the manner we have described.

On attempting to separate the various microbes, it was found impracticable to use gelatine agar agar plates or Petrie's dishes, for the former medium as a rule dissolves at a temperature at which any but common skin organisms grow, and furthermore these latter appear so early, liquefy the gelatine, and overrun the whole surface of either medium to such an extent that isolation is rendered impossible.

We were compelled therefore to use the following long and more tedious method:

Twenty tubes of milk for instance were inoculated and examined from time to time until growths were found in them, and then a series of fresh tubes was inoculated from them at the end of
a week, fortnight or three weeks, according to the exuberance and variety of the growths.

A second series was reinoculated from the primary one at the end of two, three or six weeks, and a third at the end of four, six or nine, and so on until the final tube contained only one microbe.

In some instances it would take months to isolate a given organism.

We found it useless to attempt cultivation at the room temperature; this process was carried on at thirty seven degrees centigrade.

After a pure culture was obtained, attempts were made to obtain colonies of solid media, and if these were successful, a series of cultures was essayed in bouillon or some similar transparent fluid.

In the event of the microbe not growing in any other liquid excepting milk, several generations were grown in the latter, and inoculations were made upon rabbits and guinea pigs.

Furthermore the scales and blood from the plaques were inoculated in the same manner upon
A Pure culture of Levure Rose or Pink Torula upon ordinary agar agar, isolated from psoriasis squames.

B Pure culture of a large diplococcus (c in Plate II) isolated from Psoriasis squames, and grown upon glycerine agar agar.

C Pure culture of a bacillus (B in Plate II) seen as a coccobacillus in young cultures, upon gélose sérum artificielle Sabouraud, separated from serous exudation from surface of psoriasis patch. - The young form of this is a coco bacillus (B Plate III).

D Pure culture of a small bacillus upon gélose sirop d'haemoglobin Dechien (A and A' Plate II) separated from young scales of psoriasis.
these animals, but without any positive results.

No organism corresponding to that described by Lang of Innsbruck were detected either in scrapings, sections, or by cultivation.

Perhaps the most interesting and frequently found organism (excepting of course the ordinary varieties of cocci) was a small bacillus.

This was present in at least fifty per cent of the inoculations made in milk directly from the scales.

We have never found that it grew primarily when the scrapings were sown in other media, liquid or solid, but on isolating it in the former liquid, it grew freely afterwards in ordinary bouillon, and from this could be cultivated with difficulty upon glycerine agar agar, and freely on gélose with sirop d'haemoglobin Dechien.

In bouillon the growth is diffused through the liquid and appears at first as a slight turbidity, but eventually a grayish white sediment is found at the bottom of the tube. - On a solid medium the
growth appears as an almost imperceptible grayish-yellowish-white film on the surface represented.

N.B.

The decimals indicating the dimensions of the various microbes described (see page 79 - 87) were originally calculated as fractions of a millimetre, but in error the word micromillimetre was substituted.

In order to render the reading correct for micromillimetres, the decimal points have been moved three places to the right and the superfluous ciphers crossed out.

a very light colour.

It is found generally in groups of four. The length varies from 0009 to 000215 micromillimetres, with a breadth of 00045.

When specimens taken from an older culture
growth appears as an almost imperceptible grayish yellowish white film on the surface represented in Tube D, Plate I)

Its appearance may be compared to that of the surface of a very finely and slightly ground yellow glass.

The bacillus itself differs considerably in aspect according to whether the culture is old or young.

In the latter case, when stained with Löffler's solution of methylene blue, it is seen as a small, short, and, as a rule, thin bacillus, though occasionally specimens are found very much shorter than the average and hence appear thicker.

As a rule the microbe is stained much more intensely at the ends, the middle portion being of a very light colour.

It is found generally in groups of four.
The length varies from 0.009 to 0.0215 micromillimetres, with a breadth of 0.0045.

When specimens taken from an older culture
are examined, an involution form is found.

This is very much larger than the former one, or both extremities are clubbed, and the staining is not equal, throughout dark patches alternating with the light. It resembles the involution form of the Diptheria bacillus.

Some indications of sporulation were found in certain elements. Its dimensions are: length from 0.013 to 0.072 micromillimetres, breadth at clubbed end 0.0135 and 0.00594 to 0.0072 micromillimetres at the smaller or thinner part.

The ordinary form of this organism is depicted in Plate II, Figure A, and the evolution in A' in the same plate.

The Levure rose or pink Torula was not uncommonly found, but this organism is associated with many scaly skin affections amongst which may be mentioned Caracte or Pinta, Trichophyton Tonsurans, etc (Tube A, Plate I). It is of course saprophytic.

Tube C in Plate I represents a pure culture. A coccobacillus developing in older cultures into a
DESCRIPTION OF PLATE II.

Camera Lucida Abbe, Ocular 3, oil immersion 1/12
Leitz.

A. Small bacillus (D culture, Plate I), separated from psoriasis squams. Löffler's methyleme blue.

A'. Involution form of A. Same colouration.

B. Coccobacillus separated from serous exudation from a young psoriasis patch after the scales were removed (C culture in Plate I). Polychrome blue. Unna.

B'. Bacillus, older form of the coccobacillus B. Thionine phénique.

C. Large diplococcus separated from under surface of squams (B culture, Plate I)

D. Bacillus, straight and curved form; (not isolated) from under surface of psoriasis crusts, cultivated in milk, Thionine phénique.

E. Large coccus, probably morroccoccus of Unna, from under surface of psoriasis crusts. Poly-
chrome blue Unna.

F. Sporulating bacillus (not isolated) cultivated in bouillon, from young psoriasis crust scrapings. Löffler’s Methylene blue.

G. Diplococcus separated from scale scrapings. Thionine phénique.

H. Large thick anaerobic bacillus from young squams. Polychrome blue, Unna.
moderately thick bacillus was isolated from the serous exudation on the surface of a plaque of young psoriasis after the scales had been removed.

This microbe produces gas freely, and hence, as one would expect, it is a facultative anaerobe.

In a puncture inoculation it splits up the medium horizontally.

It gives a copious, thick, yellowish, white growth upon ordinary agar agar, and gas bubbles may be observed in the liquid at the bottom of the tube. (see plate II).

In many respects it resembles the bacillus coli, but differs from it in the fact that it does not coagulate milk, nor produce the characteristic urinous odour.

The measurements of the coccobacillus' form are: breadth 0.00594 micromillimetres, length 0.009 to 0.013 micromillimetres.

The bacillus form varies from 0.0135 to 0.045 micromillimetres in length, and is 0.0045 micromillimetres broad.
The coccobacillus is represented in figure B, plate II, and the bacillus form in B on the same.

A large diplococcus was isolated from the under surface of a young scale.

This microbe occurred very often in milk inoculations and from thence was grown upon glycerine agar agar. The growth upon the latter is of a dirty yellowish white colour and not very thick, and seems to be made up of detached colonies. It is represented in tube B, plate I.

The microbe itself (see figure C, plate II) is of fairly uniform size, the diameter being 0.0135 micromillimetres, and the adjacent sides of the couples are flattened.

A microbe, curious on account of the fact that it seems to combine a curved and straight mode of growth, and for this reason we thought it advisable to describe and reproduce it, although we had not sufficient time to isolate it. - was found in an impure culture made in milk, and derived from scrapings taken from the un-
der surface of a young squame.

Some specimens were observed in the preparation, where four elements, alternately curved and straight, were linked together.

It is represented in Figure D, Plate II, and its dimensions are as follows: length from \(0.045\) to \(0.081\) micromillimetres, and breadth \(0.036\).

A large staphylococcus was isolated in milk and is probably identical with the micrococcus of Unna. It is from \(0.0094\) to \(0.018\) micromillimetres in diameter.

It is represented in Figure E Plate II.

Figure I, Plate II, represents a sporulating bacillus found in an impure culture in bouillon, and not isolated.

Its breadth is \(0.0045\) micromillimetre, and the length varies from \(0.013\) to \(0.054\) micromillimetres.

A diplococcus separated from a squame upon ordinary nutrient agar agar bore a striking resem-
DESCRIPTION OF PLATE III.

Section of older psoriasis squama Polychrome blue Unna. Camera Lucida, Abbe, Ocular 3, oil immersion 1/12 Leitz.

A. Section through the whole of the squame.
   c.c. Upper portion composed mainly of epithelial cells of the horny layer; the intercellular material is faintly stained.
   d. Dried up nuclei of polynuclear cells.
   a.a.a.a. Groups of large cocci on under surface of the squame, probably composed of the morroccoci of Unna.

B. Another portion of the same shewing streptococci associated with (f) short thick bacilli.
   e. Dried up nuclei of polynuclear cells.
blance in shape to the gonococcus, though in all other respects it differed from this organism; as an example may be mentioned its free growth on all ordinary alkaline solid and liquid media.

The colonies were small, evenly rounded, semi-translucent and faintly yellowish white in colour.

The microbe is represented in Plate II figure G. Its diameter is 0.099 micromillimetre.

The only remarkable anaerobe examined was a large thick bacillus grown in alkaline horse flesh bouillon and derived from the squames.

We had not sufficient time at our disposal to isolate this one.

Its dimensions are: breadth 0.0135 micromilli- metre and length varying from 0.02025 to 0.0405 micromillimetres.

It is represented in Plate II, figure H.

Rabbits and guinea pigs, after removal of the hair upon the back, were inoculated with a pure culture of the small bacillus A, Plate II, the coccobacillus B, Plate II, the diplococci C and G,
Plate II; and also with blood scrapings and scales from psoriasis patches, without any positive result.

In only one case, that of a young girl, was any particular microbe found constantly in a long series of sections of squames.

This was a large coccus and probably is identical with the morroccoccus of Unna.

It was often associated with a short bacillus, but never with any great quantity of remains of polymnuclear cells.

It is represented in Figure A, Plate III (a.a.a.a.), and it will be noticed that the microorganisms are visible only in the vicinity of the under free border of the section; and we furthermore wish to point out the faint staining of the elements of the horny layer included in the brackets c.c.

In Figure B upon the same illustration are seen a mass of dried up polymnuclear cell nucleii, some smaller cocci, and a number of the above men-
tioned short bacilli.

We believe from the appearance of the sections, etc. that both these microbes are saprophytic.
AETIOLOGY.

Psoriasis may occur at any period of life, though almost never in the very earliest infancy, and it is very unusual before three years of age, though several cases have been recorded.

Rille (59) reports one seen by him when the patient was five and a half weeks old.

The eruption he states was noticed by the mother five or six days after birth. - The father had suffered from the disease for some years.

Elliott (60) of New York, describes psoriasis as occurring at the early age of eighteen months, and Kaposi records one at eight months.

Duhring (61) maintains that it never commences in infancy and rarely shews itself before puberty, but may come on in early childhood.

Bulkley (62) gives the period between twenty and thirty years as the time when the maximum number of cases begin, and he agrees with Duhring in so far that it is unusually seen before the age of ten years.

Hebra maintains that it never occurs immediately after birth but only at a later period, and commonly at about the sixth year.

We have been unable to find a record of any case where psoriasis has been proved to be congenital.

The disease rarely begins after fifty years of age, though even after this it may be noticed for the first time.

Radcliffe Crocker (63) gives the following statistics relating to age: seventy two per cent occur before thirty years of age, twenty two and five tenths between thirty and fifty, and only five and five tenths after fifty.

(62) Analyses of 8000 cases of Skin Diseases. page 17. L. Duncan. Bulkley.
With regard to sex the tendency seems to be pretty equally divided between the two.

Buckley (64) gives the proportion as 169 males to 164 females in 333 cases.

(65) Devergie quoted by Gaucher believed that it was more frequent in the male sex according to the English School, in recent cases it is worse in winter, but in older ones it seems to be aggravated in the spring; but the French find that in summer and winter it is more prevalent than in the two other seasons.

**HEREDITY.** The majority of authors seem to be of the opinion that it is hereditary, though most of them do not specify whether in this respect they have under consideration the actual disease or the predisposing tendency: Weyl (66) for instance states that heredity plays an important part in the production of psoriasis.

(64) Analysis of 8000 cases of Skin Diseases. L. Duncan Bulkley, page 17.
(65) Traité des maladies de la peau, Gaucher, Tome 1, 1895, page 379.
Many of the French School holding that it is associated with gout and rheumatism, maintain that the tendencies to these complaints are decidedly hereditary; if this be so, then that of psoriasis must necessarily be also, though the disease itself is not.

The most probable state is that like tuberculosis: the predisposition is inherited, and the disease is not lit up until such time as the actual exciting cause (be it microbiano otherwise) is brought in contact with the patient.

Were the disease properly speaking hereditary, as is for example syphilis, we would expect that, as in the lather, its manifestations would appear either actually at birth or in early infancy in a very appreciable proportion of cases.

Now we know from statistics that this is not the case, but on the contrary it is never congenital, and if it does occur in early infancy at all, the phenomenon is extremely rare, and furthermore its advent is in by far the greater proportion of
cases not before ten years of age.

Contrasting this with syphilis, we find that the signs of the latter disease are apparent very often when the child is born, and if not at that time, the first manifestation within a period counted almost always by weeks, certainly not beyond three months; in fact roughly speaking well within the time that in the acquired variety separates the primary infection from the first secondary eruption.

If on the other hand we consider, say, pulmonary tuberculosis, as an example of a disease where the tendency and not the actual cause of the complaint is usually inherited, we find that the statistics as to age give figures roughly analogous to those presented by psoriasis.

The following are given by Pagge and Pye Smith (67).

Out of a thousand private cases collected

by Dr. Williams, one hundred and ninety five occurred at an age below twenty, only thirteen of which were under ten, four hundred and eighteen between twenty and thirty, two hundred and forty nine between thirty and forty, ninety seven between forty and fifty, thirty between fifty and sixty, and fourteen only at an age above sixty.

Thus nine hundred and ninety contracted phthisis when they were over ten years of age.

The reason for both diseases being in extreme youth and becoming again so towards old age, is probably the following:

A large proportion of the patients who are attacked with either of them inherit a tendency, suitable soil, or whatever one chooses to call it. After ten years of age from change of environment, occupation, etc they are subjected to a greater risk of acquiring either disease; beyond fifty the majority of those with an inherited tendency die out, and hence the percentage of psoriasitic and phthisical cases falls after this age.
This hereditary tendency is said often to skip a generation.

**PARTURITION AND LACTATION.**

Crocker (68) states that parturition and lactation have an unfavourable influence in women subject to psoriasis, and these processes often determine the advent of an attack.

He explains this as being due to their depressing influence, and that the same result may be brought about from bad feeding, anxiety, etc.

It has sometimes appeared at, or during the course of pregnancy, but as far as we have been able to ascertain, only in those predisposed.

Mc.Call Anderson (69) quotes some very interesting cases of psoriasis connected with the above.

In the first patient the eruption appeared after she had nursed her first child three months, and disappeared six weeks after weaning, and so

(68) Diseases of the Skin. 2nd Edit., page 224.
(69) Diseases of the Skin. 2nd Edit., 1894, p.383.
with the second and third.

In another quoted by the same author and observed by Dr. P. Robertson, it appeared after nursing the second child for six months and, as in the former, disappeared a few weeks after weaning. Again with the fourth child it broke out after six months nursing, and with the last after five months.

The curious fact about the latter case was the advent of the eruption only when the children were boys. McCall Anderson thinks that the increased strain in nursing boys caused greater debility and hence the psoriasis.

Violent mental emotions have in some instances preceded even the first attack.

Leloir (70) thinks that psoriasis tic eruption not infrequently in those who are predisposed, follow the above, and he has observed a number of cases and quotes the following three:

The first was that of a young priest who was very nervous and emotional, but had never had

(70) Les Annales de Dermatologie et Syphilis. 1887, page 374.
any cutaneous eruption before.

He was pursued by a rabid dog, and two days afterwards he suffered from neuralgic pains, and noticed an eruption all over his body which ultimately proved to be psoriasis.

In the second case, the patient who had never had any skin complaint, after being made very angry, suffered from an outbreak of psoriasis guttata and punctata.

The third was that of a nervous young woman who was attacked in the same manner after the same emotion.

Other authors have recorded cases where it has followed grief, fear or anxiety.

Gout is considered by Liveing as having an important influence as an aetiological factor, and he considers that it gives rise to a special type which is characterized by increased irritability and less scaliness than the ordinary variety, and yields more readily to alkalis and colchicum.

Many of the older observers of the French School are strong advocates in favour of the in-
fluence of the gouty and rheumatic constitution
in the production of psoriasis.

In support of this, Gaucher (71) calls atten-
tion to the fact that psoriasis is not uncommon
in gouty families, and that in cases of rheumatic
patients of long standing psoriasis often occurs.
Furthermore that psoriasis is often associated
with gastralgia, neuralgia, dyspepsia, and hemi-
crania; and lastly it exists with more or less
rebellious and repeated attacks of bronchitis.

In connection with this, Gaucher (72) points
out another very interesting fact, viz the metastas-
sis often observed.

He mentions a case of an individual who was
completely cured of psoriasis from which he had
suffered from infancy, and upon the same day that
he asked to be dismissed from hospital he was
struck down with acute articular rheumatism which

(71) Traité des maladies de la peau. Tome I, 1895.
page 376.
became very rapidly cerebral, and for several days he was in a dangerous condition, when the psoriasitic eruption reappeared and he recovered.

In another, very rebellious gastric symptoms supervened on the disappearance of the skin eruption, and they were of a nature so severe that they justified the diagnosis of cancer of the stomach. The psoriasitic eruption was again provoked by the application of sinapisms, and the stomach symptoms at once disappeared.

Gower (73) records three cases in which borax was administered for epilepsy, and the administration was followed by psoriasis.

Such cases, as far as we have been able to determine, have never been observed by anyone else.

Any breach of continuity of the surface of the skin may be the site of a local lesion during a general attack of psoriasis or be the starting point of the first attack. Hence the local initiation of mechanical pressure, vesication, plas-

(73) Lancet. October 24th, 1884.
ters. tight articles of clothing, cupping, herpes zoster, etc may determine a local efflorescence upon individuals who are subject to psoriasis.

In this connection may be mentioned the results of Koebner's experiments.

He found that by scratching the skin of psoriasisic patients with a needle, he was able to cause a local attack, and furthermore that he could produce psoriasisic lesions by this means in the shape of any figure he pleased, such as anchors, initials, dates, etc, at will.

A very interesting fact elicited in these experiments was that the tendency for the scratches to be infected was very considerably decreased and in some cases altogether removed by the use of tar externally and arsenic internally (74).

At St Louis Hospital, Paris, we have seen a case of a woman who, suffering at the time from an attack of psoriasis, scratched her forearm with a

pin, the scratch commencing at a spot; within a week, the whole length of the breach of surface became psoriasitic, the line being much thicker near the spot and tapering off where the scratch terminated.

Psoriasis not only local, but general may follow a breach of surface, even in those who have never suffered from the disease before and whose family history is perfectly good in this respect.

Amongst the most striking cases of this sort are those following vaccination.

We were surprised, while studying the subject, to find the comparatively large number that is recorded in dermatological literature.

We will proceed to quote a few examples.

The following are taken from the "Annales de dermatologie et syphiligraphie" (75).

J. W. C., aged twenty eight, Doctor of Medicine, without any previous illness and no skin

disease in his family, was vaccinated January 1882 with calf lymph.

The vaccination was unsuccessful, but eight or nine days afterwards, the point of puncture became very itchy, red, and covered with scales.

Several days after this, he noticed upon his arms and legs numerous little red papules covered with white scales, and itching.

On the tenth of February, the eruption covered almost the whole of the body and consisted of characteristic elements of psoriasis.

Another instance was that of a boy of nine years of age; neither he nor his parents had ever had any skin disease.

He was vaccinated successfully, and after the crust had fallen off, a red patch persisted which increased in size.

Subsequently small elements of psoriasis appeared all over the body.

A third observed by Dr. Rohe was that of a young girl.
Two unsuccessful attempts were made to vaccinate her, and after the second she developed at the site of inoculation a red patch, raised a little and scaly.

Some weeks afterwards little papules of psoriasis appeared on all the rest of the body.

The fourth and fifth were those of two sisters aged respectively eight and eleven years, and had not up to that time had any symptoms of psoriasis.

They were both vaccinated simultaneously with calf-lymph, and after the healing of the pustules, they each acquired an eruption of psoriasis which persisted on them for almost a year.

A sixth case is mentioned as being described by Dr. Hyde, in which a young girl who had never had any skin disease before, but after being vaccinated developed an eruption of typical psoriasis.

In the "Lyon médicale" (76) six cases are re-

(76) Tome VI, 1889. page 555.
corded where vaccinal eruptions were transformed into psoriasis.

Dr. Ernest Chambard (77) describes a case of a child five years of age, who was revaccinated, and three days afterwards became feverish, and three psoriasitic spots appeared upon the arm at the seat of scarification; similar spots came on the other arm and successively invaded the lower limbs and trunk.

Scattered through the literature on this subject may be found many more similar cases, but we think these will be sufficient for our purpose.

Psoriasis occasionally follows scarlatina, measles, etc.

Perhaps it is advisable here to consider also the facts recorded which point towards psoriasis being contagious. These also are not so extremely uncommon as one would be led to expect by the statements in the various Dermatological Text Books, and no doubt, were it not for the common impression that

the disease is of some internal origin, e.g. ner-
vous, etc - leading many observers to disregard
that portion of the history of individual cases
indicating the probability of contagion -, many
more would be published.

The second case we are about to quote illus-
trates this .

Unna (78) cited an instance where three chil-
dren in succession became within a short time af-
fected, after a nursemaid suffering from psoriasis,
was engaged to attend them.

In 1893 Dr. Méneau (79) was consulted with re-
ference to a child of eight years, whose parents
were tuberculous, and who had suffered for two years
from psoriasis.

She presented plaques upon the elbows, knees,
and scalp, and a very discrete eruption upon the
other parts of the body.

There was no direct or collateral family his-

(78) International Congress of Dermatology 1884, quoted
tory of any skin affection.

In 1894 the child returned to see the doctor accompanied by a sister, three years her junior, who, the mother told him, had had spots upon the head for six months, similar to those upon her elder sister. As a matter of fact, the little one had caught well marked psoriasis limited to the scalp.

The mother, very annoyed to see both the children attacked by an affection of so obstinate a nature, was desirous of knowing its origin and asked him, if the common use of one comb for the hair would be a means of contagion, FOR SHE NOTICED THAT THE FIRST LESION upon her younger child's head APPEARED ON THE SITE OF A LITTLE SORE, THE RESULT OF A SCRATCH WITH THE COMB THAT WAS USED IN COMMON WITH THE PSORIASITIC SISTER.

Dr. Méneau at the time BELIEVING THAT PSORIASIS WAS OF A NEUROTIC ORIGIN, assured her that communication of the complaint was not possible; but upon after-consideration changed his opinion
and thinks that this is apparently a case of contagion.

McCull Anderson (80) relates a case where a lady subject to psoriasis married, and after some years her husband was attacked with the disease.

The author considers this a coincidence and not an example of contagion because such a length of time elapsed before the patient was affected.

In the Lyon Medical (81) M.Aubert states that he knew of two cases where the husbands were psoriasitic and the wives became so after marriage.

In the same paper (page 556) M.Augagneur cited two facts bearing upon this subject, observed by him in hospital.

A dyer received at L'Antiguaille suffering from a professional eczema, was placed in a bed between two psoriasis patients, and after having remained there for four months, a transformation "in situ" of the original eruption took place, and

(81) Tome 61, 1889. page 555.
a squamous one appeared which commenced upon the back of the hand, extended to the elbow, and resulted in an outbreak of general psoriasis.

In the second case a young girl was admitted into the same institution for an artificial dermatitis due to chemical irritation, and after being exposed to the risk of contagion developed a psoriasis.

Abrahams (82) mentions a patient of his who attributed her eruption to having bathed in the same bath after her brother who was at the time suffering from the disease, and she stated that the latter brought it from school.

The following is a case described to us by the patient himself.

Dr. W., an American physician, who, at the time we saw him, was suffering from psoriasis of the nails of the middle and ring fingers on both hands, and those of several of the toes; the sole

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(82) British Medical Journal October 1893, page 935.
remnants of a more general attack, gave the following history:

He was absolutely free from any skin disease, until during his student days, one summer he slept in the same bed for some months with his brother who was suffering at the time from psoriasis.

During this period Dr. W. developed a well marked attack, the plaques appearing upon the elbows and knees, with small spots scattered over the limbs and body. Subsequently he left his brother's home and went back to college, sharing the same room and bed with a fellow student who also had never suffered from any skin disease and as far as was known, had no family history of anything of the sort.

After a few weeks the latter developed a typical general psoriasis.

The following is a case of direct experimental inoculation.

M. Destot (83), Resident physician to M. Au-

gagneur, inoculated himself by scarifying the skin over the dettoid and rubbing the scales of young psoriasis into these sacrifices. Within a few days redness appeared at the seat of inoculation and well marked patches on the elbows, to be followed a fortnight afterwards by a general eruption of psoriasis.

Lassar claims to have succeeded in conveying the disease to rabbits by inoculating them with blood, scales, and lymph from psoriasitic patients, and furthermore that he has transmitted it from rabbit to rabbit, not only by direct inoculation from the plaques, but by subcutaneous injection of the blood from the jugular veins (84).

Tomasoči and Campania, etc say that they have confirmed the results of these experiments.

We ourselves have inoculated rabbits and guinea pigs with scales, blood, and serum taken from young lesions of psoriasis, without any certain positive results, though in the case of one

(84) Medizin.Zeitung 1885, № 93.
of the former animals a scaly condition developed on the soles of the hind feet and in the auricles, but this was indistinguishable from a similar scaly complaint, not unusual in rabbits that are caged in the Laboratory, and it might with a little stretch of imagination be mistaken for psoriasis itself.

THEORIES AS TO THE ACTUAL ORIGINAL CAUSE OF PSORIASIS.

Erasmus Wilson promulgated the hypothesis that psoriasis was a manifestation of syphilis transmitted through several generations.

This theory was for many years given up but has lately been revived in America.

There are very many good reasons for doubting its truth.

In the first place, if the inherited syphilitic taint were sufficiently strong to produce such active manifestations as are experienced in psoriasis, then one would naturally infer that it
would at the same time confer an immunity from syphilis itself.

This we know is not true, for cases are not uncommon where psoriasis exists both with the acquired and inherited variety of the former disease.

Secondly when the two co-exist, the psoriasis improves under special treatment while the syphilis does not do so under the same applications; and on the other hand, if the psoriasis is benefited at all by antisyphilitic treatment, the improvement is very slow and the exacerbation of the syphilis disappears while that of the psoriasis remains.

Inherited syphilis occurs in early infancy, psoriasis, if it does occur at all at this period of life, is very rare.

Syphilitic skin eruptions are polymorphous.

The frequency of psoriasis is far greater than that of inherited syphilis, and the reverse would probably be the case if Erasmus Wilson's
conclusions were true.

Perhaps the two most important theories are those attributing either a nervous or parasitic origin to the disease.

We will consider the former first, as it seems to have gained the support of many more authorities than the latter.

Dr. Pringle (85) advances the following reasons for supporting it:

Firstly. The symmetry of the eruption.
Secondly. The hereditary tendency of the disease.
Thirdly. It appears by preference "in loco minoris resistentiae", for example upon points subjected to pressure, as the elbows and knees.
Fourthly. Its association much more frequently than was admitted with rheumatic arthritis.
Fifthly. Its amenability to arsenic and large doses of iodide of potash, which act sometimes with marvellous success in cases of true neurotic asthma.

(85) British Medical Journal, October 1893, p.937.
The following reasons fairly represent those advanced by continental schools in favour of this theory (86).

Attacks of psoriasis have been recorded which have followed moral emotions, and especially those of a depressing nature.

It is not rare to find it in neurotic people or those actually affected with nervous disease. Cutaneous hyperaesthesia has been observed in psoriasis, with anaesthesia at sites of patches.

Sensibility to pain is present, while that of contact and temperature is blunted.

Neuralgias, muscular, joint pains, etc are sometimes experienced.

Formication, pricking, shooting pains in the limbs are occasionally felt.

It is not rare after nervous lesions to see the epidermis thicken and become detached, sometimes in large thickened plaques, at others in

furfuraceous lamellae, over the region of distribution of the injured nerve.

Bourdillon (87) considers that psoriasis is probably due to a trophic trouble, depending upon the centre situated in the spinal cord which presides over the functions of the skin, and more particularly that which should be the centre of the function of keratinisation.

This alternation, however, is according to this author probably nothing further than a functional and provisional one, for at a given moment the skin recovers its normal state.

In explanation as to how the trophic centre of the nervous system presides over the nutrition of the skin, he says that the admission of the existence of trophic fibres rising in their own centre and carrying to the periphery the influence which emanates from it, is necessary.

The nervous trophic fibres are not distinguishable from the sensory fibres and are probably

(87) Thèse de Paris, page 152.
identical with them.

They run to the periphery mixed with the motor nerves and terminate in the derma and epidermis by special terminations of which little is known.

The central track is also indetermined.

They seem to traverse the spinal ganglions without originating in them.

Some observers affirm that they arrive in the cord with the posterior roots (probably the internal fasciculus) and penetrate the posterior horn. The posterior and central gray matter of the cord plays a corresponding role in reference to the skin, as that of the anterior horn does as regards muscles.

Weyl (88) considers that the most probable explanation of the phenomena exhibited by psoriasis are the result of a hereditary functional weakness of the nervous centres regulating the nutrition of the skin, and dependent upon hereditary

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taint. This view, he says, is favoured by the constant monotonous form of the efflorescence and its tendency to symmetrical development. The anatomical process is merely a peripheral projection of the central functional disturbance.

We will now proceed to consider in detail this evidence brought forward in favour of the neurotic origin of psoriasis.

1st. Symmetry of eruption.

No doubt it seems at first sight very plausible that a disease having symmetrical distribution should arise from some central disturbance radiating through the nerves, supplying the skin, and manifesting itself on distant but corresponding parts of the surface.

However, when one analyses this reason, one cannot help remarking the fact that the blood vessels are distributed with an equal symmetry, and part of their contents, at all events, comes in contact with all the tissues that are under nerve influence.
It seems equally logical therefore to attribute the disease to something circulating in the blood, though at the same time neither explanation need necessarily be true.

If specially favourable local conditions are symmetrically situated, there is no reason why an aetiological factor, other than that which may be associated with the nervous system, should not give rise to a symmetrical eruption.

One would expect, if psoriasis were due to a trophic nerve influence propagated from some centre in the cord or brain, that the disease would be uniformly symmetrical, whereas we know that this is not by any means the case; but, on the other hand, numerous examples are found, especially in the young, where the eruption is quite unsymmetrical.

2nd. Hereditary tendency of the disease.

Psoriasis "per se" is not hereditary, though possibly a skin or constitution possessing qualities favourable for its invasion may be so.
If the complaint were due to some hereditary peculiarity in the nervous system, it would be more or less independent of external influence, and one should under these circumstances expect a greater proportion of cases to occur in early life, and even to find many congenital.

We know that it is rare in infancy and usually does not occur until after ten years of age; in other words, it is more common at the age when the subject is more exposed to external influence.

There is as strong, if not stronger evidence of hereditary tendency with regard to the occurrence of many diseases which are undoubtedly not nervous. For example tuberculosis, various forms of tumours, etc.

3rd. Its tendency to appear in "loco minoris resistentiae" e.g. points subjected to pressure.

We confess we cannot see any indication in this pointing to a nervous origin.

The same evidence may be brought forward as a proof that an ordinary corn, epithelioma of the
lip or a tuberculous point attacked after an injury, are of nervous origin.

4thly Its association, more frequently than was admitted, with rheumatic arthritis.

We presume from the above that Dr. Pringle takes for granted that rheumatic arthritis is of proved nervous origin.

The evidence in favour of this seems to be very weak and unsatisfactory, and therefore is not accepted by the majority of authorities on this subject.

We cannot see that the purely theoretical nervous origin of rheumatic arthritis is any evidence whatever that the aetiology of psoriasis is the same, even though the two diseases are occasionally associated.

Furthermore we think it probable that Dr. Pringle's statement with regard to this more or less frequent association, is the result of his confounding the psoriasitic arthropathies described by Ch. Bourdillon, with the true disease.
5thly Its amenability to arsenic and large doses of iodide of potash which acted sometimes with marvellous success in cases of true neurotic asthma.

We do not suppose anyone at present would think for one moment of maintaining, that malaria is of nervous origin, yet arsenic is used often with "marvellous success" in this disease, in fact next to quinine, it is perhaps the most reliable remedy: Therefore if we apply Dr. Pringle's argument, the aetiology of malaria is neurotic.

In the same manner we might quote the benefit derived in cases of syphilis by the administration of iodide of potash as evidence that this disease proceeds from the same source.

ATTACKS OF PSORIASIS HAVE FOLLOWED MORAL EMOTIONS AND ESPECIALLY THOSE OF A DEPRESSING NATURE.

Moral emotions are said to precede many other diseases; for example many officers in India who have experienced epidemics of cholera amongst
the men under their charge, whether correctly or not, are convinced that those who fear the disease most, are most likely to catch it.

Numerous other instances can be found where complaints of other than of actual neurotic origin have popularly been supposed to follow such emotions.

The following is a case that occurred in our own experience.

We were called to see a child suffering from typical tubercular meningitis, which the parents stated followed the intense alarm caused by an attempt made by a fellow practitioner to open a small abscess.

Fact very probably supports the popular belief that fear, etc predisposes to many diseases, and it seems reasonable to suppose that such alleged causes, especially of a depressing nature, have a considerable influence in lowering the general power of resistance in the individual.

While one admits this, however, they cannot
regard the admission as affording any proof whatever of the neurotic origin of the many complaints that have followed such "moral emotions".

It is not rare to find it (psoriasis) in neurotic people, or those actually suffering from nervous disease.

Now viewing this statement in the light of what we know of "the doctrine" of chances, and considering that psoriasis is one of the most common affections of the skin, and that neurotic people, and those actually suffering from nervous disease are also very common, one would be exceedingly surprised, if the latter were not frequently (in a dermatological point of view) psoriasisitic or even for the same reason suffering from scabres.

CUTANEOUS HYPERAESTHESIA HAS BEEN OBSERVED WITH ANAESTHESIA AT SITE OF PATCHES. (89).

SENSIBILITY TO PAIN IS PRESENT while that of

(89) Presumably in certain circinate forms as described by M. Rendu (Annales de dermat. and syph. no. 6, 1874) quoted by Morrow. Dis. of skin and genito urinary organs, page 291, part I, Vol. III.
contact and temperature is blunted (90).

Given a local cause capable of setting up the amount of local alteration of tissue as observed in older patches of psoriasis, it can be easily conceived that the increased thickness of the superimposed tissue together with the local pressure and irritation on the nerve terminations, would cause such abnormal phenomena as are described above.

The increased epidermic layer would naturally conduct both heat and the impulse of contact less readily to the nerve termination than the normal epidermis, while the sense of pain would be, if anything, increased by the irritated condition of the nerves and their terminations.

The hyperaesthesia in the nerves associated with the patches might be explained by irritation set up from toxic substances produced by a local

(90) Observation by the above.
cause and absorbed.

NEURALGIAS, MUSCULAR AND JOINT PAINS, FORMICATIONS, ETC are observed in many diseases besides those having purely nervous origins; for examples may be quoted, the muscular and joint pains experienced in influenza, with pneumonia, etc; also the neuralgias in malaria.

Furthermore may be added those painful symptoms the result of the action of various poisonous substances, e.g. alcohol, toxins produced by microbes, etc upon the nerves and even the central nervous system itself.

In the present consideration we must distinguish these particularly from any subjective symptoms originating "per se" in the central nervous system.

IT IS NOT RARE AFTER NERVOUS LESIONS TO SEE THE EPIDERMIS THICKEN AND BECOME DETACHED, SOMETIMES IN LARGE THICKENED PLAQUES, AT OTHERS IN FURFURACEOUS LAMELLAE, OVER THE REGIONS OF DISTRIBUTION OF THE AFFECTED NERVE.
This thickening and separation of the epidermis due to nerve injury is hardly analogous to the scale formation in psoriasis.

In the former the separation of the epidermis is distributed uniformly over the skin surface supplied by the injured nerve, and it does not commence in one or more small spots with the increase of area at their periphery, the normal skin reappearing in the centre; whereas in psoriasis the eruption begins by the formation of a number of small elements which spread peripherally, and when natural recovery takes place, the healing process commences in the centre. Furthermore the actual cause of this phenomenon, when the nerve supply is interfered with, may not be directly due to this interference, but on the other hand indirectly to altered conditions depriving the tissue of its power of resistance and thus possibly permitting certain external agents to set up sufficient local irritation to cause the desquamation.

That the local power of resistance lowered
by nerve injury or disease is capable of rendering the tissue more susceptible than it otherwise would be, to external influence, is illustrated by the

ERYTHEMA OF PELLAGRA.
This erythema only occurs upon exposed parts and during the period from the month of May until March. It has been shewn by M. Bouchard (91) that it is nothing else than the result of the action of the sun's rays on the skin where the vitality is lowered.

A similar condition (pseudo pellagra) is seen sometimes in chronic alcoholism with peripheral neuritis.

If such effects can occur in the one case as a result of irritation that would not otherwise produce them, why should not the products of organisms existing in the superficial layer of the skin, and giving rise to no signs of irritation usually, cause desquamation in the parts supplied, where

nerve lesions exist?

We bring this forward merely as a suggestion, without asserting it as a fact.

Finally if this desquamation is taken as evidence of the nerve origin of psoriasis, we cannot see why it should not be brought forward as an equally strong argument in favour of the skin lesions of scarlet fever being the same.

When the nerve origin is further considered by Bourdillon, we find he is compelled to bolster up, as it were, his explanation of facts with a series of other theories.

To begin with, we are asked to assume "a centre presiding over the functions of the skin "and especially keratinisation" situated in a hypothetical point in the cord.

Then to account for the skin recovering its normal state at a given time, he assumes that psoriasis is due to a "trophic trouble depending on "this centre, which is probably nothing further "than a functional and provisional one".
Furthermore to explain how this centre presides over the nutrition of the skin, the admission of special fibres rising in this centre and carrying the impulses emanating from it to their periphery in the skin, is necessary.

Then we have further to imagine these fibres "mixed with the motor" and "ending in little known terminations in the skin".

Their central track is admitted to be undetermined, but he affirms a theoretical course through the posterior roots, penetrating the "posterior horn, ending in the posterior and central gray matter".

Bourdillon (92) himself admits the weakness of the nervous theory in the following statement: "Mais si la Clinique nous permet de préjuger de cette origine nerveuse, l'anatomie pathologique seule permettrait de l'affirmer, et nous avouons qu'elle est muette jusqu'à ce jour."

And as to the lesions of nerves he says:

"Vidal et Leloir ont examiné" les nerfs entamés, et "n'y ont constaté aucune altération. Kopp a fait "également 16 examens en 1882, et il n'a jamais "rien trouvé."

The above may be translated as follows:

"But if the clinic allows us to prejudge this nervous origin, the pathological anatomy alone should allow us to confirm it, and we confess to this day it is silent. -------"

"Vidal and Leloir have examined the cutaneous nerves and have not proved any alteration. Kopp has alike made sixteen examinations in 1882 and has never found anything."

We have now to consider Dr. Weyl's view viz. that "psoriasis is probably due to an hereditary functional weakness of the nervous centres regulating the nutrition of the skin and dependent on hereditary taint."

This view, he further says, "is favoured by the constant monotonous form of the efflorescence, and its tendency to symmetrical development. The
"anatomical process is a mere peripheral projection of the functional central disturbance."

With regard to the first assertion, one is at once prompted to ask, In what condition as a rule do we find the normal skin of psoriasisitic patients?

We find that usually it is absolutely healthy in every other respect, and but for the single tendency to this particular disease, it is quite free, as far as we can detect, with either the naked eye or microscope, from any abnormality of either texture, thickness, or function.

In fact with the foregoing exception, psoriasisitics usually have to all appearance an unnaturally healthy skin, if one might be permitted to use the term.

Now in the face of this well known fact, Weyl asks us to believe that in this class of patients "there is an hereditary functional weakness of the nerve centres regulating the nutrition of the skin."
We confess that we are not sufficiently credulous to accept this.

He brings forward as evidence to support his statement "the constant monotonous form of the "efflorescence."

He might with equal reason bring forward the constant monotonous form of the efflorescence of Pityriasis versicolor, Tinia cærcinata, Favus, etc., as evidence that these diseases were due to the same hereditary nerve centre functional weakness.

We have discussed before the question of symmetry of eruption as a proof of nerve origin, but may here add that certain authorities consider that parasitic eruptions are not destitute of bilateral symmetry, and some even hold that they are quite as symmetrical as the nonparasitic (93).

"The anatomical process is merely a peripheral projection of the central functional disturbance."

(93) Balmano Squire, British Medical Journal, October 1893, page 937.
Of course if sufficient evidence is not forthcoming to support the central functional disturbance theory, it goes without saying that it is not necessary to accept this explanation as to the anatomical process.

We will now proceed to the second of the two principal theories of the origin of psoriasis, viz. that the disease is due to a living organism.

Professor Lang of Innsbruck in 1878 described certain fungus elements to be found by examining the pellicle beneath the mass of the psoriasis squam and immediately in contact with the papilla.

He says that they are readily made visible after soaking this in a 5 per cent solution of potash. The elements appear as round or oval bodies having a double colour, and quite colourless protoplasm which is seen to be somewhat granular under a higher magnifying power. He terms these cells brood cells. They are from six to eight micromillimetres broad and twice as long.
In certain parts they are constricted or present outgrowths.

Lang thought that he observed them grow after a lapse of two or three hours, in a mixture consisting of five parts of potash added to glycerine and water of each fifty parts.

The contents and membrane of the young cells are similar to those of the brood cells.

The ends are enlarged and present a rounded appearance, and endogenous development of spores seems to take place within the extremities.

They stain with difficulty and often present the appearance of a chain.

During the examination of many hundreds of sections of psoriasitic patches, squames and scrapings derived both from the under surface of the scales, and the pellicle over the diseased papillae; we have never observed any organism which we were able to identify with Lang's fungus, and though we have made very numerous inoculations on every variety of medium in this particular respect, the
result has been the same. Had any such obvious organism existed in the specimens we have examined, we hardly think it would have been passed over.

Without, however, advocating Lang's or any other organism as a cause, we will proceed to discuss first the evidence in favour of a parasitic aetiology, and secondly that against it.

Let us first look at that afforded by the symptoms, and for this purpose we will recapitulate the development of a plaque running a typical course and ending in natural recovery.

The earliest element of psoriasis consists in a minute papule, which enlarges by spreading at the edges, and after attaining a certain size, the skin begins to return to the normal in the centre, and eventually the whole forms a ring with the healthy tissue in the middle and the diseased at the circumference.

When one or more of these rings join, the disease disappears at the point or points of contact.
Now it seems to us that this method of spreading and of recovery is impossible to explain satisfactorily, save by admitting that a local growth of a specific microorganism has taken place in a given point and that as the resulting colony increases and spreads, it exhausts the soil or confers immunity on the tissue situated at the original point of inoculation, and therefore it dies out there while the living part flourishes in the non-immunized epidermis at the edges of the patch which in turn acquires immunity.

The microbe continues to invade and immunize one fresh zone after another as the patch enlarges. At the points of contact the same conditions hold good, and therefore the disease disappears in these positions also.

If the psoriasitic elements were of functional nervous origin, we might expect them to appear and disappear with equal suddenness, but it would be impossible, in our opinion, to explain by this hypothesis the central recovery and peripheral
extension.

This clinical fact, leaving the parasitic theory out of the question, is in our opinion one of the strongest arguments against the theory of neurotic origin.

Dr. Leslie Phillips (94) describes a very interesting case which illustrates the local immunity that may be conferred on the skin by a former growth of psoriasis.

A patient of his had a sepia coloured patch that represented the area of a psoriasitic plaque, from which the subject had suffered the previous year.

A new efflorescence took place which in its evolution followed the outline of the pigmented part but did not extend into its area.

Can this case be explained by any neurotic theory of origin?

This circinate phenomenon not only points to a probably microbian origin through what we

know of the immunity often acquired by the living tissue after parasitic invasion, but furthermore we would be led to the same conclusion by analogous clinical phenomena met with in studying the same appearances and method of spreading, exhibited by other skin lesions which we know to be of parasitic origin.

As an example we may take Tinia circinata, and for the sake of comparison, we quote the following description given by Radcliffe Crocker (95).

"It (Tinia circinata) begins as a small, pale, red, circular, well defined, slightly raised spot, which soon becomes scaly and spreads peripherally clearing up "pari passu" in the centre, thus forming a ring, the raised border of which is usually papular and slightly scaly.

"The ring continues to increase in diameter without thickening of the border, until it has attained the size of a crown piece or the palm, and when it has attained its full size, it either

(95) Dis. of Skin, 2nd Edit., p. 807.
"remains stationary or, the process of involution
"outstepping that of evolution, the ring
"thins, then gets broken, and finally the fragments
"also disappear, and the process is thus sponta-
"neously terminated as far as that ring is con-
"cerned.

"It is common, however, for other rings to
"form, and if they are near each other, they coa-
"lesce, the rings being broken at their point of
"contact, and a gyrate figure is produced enclosing
"sometimes a very large area.

The course and method of growth of the ele-
ments in this disease are so analogous that the
above description would apply almost equally well
to psoriasis circinata, and the conclusion is al-
most forced upon one that the two diseases are the
result of the pathological action of similar agents.

Around the larger and older patches, seconda-
ry, younger and smaller ones can very frequently be
observed which resemble in their distribution,
lesions, the result of local infection, as for exam-
pie: Pityriasis versicolor.

If one intentionally, or by accident scratches the skin and the scratch commences at a plaque, one can notice the lesion of psoriasis growing along the scratch, and this growth is as a rule most vigorous and advanced on the part nearer the plaque than in the more distant.

This phenomenon would be easily explained, if the pathogenic parasite existed in the plaque, by the obvious fact that the abraded surface would be inoculated with a larger quantity of the specific material at the proximal end, than at the more distant, because the most of it would be rubbed off before the abrading instrument reached the latter point.

A similar phenomenon is seen when one examines the result of a surface inoculation of a microbe made upon agar agar: The most exuberant growth occurs likewise at the point where the inoculating needle first touches the surface of the medium, and it tapers off as it approaches the
last point of contact.

Were such efflorescences due merely to the balance being disturbed in a skin having a neurotic tendency to psoriasis, as has been maintained by some advocates of the neurotic theory - then there would not be any marked difference in the size and advancement of the growth at either end of the scratch.

This is another case in point where the latter hypothesis can hardly explain observed facts.

It will be necessary to refer again to Koebner's experiment.

As we have mentioned before, this Dermatologist produced plaques experimentally upon the skin of psoriatrics by scratching it.

Now taking for granted that the patches thus produced are the pathological results of a parasite distributed over the patient's skin, being inoculated into these scratches and enabled to grow - what would we expect to happen if we administered internally a drug having an antiseptic
action which is very probably deposited in the skin itself, or applied externally another decided antiseptic?

We would naturally expect that the tendency of the lesion to develop would be greatly diminished or its development prevented altogether.

Koebner found that this was precisely what happened under these conditions, for he elicited the interesting and significant fact that "this vulnerability could be diminished and even extinguished by the administration of arsenic internally and the application of tar locally."

With reference to the above, we may mention E. Schiff's (96) experiments with dogs, by which he proved that when arsenic was administered to these animals, it was deposited in the hair, and we see no reason to doubt that the same thing happens under the same circumstances to the human epidermic structures, especially as it has been found

in the hair of victims poisoned by arsenic. (97).

We do not know any parallel example in therapeutics of a drug preventing the onset of any purely nervous disorder of the skin, and if psoriasis were of this nature, we cannot conceive such an action as we have described taking place.

When speaking of Koebner's experiment, one is naturally reminded of the instances where psoriasis has commenced after a breach of surface.

With regard to this, we may again refer to the cases we have quoted, where the disease has followed vaccination.

We referred to thirteen in all, and out of these it is distinctly noted in five that there was no previous family or personal history of psoriasis, and in the other eight, the previous history is not mentioned.

In all of them the first indication of the onset of the disease was the appearance of a scaly

papule at the seat of scarification, and this was followed after a variable time by a general eruption.

These outbreaks could have hardly been due to the lowering of the general health by the vaccination, for in a larger proportion of the cases it was unsuccessful.

Apparently the most reasonable and credible explanation is, that a microbial cause, capable of producing psoriasis, was in each inoculated at the time the attempts at vaccination were made.

We can hardly conceive an equally satisfactory one based upon the hypothesis of neurotic origin.

We will now consider the evidence tending to shew that psoriasis is contagious, and will again refer to those cases pointing to this mode of origin.

First, that one recorded by Dr. Méneau, where a younger child's hair was combed with the same comb as that of her elder sister who was pso-
riasitic, and subsequently the former was attacked upon the scalp with the disease.

The primary lesion appeared at the site of a scratch made by the comb.

Then we have the two cases quoted by M. Au-gagneur. - The first that of a dyer admitted into hospital, suffering from a professional eczema, in whose case afterwards psoriasis was superadded at the site of the original disease, after he had remained some time in a bed between two psoriasi-tics.

The second that of a workgirl from a chemical factory, admitted into the same hospital, suffering also from a professional eczema, and who also acquired a psoriasis at its seat.

Then there is the instance, described by Dr. Abrahams, of a girl who attributed the onset of the psoriasis to bathing in a bath after her brother who suffered from the disease.

To these may be added Unna's cases of the children who were affected, after a psoriasitic
nursemaid was engaged to attend them; and the case of Dr. W., the American physician, and his friend.

With regard to contagion between husband and wife, we have the instance described by Mc Call Anderson, where a husband was attacked some years after having married a psoriasisic wife, and also the five cases quoted by M. Aubert.

That of Dr. Ménéau, the first one of M. Augagneur, Unna's cases, and those of Dr. W. and his friend, seem without doubt to be cases of true contagion. The others, though not so satisfactory, serve well to supplement the stronger evidence that can be brought forward in support of the microbial theory of origin.

In that of Mc Call Anderson, this author considered it to be one of co-incidence rather than contagion, and he founded this opinion upon the fact that the husband was not attacked until some years after marriage. However, when we consider the many apparently unimportant conditions that interfere with or
favour microbian growth in general and affect their powers of producing pathological results in particular, and furthermore the modifying effect of season, state of health, occupation, climate, etc upon the efflorescence of psoriasis itself - we think it quite possible that during these years the husband's skin had not presented a suitable soil, and that at the time he was invaded, some cause - maybe too trifling to be noticed - altered the former state of affairs and gave the necessary opening for attack.

The most convincing proof of the contagious nature of psoriasis is the experimental auto-inoculation, performed successfully by Destot of Lyons.

It is impossible to imagine that the efflorescence, that appeared upon him, arose by coincidence, and unreasonable to suppose that he possessed "that theoretical nervous functional "trouble of the centre of keratinisation" which was excited into activity merely by the scarifica-
tion and rubbing in psoriasis scales.

The parasitic theory affords the only possible explanation for this.

Let us now see what evidence the microscopic Anatomy affords us in connection with the Aetiology.

If this is admittably silent with regard to any support, it might be expected to give to the theory a neurotic origin; it certainly does not seem to be equally so in connection with the microbian.

It will be advisable here, in order to assist us in interpreting the changes we have observed, to digress a little and consider those that would take place as a result of microbian invasion.

According to Metchnikoff (98), when an animal is inoculated with a microbe, and when the malignancy of the latter is diminished with re-

gard to the subject of experiment, either by na-
tural or acquired immunity, an immediate invasion
of leucocytes takes place at the site of inocula-
tion.

The more chronic the pathological, and the
less lethal the effect of the organisms in question,
the stronger the "positive chemiotaxis" and hence
the more numerous the invading corpuscular army.

That variety of leucocytes known as the large
polynuclear, is the one which possesses the most
marked parasiticidal properties.

Metchnikoff's theory of phagocytosis is
probably true in the main, but whether the special
role of the phagocytes is admitted in its entirety
or not, no one can deny that the above statement,
as far as the invasion of the inoculated area by
polynucleated cells is concerned, has been tho-
roughly proved by actual experiment.

Now let us suppose a microbe, capable of
causing chronic pathological effects, though not
of a very malignant nature, has been inoculated in the superficial layer of the epidermis, where it grows. What would we expect to happen? Bearing Metchnikoff's observations & experiments in mind, we would look for a local invasion and collection of polynuclear cells.

Afterwards we would expect to see a thickening of the tissue (the horny layer) around this cellular collection.

This thickening and invasion, we would argue from analogy to be natural attempts to rid the infected organism of the irritating material and to cut it off from the subjacent tissues.

We would also not think it improbable, in this anatomical situation, for the process to lead eventually to more or less exfoliation of the epidermis.

Should the patient suffer from such a disease, as we have just described, for many years and over an extensive area of the integument, or if the attacks were repeated many times, it is
not unreasonable to suppose the protective power of the skin breaking down and the toxic effects of the microbes, or rather their products, becoming manifest by lesions other than those noticed upon the surface of the skin.

These effects might be due to the original organism, or to some secondary infection.

It is possible that the liability to these extraordinary symptoms would be increased, either by an unfavourable idiosyncrasy or some temporary external change of condition affecting the patient, and either of these influences might permit these more general effects to supervene in an early stage of the malady, or even before the skin lesion had appeared.

To compare what is actually seen during the course of psoriasis with the above, it will be advisable to recapitulate portion of the description of our observations of the primary lesion found in this complaint.
The first change noticed is the formation of a little cavity separating the cells of the most superficial part of the horny layer, and in this a number of polymuclear cells establish themselves.

In certain sections these can be seen in the very act of migrating from the deeper and more vascular layers.

These corpuscles increase in number, the horny layer thickening in the meantime around the collection which eventually assumes the form of the dry abscess which we have described before.

Other similar lesions in their turn arise, more thickening of the horny layer takes place, and finally the psoriasis squame with subsequent exfoliation results.

As the age of the lesions increase, we find that the superficial signs of irritation also grow more pronounced, and those of the deeper portions of the skin are evolved.
Consequently the rete thickens, the interpapillary portions lengthen, the intervening parts of the corium share this change, the contained papillary vascular loops become twisted, overfilled with blood corpuscles, a cell and serous exudation takes place here, and the thickened, indurated, older patches of psoriasis are produced.

One is compelled to admit that these phenomena which we actually observe, are exactly parallel to those which we have described in our suppositional case of microbial inoculation and the secondary results of the toxic irritation.

In both cases we have the polynuclear cell invasion, in both the thickening of the horny layer, the rete, and finally the reaction of the corium itself.

Before proceeding any farther with this comparison, let us examine to what extent the protective influence of the skin prevents general infection in certain diseases which we know to be
infective.

For instance in the case of epithelioma of the skin, as long as the lesion has not penetrated through the integument, it usually remains local, but as soon as the ulcerative process extends through the latter, the disease spreads, and infection of the neighbouring glands and the internal organs takes place much more rapidly.

Another class of diseases illustrating this protective influence, is that of the tubercular diseases of the skin.

If we take lupus vulgaris as an example of these, we find that as long as there is no deep ulceration and the tubercle bacillus remains confined within the skin proper and does not come in contact with the deeper and more vascular parts, the disease progresses locally for years and shews little tendency towards general infection; but occasionally, as a result of too vigorous treatment, ulceration, etc, breaking down the protective bar-
rier, infection takes place and the local tuberculosis becomes general.

This localization cannot be the result of a general immunity, for many cases are known in which the lupus arose after the patient was suffering from tuberculosis elsewhere, and we ourselves know of one instance where a phthisical patient was in the habit of wiping the sputum from his moustache with the back of his hand, with the result that he developed a lupus upon the latter situation.

Many more instances might be quoted to illustrate this, but the above will be sufficient for our purpose.

With regard to psoriasis we find that in a certain proportion of cases, after the disease has existed, more or less constantly, over a period of years and becomes more or less generalized, there is evidence that the protective influence has probably lost its power of complete protection, and symptoms which seem to be of systemic infection, arise.
The articular surfaces of the joints, the fibrous tissue around the articulations and elsewhere exhibit signs of chronic inflammation (See arthropathies).

These processes, though perhaps of a more chronic nature, are analogous to those resulting from toxic substances present in the circulation and similar to the troubles arising in certain cases of chronic septicaemia, syphilis, gonorrhoea, etc.

The nervous phenomena so ably described by Bourdillon, are in all probability merely another aspect of the same toxic process, and similar symptoms can be observed in many other diseases of undoubted parasitic origin.

The headaches, neuralgias, etc are analogous to those present in early syphilis (which we think, no one at present doubts is a microbial disease).

The intermittent, or continuous pains in the
limbs, intercostal spaces and loins, of a lancinating, sharp, or girdle variety, indicating an inflammatory process in the meninges, are found in cases of late nerve syphilis.

The hyperaesthesias, neuralgic pains, cramps, paresis, and even paralysis and anaesthesia might indicate, according to their situation, symmetry, etc, either attacks of meningitis or neuritis similar to those arising from a toxaemia, bacteriological or otherwise.

Illustrations of this may be found in the course of many cases of chronic alcoholism, malaria, etc.

The path of modern investigation tends to lead us to the conclusion that even a disease like locomotor ataxia in which we formerly thought we recognized one of a typically nervous origin, is probably not primarily a nervous disease at all anymore than Tetanus or Post Diptheritic Paralysis, but is the result of the toxins produced by the or-
ganism that gives rise to Syphilis, or at all events to that of one intimately associated with it (99).

Upon reading Dr. Buzzard's (99) admirable address "on the influence of microorganisms and their toxins in the Diseases of the Central and Peripheral Nervous System", delivered before the neurological section at the sixty sixth annual meeting of the British Medical Association, one cannot help recognizing the probability that all the nervous phenomena described by Bourdillon and other writers, as being associated with a certain percentage of cases of psoriasis, are the result of the toxic products of certain microbes - possibly those that may give rise to the original skin disease - or, on the other hand, perhaps the result of secondary infection.

This explanation seems much more feasible and in accordance with observed facts than that which takes for granted a hypothetically functionally disturbed theoretical centre of keratinin-
sation.

These joint diseases and nervous symptoms are, as we have pointed out, quite in keeping with what we should expect from the prolonged absorption of toxic products, and we think it is more rational to attribute to them an external origin common with psoriasis, than to seek a more complicated one in some primary inherited nervous defect.

A phenomenon that is, according to Gaucher (100), not unfrequently seen associated with psoriasis and which we have referred to before, seems to be an exact parallel to that which is known to take place in certain contagious and therefore parasitic diseases. We refer to the so-called metastasis.

To repeat in brief Gaucher's account, we find an eruption in a psoriasitic individual disappear, and he is forthwith attacked with what appears to be an acute articular rheumatism, which exhibits

(100) Traité des Maladies de la Peau, Tome I, 1895, page 378.
alarming cerebral symptoms and, strange to say, the disappearance of which is coincident with the reappearance of the psoriasis eruption.

Side by side with this, we quote the following case from every day experience:

A man is suffering from gonorrhoea, the discharge suddenly ceases and the epididymis at once becomes inflamed and furthermore, when the latter lesion disappears, the discharge comes on again.

Another patient loses his psoriasis, and immediately symptoms of interstitial nephritis appear.

Parallel to this we may place the case of a child suffering from mumps. The swelling of the salivary glands abruptly subsides, and the mischief reappears in the testicle if the patient is a male, or in the mamma, if the case is that of a female.

In respect to the former instance, we may mention that the gonococcus is found according to Neisser, in all the manifestations of gonorrhea (101),

\[(101) \text{Précis de Microbie. Thionot et Masselon,} \]
\[3d \text{Edition, page 579.}\]
and therefore is present in the metastatic epididymitis.

The probable explanation of this metastasis is that the protective power of the urethra breaks down and the infection spreads beyond its limits, but otherwise the gonococcus finds in the epididymus a suitable soil and therefore grows there by preference, immunizing for the time being the urethral surface; eventually the infecting organisms disappear from the epididymis, probably through the influence of the phagocytes, the temporary immunizing effect ceases, and the discharge re-appears in the urethra.

With regard to mumps, the unknown microbe prefers the soil that it finds in the salivary glands, mamma and testicles, and the same explanation would hold good for the metastasis in this case as in gonorrhoeal epididymitis. As a similar phenomenon is described as being not very unusual in psoriasis, we think this fact affords evidence
to lead us to believe that the same explanation
would hold good for the latter and that its origin
is similar.

We will now examine what evidence the results
of the various methods of treatment afford as re-
gards the aetiology.

Let us first consider that form by means of
warm baths, hydropathic treatment, and similar
plans.

It is agreed by most authorities that many
cases of psoriasis eruption are considerably im-
proved and some even cured by these means. The
question at once arises - Why?

For the purpose of answering this, let us see what happens during the process.

1stly The squames and superficial layer of
the skin are saturated with water and (2ndly) all
contained substances soluble in water and in con-
tact with it, are dissolved, and if the submersion,
etc is continued long enough, they are removed.
3rdly The hot bathing combined with friction increases the blood supply to the skin, and (4thly) removes the scales and superficial epidermic layer covering the diseased patches.

How can these various processes benefit the patient?

If we adopt the neurotic theory, we confess we find this question very difficult to answer, but supposing, on the other hand, that of a local microbian origin to be correct, then the rationale becomes at once clearer. - The mischief that microbes do is through the poisonous substances they produce, and if these products are removed for the time being, benefit is noticed.

Now supposing the visible lesions of psoriasis are the results of a toxin soluble in water, its more or less removal would explain the improvement; but as this substance would soon be produced again, it would not explain the cure so well.

However, the following experiment, which we
have seen performed at the Pasteur Institute, might throw some light on the latter.

If a culture of the tetanus bacillus is taken and kept until it contains nothing but spores, and then filtered, and the filtrate containing the spores subjected to prolonged washing with a weak solution of ammonium chloride so that all the toxin is thoroughly removed, and then, if an emulsion is made with these spores and this emulsion injected beneath the skin of a guinea pig, no ill effects beyond local swelling and suppuration occur.

Upon examining some of the discharge from this local abscess, the spores are found to be all taken up by the leucocytes, and they may be seen contained within the latter.

This does not hold good if a large quantity of the spores is used, for in that case the cells cannot take them up before some bacilli are developed and therefore toxin produced, which at once
exerts a negative chemiotaxis and preserves the microbes, and in consequence the guinea pig succumbs.

We know from our histological investigations of psoriasis that there is an invasion of leucocytes at the primary seat of lesion, and therefore if there is a specific microbe there, we can readily understand if the toxin it produces (already too weak to give rise to a negative chemiotaxis), is that diluted and removed in solution, the polymuclear cells have a much greater chance of destroying the original cause of the disease.

Furthermore, the increased blood supply to the affected area would mean the advent of large reinforcements of the destructive agents.

Lastly, the removal of the scales and superficial epidermic layer would result in getting rid of numerous colonies of microbes and their spores, if the latter were present, and thus help to prevent immediate re-infection.
It will be requisite also to turn our attention to the various substances used for the medicinal treatment of psoriasis, and consider them with regard to investigating any information they may afford with respect to the subject under consideration.

A fact that stands out in such relief that it must at once strike the observer, is that all those, perhaps with one exception, which have been found to afford good results, are possessed of marked antiseptic properties.

Though internal remedies can only be considered as adjuncts to external treatment in psoriasis, yet the former may be classed under the germicidal category.

In arsenic for instance, we have an antiseptic drug which, after being administered internally, we have every reason to believe, is eventually deposited in the very tissue where the primary lesion of psoriasis exists.
Turpentine, another strong antiseptic, has been found to possess marked beneficial effects, both when administered internally and applied externally.

Carbolic acid, Thymol, etc are also well known parasiticides.

On account of the fact that we are unable to administer antiseptic materials in sufficiently large doses to produce anything like a satisfactory local antiseptic action, we could hardly expect this class of remedy to exhibit any strongly marked curative effects in a microbial disease, at least, however, in comparison to similar therapeutic agents used locally.

Should these local applications have at the same time a slightly irritating action and the disease be of a chronic nature "a priori", we would expect the resulting increased blood supply or rather the increased supply of leucocytes, to render material assistance in the cure.
From this and the antiseptic point of view, we find in psoriasis a marked resemblance to a microbrian disease.

To verify this statement, let us for a moment look at the remedies.

Tar, Oil of cade, Oleum rusci, and similar substances of this class, those most commonly used, are typical antiseptics and have also more or less irritating qualities.

Chrysarobin, Turpentine, Carbolic, Pyrogallic, and Salicylic Acids, Salicine, Sulphur, Sulphide of Potassium, Mercurial Preparations, and all the rest possess in common these two properties in a more or less marked degree.

We admit that we cannot understand how these numerous materials, having so many diverse therapeutic effects, can all bring about more or less improvement in psoriasis, if the cause of the disease is nervous, and we furthermore can hardly conceive how one can avoid, given their common an-
tiseptic property, a preponderating influence when weighing the evidence as to the probable truth of either of these theories.

Before leaving the subject of antiseptics, we must refer to the case of the man subject to psoriasis, and during the time he was employed in a naphthaline factory, was free from the eruption, but was again attacked immediately upon giving up this employment.

The best explanation of this seems to be the presence of a sporulating microbe, and the antiseptic qualities of the naphthalinewere sufficiently powerful to destroy it, at the same time preventing the development of the spores without killing them.

These spores remained dormant in the horny layer, especially where it was thickest, and developing, reproduced the disease as soon as the restraining influence of the naphthaline was removed.

The possible exception to the rule that
the remedies for psoriasis are antiseptics, is the Thyroid extract.

Now if we consider the Antiseptics as a species of those agents which belong to a class of remedies preventing microbes exerting their ill effects, then Thyroid extract may possibly, with respect to its action in psoriasis, belong to the same class.

The specific microbe of psoriasis, if it exists at all, is probably located in the little superficial dry abscess that we have described.

The rapid and extensive exfoliation produced by this remedy means, as with bathing combined with friction, the rapid removal of the scales and superficial epidermis containing these lesions in various stages of efflorescence and decay, and therefore if the cause were parasitic improvement is just the result we would expect.

In the absence of any direct parasiticidal effect leading to the destruction of any microbes
or their spores that may be left in the integument, we would not be surprised at the frequent and immediate relapses noted as occurring after this treatment has been suspended.

Bearing this in mind, it would be interesting to try the effect of combining it with a course of external antiseptics.

Having considered the arguments in favour of the parasitic Aetiology, it will now be necessary to discuss those that have been advanced against it.

Many of the opponents of it seem to direct their arguments against Lang's parasite and to conclude that, because this particular organism (if it is an organism) cannot account for all the phenomena manifested in psoriasis, the disease is not due to any specific microbe whatever.

It is needless to point out that this view is illogical, and we would not mention it, only we wish it to be clearly understood that we do not desire to discuss in this respect any particular mi-
crobe, but to try and determine the value of the evidence in favour or against any special mode of origin.

We have collected the following fairly representative reasons given for discrediting the parasitic Aetiology.

Dr. Pringle maintains that "we are not aware of any microbe which could be introduced into the blood, which cropped out at symmetrical places producing eruption." (102).

Dr. Radcliffe Crocker (102) gives the following facts as being inconsistent with this theory.

"Psoriasis remains a long time limited to certain parts.

"It is liable to recur in predisposed subjects under depressing or debilitating influences, and rapid improvement takes place on the withdrawal of these influences.

"The apparent inoculability is confined to a

"very few instances, considering the great freque-
cy of the disease."

Finally we add those of Charles Bourdillon (103).

"The want of success in transmission."

"Resistance to treatment with regard to com-
plete cure."

"It cannot be denied that parasitism does
not agree with heredity, neither with the re-
lapses which characterize the disease and which
happen in some cases after the skin has returned
to the normal."

Let us now look at these reasons in detail.

"We are not aware of any microbe which could
be introduced into the blood and which cropped
out at symmetrical places producing eruption."

We may point out, to begin with, that be-
cause we are not aware of the existence of a mi-
this
crobe giving rise to particular effects, is no rea-
son why it cannot exist.

(103) Thèse de Paris, Psoriasis et Arthropathies,
1888, page 144 - 145.
Furthermore, if there is a psoriasitic microbe, the pathological evidence tends to shew that it appears, (at first at all events) not in the blood, but in the most superficial horny layer of the skin.

Lastly, taking for example one of the specific fevers, scarlatina for instance, although the specific microbe has not been isolated, yet we are certain it exists, and in order to produce the disease must be introduced into the blood. We find a specific eruption cropping out symmetrically on the skin, and we have the proof that the origin of the disease locates itself in the integument, in the fact that the desquamated epidermis is the most fertile source of infection.

"Psoriasis remains long limited to certain parts."

Many diseases of undoubted microbian origin remain long limited to certain parts, e.g. certain cases of Lupus vulgaris, and especially that varie-
ty known as lupus verrucosus.

"It is liable to recur in predisposed sub-
jects, when they come under depressing or debi-
ilitating influences, and rapid improvement takes
"place on the withdrawal of these influences."

It will be convenient to couple with this
the following one of Ch. Bourdillon.

"It cannot be denied that parasitism does
"not agree with heredity, neither with the
"relapses which characterize the disease and which
"happen to some cases after the skin has returned
"to the normal."

As to the tendency to relapse, we know quite
well that, if certain microbian diseases confer an
immunity at all, the length of time over which it
lasts, is very short, and even in some cases after
the first attack, the patient seems to be more
liable to a recurrence.

After one has been in general practice for
a while, a case will usually crop up, giving a his-
tory of attacks of erysipelas repeated year after year, the skin in the interval returning to the normal.

In many such cases the disease will be attributed to the debilitating influence of exposure to cold wind, alcoholic excesses, etc.

The recurrences or the influence of the predisposing causes quoted are not inconsistent with the bacteriological origin of erysipelas, and we therefore very naturally ask, Why should the relapses under depressing or debilitating influences be inconsistent with a similar causation of psoriasis, even though the skin in the meantime returns to the normal?

We would furthermore expect the withdrawal of any influence that might favour the parasite at the expense of the host, to lead to improvement, and we think that the latter part of the argument, if admitted to be true, would be rather in favour of than against the microbian theory.
Apropos of this, however, we must point out, that many authorities practically deny that depressing and debilitating influences favour the development of psoriasis, but on the contrary frequently bring about the disappearance of the plaques.

As to parasitism not agreeing with heredity we have good cause for believing that psoriasis "per se" is not hereditary, though the tendency to acquire it may be.

If this be so and the inherited tendency to tuberculosis is not inconsistent with the role of the tubercle bacillus, why then should the same thing not agree with a psoriasis parasite?

Granting, however, for the sake of argument that the actual disease is hereditary, we have to admit the existence of hereditary syphilis, and because this is the case, is it any reason to deny the microbian origin of the latter disease?

"The apparent inoculability is confined to a "very few instances, considering the frequency of
"the disease" (R. Crocker).

"Want of success in transmission". (Ch. Bourdillon).

It will be advisable to view these objections, or rather this objection, for they both embody the same assertion, in two aspects.

1stly As regards the transmission of psoriasis from man to the lower animals.

2ndly From man to man.

Looking at it in its first aspect, it must be admitted, that want of success in transmission of a disease from man to the lower animals, or from any one species of the latter to another, is no evidence whatever that the complaint is not microbian.

Were this so, the bacteriological origin of Leprosy might with reason, in the face of overwhelming evidence to the contrary, be disputed, and for the reason that cats, white rats and Algerian sheep have an immunity from anthrax, we
might maintain that Wool-sorters Disease was not also.

As to the second aspect, viz. the rarity of the apparent transmission from man to man - Bearing in mind the history of the investigation into the causes of many other diseases, we must accept Dr. Radcliffe Crocker's qualification with a caution equal to his own.

This infectiousness of erysipelas was at one time absolutely denied by some observers (104); the existence of an anthrax bacillus was ridiculed (105), and the tubercle bacillus as a pathological factor was in our own experience laughed at by some eminent authorities.

Many observers, no doubt influenced by the belief that psoriasis is of neurotic origin, and, owing to the multifarious duties of practice, not af-

fording the leisure to properly investigate the 
subject for themselves, are apt either to totally 
disregard any evidence of transmission, or to put 
possible examples of such down to mere coincidence.

We have an example of this in Dr. Méneau's 
statement referred to before, viz. "At the time 
"believing that psoriasis was of neurotic origin, 
"I assured her that communication of the complaint 
"was not possible; but on after-consideration 
"changed my opinion and think that it is apparent-
"ly a case of contagion."

Before the fact of the microbian origin of 
tubercular disease was universally accepted, the 
proportionately few cases recorded of "apparent 
contagion" were attributed to mere coincidence or 
any other cause but the correct one, while since 
this fact has been established beyond dispute and 
the rank and file of the profession have been con-
vinced of its truth, they have looked out for them, 
and hence such instances have increased very consi-
derably in number.

Now we can readily understand that, as psoriasis is a chronic disease cured with difficulty, or not at all, unpleasant in its treatment, and liable to recur, it would require a large amount of enthusiasm to induce an investigator to inoculate himself, and he would have more hesitation in doing so to anyone else: This readily accounts for the fact that the only example recorded (at the same time successful) is that of Destot of Lyons.

Here we have a healthy man inoculating himself with the pathological products of a disease, and he is attacked with this complaint a short time afterwards.

We are constrained to admit our inability to conceive stronger evidence of successful inoculation, and also we believe that one such case of transmission is sufficient to prove the transmissability of the disease.

Another strong one is that of Dr. W. and his friend.
"Resistance to treatment with regard to complete cure."

This assertion can hardly be accepted as evidence, for otherwise the same argument, in a degree, might be brought against the parasitic origin of either Favus or Tricophyton of the scalp, because certain cases resist treatment, or to return to another disease that we have quoted often before, how frequently do we see syphilitic manifestations recurring time after time, sometimes over the course of many years, in spite of the temporary relief afforded by the administration of mercury, etc until, to use a popular expression, "the disease has worked itself out".

We can readily imagine an affection caused by a sporulating microbe, subsiding under a treatment, which results in the microbe perishing, but, however, if the spores remained in such tissue as the thick wrinkled horny layer of the skin at the elbows and knees, they might grow again into micro-
bes, when more favourable conditions arose, reproducing repeated exacerbations of the disease.

The well known vitality of spores renders it possible in many instances for them to survive for many years and to resist any but the strongest antiseptics immediately applied.

The argument that psoriasis resists treatment with regard to complete cure, as evidence against the parasitic origin, is considerably weakened by our knowledge of the properties of spores.

In concluding these remarks upon the respective merits of the neurotic and microbial theories of the Aetiology, we submit that the weakness of the former consists in the following very important facts (1stly) of the absence of any anatomical support furnished either by the histo-pathology of the skin and the central or peripheral nervous systems, and (2ndly) by its being practically based upon symptoms and signs which are equally consistent with other causes, and the analogies of
these may be for the most part observed in many non-nervous complaints.

Other evidence is derived from resemblances to diseases which are also only of theoretical nervous origin, and the ideas with regard to which may under the light of future investigation completely change.

Furthermore the opinions of many advocates of this hypothesis have evidently been influenced by the positive statements made by some authorities, and these assertions, as far as we have been able to ascertain, lack sufficient proof to be worthy of the acceptance they seem to have gained.

With all due deference to the opinions of others, we believe that the parasitic theory offers an equally reasonable explanation for all the so-called nervous phenomena connected with psoriasis, and as to the remainder, even with our present imperfect bacteriological knowledge, it tends to clear up many things which would be impossible to satisfactorily explain by any other hypothesis.
The prognosis of psoriasis is usually good as regards ultimate recovery from any single attack, but bad in connection with absolute cure, for the disease returns in by far the greater percentage of cases (probably over 88 per cent).

As to the frequency of the attacks, this is variable; very often it is repeated every year, but one attack may appear before the last has disappeared.

On the other hand, there may be an interval of some years' duration between the individual relapses, or even in rare instances, the patient has none after the first attack.

There seems to be little danger to life in the uncomplicated disease, but if it becomes generalized, one always has to bear in mind the possibility of the onset of joint troubles which may disable the patient for the rest of his life and through pain and exhaustion tend to shorten it.
DIAGNOSIS.

A typical case of fully developed psoriasis is unlikely to be mistaken for anything else, and therefore, when we see an eruption manifesting itself by thickened dark red patches, abundantly covered with laminated, white, micaceous scales which, when removed, expose an easily bleeding surface, and distributed chiefly upon the extensor surfaces in general, and particularly on the skin over the elbows and knees, the said eruption being dry from the beginning - we know that it can be nothing else than Psoriasis.

When, however, the efflorescence is atypical in appearance and distribution or modified by complications, situation, etc, a differential diagnosis is often anything but easy.

We will now consider its distinguishing features compared with the various diseases with which it may be confused.
From eczema, when the latter is acute, there is very little difficulty in diagnosis, but the more chronic forms are not unfrequently confusing.

Evidence of exudation can be found often either in some elements of the eruption or in the past history of the disease.

It usually occurs by preference upon the flexor aspect and is frequently seen in the articular folds; the itchiness is more marked, the scales have a darker colour and are less abundant, the patches are more ill-defined, and the distribution is less symmetrical than that of psoriasis.

Unlike the latter, it does not avoid mucous orifices, but on the contrary is likely to be more intense around them.

On the scalp it spreads more rapidly to the face, extends behind the ears and around the mouth and nose, an ill-defined line of demarcation dividing it from the healthy skin. - Psoriasis in the same situation, when spreading to the face, does so
in the form of a band extending about an inch beyond the hairy scalp on to the forehead, and this band is sharply cut off from the sound integument.

It may extend to the cheek, but in males usually spreads along the surface covered with the hair of the whiskers, and if there is any over the rest of the face (the whole in women), it occurs as isolated patches.

On the body, psoriasis spreads from the back towards the front, while eczema is usually more pronounced in the region of the areola and beneath the breasts in women, and around the naval and pubes in both sexes.

Psoriasis usually avoids the latter situations and, though rarely seen about the genitalia, when it does occur there, it is almost impossible to diagnose from eczema, save for the fact that a typical patch of either disease is almost sure to be found elsewhere.

Though psoriasis occurs not unfrequently in large patches upon the sacrum, it never, or hardly
ever, is seen around the anus, whereas this is an usual locality for eczema, which may spread from thence towards the sacrum and forwards towards the genitalia and inner surfaces of the thighs, but tapering off, so to speak, as it reaches the extensor aspects.

Psoriasis is rare upon the hands and feet, and exceedingly so on the palms and soles, while eczema is rather common in these situations.

In these parts also the latter maintains its more diffuse character, the squames are likewise not so clean and white as those of psoriasis, but as a rule have a grayish, or dirty yellow appearance.

The exudation from the fissures is more abundant, compared with psoriasis, with which, though fissures exist, they do not exude the same amount of moisture as in eczema, and the squames are therefore drier as well as being whiter and thicker.

Notwithstanding, however, all this, in the rare event of other elements of either disease be-
ing absent elsewhere, a diagnosis is often exceedingly difficult, if not impossible.

Psoriasis of the nails is sometimes distinguished from eczema by the former producing a mass of scales beneath the nail, and raising it from its bed, and again by the presence of elements of either disease elsewhere.

It is almost impossible to make a certain diagnosis between the two in this locality, if there is nothing else to confirm it.

**DRY SEBORRHEA AND SEBORRHORIC ECZEMA.**

In the former, the scales are fine, greasy, and do not cover the typical papules of psoriasis, and the skin beneath it is not raised, and if it is coloured at all, the colour is a pinkish red and not the deeper red of psoriasis.

On the scalp, the scales are especially greasy to the touch, dirty looking, easily separable, and do not cover a thickened, easily bleeding integument.

The crusts of Seborrhoeic Eczema are fatty al-
so and more yellow than those of psoriasis.

Upon the scalp it rarely forms a well defined band, and it leads to loss of hair.

Elements of psoriasis may be found in situations where seborrhoeic eczema never exists.

Examples, however, occasionally arise where it is almost impossible to distinguish between the two, and this condition is most likely to occur upon the scalp.

We have, however, seen at the Hôpital St. Louis, Paris, a case of a middle aged man in which a single patch about three inches long by two and a half inches broad, existed over the sacrum, which in colour, variety of squames, and in every other respect presented all the appearances of psoriasis.

A diagnosis of Seborrhoeic Eczema (Unna) was made, on the grounds that there was a history of typical Eczema Seborrhoea, situated between the shoulder blades and upon the middle of the chest,
and at the time the patient suffered from a severe seborrhoea of the scalp, which had existed off and on for many years; and furthermore there was no history of psoriasis in any other part.

Taking the sacral lesion by itself, we believe that it would be quite impossible to have made such a diagnosis in this instance.

Another that we have seen was that of a young man who was under treatment for Alopecia Areata at Dr. Sabourand's clinic, when suddenly a plaque developed upon the scalp exactly resembling psoriasis, but during the after-development of the case it became apparent that it was one of Eczema Seborrhoea (Unna).

This case was the original from which one of the recent models was taken for the Museum of St. Louis Hospital.

Dr. Sabourand asked us to examine a biopsy from this patient, and on section it resembled an old psoriasis lesion, save that the dried up col-
lections of poly-nuclear cell nucleii were absent in the crusts.

A class of cases where difficulty might arise in this respect is that of psoriasis in some old people where, especially upon the chest and back, the scales acquire a dirty yellowish appearance and greasy feel, but this difficulty can almost always be overcome by a reference to the history and the presence of other elements on the elbows, knees, etc.

Pityriasis Rose GIBERT may be distinguished from psoriasis by the more generalized character of the eruption, the fineness of the scales, the lighter pink colour of the subjacent integument, and the absence of thickening.

We, however, have seen a case at Kaposi's Clinic in Vienna, of a young blonde, anaemic woman who presented herself after being under treatment. The spots on the body at first sight bore a striking resemblance to the above disease. They were of
a very light pink colour and sparsely covered with thin fine scales. The diagnosis, however, of psoriasis became quite clear on examining the elbows and knees, where more typical lesions existed.

**PITYRIASIS RUBRA** is distinguished by its rapid course, and when developed, by the eruption being universal without the intervals of healthy skin, which practically always exist in psoriasis. The scales in the former are weak, thin, and very abundant, and the reddened skin may be seen through them, hence they offer a striking contrast to the thicker dry, mother-of-pearl like squames of psoriasis, on separating which an easily bleeding thickened surface is exposed.

Icthyosis, with its congenital history, imbricated scales of the same colour as the skin, covering no elevated red inflammatory patches, can scarcely be confounded with psoriasis.

Favus can only be mistaken for psoriasis in old standing cases where the yellow cup-shaped ele-
ments are obscured. It may be distinguished by the brittleness of the hairs and their loss of lustre, the mouse-like odour, scarring, and finally by the presence of the parasite being detected upon microscopic examination.

*Tinia circinata* is diagnosed by the small number of the lesions, their lack of symmetry, the vesicles often present, the paucity of the scales, and in extreme cases of doubt, by the detection of the fungus under the microscope.

*Pemphigus Foliaceus* can be distinguished by the history of bullae preceding the scales, and the probable presence of the latter in some parts, also by the constitutional symptoms, e.g. rigors, nausea, vomiting and fever.

*Lichen Planus*, when of old standing, sometimes presents considerable difficulty. The favourite situations of the lesions in this disease differ from those of psoriasis. Though it occurs upon the limbs, the elements are more usually seen on
the flexor surfaces of the wrists; the elbows and front of the knees are usually avoided.

Furthermore lichen elements are not unfrequently found upon the buccal mucous membrane, while those of psoriasis never are.

The scales are very adherent, finer, more usually of a grayish colour, and not superimposed like those of psoriasis, which are also more brilliant and have a silvery whiteness.

The integument is more markedly thickened, and usually some characteristic papules may be found at the edge of the patch or elsewhere. These papules differ from those of psoriasis in being facettted, smooth, lustrous, polygonal in shape, and umbilicated in the centre. The colour is almost always darker than that of psoriasis, the early elements are flat and practically scaleless, and the enlargement of the patch is due to aggregation and not enlargement of the individual spots at the periphery.

Pigmentation at the site of the lesions is
more often observed than after psoriasis.

**LUPUS ERYTHEMATOSUS** can only be mistaken for psoriasis when the scaliness in the former is very abundant.

The differential diagnosis may be made by observing the following phenomena.

Lupus Erythematosus usually occurs upon the face, the scales are finer and of a darker colour than those of psoriasis, and on removing them, projections will be noticed corresponding to the orifices of the sebaceous glands.

If Lupus Erythematosus has existed a sufficiently long time for it to be mistaken for psoriasis, cicatrices will usually be observed, which are exceedingly rare, if they ever occur, after the latter. Doubts can usually be cleared up by the presence of psoriasis elements elsewhere.

**SYPHILIS.**

**TERTIARY SQUAMOUS SYPHILIDES.**

Palmar and plantar Syphilides are much more
common than psoriasis in these sites. The specific eruption shews a greater tendency to circinate, it is more indolent, and the papulo-tuberculous element more marked.

Palmar Psoriasis is always symmetrical, while on the contrary, palmar syphilis is not unfrequently unilateral. In other parts, this variety of syphilitic lesion is less abundantly covered with scales than psoriasis elements, and these scales are not superimposed as in the latter.

The skin at the seat of lesion is of a deeper colour, and there is a tendency to ulceration and consequently cicatrices are often found.

Cicatrices, if they occur at all in psoriasis, are so extremely rare that they need not be considered as complicating the diagnosis.

The marks of preceding syphilitic manifestations can generally be found in other parts of the body. Pigmentation is deep and usual with syphilis, uncommon and slight with psoriasis.
The health of psoriasis is a rule good, while that of tertiary syphilitics is impaired.

The ordinary papulo-squamous syphilide is distinguished by being accompanied with other forms of the efflorescence; in other words, the eruption in this stage is polymorphus.

The seat of predilection, unlike that of psoriasis, is upon the flexor surface. The colour is the characteristic coppery hue, the squames are fine and not so white, nor so thick as in the latter. Those of psoriasis rest on a red hyperaemic, elevated surface which bleeds easily. Those of syphilis do not.

Other evidence of syphilis, as sore throat, mucous patches in the mouth and elsewhere, osseous pains, enlarged indurated glands in the neck, groin, etc, present or past iritis, and perhaps the history of a primary sore may be elicited, or the cicatrix found upon the genital organs.

With regard to inherited syphilitic eruptions,
the same distinctions (excepting the last of course) apply; but in these cases we have additional evidence in the fact that this variety appears during early infancy, or even at birth, while psoriasis does not, or if it does, the occurrence must be extremely uncommon. In rare cases, when there is still a doubt as to the nature of the complaint, if antisyphilitic treatment be adopted, the syphilis will improve comparatively rapidly, while the psoriasis, if it improves at all, does so very much more slowly.

One must always bear in mind that psoriasitic and syphilitic eruptions can co-exist upon the same patient, and furthermore that when this is the case, each disease may be obscured by exhibiting some of the characters of the other. Under these circumstances some difficulty of diagnosis is liable to arise.

We have seen a case recently at Kaposi's Clinic which illustrates this very well.
The patient, a man, gave a history of having suffered from repeated attacks of psoriasis during a period extending over some years. When he presented himself for examination, the elements of the eruption were distributed upon the arms, legs, scalp, face and body, but though occurring freely upon the flexor, were more numerous upon the extensor surfaces, and especially on the elbows and knees. They were covered with thick, laminated, silvery scales (especially in the latter situations), but the subjacent tissue presented a deep raw ham-like redness, quite different from that of ordinary psoriasis.

The diagnosis of psoriasis was deduced from the history of repeated attacks, cured without specific treatment, the thickness and lamination of the scales, especially upon the elbows and knees, and the fact that they exposed an easily bleeding surface when removed, the special prevalence of the elements upon the extensor surfaces and the raised
subjacent integument.

That of the combined Syphilis was made from deep colour of the lesions, their presence on the flexor surfaces, (more abundantly than in ordinary psoriasis), the induration of the lymphatic glands, presence of sore throat, and a history of a chancre having occurred within several months of the eruption referred to.

We have seen similar cases at the clinic of M. Fournier at the Hôpital St. Louis, Paris, one of which was that of congenital Syphilis combined with Psoriasis.

**TREATMENT.**

We find in the history of medicine many instances to illustrate the fact, that before the active cause of a particular disease was known, the human mind has evolved means of relief which have proved more or less scientifically correct in the light of more advanced knowledge.

A simple example of this is the treatment of
an ordinary abscess. -

Long before the existence of micrococci, or the many evil effects of the imprisoned toxins that they produced, were known, it was found that when in the natural course of events an opening into the cavity occurred and the purulent contents escaped, at all events temporary, and often permanent relief from the general symptoms and local pain followed. Hence the primitive surgeons were taught to forestall nature, relieve the patient earlier, and shorten the whole course of the complaint by a timely incision.

The many lessons of this sort led to the evolution of that which is the chief aim of the most scientific and rational plans of treatment, viz. if possible to remove the cause of the evil, and keeping this in view, it has often been found that when the cause is not actually known, this desirable end can frequently be effected by imitating, as nearly as the state of our knowledge permits, na-
ture's efforts in this direction.

Furthermore we think that the converse of this may, and perhaps has not uncommonly given very valuable information as to the origin of many evil effects exhibited in numerous abnormal conditions.

One can readily imagine, when a certain line of treatment, the adoption of which consciously or unconsciously, in imitation of the natural cure of a particular disease, or in other words the removal of the original cause, leads to a happy result, that in many instances the logically trained mind may receive a valuable hint, not only as to its situation in the organism, but even as to the exact nature of the very cause itself.

The actual fundamental cause of psoriasis being as yet unknown, the modern treatment is the result of the prolonged experience of many observers, and the methods proved by time to be the most successful are those which have been chosen, perhaps more or less by chance, in imitation of the natural
attempts to remove the disease.

The various substances proposed for the treatment of psoriasis may be roughly classified as follows, according to the effects resulting from their use:

1st. Those of a soothing nature used at the beginning, or in the more acute manifestations of the disease.

2nd. Those assisting to remove the scales.

3rd. Those increasing the blood supply to the diseased part.

4th. Those having more or less antiseptic properties.

5th. Those the effect of which in improving the diseased condition is not exactly known.

6th. Remedies lowering the general health.

7th. Dietetic remedies.

As many of the measures and substances in use fall naturally under two, or perhaps more, of these headings, it will be more convenient, in giv-
ing a detailed account of them, to describe first those used internally, and afterwards the external applications, and to indicate under which of the above classes it may be included when we consider each remedy in turn.

**INTERNAL REMEDIES.**

The most important amongst these is arsenic. The effects of this drug in modifying the skin and horny tissues of men and lower animals have been known from a very remote period (106).

Most modern authorities agree that it has a beneficial effect, and some go as far as to maintain that certain yet untreated cases can be cured, at least in as far as causing the eruption to disappear, by the administration of this drug alone. (107).

Others say that though it does good in a certain proportion of cases, it should only be used as

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a last resort (108).

Bulkley states positively that arsenic can in some cases not only temporarily, but permanently, cure psoriasis, and the proportion of these cases depends firstly on the age of the patient, secondly upon the duration of the disease, and thirdly upon the amount of previous treatment.

In very young subjects (from 10 to 12 years) he believes in its curability, and says that the drug should be given fearlessly and patiently to children afflicted with psoriasis, with very good prospect of its permanent removal.

Recent attacks in older people react well to arsenic, and in these cases it may be used with encouraging results, and every prospect of a successful issue, but he adds that the remedy should be continued steadily for a long time.

Another class of cases in which he finds the drug beneficial is of those which have the eruption (108) Diseases of the skin. 1897. Hyde, page 251.
for many years with little, or no treatment.

When the remedy on the contrary, has been taken irregularly and thus ineffectually, the chances of a good result are largely diminished. In any cases where it has been taken for a long time without permanent good results, little good can be expected of it (109).

Bulkley differs in his views from Hyde, and the majority of other observers who are of the opinion that arsenic does not prevent relapses. (110).

Jamieson states that in the same person at one time it will cause the disease to disappear in a satisfactory manner, and at another it exerts little or no effect, while in some cases the disease seems to acquire fresh vigour during the time it is being taken (111).

Hebra (112) goes so far as to say that he has

seen the eruption break out or relapses take place while the drug was being taken.

The general opinion is that in suitable cases one should commence with small doses and gradually increase them, but if ill effects are produced, reduce the dose, without stopping the drug, and increasing it again until the patient is taking as large a quantity as possible without suffering any ill effects.

Begbie (113) (quoted by Bulkley) advises this course to be carried to the extreme. - He says "that in order to secure its (arsenic's) virtues as an alterative, in a large class of chronic cases which yield to its influence, it will be necessary to push the remedy to the full development of the phenomena which first indicate its action on the system", and adds that he has never seen the scales of lepra or psoriasis drop from the skin and leave the healthy cuticle until the eye and 

tongue manifested that the patient was under the full influence of the mineral, and that for days and weeks together.

He also warns the physicians not to be alarmed into withdrawing the drug by the patient complaining that it disagrees with him. He admits, however, that its curative effects may sometimes be obtained before the patient is under what he calls "the full physiological influence".

On reading this article the following ideas occur to one: That the so-called curative effects (as far as psoriasis is concerned), when arsenic is administered in the manner described, may be due to the patient's health being depressed and broken down by chronic arsenic poisoning, and that the eruption disappears for the same reason that it does in the course of a debilitating disease, viz. simply because the system is below par, to re-appear again when the normal health is regained; and furthermore that patients in Begbies' day must have been
very much more docile and long-suffering than they are at present.

Hebra and Kaposi are in favour of prolonged continuous administration.

In one case treated by the former, the patient took two thousand asiatic pills before he got rid of the disease.

This writer says he has never in any case seen any ill effects from the prolonged use of this substance (114).

Fournier differs somewhat from other authors and advises (115) not to begin with a small dose and gradually increase it, but he maintains that the better plan is to commence at once with a moderately active one, say from ten to fifteen drops of Fowler's solution, and to increase by one drop per day up to twenty-five drops. This treatment should be carried on for a long time, for he states that hardly any effect is brought about before the

(115) Gazette des Hôpitaux. 16th July 1889. p.745.
fourth, fifth, or sixth week.

One should not permit the patient to become accustomed to the arsenic, and in order to avoid this, the course should be interrupted from time to time.

Furthermore he goes on to say that it is as well to suspend its use when one perceives the "tâche arsenicale" produced on the spots, in other words, when the redness of the psoriasis plaque is transformed into a grayish brown colour.

The usual dose recommended by British authorities is, to begin with, three to five minims of Fowler's Solution and increase it if need be, and if there is no reason against it, to twenty or thirty. The dose must be largely diluted of course and is preferably taken after food.

Hebra used the asiatic pill, but Crocker (116) prefers the liquid preparations, for he says with reason that, as they can be largely diluted, they are less liable to irritate.

Jamieson (117) administers it in the form of a gelatine coated pill and commences with one fiftieth of a grain thrice daily, increasing the quantity to one twentieth or even one twelfth.

The liquor Sodae Arseniatis is preferred by some, and this preparation certainly is less irritating for hypodermic injection. This method of administration is fashionable at the present time in Vienna.

In Kaposi's Clinic one half to three minims, increased to ten or even more, are administered daily.

Weyl objects to hypodermic injection on the ground that it is painful and occasionally causes abscess (118).

The former objection can be removed to a great extent by taking the precaution of diluting the dose largely, and the latter complication is

hardly likely to occur if antiseptic precautions are taken; at least we have seen many injections of this sort made without any bad result of the kind supervening.

In whatever manner the medicine is given, certain precautions are necessary, and amongst the most important is to make sure that the digestive organs are in a good healthy state, and if they are not, to see that the disorder is removed before the commencement of the course.

While he is taking the drug the patient must take care that they do not become disordered, and should be warned to avoid all excesses in diet, to be moderate at least in the use of alcohol, and not to indulge in any indigestible, highly spiced, and rich articles of food..

All defects of health other than the skin affection should be remedied as far as possible.

Crocker (119) advises controlling any colic

or diarrhoea by means of opium, and also when large doses are tried after small ones have failed, that they should be given with caution, and half a drachm of Tinctura Lupuli combined with each dose to increase toleration.

Arsenic is indicated when the eruption takes the chronic form and there is no tendency to acute exacerbations, or excessive hyperaemia.

Jamieson (120) says when it is persevered with for a long time, it acts especially well in psoriasis of the nails.

It is naturally contra-indicated when the patient exhibits any idiosyncrasy resulting in especial intolerance, in any catarrhal conditions of the stomach and alimentary canal (save in minute doses in chronic gastric catarrh). (121).

It must not be given when there is any tendency to acuteness, either at the commencement or during a prolonged attack.

Referring to this Hyde (122) considers that, as the disease is usually more acute in young children, with them arsenic is contra-indicated. He thus differs from Bulkley and Malcolm Morris (123), the latter observer choosing it as the drug of election in young subjects.

Apparently, when the disease is acutely spreading, it not only does not have any curative effect, but actually aggravates it.

Irritation of the eyelids with hyperaemia of the conjunctiva followed by symptoms of gastrointestinal irritation, manifested by abdominal pains, looseness of the bowels, with indigestion and even vomiting, are indications that the dose should be greatly diminished, or the medicine stopped altogether, at all events for the time being.

It should be administered with caution, and the patients watched carefully, when they are ad-

vanced in life, and especially when they shew any tendency to fatty degeneration.

Amongst the ill effects attributed to arsenic are the production of Pityriasis Rubra, Pigmentation of the skin, verrucous growths, and Epitheliomata, all of which we have referred to before.

Hutchinson (124) records a case of Herpes Zoster brought on from its administration, and loss of hair, and peripheral neuritis are mentioned by Malcolm Morris (125) as results of the excessive use of arsenic.

Thickening of the horny layer upon the palms of the hands and soles of the feet, giving rise to a condition analogous to Tylosis Palmae or Plantae, is attributed to its long continued administration (126).

Besides these ill effects the usual results

(124) Medical Times and Gazette. December 1868.
of chronic arsenic poisoning may arise.

With regard to the method of action of arsenic, Jamieson (127) explains "that it attacks the columnar cells next the derma, partly because these are nearest the vessels containing the drug, and partly on account of their greater activity and more irritable protoplasm.

In psoriasis it probably stimulates the epithelium cells to exhaustion, so that destruction overruns construction."

There is no doubt also that it causes a certain amount of irritation and hyperaemia, which is liable to run into excess when it is incautiously administered, or given in unsuitable cases.

In the experiments of R. Schiff (128) it was proved that when dogs are given small doses

of arsenic for some weeks, or poisoned with large ones, on examining the hair by Marsh's test, the element is found in it without doubt.

The same process takes place, no doubt, with regard to the hair and other epithelial structures in the human subject, and therefore part of the beneficial effects of the mineral probably may be due to its local antiseptic action. It also, owing to the power of stimulating the epithelium cells, leads to a more rapid exfoliation of the elements of the crusts and thus assists in removing them.

Arsenic may therefore be grouped under headings two, three, and four. External treatment should always be combined with it.

POTASSIUM IODIDE has been proposed as a remedy for psoriasis by Haslunday of Copenhagen, and according to Fournier (129) his mode of using this drug is as follows:—

To begin with, an ordinary dose of three or four grammes daily is taken, and every two days this is increased by two grammes until a therapeutic effect is observed.

Haslund says that he has given his patients as much as fifteen, twenty, twenty-five, thirty-five and forty grammes daily, and in one case even increased it to fifty.

The medium amount is from twenty-five to forty grammes.

This course of treatment is continued with occasional interruptions as long as is requisite for cure (from seventeen to sixty-seven days).

The average time is about five weeks, and it is wise to keep on with the drug for some time after the cure has been effected, in order to prevent relapses.

Haslund's statistics are as follows:-

Out of fifty cases, in six it completely failed, four were markedly improved, and in forty the cure was complete, in other words the eruption completely disappeared.

He maintains that in the great majority of them these immense doses were well tolerated, and
in no case did they produce mammary atrophy, nor wasting of the testicle.

In all patients the nutrition remained good and some gained considerably in weight.

In this article no mention is made of the after history of any of these cases, or whether the eruption returned after the iodide was withdrawn.

Dr. Sabourand informs us that he witnessed a trial of this drug, used according to Haslund's plan by M. Besnier, in which it was administered to a number of patients. In no case was any benefit noticed until marked toxic symptoms supervened, and when through these the patients were reduced to such a state of debility that they could scarcely stand upright, then the psoriasis disappeared, to recur again as soon as the health was restored.

From the above, and also our own experience in the administration of iodide of potassium generally, we think that the curative effects in psoriasis with the large doses proposed by Haslund, must be explained by its debilitating influence upon the subject, and in this event, combined with the fact observed by Besnier in his experiments, viz:-
that relapse is coincident with recovered strength, we think that in the eyes of the patient, it is quite possible that the remedy might appear worse than the disease.

We have not been able to find in the literature upon psoriasis that Haslund’s observations in this respect have been completely confirmed by any other authority.

In the present state of our knowledge we are inclined to class iodide of potassium under heading number six.

Turpentine is very highly spoken of by Radcliffe Crocker (130) and he believes that under its use the hyperaemia is reduced, and the scales fall off, and many cases get quite well in about two or three months.

In a large number great improvement takes place up to a certain point, but the cure is not complete without the use of external applications. He begins with ten drops thrice daily after meals, increased by five or ten drops per dose up to thirty in cases where it is tolerated. To prevent the irritating effects on the genito-urinary

(130) Diseases of the Skin. 1893. p.234.
system, barley water in large quantities should be taken, and the last dose should not be given after six o'clock in the evening. Strangury and haematuria are rare except when very large doses are administered. Giddiness and diminution of the urinary secretion may also occur, but these may be obviated by the free use of barley water.

Turpentine is contra-indicated when there is any ill health, especially of dyspeptic variety, and in people who have a natural irritability of the urinary organs.

Turpentine is a strong antiseptic and when taken internally excreted by the skin. Probably also it increases the blood supply to the diseased part.

It can be classed under the fourth heading and possibly under the third.

**Thyroid Extract.**

Byrom. Bramwell (131) observed that during the use of this substance in the treatment of myxoedema, profuse disquamation was produced. This very marked effect led him to conjecture that

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it might do good in psoriasis, and he determined to try it in this disease.

In the case in which he first used it, the plaques of eruption upon the patient's back separated in the form of large scales, some of them being at least one inch in diameter, leaving pale, apparently healthy skin at the site of the former eruption.

The experience of other observers with regard to this remedy does not seem to be encouraging. Talfourd Jones (132) reports a case of psoriasis in which he used thyroid extract where pyrexia, cardiac irregularity, faintness, and loss of flesh followed, and this without any improvement of the eruption.

Phineas Abrahams (133) speaking of this treatment, says that in a trial of seventeen cases he only had seven successes. He did not consider the removal of the eruption in seven or eight weeks extraordinary, as this could be done by other remedies, e.g. Tar. Out of sixty-five hospital cases, seventeen were under treatment for too short a time,

so he has excluded them. With regard to the remaining forty-eight, definite improvement was noted in eighteen, but only seven of these were under the thyroid extract treatment alone. In sixteen, the result, as regards the eruption, was negative, and in fourteen there was an increase.

In twenty-eight out of the forty-eight cases disagreeable symptoms, such as headache, palpitation, muscular tremors, neuralgic pains, dyspnoea, etc. supervened.

His conclusions are summed up as follows:-

1. Thyroid extract had no constant effect upon psoriasis.

2. In a large number of cases the result was negative, and in a few the cutaneous lesions were aggravated.

3. That in the minority of cases there was a distinct and marked improvement.

4. That at present (January, 1894) there were no prior indications where benefit was to be derived.

5. That in a considerable number of cases disagreeable constitutional effects were experienced.

6. That age and sex had nothing to do with
the success of the remedy.

Dr. M. Dockerell (134) says that thyroid extract does most good in debilitated subjects and children.

Doctors Eddowes and W. Anderson in the same journal report unfavourably of it.

In a case of thirty years' standing, referred to by the latter, great improvement was noticed at first, but this ceased, and though the drug was administered for three weeks, no improvement took place, the patient on the other hand getting worse. The extract was then discontinued, and he improved rapidly under tar.

Malcolm Morris (135) is unable to agree from his own experience with the report of Dr. Bramwell and others, and though he found there was in some cases an influence on the condition at the time, yet it was transient. He furthermore objects to its use on the grounds that even in healthy people it is apt to cause great systemic disorder, and in

elderly people with weak hearts it is distinctly dangerous.

With regard to the latter part of this opinion, one cannot help remarking that exactly the same objections apply to this observer's favourite remedy, Antimony, and the moral is: Do not administer either thyroid extract, antimony, or for that matter anything else in cases where they are unsuitable or dangerous.

As far as we know, in the above cases no special precaution seems to have been taken to confine the patients to bed during the course of treatment. Jamieson points out that it is important to do this (136) in order to keep the body, if possible, at an equable temperature and to avoid friction. He thinks that continuous warmth, and freedom from friction may have a marked effect in aiding the action of the drug. The neglect of these precautions may account for the failure and untoward symptoms recorded in many of the cases where it has been tried.

Jamieson further recommends that the pulse

should be watched, and when the rate increases to one hundred, or one hundred and eleven, accompanied by headache and nausea, or other untoward symptoms, reduce, or discontinue the drug for a few days. He also says care is necessary in its administration to females during their periods.

The beneficial action may be attributed in part to its effect in causing a more rapid exfoliation of the squames, but in addition to this there seems to be some further action not exactly explained. (137) Jamieson thinks that it may alter the condition of the soil and thus cause a recrudescence of the psoriasis. If the cause of psoriasis is microbiano it may have an antitoxic action.

The dose is the same as in myxoedema.

Thyroid extract may be classed under headings two and five.

Kaposi (138) recommends the internal administration of Carbolic Acid in doses of one half grain made into pills, five to ten per day being taken. He thinks it acts as well as arsenic and has never seen it give rise to any renal trouble.

Crocker (139) advises salicin and salicylate of soda and is of the opinion that these are the most useful of all internal remedies in all stages of the disease, but especially during the period of acute development.

Malcolm Morris says he has tried them in what appeared to him to be suitable cases and never found them of much use.

**Balsam of Copaiba.**

Hardy, (140) whilst treating an attack of gonorrhoea in a psoriasitic patient with this drug, noticed that the spots of psoriasis disappeared. He did not strongly advocate its use on account of its bad reputation, unpleasant taste and its uncertainty of action. He remarks, however, that it is a therapeutic resource not to be forgotten in considering the treatment of psoriasis. Any action it may have is probably similar to that of turpentine.

In acutely inflammatory varieties of psoriasis

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Malcolm Morris strongly recommends Antimony. The following quotation, taken from his address entitled "The Use and Abuse of Internal Remedies in the Treatment of Skin Disease" embodies his views.

"It (Antimony) is especially indicated when the arterial system is in a state of great tension. Small doses of the Vinum Antimonialis quickly reduce this, and, as a consequence subdue, or markedly reduce the inflammation. In acute forms of psoriasis, and particularly in cases where the subjective symptoms are very pronounced, I also find Antimony of great service. Here I give the wine in somewhat smaller doses (M.V to X thrice daily)......

Antimony has a two-fold action according as it is given in large or small doses. In relatively large doses it controls vasomotor disturbances, lowers the blood pressure and so, as already said, reduces inflammation. In small doses its action has an alterative character similar to that of arsenic. In certain conditions, as in painful irrita-

ble psoriasis. I find the remedy very valuable in small doses and continued for a considerable period of time. Careful watch must be kept of the patient's state, especially as to the heart's action, in all cases where it is continued for any length of time.

In some cases the internal use of Antimony is followed by the appearance of Vesicular, Pustular and Urticarial eruptions.

It is contra-indicated where the patient's health is depressed, and when there is any tendency to heart weakness.

Chrysarobin (one sixth of a grain, thrice daily) also has been tried, but owing to its emetical and other disagreeable qualities does not seem to have been extensively used.

Phosphorus also has its advocates, and Bulkley (142) says that in doses of one eightieth to one hundredth of a grain in combination with cod liver oil, it often has very good effects.

The same authority (143) states that the latter remedy, when psoriasis is complicated with

(142) Analysis of one thousand cases of skin disease. page 21.
(143) Monograph on Eczema and Psoriasis. p.15.
struma or scrofula, cures the skin affection more quickly than anything else, local medication being either omitted or playing a very unimportant part.

McCall Anderson (144) advocates a combination of cod liver oil and arsenic in these cases.

Probably on account of the theory that psoriasis occasionally originates from gout, acetate of potash and alkalis, with or without colchicum, have been lauded as remedies in this complaint.

McCall Anderson (145) uses freshly prepared carbonate of ammonia in ten-grain doses, well diluted, combining it with arsenic, or colchicum if there is any gouty tendency. He thinks that the ammonia salt is very beneficial in those cases complicated with the abuse of alcohol, especially if the patient is sent for change of air at the same time.

Many other internal remedies have been proposed, such as Tincture of Cantharides, Tar, Decoction of Dulcamara, Pilocarpine, Mercurial compounds, etc., but none of these have become very popular.

Referring to Tinctura-Lyttae, or Cantharides, Hebra (146) states that with four minim doses and increasing up to thirty (as has been advised), as soon as the quantity reaches fifteen drops, difficulty of micturition, dark colored urine, with albumen and then blood results. He furthermore states that he has never succeeded in removing the eruption with this drug.

Weyl (147) thinks that subcutaneous injections of pilocarpine are better than Tincture of Cantharides, or Oleum Phosphoratum, and states further that Campana advises the former drug to be used in cases of psoriasis occurring in grown people, with rigid skins, marked scaling, and diminished tone of the skin, and also when the nutrition in general has deteriorated and other diseases are present.

Mapother uses mercury internally and externally, and this will be again referred to under the consideration of external treatment.

Diet.

Passavent (148) of Frankfort treated inveterate cases by restricting the patients to an exclusive meat diet. He was led to adopt this method on account of the experience in his own case. He had suffered from psoriasis for a quarter of a century and speedily recovered under this treatment.

This experience does not appear to have been that of other observers, for many look with disapproval upon meat, while others say that diet has no effect whatever, and many with reason recommend that the patient’s general health should be brought to as perfect a state as possible, and maintained there by plain, wholesome, and nutritious diet, avoiding a sedative life and excess of all kinds.

In the eyes of most practitioners any internal treatment holds a subordinate position to external applications, and by a not inconsiderable number the latter plan is relied upon entirely as a means of removing the disease.

Mental fatigue, worry, or strain, either arising from business or over study, etc. should be removed, for in some cases these elements have not

(148) McCall Anderson’s Diseases of the Skin.
only aggravated the disease, but even seem to have been the exciting cause.

McCall Anderson (149) says that cases have been cured solely by rest.

**External Treatment.**

The ends of this method are directed, firstly towards removing the scales, preparatory to (secondly) the local application of various remedies calculated to remove the disease.

As in the internal treatment this point must be always born in mind, viz: if the patches present heat, itchiness, and any symptoms indicating the presence of inflammation more acute than usual, soothing applications must be made until such time as the abnormal inflammation has subsided.

In the first category perhaps the most important means at our disposal is the use of baths. The procedure adopted at St. Louis Hospital is as follows:

Over night the squame-covered patches are well rubbed with some greasy preparation until it thoroughly penetrates them, and to insure the latter

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the inunction is repeated.

The patient is then put to bed, and in order that the bed linen may not be soiled, is allowed to sleep in his clothes. The following morning he is placed in a tepid bath for an hour, and the following evening the inunction is repeated, to be again followed by a tepid bath as before.

The process is continued for two, three, or four days until the scales are completely removed.

The greasy application used may be lard, vaseline, glycerine of starch, etc., its exact nature matters little.

The St. Louis treatment will be further referred to when we consider the use of the tarry preparations.

Various substances may be added to the baths to soothe the skin in those cases where there are any acute symptoms, or on the other hand to assist in removing the squames.

According to their strength, solutions of alkalis are used to effect either the former or the latter purpose, e.g. one to four ounces or more of bicarbonate of soda may be added to thirty gallons of water and used as a bath.
Gelatine, bran, or starch applied in the same manner have a sedative action.

Sapo Viridis, or Spiritus Saponis Kalnius (two ounces to ten of water) are applied in conjunction with the baths in order to remove the scales.

Either of these preparations are rubbed thoroughly into the patches with a piece of woollen cloth, or sponge, and may be washed off at once, or on the contrary allowed to remain in contact with the spots for some time.

In Vienna, following the method of Kaposi and Hebra, a quantity of green soap mixed with a little water until a convenient consistency is obtained, is applied to the diseased area. This process is repeated twice daily for six days, and as a result the epidermis gradually becomes of a brown colour, the scales in the meantime exfoliating. Finally the patient takes a warm bath and the surface is completely cleansed.

McCall Anderson (150) suggests the use of Brooke's soap to remove the squames.

The Turkish bath has also been recommended by this author for the same purpose.

The so-called "Hydropathic Treatment" is another means used for the same end, and is preferred by many. It is carried out as follows:

Over the mattress and sheet, a bed is covered with a piece of macintosh cloth, sufficiently large to envelope all the patient's body excepting the head. A blanket is laid over this and then a wet sheet thoroughly wrung out, and finally the patient lies down upon the latter and is enveloped by it, together with the blanket and macintosh. He remains covered for two or three hours and is allowed to drink as much water as he is able.

Profuse diaphoresis occurs during this time, which results in macerating and loosening the squames.

Immediately after he is uncovered the patient takes a cold bath followed by a sharp walk.

On the same principle local patches may be cleared by wet lint covered with oiled silk. Brushes, saturated solutions of salicylic acid in alcohol, or even the dermal curette are used for the same purpose.

Another method is by wearing shirt and drawers made of soft rubber cloth. These are used for
a few hours at first and afterwards, as the patient becomes accustomed to them, for a longer period.

By this means perspiration is encouraged, and by its retention upon the skin surface maceration, softening and removal of the scales results.

Baths, vapour and ordinary Hydropathic Treatment, etc. fall under headings two and three, and when they are combined with soap, perhaps under four.

Mechanical methods may be classed under headings two and three.

In many instances recovery will ensue under one or other of the above plans of external treatment, although, as a rule, some further external application will be necessary.

All those substances that have been found to produce any benefit, without exception possess more or less antiseptic properties. They vary as to their irritating qualities, and therefore cannot be used indiscriminately in every case, so irritability of the patient's skin and the particular variety of psoriasis under treatment must be carefully considered and a suitable remedy chosen for the particular patient.
Whether the full curative action of any local remedy is obtained or not, depends on its application to the actual diseased tissue, or in other words on the complete removal of the scales and the bringing of it thoroughly in contact with the surface thus exposed.

After the cleansing process, if there is much hyperaemia, remedies such as calamine lotion, calamine or oxide of zinc ointments, vaseline, olive oil should be chosen, and these should be closely and continuously applied.

The baths (ordinary or weakly alkaline) must be continued until the irritation has subsided.

When this has taken place, or if the complaint is of the ordinary chronic variety, more stimulating materials are used. The chief and most important of these are the various forms of tar and allied substances.

The varieties used are Pix Liquida, or ordinary tar, which is distilled from the wood of the spruce; Oleum Cadini, Oleum Juniperi Pyroligneum, Juniper tar oil, Huile de Cade, derived from the Juniper Oxycedris; Oleum Fagi Pyroligneum, or Beech wood tar; Oleum Betulae, or Oleum Rusci Pyro-
ligneum, obtained from the birch; and finally coal tar.

The Oleum Rusci is preferred by many owing to its less disagreeable and more aromatic odour. The oil of cade is used almost universally in France.

The local effect of these substances upon different individuals varies very considerably, for in some they at once set up a dermatitis, while in others no trouble takes place for some time, and then suddenly irritating reaction makes itself manifest, and prevents any further application.

Many patients, on the contrary, seem to bear their inunction indefinitely without any bad results excepting perhaps the following:

According to Hebra (151) an invariable result from the prolonged application of tar is an inflammation of the hair sacs, forming papules from the size of a hemp seed to that of a lentil.

This eruption resembles acne, but is distinguishable from it by the black comedone-like points in the centre; hence it has been called "Tar Acne".

Sometimes tar causes insufferable itching,

while general toxic symptoms may in other instances supervene. The appearance of the latter depends probably as much on idiosyncrasy as upon the amount of the substance absorbed.

The onset of the poisonous effects is indicated by irritation of the gastro-intestinal and urinary systems; that of the former resulting in diarrhoea with black motions, and vomiting, and the latter in strangury with cloudy, or very dark colored urine.

These effects pass off readily if the application is discontinued and the patient is usually free from the alarming symptoms within twenty-four hours afterwards. (152).

Hebra (153) says that the toxic symptoms may be avoided by giving large quantities of diuretics, e.g. water, barley water, etc., both before and after the tar has been rubbed in, and it is said that they never occur when it is used over only one region of the body at a time instead of over the whole.
At first caution should always be exercised in its application, and small quantities used over limited areas, until the observer ascertains whether the remedy is likely to have any untoward effect upon the patient.

At Vienna tar is used in conjunction with soft soap, the patient being soaped, bathed, the tar rubbed in well and then the bath repeated, in which he may remain during several hours.

The tar is often mixed with soft soap in various proportions according to the nature of the case, or it is also applied pure with a hard brush, after which the patient remains some hours in bed until it dries, woollen being worn next the skin, for, unlike linen, this material does not absorb the tar.

Hyde (154) suggests as an alternative method of preventing the tar sticking to the clothes, powdering the barred surface with pulverized soapstone, and bandaging the parts with a flannel bandage.

At Vienna the inunction is performed twice
daily, with friction or baths preceding each application.

The old method used at St. Louis Hospital, Paris differs somewhat from the above. It is a combination of inunction of oil of cade and repeated bathing and is described by Fournier as follows (155):

The oil of cade is mixed in that proportion suitable to the case, with oil of sweet almonds, or glycerine of starch, and on the evening after the skin is free from scales, this mixture is rubbed well into the patches of eruption and without wiping the superfluous oil off, the patient clothes himself in linen set apart for the purpose, in which he sleeps. This inunction is practised each evening, and in hospital the patient wears the garments saturated with the medicament night and day.

On the other hand, if he is not in hospital he cleanses himself in the morning and rubs lightly in glycerine of starch.

From time to time during this treatment a bath is taken in the morning to cleanse the skin.

The course usually extends over several weeks,

until the thickening and scaling seems to have disappeared and the bright red tint of psoriasis is changed to reddish yellow or yellow.

The treatment is only repeated every three or four days and then only upon refractory spots.

When the disease has apparently subsided under the influence of whatever method that is chosen for the application of tar, it is stopped for some time and the case watched. At the end of eight, ten, or fifteen days, if the redness and scales do not reappear, and the yellowish red patches continue to grow paler, the treatment may be discontinued altogether.

**Chrysarobin or Chrysophanic Acid.**

Next to tar this substance is perhaps most frequently employed as an external application.

Goa powder is the dried, powdered and purified concretion found in the stem and branches of the Andira Araroba, a plant growing in Brazil. The crude substance contains about eighty per cent. of Chrysarobin. It was imported from Brazil by Portuguese settlers at Goa and used in India for many years under the name of Goa powder, as a remedy for Indian ring worm and other skin diseases.
Kemp (156) first described it in 1864 and called it Chrysarobin.

Balmano Squire recommended it in 1878 as an application for the cure of psoriasis.

It is most usually employed as an ointment, the strength varying from fifteen grains to two drachms to the ounce of vaseline, etc., but on account of its irritating effects in certain individuals it is better to begin with a low percentage of the active ingredient, and afterwards gradually increase the strength if such a course should be deemed necessary.

Another means of employing it has been devised by Fox (157), which is as follows:

The Chrysarobin is rubbed up with water to form a soft paste, which is smeared over the patches after the removal of the scales, and when this dries collodion is allowed to flow over it, so that when the latter hardens, it forms a protective covering. This remains "in Situ" for several days, and after it falls off is renewed from time to time.

If the powder is mixed with the collodion it does not act so well, probably because it does not come into sufficiently close contact with the diseased surface.

Auspitz recommends a mixture of ten parts of salicylic acid, fifteen parts of sulphuric ether, with one hundred parts of flexile collodion, to be painted over the spots.

Besnier has modified this process by applying first a solution of Chrysarobin in chloroform and after this has dried, fixing it by a covering of traumaticia varnish.

Another method is to rub the ointment in, cover the part with gutta percha tissue and fix the edge of the latter to the skin by brushing it over rapidly with chloroform (158).

Chrysarobin possesses several objectionable qualities. First amongst these is its liability to set up irritation, perhaps more often alarming to the patient than actually dangerous. This is manifested by a hot, itchy, erythematosus eruption,

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spreading uniformly from the point of application.

It, however, usually passes off within a few days if the drug is discontinued, and the affected skin desquamates slightly.

On the other hand, a number of cases have been recorded where the inunction of chrysarobin has been the exciting cause of pityriasis rubra.

McCull Anderson (159) thinks that the addition of ten grains of bi-sulphate of lime to the ounce of chrysarobin ointment renders the irritating properties less, and prevents the acid from combining with alcalis and forming salts. Even if the inunction is continued, a tolerance is often acquired and the erythema subsides.

Another ill effect is that it stains yellow everything it touches, nails, hair, linen, etc. and it combines with the alkali in soap to form a purple dye. If it comes in contact with the eyes it is likely to set up a conjunctivitis.

For this reason, in addition to its staining properties, it should not be used upon the face.

The chance of discoloration is in a great measure removed by adopting either the method of Fox, Auspitz or Besnier, or covering the patches with gutta percha tissue as suggested by Hyde.

In suitable cases it exerts a very rapid beneficial effect, the diseased patches quickly losing their red colour under its influence, and assuming a white aspect when the curative action is in progress.

When used on part of the body, e.g. one limb, it exhibits a curative effect on the remainder where it has not been applied, though in a less degree.

Anthrarobin, a reduction product derived from alizarin, has been used as a substitute for chrysarobin, and it is said to possess all the advantages of the latter without the disadvantages.

Crocker (160) says, however, that it produces stains, and when strong applications are made excites erythema; and furthermore that it is much less powerful than chrysarobin.

It is used as an ointment of a strength of five to ten per cent., or dissolved in alcohol as a tincture.

**Pyrogallic Acid**, or Pyrogallal, was first suggested by Jarisch, as a remedy for psoriasis. It is used as an ointment five to ten per cent. alone, or, as proposed by Unna, combined with two per cent. of salicylic acid, and five per cent. of Icthyol.

It is necessary to use it with caution and to apply it to a limited surface at one time, for several cases of toxic effects, and even death due to its absorption have been recorded.

The poisonous symptoms are similar to those of tar, viz: strangury, black evacuations, albumenuria, with rise of temperature, etc.

Unna (161) advises the administration of nitro-hydrochloric acid during its application, in order to counteract the toxic effects.

It excites no inflammation beyond the part where it is applied, and does not do so there unless the inunction is very vigorous and continuous, and it furthermore possesses the advantage of being colourless, odourless, and painless, and

does not discolour the skin, clothes, etc. so much as chrysarobin, though on the other hand it does not act so strongly or rapidly as the latter. Gallacetophenone, a derivative of pyrogallol, has been proposed as substitute for the above.

It is in comparison nonpoisonous and in a ten per cent. ointment does not stain the linen, and is said to act very rapidly in psoriasis (162).

Hydroxylamine is another substitute for chrysarobin.

Like pyrogallic acid it is a strong reducing agent, and powerfully toxic to the lower forms of life. It, however, possesses the disadvantage of destroying the red blood corpuscles, causing hae-maturia and albumenuria when a very small quantity is absorbed.

Crocker (163) says that even a solution of one in a thousand, used as a lotion, has produced albumenuria.

It is best applied as an ointment with lano-

line (164).

Owing to its dangerous properties, it is not safe to use it except over very limited areas, and under circumstances where the patient can be carefully watched.

**Turpentine** is advocated by Crocker (165) as an external as well as an internal remedy. He prefers the Oleum Pinus Sylvestris because of its less unpleasant smell, which he proposes to disguise by means of essence of lemon, or oil of lavender.

He uses it either undiluted, afterwards smearing the skin with vaseline to prevent too much desiccation, or diluted with seven parts of olive oil.

It is preferable, he says, to commence with a weak solution and gradually increase the strength, by which means a certain amount of tolerance is established and irritation avoided. In obstinate cases he proposed the addition of oil of cade to the turpentine.

Kaposi first suggested the use of Beta Naphthol

as an application in psoriasis, and he used it in alcoholic solution.

Hyde (166) reports that under the employment of this drug, used as a fifteen per cent. ointment, he has seen psoriasis patches rapidly disappear.

In opposition to this Balmano Squire (167) reports that he has tried this substance in various strengths from ten to twelve, and even up to twenty-five and fifty per cent. without any good effect, and in fact merely irritating results were produced.

Beta Naphthol has the advantage of being almost odourless and colourless; it also does not have any staining qualities. It is a powerful antiseptic and germicide.

Treatment by various preparations of mercury.

E. D. Mapother (168) strongly advocates mercury as a therapeutic agent in this complaint. For the past twenty-five years he has used it in every case, and extends the course over periods varying from three weeks to three months. He advises the use of a mixture of equal parts of unguentum hydrargeri

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and lanoline, and if possible keeps the patients in bed. If they do not submit to this, he prescribes three grains of pilula hydrargeri twice daily, and says that this may be relied upon to effect a cure.

He advises "ablutions" with alum etc. to avoid salivation. Combining internal administration with inunction is sometimes more effectual.

To avoid relapses he recommends rubbing the mercurial well into the skin over the olecranon and below the patellae, for some weeks after the eruption has disappeared.

He states that where mercury fails, arsenic, chrysophanic acid, and other internal and external measures are inefficacious.

The same observer (169) quotes an experiment made by Mr Jonathan Hutchinson, where the latter used white precipitate ointment upon one half of the body of a psoriasitic, and chrysarobin upon the other. On the former half the eruption improved, and on the latter it did not.

Mapother does not suppose that the mercury acts

beneficially, because psoriasis is of a syphilitic origin, but on account of its antiseptic action destroying the unknown parasite of the disease.

Brault (170) describes two cases that were cured in ten weeks by seven hypodermic injections of yellow oxide of mercury. Commenting upon this Mapother remarks that the cure would have been effected sooner had he used a soluble preparation.

Numerous other external remedies have been proposed, and amongst them may be mentioned cantharides, resorcin, extract of capsicum, oil of mustard, ordinary mustard, oleate of copper, sulphur, etc. etc., many of which have their uses in suitable cases, and when other remedies fail.

Many watering places are beneficial to psoriasis. The waters of some of these contain arsenic in solution, e.g. La Bourbole and Levico, and to this mineral some of the benefit may be ascribed.

Arsenical waters, according to Malcolm Morris (171) do not prevent relapses so much when taken internally as when used in the form of baths.

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He explains the good effect of the latter as being due, not so much to absorption of the drug, as to its action on the nervous system through the cutaneous nerves.

This explanation appears to us very far-fetched and without any evidence whatever to support it.

It seems much more probable and reasonable to suppose that the benefit is due to the maceration and removal of the squames, followed by the direct and prolonged effect (antiseptic probably) of the arsenic upon the actual seat of lesion.

With regard to the other baths, the general improvement of health by change of air, absence of worry and the cleansing effect of the bathing, sufficiently account for the improvement in the skin affection.

Most authorities are of the opinion that sea bathing and sea air are very beneficial, but McCall Anderson (172), on the contrary, believes that it aggravates the disease.

Hyde considers that this is disproved by the

benefit received in many cases removed from inland to the coast.

Concerning the local regional treatment of psoriasis on the head and face, a remedy must be chosen that does not disfigure the part, and that is not of an irritating nature, or liable to injure the eyes, etc., therefore the use of chrysophanic acid, tar, and other materials of this description is out of the question.

Ammonio-chloride of mercury, owing to being cleanly, and the surface of application limited, is a very useful remedy.

Salicylic acid in ointment, or in the form of Lassar's paste, is also extremely efficacious, both in removing and softening the scales so that they can be easily scraped off, and also in curing the eruption.

A good plan is to add a small quantity of corrosive sublimate, say one half grain to the ounce, for this seems to make it especially beneficial in psoriasis.

Hyde suggests the use of a salve, consisting of one half to one drachm to the ounce of tincture of benzoin. One scruple to half a drachm of
thymol is also useful.

It is necessary to notice the effect of exposure to sunlight, occupation, etc., before leaving the subject of treatment. It is a well-known fact that if the parts of the body affected with the eruption are exposed to the full influence of sunlight, in many instances the spots completely disappear.

Another interesting fact is that if the patient adopts an occupation where the body is constantly covered with perspiration, this usually results in a considerable mitigation of symptoms, if not in a cure.

A curious case communicated to us by Dr. Sabourand (173) is that of a man who was affected for a considerable time with psoriasis, but on his obtaining employment in a naphthaline factory, the disease completely disappeared, and he remained perfectly free during the time—many months—while he worked in this place, the psoriasis reappearing again with all its former intensity on his relinquishing this employment.

(173) We have referred to this case under Aetiology.
In another case a man who had been subject to this disease all his life, was transported to New Caledonia through being implicated in the Commune. According to this patient’s statement he was completely free from the eruption during the whole time he resided in this island, but immediately after his return to France the disease re-appeared as well marked as before, and he has been subject to it ever since.

This case illustrates the effect upon a psoriasis, of a semi-tropical climate, where the skin would be kept almost constantly moist by the increased perspiration.
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