

TREATMENT.—Rationally this is purely surgical, viz., ablation of the neoplasms. Em-plastrum hydrargyri is often very effective.

PARANGI.

Under this name Dr. Kynsey has described a disease prevailing for years in Ceylon. It begins with a period of incubation during which an ulcer develops on some part of the body, and which is followed by a stage of invasion accompanied by fever and arthritic pains. This is succeeded by an eruptive stage which may last for weeks or months, and ends either in recovery or leads to the development of ulcerations, etc. This affection is contagious, being propagated by contact with the secretions of the ulcers (even on the intact skin); heredity is also assumed. After one attack there exists, it seems, immunity against fresh infections. Dr. Kynsey thinks the disease is certainly to be separated from syphilis and would rather suppose an identity with yaws.

VII. RHINOSCLEROMA.

In reference to the etiology of rhinoscleroma, Prof. A. v. Frisch has made the following communication:

"My investigations on rhinoscleroma comprised twelve cases. By the kindness of professional friends, there were placed at my disposal excised portions of the diseased tissue, stained in alcohol, of six cases; the other six cases I had the opportunity of examining in the fresh state.

In all the cases, I found both in the cells and between them in the interfibrillary fissures of the connective tissue a certain species of bacteria which, under appropriate staining-methods, could be rendered visible.

These bacteria have a pronounced rod shape, but the individual rods are exceedingly short. The longitudinal diameter is about one and one-half times the dimension of the width. They were mostly found in rows of two. These relations are clearly recognized only by employing very high powers (Reichert's oil immersion $\frac{1}{6}$). Under low powers, they appear almost spherical, and they would be at once held to be cocci, were it not that attentive observation shows that their grouping into larger masses permits the recognition of an arrangement unusual with cocci.

The rods lie almost exclusively within the cells. Between the cells and in the fissures of the connective tissue they are rarely found. They are present most numerous and distinctly in those distended cells which exceed the diameter of the ordinary round cells three or four times. Mikulicz, who describes these peculiarly distended cells in detail (l. c., p. 509), believes them to be round cells in regressive metamorphosis. It seems to me quite probable that this metamorphosis is to be traced directly to the reception and the influence of these bacteria. It is easy (often in the same field) to follow all the transitions from the ordinary round cell to the terminal stages of these altered cells. Round cells containing but few (two or three) rods, and exhibiting a well-stained nucleus, lie by the side of such as have but little increased in size, but the protoplasm of which shows more or less distinct granulation, and the nucleus of which is only faintly visible, or has entirely disappeared. Close by are cells of double, treble, or even quadruple and quintuple the size, in which the granulation of the protoplasm and the nucleus are no longer visible, and which are filled by larger quantities of bacteria. Very frequently the rods in these cells appear arranged around the walls, at times rows of cells extend radially from the periphery toward the centre of the cell; finally cells are found which are tensely filled with a closely-packed mass of bacteria. Between these distended cells free hives of micrococci are sometimes seen.

Vertical sections of rhinoscleroma nodes convince us that those altered cells are quite singularly distributed in the tissue. In the deeper layers we find over larger stretches of apparently uniformly granulated round cells but a single cell or a few such filled with bacteria and greatly distended. These then form the centre of a region in which the above-described alterations can be followed step by step from the periphery, on more careful inspection. In the superficial layers the yellowish cells increase in number, and in some places we find the layers immediately beneath the epidermis or the epithelium almost exclusively composed of these distended forms. In recent or unstained

sections, these portions of the tissue bear the greatest resemblance to adipose tissue; the large round, sharply contoured cells, with their strongly refractive and, with peripheral arrangement of the rods, almost homogeneous contents, can hardly be differentiated from fat-cells. I must emphasize that this arrangement is not seen in all its details in every node and at every part of it. These far advanced alterations are obviously found only in the oldest foci. Should we accidentally strike a node at the periphery, it may happen that in a large series of sections we find nothing but small-cell inflammatory infiltration.

Not all the round cells of rhinoscleroma tissue undergo the described alterations. A large part of them assume a spindle shape and finally changes into fibrillary connective tissue. In the spindle-cells, too, bacteria can now and then be demonstrated. These, as well as the small groups found here and there between the fibrillæ, can probably be looked upon as necrosed.

The above appearance could be demonstrated equally on nodes from the lips and on those from the nostril or the soft palate.

As to the mode of examination, all the portions of tissue are hardened in absolute alcohol, and the sections are stained with anilin colors in the well-known manner. Methylene blue dyes the rods most intensely; gentian violet, methyl blue, fuchsin, Bismarck brown, and vesuvin likewise give good pictures. Throughout, one-per-cent aqueous solutions of the pigments were employed. Particularly distinct pictures are obtained if the sections, after being taken out of the pigment solutions, placed in distilled water and well washed therein, are transferred to a one-half-per-cent solution of potassium carbonate and left therein two or three minutes. If then they are clarified in the ordinary manner in alcohol and oil of cloves, the entire tissue becomes colorless; only the bacteria retain the pigment.

Pure cultivations of the bacteria of rhinoscleroma offer no particular difficulties. If a fresh node, the surface of which has been carefully cleansed, be incised with a sharp knife, and some of the tissue be cautiously scraped from the cut surface, we can convince ourselves, by spreading the fluid on the slide, drying and staining it, that there is present almost always a larger or smaller quantity of the characteristic rods. If a small quantity of the sap thus obtained be brought into a small moist chamber, it is possible to observe, after a few hours, under a temperature of 35-40° C. (95-104° F.), a great increase of the short rods. I could not demonstrate any lengthening into filaments or the development of persistent spores. The vegetations are visible to the unaided eye as a delicate whitish cloud. The rods show no spontaneous movements. The covering glasses were detached from the slides after twenty-four hours, thirty-six, and forty-eight hours, quickly dried over sulphuric acid, and stained. In no instance could I observe any accidental admixture of foreign organisms.

The bacteria increase plentifully also in blood serum and meat-water gelatin (R. Koch). Only the growth, corresponding to the lower temperature (25° C. = 77° F.), progresses more slowly.

Experimental inoculations unfortunately have given altogether negative results. The non-receptivity of the test animals employed by me naturally does not exclude the possibility that rhinoscleroma is transmissible, perhaps by direct inoculation into the nasal mucous membrane of man or else of some other animal.

It follows from these investigations:

1. That in the tissue of rhinoscleroma a certain form of bacteria is constantly present.
2. That these bacteria, furthermore, distinguish themselves by the peculiar arrangement in the tissue cells.

3. Finally, that these bacteria most probably produce the above-described regressive metamorphosis in all those cells into the protoplasm of which they have penetrated. This metamorphosis manifests itself by the disappearance of the cell nucleus, gradual enlargement of the cell with simultaneous lessening of the granulation of the protoplasm, and final change of the cellular protoplasm probably into a fluid substance. The formation of fibrillary connective tissue from that part of the round cells which have not suffered any invasion of bacteria, which takes place by the side of this regressive process, I think is a further essential characteristic of the morbid process, perhaps depending on the specific quality of the organisms. This connective tissue must be interpreted as a product of the chronic inflammatory irritation caused by these bacteria, just as the formation of connective tissue wheals around cheesy masses in tuberculosis, or the origin of many acute inflammatory forms and suppurative processes around certain necrotic patches produced by bacteria, is connected with some other kinds of schizomycetes. All observers emphasize the fact that rhinoscleroma never leads

to the disintegration of the infiltrated tissue, but rather "terminates in the formation of a firm contracting connective tissue." The nature of the process must be interpreted as a "chronic inflammation."

The exceedingly slow course of the disease, the formation of nodes in the skin, the presence of bacteria in the cells, finally the occasionally perceptible occurrence of shallow atrophic cutaneous cicatrices on places formerly the seat of nodes, in many ways reminds us of leprosy. Nevertheless careful comparison will convince us that both processes are altogether different, that the bacteria in leprosy play quite another part, and that the resemblance is confined merely to the presence of bacteria in the cells.

I myself have had but a single opportunity of examining a piece of rhinoscleroma for bacteria, and the result in this case was negative.¹

VIII. ACTINOMYCOSIS.

It is but a few years since this disease was discovered. It was Bollinger who first found peculiar bodies of light-yellow color, the size of a hemp-seed, in the partly fibrous granulation tissue inclosing many cells, of a formerly enigmatical tumor at the anterior and posterior maxilla of the ox, which had usually been termed an osteo-sarcoma. He further ascertained that these bodies were opaque acinous formations which broke down under pressure. The resulting masses again were nothing but fields of intertwined threads with club-shaped extremities radiating from the centre. Harz proposed for these formations the name actinomyces, the ray fungus; for the disease the name actinomycosis.

This disease of cattle which is to be interpreted as based on highly organized granulation tumors, has also been demonstrated in man, first by Israël, and recently by Ponfick.

Of late Johne has cast doubts on the absolute identity of actinomycosis hominis and *A. bovis*, because in one case he did not succeed in inoculating a calf and two pigs with the actinomyces fungi taken intra vitam from man and used quite freshly. No invasion was effected by introduction either into the abdominal cavity or into the subcutaneous tissue.

The demonstration of the infectiousness of the disease, as well as the etiological relation between the fungi and the neoplasm has been furnished chiefly by Johne. He succeeded in producing the disease by introducing free granules into the subcutaneous tissue or into the abdominal cavity. One or two months later, smaller or larger tumors arose which under the microscope exhibited the usual structure of actinomycotic growths. According to Ponfick's experiments, rabbits and dogs are not inoculable. Experiments with feeding were likewise ineffectual. But it was possible to produce typical neoplasms in the lungs by introducing the matter into the circulation.

As to the road by which the infectious material enters the body of man and animals, we shall be able to assume, with Ponfick, that any part of the external surface and the mucous membranes may serve as points of entry. Johne has called special attention to the importance of the food; he frequently found in the tonsils of healthy pigs bristly and stubble-like fibres, and beards of ears of corn which were covered with distinct actinomyces vegetations. In the case of man it is particularly hollow teeth, etc., which are to be considered as the foci of origin and development of the fungi. But in any case the fungus requires an open breach of tissue in order to proliferate into the depth of the organism.

¹ But I have seen Frisch's specimens which seemed to me to be perfectly conclusive.

Under the influence of the growing actinomyces, large tumors arise, especially in cattle, distinguished by the high degree of development reached by the granulation cells. In such tumors we find beautiful spindle-shaped elements in a copious neoplastic fibrous tissue with ample vascular development: scattered between them the acinous fungous depots of the actinomyces. No direct influence of the fungous elements on the cells seems to be present in this affection, but the fungi excite and maintain a chronic inflammation only by the continuous irritating effect of their growth.

The disease has a more immediate interest for the dermatologist on account of the fistulous tracks occurring as the result of the actinomycotic affections of the bones. Besides, doubtful affections, hitherto interpreted as "glanders," "atheromata," etc., may belong to actinomycosis. Furthermore, actinomycotic tumors must not be confounded with gummata (especially of the visceral organs) and sarcomata.

The DIAGNOSIS will be rendered certain by the discovery of the small yellow fungus granules which are even macroscopically easily visible and palpable—a diagnosis which can certainly be formed intra vitam when some fistulous tracks spring from the bone.

Aside from these practical points of view, actinomycosis is of interest for us chiefly by again furnishing the proof that the etiological factor, *i. e.*, the fungi, and not the pathological anatomical process, the granuloma formation, must form the starting-point in judging these diseases we have been here considering together. For while, in cattle, granulation tumors really characterize the disease, it occurs in man under the guise of chronic suppurative processes (especially in the face), simulating abscesses of the teeth, prevertebral phlegmons, peripleuritis with depressions and metastases, chronic pyæmia, etc. (comp. Ponfick, pp. 91 et seq.).

Furthermore, according to the point of infection, the quantity of the fungi, the mode of transportation in the organism, we see totally different clinical pictures presented. Sometimes there are firm, isolated, massively growing tumors (especially on the maxillary bones, more rarely in the lungs), sometimes countless minute patches scattered all over the lung, "in the form of an acute miliary tuberculosis," such as Pflug has described in one case. In connection with this case it should be stated that in the same stable with this cow two other animals were coughing, "and in the concrete we are certainly dealing with an ectogenous virus and a pronounced infectious disease."

As to the botanical rank of actinomyces, it is still doubtful with which species it should be incorporated (mould fungi or schizomycetes?). The resemblance to the concretions found in the lachrymal canal which are included among the schizomycetes as *Streptothrix Foersteri* has induced Ponfick to consider actinomyces likewise a streptothrix-leptothrix form of a species of schizomycetes. Harz thought that its mould-fungous nature was almost certain.

In this connection I should like to make mention of the observation of a new pyrexial affection communicated by Birch-Hirschfeld which reminds us of actinomycosis. "A child was attacked by violent fever, yet nothing could be found but a loosely attached deposit on the left tonsil, of a stearin-white color, which was easily removed. After its removal the fever ceased, but ten days later the disease relapsed in the same way, and the third time after ten more days. The microscopic examination of the detached deposit, which had the form of a spherical ball almost the size of a pea, showed radially arranged bundles of mycelium the ends of which, however, exhibited no swelling, or only very slight tumefaction; between the unjointed threads there were very numerous accumulations of closely packed, fine micrococci. After the fourth relapse had occurred, the part in question was wiped clean for ten days with a sponge and touched with powdered sulphur. No

further relapse took place. For this form of fungus, the name *leptothrix fasciculatus* would be most appropriate."

Mention should here also be made of a disease endemic in India, known as the Madura foot, the etiology of which is attributed by Carter to the presence of a fungus termed *Chionyphe* (Carteri). An arborescent mycelium spreads in the cutaneous and subcutaneous connective tissue, leads to the formation of tubercular efflorescences, superficial and fistulous ulcerations, from the sinuous recesses of which peculiar blackish masses can be lifted up. The bones are likewise attacked and excavated. Other authors however, doubt the mycotic nature of this disease.

Here should also be added the inflammatory infiltrations produced by the penetration of mycelium fungi into the cutaneous and subcutaneous tissue, such as kerion Celsi, certain forms of parasitic sycosis due to *Trichophyton tonsurans*. Under this head belong also the papillary neoplasms observed by Oscar Simon in balanoposthymycosis which resemble acuminated papillomata, but differ from them by being everywhere penetrated by anastomosing mycelia. This affection is frequently observed with diabetes mellitus.

IX. GRANULOMA FUNGOIDES.

We now come to an ANATOMICALLY thoroughly well-known affection, but one whose ETIOLOGY has hitherto remained unexplained, and in which the character of a parasitic or an infectious disease is entirely absent. It is the disease termed by Alibert mycosis fungoides, but which we, with Auspitz, designate as granuloma fungoides.

The title chosen by Erasmus Wilson, *eczema tuberculatum*, most aptly represents this rare disease to those who have not seen it themselves.

There are formed flat patches the size of a finger-nail to that of the palm of the hand, sharply demarcated or with gradually fading borders; oval, round, or quite irregular; at the same level with the surrounding healthy skin or slightly elevated. The surface is of a dark red, somewhat livid color, smooth and dry, similar to urticaria, desquamating, or finally moist and soon becoming covered with yellowish-brown crusts; these (corresponding to a moist eczema) sometimes quite superficial, sometimes more deeply extending infiltrated spots are generally deprived of their epithelial covering. They do not again become covered with skin, but tumors project above the level of the skin, ranging in size from a pea to an apple. They are firm and solid, often slightly lobulated, at times with a shallow depression in the centre; often with a narrow pedicle bearing a broad overlapping body, toadstool-like. The surface is smooth and moist with an intact epidermal covering, or else excoriated and secreting a thin serous bloody fluid which may again give rise to the formation of crusts.

No regular arrangement of the lesions is recognizable. All regions of the body may be attacked.

The subjective symptoms are very variable and frequently consist in an intense itching sensation, which often appears as the only prodromal symptom.

The course of the disease is exceedingly chronic on account of the continual recurrence

of new tumors. The tumors sometimes grow rapidly, sometimes very slowly; sometimes on formerly intact skin, sometimes from long existing excoriations. After they have reached a certain size, they generally undergo spontaneous involution and often disappear without any particular pigmentation, without any cicatrix, at times quite rapidly and unexpectedly.

The implication of the general health is very variable. Aside from the trouble produced by the intense itching, sleeplessness, etc., the general condition often is not disturbed for years. Still a steadily increasing cachexia gradually ensues; all cases hitherto observed ended fatally. Only a single case observed and published by Bazin recovered in consequence of an erysipelas. The prognosis in general, therefore, is unfavorable.

Microscopic examination shows in the corium and the subcutaneous connective tissue an infiltration with typical small round cells, which are inclosed in a narrow mesh-work of fine fibrillary connective tissue. In recent cases, the vessels are the first zones to be infiltrated. In the beginning, the epithelium, as in all inflammatory processes, is in active proliferation, and shows moderately widened cones. Later, it atrophies and perishes by the cellular infiltration spreading from below upward. In spite of the most careful examinations, I have been unable to find any parasites.

The disease, as has been stated, is rare. Alibert described it under the name mycosis fungoides, Tilbury Fox as fibroma fungoides, Köbner, in Paris, observed five cases as multiple papillary tumors of the skin resembling the beer fungus; Ferdinand Hebra, in 1873, reported a similar case (described by Hans Hebra in 1875, by Geber in 1878) and a second one in 1874. A more recent communication is on record by L. A. Duhring (inflammatory fungoid neoplasm). I myself know of two cases observed at the clinic in this city. Kaposi identifies this disease with the one described by him under the name sarcomatosis generalis of the skin. Finally, Auspitz and O. Simon call it granuloma fungoides. Simon thinks the tumors are to be interpreted as malignant proliferations of connective tissue in individuals who have suffered for years before from eczema or psoriasis. But the cause of these proliferations is entirely unknown.

Another view is held by the French and Italian authors. Vidal, Hillairet, Galliard, etc., Amicis, term the disease lymphadénie cutanée, and consider the cutaneous eruptions merely as the expressions of a "diathèse lymphadénique." They are led to this view not only by the histological resemblance with the lymphomata and lymphadenomata of internal organs; they report also the frequent presence of an increase in white blood-corpuscles, as well as the simultaneous occurrence of such tumors in internal organs and the skin.

Galliard gives the following resumé of his case:

1. Absence of prodromal symptoms, erythemata, etc. Immediately small indolent nodules.
2. Temporary hypertrophy of the axillary lymphatic glands.
3. Considerable enlargement of the cutaneous efflorescences in extent, not in height.
4. Rapid fatal result nine weeks after the occurrence of the first nodules. No ulceration of the nodes.
5. In the intestines, no circumscribed symptoms (as in the skin), but merely enormous diffuse infiltration of the intraglandular, intermuscular, perivascular, submucous, and subserous connective tissue.

Amicis formulates his diagnosis in the second of his cases: Dermo-lympho-adénome fongóide, lympho-adénome splénique et ganglionnaire, avec répétition du même processus dans la foie, dans les os du crâne; Leucocythémie, pleurite exudative concomitante, marasme cardiaque.

The local treatment, according to Vidal and O. Simon, is best conducted with ointments of pyrogallic acid. No general treatment of the disease is known as yet.

POSTSCRIPT.

It was unfortunately after the printing had been concluded that I received the excellent work of Aug. Hirsch in its revised form,¹ so that I am debarred from utilizing the valuable statements of this learned investigator. This would have been especially desirable to me in the section on leprosy, because Hirsch occupies almost the opposite standpoint from the one I have taken in the most important questions, namely, those of contagiousness and heredity. Although he believes the infectious nature of leprosy to be extremely probable, he positively denies the contagiousness of the disease. He says: "According to my conviction, there is not one fact presented which speaks decidedly and incontrovertibly for the transmission of the disease by contagion." On the other hand he writes: "Only one kind of transmission of leprosy cannot be doubted—I mean the one brought about by heredity." I have felt constrained to cite these views which are opposed to my assumption, but am nevertheless inclined to adhere to my opinion. As far as I can see, two hypotheses are now opposed to one another, and of these, I must look upon the one I defend as better supported, though not proven as yet.

Especially as to the spread of leprosy on the Sandwich Islands and the doubts raised by Hirsch in reference thereto, there is no room for doubting the fact that in the decennium 1850-1860 only isolated cases occurred, but a few years later, hundreds of cases already were observed. Hillebrand has lately (by letter) called attention to the fact that possibly the forcible general vaccination succeeding the small-pox epidemic of 1872 may have contributed to diffuse leprosy in the pronounced, above-described manner. The vaccination in most instances was performed by laymen, and the supposition is not entirely without foundation that with the vaccine virus leprosy germs were transferred from the sick to the well.

Compare also in Hirsch, Sec. III., Yaws, Pian, p. 69; Sec. IV., Button Scurvy (Ireland), p. 77; Sec. V., Verruga peruviana, p. 78.

¹ "Handbuch der historisch-geographischen Pathologie," Zweite, vollständige neue Bearbeitung. II. Abtheilung, Stuttgart, 1883.

NEUROSES OF THE SKIN.

BY

PROF. ERNST SCHWIMMER.

NEUROSES of the skin are affections of the common integument caused by disturbed nervous activity inducing alterations in sensation, nutrition, and motility. Hebra¹ considers the cutaneous neuroses as affections in which the disturbances of innervation run their course in the skin and its nerves without demonstrable pathological alterations. Kaposi² expresses a similar opinion. Neumann and Bulkley have enlarged the category of those affections to some extent. Auspitz³ has collected into three classes the group of affections due to disturbances of nervous activity; namely, diseases of innervation of the vessels, diseases of the sensory nerves, and functional anomalies of the cutaneous nerve expansions. In a recent monograph,⁴ I have thoroughly discussed the dermatoneuroses, and summarized all factors which physiology and pathology permit us to adduce in favor of this view.

Since the question respecting the trophic nerves⁵ is not yet decided, and as objections might be raised against basing upon it the classification of neuroses of the skin, we shall divide and attempt to discuss nervous affections of the skin according to physiologically justifiable principles, including some anomalies of nutrition which may be looked upon as tropho-neuroses.

I. NEUROSES OF SENSIBILITY.

These consist in functional disturbances of the sensory nerves, and the qualities appertaining to them show alterations manifesting themselves as anomalies of the sensory apparatus. Diseases belonging to this class are either concomitant phenomena of other diseases, or they are separate forms distinguished by the fact that they run solely along the tracts of nerves, and are not followed by any disturbance of growth and (unless we include prurigo in this class) of nutrition. Neuroses of sensibility show disturbances either

¹ "Handbuch der Hautkrankheiten." Stuttgart, 1876, ii., p. 540.

² "Pathologie und Therapie der Hautkrankheiten." Vienna, 1880, p. 704.

³ "System der Hautkrankheiten." Vienna, 1881.

⁴ "Die neuropathischen Dermatosen." Vienna, 1883. Urban & Schwarzenberg.

⁵ *Ibid.*, pp. 37 et seq.