

only subsequently invade the follicle. According to him, sycosis is primarily a perifolliculitis.

*Treatment.*—Internal remedies are ineffectual.

Very mild cases only can be cured without removing the beard, the pustules being opened with the knife, the nodules painted twice a day with an alcoholic solution of pyrogallic acid (1 : 50), and smeared during the night with the sulphur paste recommended for acne; this should be covered with a wet compress and rubber cloth.

In graver cases it is necessary to remove the beard. It is cut as close as possible, any crusts present are detached with an emollient ointment (diachylon or a weak tannin ointment, 1 : 10 of unguent. lenient.), or with cataplasms. Then the hairs seated in mature pustules are pulled with tweezers and the skin is shaved. Then the affected spot is painted with the solution of pyrogallic acid 1 : 50 and by day the cataplasms, by night an emollient ointment or a non-irritating plaster are again applied. This treatment, combined with continued epilation of the hairs seated in mature pustules, is continued until pustules no longer form. Larger abscesses must be opened, larger tubercles scarified (punctiform scarification) so as to evacuate blood and pus, which method I greatly prefer to scraping with the sharp spoon.

The application of the sulphur paste is excellently adapted to prevent relapses. As a rule, I order it every night for three months, the beard to be shaved every morning. The shaving must be continued for at least one year. Should the skin become fissured from the application of the sulphur, I order a mild tannin ointment to be rubbed in after shaving.

If the above procedure fail, the entire affected spot must be epilated. With the tweezers hair by hair must be withdrawn in the direction of its growth, and the epilation of the after-growth, the other treatment remaining the same (only the shaving is omitted), continued daily until no more pustules are formed.

The verrucose, condylomatoid vegetations rapidly yield to a single painting with chloracetic acid.

Sycosis of other parts of the body is treated like that of the beard.

In sycosis of the eyelashes I have always had the best effects from epilation followed by painting of the affected spot with yellow precipitate ointment (1 : 50 of vaseline).

## MORBID CHANGES OF THE NAIL AND ITS BED.

BY

PROF. E. GEBER, M.D.

THERE is great diversity in the situation, shape, size, etc., of the nails. These variations start almost without exception from the true point of formation of the nail. Therefore, in speaking of an extraordinary growth, etc., rather than of a material alteration of the nail, we must imagine it as a quite passive product, while the matrix generally is the immediate cause of it. The matrix, however, always requires the action of some etiological factor in order to depart from its physiological course.

Only in a relatively very small number of cases do changes of the nail occur; for instance, by the immigration of animal and vegetable parasites which arise in consequence of the influences from the matrix; but even there the matrix is nearly always secondarily implicated.

The nail, representing a plate of cemented epidermis cells, may exhibit an increase of its elements (hyperplasia) or a diminution of them (hypoplasia and aplasia), and a correspondingly hastened or retarded growth. It may possess also a deviation of form (deformity) or an altered color (discoloration), may have an unusual site (dislocation), and suffer an alteration of texture (degeneration).

### I.

*Excessive formation of nail substance* manifests itself either by a multiplication of the nails or by an augmentation of bulk.

This anomaly includes: the occurrence of nails on the last phalanx of supernumerary fingers or toes; the presence of double nails on one finger or toe; and finally the occurrence of completely or imperfectly developed nails at an unusual place, such as may be occasionally encountered after the loss of the terminal articulation on the first phalanx, on a metacarpal stump, etc., or else as a malformation in the region of the scapula (Tulpius).

*Onychauxis.*—Should the excessive deposit take place on the nail, the superabundance will be manifested either by the nail-cells being more closely aggregated and the



nail becoming more massive while retaining a nearly normal circumference, or else by an abnormal size of the nail, the elements not materially changing their mutual relation. Both kinds of alteration are designated onychauxis or hypertrophy.

These forms present essential differences. The nail in which the over-production manifests itself by unusual aggregation of the nail-cells appears unshapely, thick, opaque, glossy on the surface or spherically curved and of a grayish-white color, has a massive feel, is heavy and so hard that often it can be divided only with the scroll-saw. When the change affects the whole nail, it shows at its free border a tendency to curve downward.

The appearance is different when the deviations are based upon an enlargement of the dimensions, *i. e.*, the longitudinal or transverse diameter or both.

Should the relation be disturbed in favor of the transverse diameter, this will manifest itself especially in the adjoining soft parts. Should the nail enlarge in its vertical diameter, it may reach a length of 12 cm., and this deviation is generally associated with alterations in direction; the nail being either turned upward by the mass of epidermis accumulated in the matrix, or curving in various ways (onychogryphosis). In its simplest form, the nail becomes claw-like, so that, if of sufficient length, it may reach as far as the interosseous space. Fig. 38 represents a gryphotic nail 7.5 cm. in length and 2.3 cm. in width. In other cases the nail curves spirally and may wind once or twice around its longitudinal axis (Fig. 39). Between these two kinds of deviation transitions occur.

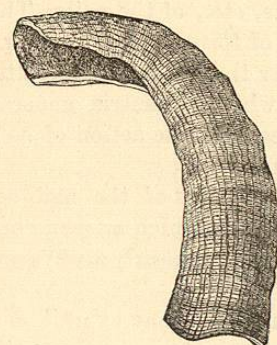


FIG. 38.

FIG. 38.—Nail from a great toe. (Drawn from nature.)



FIG. 39.

FIG. 39.—Nail from the little toe of a woman aged 60. (Drawn from nature.)

Such nails as exhibit an altered configuration from accelerated growth are also changed otherwise. They are dirty yellow, slightly lustrous or yellowish-brown, yellowish grayish-white, have on their external surface strongly marked longitudinal ribs, at greater or lesser intervals transverse more or less elevated ridges, and here and there horny plates. The inferior surface is usually brownish in color, has an irregular, flaky exterior interrupted by smaller or larger cavities, and is crossed here and there by transverse ridge-like projections.

*Anatomy.*—On making longitudinal and transverse sections through gryphotic nails, we learn from the pretty uniform consistence at the surface that here only a slight deviation obtains; while toward the inferior surface there appears a harder or softer substance arranged in fan-like layers. At the more superficial layers the nail consists of small roundish or flattened round cells containing dark granules of various sizes. Along the

longitudinal axis, the cells are arranged more linearly, and more closely aggregated in places, especially those corresponding to the higher transverse ridges. Farther downward the cells are grouped in irregular masses, especially at the above-mentioned ridges. According to Virchow, they contain centrally horizontal masses of horn, which laterally, however, descend vertically, both together inclosing the "medullary spaces" first observed by him. On closer examination, they are seen to represent sharply demarcated cavities filled with a homogeneous, lustrous yellow or finely granular mass, and in them may be found, at times, epidermis cells in process of cornification.

When the gryphotic nail is lifted off, the bed looks shorter, is arched in the centre, and often narrowed. On removing the mass of epidermis usually largely accumulated at the surface, the greatly hypertrophied, longitudinally pointing ridges, and further backward the papillæ too, come into view. The latter exhibit large, dilated vascular loops with a slight small-celled infiltration around them. Moreover, this condition will be met with in no slighter degree all over the nail-bed and on a considerable part of the matrix.

Hence I conclude that both the anterior portion of the matrix and the entire circumference of the nail-bed are in a chronic state of irritation.

*Etiology.*—The causes of onychauxis may be congenital or acquired.

The former is the case in so far as the disposition dates from the embryonal period, and the anomaly appears in the course of life. A child born with macrodactylus comes into the world with a relatively larger nail, but the latter becomes very voluminous only by the part in question growing with disproportionate rapidity. More frequent and more pronounced in form is this onychauxis in children affected with the various cutaneous diseases associated with papillary hypertrophy (ichthyosis, cornu cutaneum, etc.).

In the great majority of cases the onychauxis is acquired, *i. e.*, traceable to direct causative factors. These may be idiopathic or symptomatic in nature.

1. *Trauma.*—Any considerable pressure acting for some time from in front or sideways on the phalangeal extremities (too short or narrow shoes), increases the nutrition of the nail-bed by the augmented afflux of blood, and provokes an over-production of nail substance.

2. *Defective or altogether neglected care of the nail.*—Nails present an excessive development wherever the care of the skin, and especially that of the nail, is grossly neglected. Voigtel narrates that he knew a man whose toe-nails, in consequence of uncleanness, were much twisted, 6.5 cm. long and 6.6 mm. thick. The great accumulation of all sorts of substances on the nail-bed act as mechanical irritants, and lead to the hyperplasia.

Under this head belongs also the occurrence of excessive nail formation in old people and bed-ridden patients.

3. *The extension of morbid inflammatory processes* of the corium and the connective tissue of the cutis to the matrix of the nail (psoriasis vulgaris, chronic eczema, lichen exsudativus ruber, elephantiasis Græcorum and Arabum, etc.).

However, the diseases enumerated under this head are by no means to be looked upon as absolute causes of onychauxis. For every physician has certainly seen a large number of cases of chronic eczema, and still how rarely has he seen as a sequel hyperplastic malformation of the nails! Furthermore it should be emphasized that, in consequence of the last-mentioned cutaneous disease, we are not rarely liable to encounter conditions of the nails pointing, on the contrary, to a defective formation. Therefore we must admit that there must be, besides the immediate cause (cutaneous affection), some predisposi-



tion. In favor of this view is the fact that in isolated cases—*e. g.*, in eczema chron., psoriasis vulgaris—onychauxis arises even when the matrix of the nail is not implicated.

*Symptomatically*, hyperplasia of nail cells occasionally appears: 1. in neuropathic affections of a degenerative or irritative character, most frequently in spontaneous neuritis, neuralgia, chronic myelitis, traumatic lesions of mixed nerve trunks (glossy skin), and the like.

Furthermore, this alteration of the nails occurs: 2. after various chronic diseases, such as articular rheumatism, affections of the bones, ankylosis.

3. Partial hyperplasias appear after various ulcerative processes at the nail-bed, in which cases the remaining part of the matrix strives, as it were, to compensate for the loss.

*Symptoms, Course, and Termination.*—Nails altered in consequence of hyperplasia become noticeable in many ways. From a cosmetical point, they become conspicuous by their deformities. A thickened nail has lost its elasticity, and hence will not only not contribute toward enhancing the tactile sense, but, by the continual pressure exerted by the stiff unyielding plate on its bed, this sense is diminished and often even reduced to a minimum. How is it with gryphotic nails? Here the finger tip is either entirely covered, or else, owing to the upturning of the nail, it is unprotected and thus, together with the exposed nail-bed, prone to injury.

If the finger nails are affected with the disease, even in the mildest form, the person is unable to execute fine work, and where the enlargement is at all considerable, is quite incapacitated for work. Fortunately, onychogryphosis is very rare on the fingers. Where the toe nails are affected, walking is interfered with, and in advanced cases, altogether impossible. One of the most frequent and at the same time most unpleasant effects (inflammations and suppurations) is produced by nails enlarged laterally; if left uncared for, they penetrate toward the lateral groove, *i. e.*, grow in. We shall return to this form more fully in connection with the treatment of hypertrophied nails.

The fully formed nail retains the acquired deformity unchanged, inasmuch as it undergoes no transformation of tissue. Therefore, we shall have the prospect of regeneration of the after-coming portion of the nail, and of its gradually regaining a normal appearance, only when it is possible to remove the morbid agent before the matrix is irrevocably degenerated. Hence normal nails will be likely to follow hyperplastic ones when the cause has been furnished by psoriasis vulgaris, chronic eczema, lichen ruber, etc. On the other hand, there is little or no hope that onychauxis will ever cease after elephantiasis Græcorum or Arabum, as the causative factors can never be completely removed. The same is true when the matrix has been altered by mechanical influences to such an extent that regression no longer occurs.

The prognosis, therefore, depends on the possibility of removing the cause of the hyperplasia of the nail.

*Treatment.*—The object to be attained consists in rendering harmless the morbid product, and then in its removal.

If the nail is troublesome on account of its abnormal longitudinal growth, then this encumbrance must first be removed, for which the scissors will suffice in simple elongation. Only when the thickness is increased at the same time, resort must often be had to the cutting pliers and even the saw.

If the nail has enlarged in width, it will press on the lateral furrow to a variable extent, and when this is coupled with compression from the shoe, there will appear at first

great irritability of the soft parts; and later, inflammation, suppuration, great proliferation of granulations, destruction of the cutis, of the tendons, of the muscles, and even opening of the phalangeal joint, caries and necrosis of the bones—paronychia lateralis. Usually the internal angle of the great toe is implicated in this process, rarely the outside of the little toe, and hardly ever any other toe. Sometimes even children of from one to two years show symptoms of this affection.

The hyperplastic broad nail does not alone give rise to paronychia lateralis; the infolding of the edge of the skin by the shoe, laceration of the fold, traumatic lesions, and various ulcerative processes may likewise cause an affection which cannot be differentiated from that described, either in its course or termination.

On close inspection of a paronychia lateralis in its initial stage, we note the reddening, tumefaction, and heat of the skin. At the same time the patient experiences pain at the slightest touch. If the causative factor be removed, the inflammation soon subsides, and at most a disagreeable sensation is felt for a few days. When immediate relief is not obtained and the process extends, suppuration takes place, and there is formed either a true abscess, or a diffuse suppurating wound surface, offensive from the admixture of the decomposed secretion around it. In either case the inflammation may extend into the depth, and possibly destroy the subcutaneous connective tissue, muscles, tendinous sheaths, periosteum, and bone. In exceptional instances, with long-continued suppuration, there may be loss of the affected phalanx, and even of the foot in the case of cachectic dyscrasic persons.

Usually, however, the course is less violent. The process assumes a chronic, now and then exacerbating character, and may lead to extensively undermined, but rather superficial destructions by the burrowing of pus. Such a suppurating surface always looks very irritated, is uneven at its base, and covered laterally by irregular spongy, easily bleeding granulations. With lateral pressure on such an inflamed phalanx, pus comes to the surface from various points. Such a paronychia may last for years.

In the beginning of the affection it is generally sufficient to remove that part of the nail which threatens to grow in, besides putting into the groove fine threads of charpie, and ordering wide shoes to be worn in the future.

However, if the inflammation is intense, or if even suppuration and proliferation of the edge of the nail are present, it is advisable to employ the method of complicated lateral pressure. The portion of the nail projecting into the inflamed part having been removed, the swollen edge of the skin is carefully pressed downward, and the widened space thus gained at the furrow is filled with accurately inserted threads of charpie or cotton. In doing so, regard should be had that a part of the filling comes to rest under the sharp edge of the nail, in other words, that the latter do not come into direct contact with the irritated part of the skin. This done, stripes of adhesive plaster are wound around the ungual phalanx in such a way as to commence at the affected part from above downward, each turn being moderately stretched, so as to remove the border of the skin as much as possible from the edge of the nail, that is, to crowd it downward. This procedure, if performed with some skill, causes absolutely no pain to the patient, but eases his condition at once to such an extent that he can not only walk but even wear shoes. After twelve or twenty-four hours, the dressing is taken off, the foot bathed for a short time, and bandaged anew. If the patient has perseverance enough to continue this treatment scrupulously for several weeks, he has good prospects of being entirely freed from his trouble. Various authors add to the charpie some medicinal solution, caustic potash, camphor jelly, carbolic solutions, etc., and instead of the diachylon plaster use



emplastrum hydrargyri, aconiti, lithargyri fusci, etc. If greatly developed fungous granulations are present, they are cut away with scissors down to their base, and the bleeding points touched with silver nitrate or caustic.

In very exceptional cases, nothing remains but to resort to the radical operation of Dupuytren. For this, the pointed end of a pair of scissors is inserted under the nail as far as the limit of the affection; then the nail is divided into two parts, and, by firmly seizing at the anterior margin the one belonging to the diseased side with pliers, and drawing it vigorously forward with a twisting motion, the affected furrow is freed from its irritant. Then the wound surface is bandaged and treated according to surgical laws. Inasmuch as this operative procedure is always very painful, the patient must be anesthetized.

We must next endeavor to overcome the fundamental affection, and must therefore trace the etiological factors, which will not be difficult if the unguis phalanx is carefully inspected.

If an eczema exists which has extended to the unguis phalanx, this, too, will have to be treated on dermatological principles. In the first place, we must remove the cause of the eczema, and then treat it, if it be of the moist variety, with diachylon ointment, naphthol, salicylic acid, etc. In stubborn cases, I should strongly recommend vulcanized rubber stockings, gloves, etc., according to the seat of the disease. When eczema is present on the body, but not on the affected phalanx, an anti-eczematous local treatment will be of little use. We may then exhibit iron, which is well known to be very useful in eczema of the anæmic, chlorotic, dysmenorrhœic, etc.

In psoriasis vulgaris of the unguis phalanx, we must first of all overcome this affection by the usual remedies—tar, carbolic acid, chrysarobin, etc. Should the hyperplasia of the nail appear only symptomatically (in consequence of psoriasis), we must strive to master it by the use of arsenic.

In the case of the sequels of elephantiasis Græcorum, the hope of improving the after-growth of the nail is very slight. All our assistance will consist in keeping the affected part clean and removing injurious influences.

It will be almost the same with all those diseases associated with connective tissue and papillary hypertrophy at the terminal phalanges—pachydermia, ichthyosis, verruga, etc.—where, in the most favorable case, we shall be able to effect a temporary arrest of the exacerbation.

On the other hand, when the disease of the matrix and nail-bed is due to any form of syphilis, a great deal can be accomplished. During the papular stage, when weeping is present, it is well to apply chlorine water or solution of common salt followed by dusting with powdered calomel. If a change in the dressings is desired, we may employ solution of corrosive sublimate (0.1 : aqua destillata 25). The weeping having been relieved, strips of emplastrum hydrargyri should be wound around the affected part. This plaster, however, will act rapidly and surely also in syphilitic gumma, periostitis, and ostitis. Should spots of syphilitic degeneration on the phalanges give rise to the excessive nail formation, local sublimate baths (1 gm. for each bath) are to be particularly recommended. Besides this, gray plaster or, to make the ulcerated part more accessible, powdered iodoform.

Should it be some traumatic influence which causes the morbid change, we must ascertain its nature. If the shoe is at fault, we must see to it that it is neither too narrow nor too wide; it should be fitted to the form of the foot and allowance made for any special sensibility of the foot (Camper, la Forest). Where oft-repeated lacerations

at the furrow maintain the irritative conditions, they should be guarded against by frequent removal of the stiff cones of epidermis. Should the occupation possibly contribute to it (baker, carpenter, etc.), it is advisable to surround the end of the phalanx with soft wax.

## II.

*Defective formation of the nail*, atrophy of the nail, hypoplasia and aplasia of the nails. The absence of the nails (anonychia) or their retarded growth may be congenital or acquired.

On insufficiently developed fingers and toes we not rarely encounter, together with complete absence or defective development, mutilation and coalescence of the nails.

More frequently these conditions are acquired, and may affect the entire nail or only a part of it. They may appear, moreover, as the expression of a local or general disturbance.

*Etiology.*—As local causes we enumerate :

1. Trauma, which, under similar circumstances, produces sometimes hyperplasia, sometimes aplasia. Should the shoe press upon the bed of the furrow so as to narrow it, the nail-bed is lifted up like a wall and thus hindered in its activity. The result will be that only a thin plate is produced. Should there be at the same time a strong pressure backward from in front, a part of the matrix is placed out of function and even complete arrest of the nail-formation may ensue. The nail-formation at the affected part may also be hindered by a knock, blow, pinching, etc. I look upon the white spots, on the nails of children, artisans, and hard-working day laborers, as an insufficient cornification of the nail-cells traceable to mechanical influences.

2. *Thermic and chemical irritations.* High degrees of cold may cause even complete arrest of nail-formation. In the same way, a glance at the frayed-out, crippled nails in workmen forced to handle strong acids teaches us to what an extent the latter may damage the development of the nails.

3. *Inflammations associated with suppuration and ulcerative processes.* In suppuration of a part of the nail-bed, while it continues, the matrix being otherwise employed, there will be an arrest, and with degeneration of the tissue (panaritium), a permanent cessation of production. Hence we find, spread over a greater or lesser portion according to the extent of the process, either a narrowed nail, or one showing a circular or oblong loss of substance as if punched out, or complete absence of the nail. Adjoining this defective formation, pronounced hyperplasia is usually present. Henle has called attention to a peculiar atrophy of the nail in consequence of suppuration of the nail-bed and obliteration of the furrow.

Among the causes of retarded nail growth we mention the following constitutional disturbances :

1. *Every febrile condition.* In fever the increased heat is produced at the expense of the augmented transformation of tissue and hence the consumption is greater than the reproduction. But as this disturbance extends over all organs and tissues, the result is that, during the continuance of the fever, the elaboration of nail-substance is diminished or entirely suspended. A patient with a grave form of typhoid fever will certainly not be able to form nail substance, and this holds true of pneumonia, peritonitis, pericarditis, etc. When the febrile condition is associated with an exanthem or a cutaneous affection, the extension of the disease to the nail-bed will also play a part.

In temporary fever the defective formation of the nail can only be demonstrated by