inum knife. The Paquelin cautery will serve the same purpose.

Caustic pastes (Bougard, Felix, Marsden, etc.) act as the cautery does, by producing an eschar, and finally a slough. With caustics, however, the slough is apt to be more extensive than when the cautery is used. Hence the need for caution in using them.

Vaccination has been used in locations where an irregular scar is no objection. The slight bleeding need not be stopped, except by a temporary compress.

The injection of pure carbolic acid or the tincture of iodine is followed quite often by gratifying results. Little scarring remains, plugging of the vessels is rapidly obtained, and the operation is less painful and of shorter duration than when other methods are employed. The injection of a one-per-cent. solution of chloride of zinc is used for the same purpose. The perchloride of iron may be used by injection, or, as is frequently indicated in the more elevated growths, silk threads, saturated with the perchloride solution, should be passed in several directions through the nævus, and be allowed to remain until they are absorbed in the contraction, or else slough out.

Except in the case of small nævi, the treatment is never highly satisfactory, and the methods employed may have to be changed several times before the whole of the growth is removed. It is always well to impress upon the patient the necessity of perseverance in the matter.

Where the patient will submit, the use of repeated ignipuncture with the Paquelin cautery under a general anæsthetic will effect good results; otherwise the electric needle is of most service. A number of cures have been reported after long use of electrolysis. For extensive nævi of the capillary variety, multiple needles (as many as a dozen) attached to the negative pole of the galvanic current may be employed. This does not answer so well as the single needle frequently introduced. The amount of current required varies with the patient and should be regulated accordingly, a mild current being used at the start.

The technique of this operation is as follows: The patient should hold the sponge electrode and should turn on the current when the needle is introduced and turn it off when the needle is withdrawn; or, if he does not mind the greater painfulness of the procedure, he should keep the sponge constantly applied. The needle may be pushed in to a depth of at least half an inch below the surface of the skin and parallel with it, and it should be allowed to remain until a distinct eschar, in the form of shrivelled skin, shows itself along the line of the needle. This procedure is to be repeated at each sitting as often as the patient will permit. As this linear operation almost always leaves ridges as the ultimate result, it is probably better to introduce the needle simply at a right angle to the surface of the skin, leaving it in position until a small blister forms. Several such punctures should be made at each sitting, and they should be located as closely together as possible. At each sitting, for a few succeeding days, a new area should be selected, and then each area in turn, beginning with the one first selected, should be gone over a second or even a third time, until finally the region so treated presents the appearance of a white superficial scar.

For the cavernous variety of nævus the electrolytic method is not so well adapted. In the treatment of this condition by electricity the positive pole is supplied with a platinum and the negative pole with a gold needle, or *vice versa*, and both are introduced at once, deeply. The strength of the current is gradually increased to the limit of the patient's endurance, and is kept applied as long as possible.

In both varieties of nævus it requires months of treatment before any result is obtained, but usually the patient's endurance is finally rewarded.

Isadore Dyer.

[1] Foster: Encyclopedic Medical Dictionary.
[2] Unna: Histopathology of Diseases of the Skin, Walker's translation, p. 1128.

NAFTALAN is a greenish-black, soft, gelatinous material, with a slight empyreumatic odor, and consists of 96 to 97.5 per cent. of a peculiar Russian naphtha, purified and mixed with anhydrous soap. It is readily miscible with oils, fats, ether, and chloroform, and is insoluble in water, alcohol, and glycerin. Kolbl found it of distinct value in minor skin lesions such as urticaria, scabies, psoriasis, burns, and bee stings. Bloch considers it almost specific in burns, but in psoriasis not so good as chrysarobin. Several authors report good results from its use in chronic eczema, though it is not recommended in acute eczema, or when the skin is moist. Skin parasites are destroyed. It is applied as a thick coat and does not melt at body temperature (melting point, 70° C. or 158° F.).

W. A. Bastedo.

NAILS, DISEASES OF THE.—Terminology.—As the study of the nails demands its own vocabulary, it is necessary to define clearly the various terms which will be employed in this article.

The root or matrix is that part of the finger under the lunula from which the nail substance is formed.

The bed is that portion of the finger lying directly anterior to the matrix, which forms the floor on which the nail rests, but which plays no part in the formation of the nail.

The plate is what is commonly termed the nail. The lunula is the white, opaque, rounded part of the plate which lies over the matrix and under the eponychium.

The walls of the nail are those parts of the finger which lie along the sides of the plate.

The eponychium or "quick" is the horny layer which forms a selvage to the skin over the bed of the nail.

Pterygium is a forward growth of the eponychium over the plate.

Transverse or horizontal will signify the direction across the plate, while vertical will mean the direction from eponychium to free or distal border of plate, *i.e.*, the line in which the nail grows.

Anatomy.—The normal shape of the plate is convex both horizontally and vertically. The vertical ridges which appear on many nails in youth and adult life, and which increase markedly in old age, are due to the presence of the papillæ in the underlying bed of the nail. The color of the nails should be a delicate pink, due to the subjacent capillaries which transmit their color through the normal, translucent plates above. The plate is composed of flat, polygonal, keratinized, nucleated cells between which are air spaces. Wherever these air spaces exceed their normal size the plate becomes opaque and white, a condition which is called leuconychia. The lunula is white in color because the underlying matrix is not supplied with vessels. On the thumb the lunula appears distinctly anterior to the eponychium, but on the other fingers it does not extend so far forward.

The nail bed is not sharply marked off from the adjacent parts of the finger, there is never a clearly defined boundary, and the contiguous parts blend into each other. The lower layer of the bed merges gradually into the periosteum of the last phalanx without the interposition of the panniculus adiposus. The blood-vessels are arranged in an upper and a lower layer as in other parts of the skin, and the lymph vessels are well marked.

Embryology.—The nail arises from the ectoderm and makes its first appearance between the third and fourth months of fœtal life.

General Pathology.—Disorders of the nail may be symptomatic of general infections of the skin or of the body, or may be simply local affections.

Inheritance.—Diabetes, tuberculosis, cretinism, eczema, psoriasis, or epidermolysis in the parents have been known to cause marked disturbances in the nails of the child, while serious disturbances in the nails and hair have been a family dyscrasia for several generations (*vide* observations of Nicolle and Halipré in France and of the present writer in America).

Psychic disturbances are frequently the cause of nail derangements. Such examples have been recorded after "apparitions," severe lightning, hysteria, delirium, mania, overwork, or worry.

Disturbances of the nutrition are common causes, among which Heller mentions typhoid fever, gastric disorders, icterus gravis, infantile atrophy, pneumonia, anæmia, phthisis pulmonalis, erysipelas, epididymitis, severe angina, parotitis suppurativa, scarlatina, measles, influenza, gout, rheumatism, accidents, and childbed. These conditions are often followed by the appearance of transverse furrows in the nail plate.

Localized Nail Affections.

Anonychia or absence of nails may be congenital or acquired. The former origin is rare, but the latter is not uncommon, and loss of the nails is frequently observed after syphilis, injuries, chemical irritants, burns from *x*-rays, constitutional diseases, eczema, psoriasis, pus under the nail, ringworm, felon, paronychia, shock, hydroa æstivale, and ichthyosis.

Onychatrophia almost always results from the separation of the plate from the bed of the nail, a condition which usually follows any hyperkeratosis of the bed itself. Another source of separation is the invasion of blood after trauma or in connection with certain nerve diseases—for example, cerebral paralysis, multiple sclerosis, or tabes dorsalis.

Onychorrhexis.—This term is applied to the condition of the brittleness of the nail which follows decreased production of nail substance, and is usually associated with some trophic disturbance.

Onychauxis.—An increased growth of nail substance, and when associated with curving or hooking of the nail the word *onychogryphosis* is used. The etiology of this condition is somewhat obscure, but the deformity has been observed in connection with wounds, pressure of shoes, old age, deformities of toes, especially hallux valgus, syphilis, tinea tricophytina, central or peripheral nerve disorders, old tuberculosis, circulatory disturbances, such as thrombosis and aneurism, leprosy and confinement to bed.

The pathology of onychogryphosis was carefully studied by Virchow in 1855, and his description which follows remains the best to-day. There are three gradations in the formation of a truly gryphotic nail: First, the flat or plate shape; second, the conical form; and third, the perfected claw. At first the bed becomes shortened and the pulp of the last phalanx diminishes in size; the subungual vessels dilate and the stratum spinosum proliferates with the formation of abnormally high, transverse ridges, and an accompanying hypertrophy of the stratum corneum. These changes separate the plate from the bed, especially at the distal border, and the plate itself thickens, becomes yellow or dark brown in color, and shows on its surface overlapping transverse ridges. These ridges, of course, denote an intermittent process. The second or conical stage results from a continuation of the previous changes. The bed becomes deeper and forms a distinct transverse ridge, behind which the plate is almost perpendicular, yellow, translucent, and very hard; while in front it is opaque. The cells of the plate are no longer nucleated and apparently lose their boundaries. In the deeper portions of the bed the cells soften and blood finds its way into the intercellular spaces as in cutaneous horns. The third stage shows a still further advance from the normal. The downward pressure of the plate has caused an almost total disappearance of the bed. The ridge noted in the second stage has widened and the distal portion of the plate has become smaller; in fact, the last stage is one of atrophy. The resulting claw may grow simply downward or downward and backward, or in rare cases may assume the spiral curves of a ram's horn.

Leuconychia (leukopathia unguium, canities unguium).—The appearance of white areas in the nails follows three types, the punctate, the striate, and the total. Pathologically, we find this normal color due to the faulty production of nail cells with subsequent imbibition of air. This abnormality has been observed following wounds, trophic disturbances, relapsing and typhoid fevers, stimulation of nerves by electricity, and, rarely, congenital examples have been recorded.

Koilonychia, or spoon-nail, is the concave appearance which the plate assumes at times. This condition is usually the result of an underlying eczema, but may appear after other diseases, or without any apparent etiological cause.

Agnail, or hangnail, is caused by the drying up of the eponychium after insufficient nourishment. With the formation of the hangnail an easy entrance is afforded to bacteria, and in this way arise many of the syphilitic chancres and the more numerous cases of paronychia and of panaritium.

Hemorrhage.—The invasion of blood below the nail is usually traumatic in origin. A squeeze or a blow is followed by the bursting of a vessel in the bed or in the matrix; and when in the latter, the plate is sure to fall. The blood forms a clot between bed and plate, and if small, is usually absorbed while a large hemorrhage will often lift up the plate and produce subsequent atrophy or possible loss of the nail. Cases of vicarious subungual menstruation have been recorded, while other etiological factors in hemorrhage of the nail are scorbutus, morbus maculosus Werlhofii, tabes dorsalis, or the introduction of foreign bodies below the nail plate.

Trauma.—Wounds of the plate mean nothing serious to the nail, while similar injuries to the matrix always lead to scars which produce permanent deformities.

Unguis incarnatus.—Ingrowing of the nail is most commonly met with in males between the ages of fifteen and twenty, and is usually coincident with lack of care of the feet and the wearing of ill-fitting shoes, but flat-foot, wounds of the nail walls, and great convexity of the nail are other possible etiological factors. The first symptom is pain, followed by swelling and the formation of pus, and finally a granulating sore is produced, which shows no tendency to heal. Constitutional symptoms sometimes make their appearance, and finally the disease may result in necrosis; but this event is fortunately rare.

Subungual Tumors.—The presence of new growths under the nail is distinctly uncommon, but, according to Heller, cases of subungual corns or horns, fibroma, papilloma, leiomyoma, angiosarcoma, angioma, colloid sarcoma, exostoses, cancer, and enchondroma have been recorded.

Symptomatic Pathological Involvement of the Nails.

Onychomycosis tricophytina.—Ringworm of the nail is a rare condition, and is usually caused by the megalosporon. The disease first appears at the distal end of the nail and gradually spreads backward. The plant first attacks the bed, producing an opacity and discoloration of the plate, which usually assumes a whitish-yellow tint. As the disease progresses, the color darkens even to a brown, but never reaches black, as is so often the case in favus. Coincident with the progressive color changes the bed becomes more and more hyperkeratosic, the plate is raised more and more from the bed and shows transverse depressions, transverse elevations, or vertical ridges, and finally the plate itself is attacked and becomes rough on the surface, exfoliates in lamellæ, atrophies or splits, and is finally cast off. The disease is essentially a very chronic one, and even when properly treated requires at least two years for its thorough eradication. If left to itself, the plant has been known to remain active in the nail substance, even up to thirty years. The diagnosis is extremely difficult, for even although we have to our satisfaction excluded all other possibilities, the spores may elude the most diligent microscopical investigation—in fact, it is only when one has demonstrated conclusively the glistening, rectangular spores with rounded corners, five to seven micromil-

limetres in diameter, growing in chain formation that one can positively state that the disease present is ringworm of the nail. On the other hand, if the nail presents the clinical characteristics above enumerated and ringworm is present elsewhere on the patient's body, we have a certain right to assume that the nail is similarly infected. The treatment, although tedious, always triumphs in the end. It consists in the bi-weekly or triweekly cutting of the nail, and, in case the plate has been cast off, the curetting of the bed and subsequent painting with Lugol's solution or with acetic or pyrogallic acid.

Onychomycosis favosa.—Nails are apparently much more susceptible to tinea favosa than to tinea tricophytina. The clinical appearances of the diseases are quite similar. The plant attacks the distal end of the bed and produces an opacity and discoloration of the plate. The hyperkeratosis spreads backward and the plate is raised from its bed, becomes darker and darker in color, even to blackness, and its surface shows transverse depressions or ridges. Often the substance of the plate is attacked and assumes a honeycombed appearance, which soon leads to crumbling and splitting and final loss of the nail; or else the hyperkeratosic granules are extruded from the bed, leaving, as sometimes occurs in ringworm, a hollow space underneath the somewhat atrophied and brittle nail plate. The disease may be caught from domestic animals or from one's neighbors, and often occurs in two or more members of the same household. The Russian Jews seem to be particularly liable to infection, and in the writer's four hundred and eighty-five tabulated cases of nail diseases occurring during the last three years, his eight examples of onychomycosis occurred in this race. Histologically, one finds a thickened prickle layer of the bed, elongated papillæ, and an enormously hypertrophic horny layer in which the achorion Schönleinii appears. The fungus is not so abundant at the distal end of the plate as farther back, and its mycelium grows parallel with the cells of the stratum corneum. The process is much more chronic than in the scalp, and follows closely the characteristics of ringworm, both in its life history and in its treatment.

Diseases Caused by Animal Parasites.—This forms a class about which there is little to state beyond the fact that in extremely chronic cases the nail plates show slight changes. The chief diseases in this group are scabies, myosis, pulex penetrans, and plica polonica.

Ichthyosis and Xeroderma.—At birth, in severe cases, nails have appeared small, soft, and easily detached, with poorly developed nail walls. In older children and adults nails may show transverse depressions or vertical ridges, or may appear dull, very convex, or even gryphotic. Hyperkeratosis of the bed with gray or greenish discoloration of the plate and final loss are still further conditions which have been observed.

Elephantiasis Arabum.—The changes of nails in this disease are usually limited to the large toes where increased thickness, yellow color, and atrophic changes have been recorded.

Hyperkeratosis subungualis.—Although this is really a symptom rather than a disease, it should be considered here in order to gain a better knowledge of this important condition, which is so frequently met with in nail pathology. This lesion is strictly limited to the bed of the nail, and only after long continuance does the plate itself become involved, excepting its elevation and increase in convexity. This condition, therefore, illustrates well how little the plate depends for its nutrition upon the bed. The horny mass grows most abundantly at the distal end of the bed and constantly diminishes in height toward the matrix. Consequently the elevation of the plate is greatest near its free border. Unna describes the histological picture as follows: One sees extending into the horny layer papillary-like vascular processes which contain spindle cells and leucocytes. The prickle layer is thickened and passes without definite line of demarcation into the horny layer. A perfectly developed granular layer does not exist. The horny cells retain their nuclei and increase in size even up to the surface, and we note the same medullary processes which have been described in cutaneous horns. Swarms of cocci exist in the upper layers of the stratum corneum and exert a softening effect upon the adjacent cells.

Eczema.—The changes observed in this disease may occur in the nail walls, matrix, bed, and plate, and are produced by the same causes that bring about an eczema of the skin. The involvement of the nails before the age of twenty is distinctly uncommon—only six cases in the writer's one hundred and seven occurring before that age. The disease prevails all through adult life up to the age of seventy, when it diminishes in frequency. In the acute form the nail walls are red and swollen, the plate loses its normal convexity, pain is felt in the bed, the plate becomes rough, the lustre vanishes, discoloration is present, and soft spots appear in the plate which later form minute punctate depressions. If the cutaneous disease continues, the nail exhibits one or more of the following conditions: Transverse depressions or ridges, vertical ridges, hyperkeratosis of the bed with increase in the convexity of the plate, and subsequent disappearance of this granular detritus and thinning of the plate with increased brittleness, exfoliation of surface cells of plate, leuconychia, or finally total loss of the nail. If the matrix is affected, a deep transverse furrow may result.

The pathological changes consist in the formation of eleidin and horny matter with œdema and cellular infiltration about the vessels of the corium. The prognosis is decidedly good, and the treatment for the nail disturbances is the same as for the underlying skin disease.

Paronychia.—This is a very frequent cause of nail deformities, and consists in a severe dermatitis of the nail walls. It is an acute or subacute process, and usually occurs in women who wash dishes or scrub floors; but any individual who subjects his fingers to a constant irritation may develop this localized condition. The most common nail changes are discoloration, transverse depressions, and hyperkeratosis subungualis with its usual sequelæ. These consist of a lifting of the plate and subsequent discharge of the keratosic granules from the bed, leaving a flat, horny floor covered by a thin, dome-shaped roof. All the other alterations of the plate noted under the heading of eczema may appear in cases of paronychia, but the ones above mentioned are by far the most frequent.

Dermatitis venenata.—Under this title will be considered the acute cases of dermatitis which can be directly attributed to some noxious occupation or to some chance poisoning of the skin. Here the commonest symptom is koilonychia, which appeared in twenty-five of the fifty-eight cases recorded by the writer. Other frequent changes in the nail are round punctate depressions, discoloration, transverse depressions, vertical ridges, and hyperkeratosis subungualis with its usual sequelæ of separation from bed, thinning and brittleness of the plate.

The prognosis is good in paronychia and in dermatitis venenata of the nails, and the treatment consists in the application of soothing antiseptic washes and ointments.

Trauma and Felon.—These two accidents frequently affect the nail, and when they are of slight importance or do not involve the matrix, the results upon the nail are unimportant. When, however, the matrix is affected, then we have a permanent change which will reproduce itself as long as the individual lives. The commonest of these constant deformities are transverse depressions, vertical ridges, hyperkeratosis subungualis with its usual sequelæ, and discoloration. The more unusual changes are round, punctate depressions, thinning, exfoliation of surface of plate, increased convexity, brittleness, opacity, koilonychia, gryphosis, leuconychia, transverse ridges, vertical depressions, invasion of air into the plate with subsequent crumbling or total loss of the nail. Under this heading should be considered the results of persistent biting of the nails, which leads to shortening,

thinning, brittleness, and koilonychia, or to the production of transverse ridges or depressions.

Psoriasis.—The involvement of the nails in cases of cutaneous psoriasis is relatively much commoner than is the rule in eczema. The disease can also exist alone in the nails, but such a diagnosis is in truth a hazardous one. The condition is most frequently observed in men, and between the ages of twenty and forty. The simplest cases consist of round, punctate depressions in the plate, and Unna and Heller regard this symptom as pathognomonic of psoriasis; but the writer cannot agree with this position, as these lesions appeared in more than one-fourth of his cases of eczema of the nails. The commonest lesion in the writer's experience is a more advanced condition, and consists in the changes subsequent to hyperkeratosis of the bed, namely, a horny floor, partly covered by a short, thinned, broken, discolored, arched plate. This change was noted in fifty-seven per cent. of the cases. Two other common lesions are discoloration, which varies from yellow to dark brown, and transverse depressions, both of which occur in about thirty-eight per cent. of the cases. After these four deformities come, in the order of their frequency, simple hyperkeratosis subungualis, brittleness of the plate, thinning, opacity, vertical ridges, exfoliation, increased convexity, total loss of the nail, broken nail, koilonychia, disappearance of lustre, transverse ridges, and vertical depressions.

Pathologically, the psoriasic papules form on the bed, raising up the plate and allowing the air to be imbibed by the plate cells. This leads to opacity and discoloration. In the subungual corium there is great dilatation of vessels instead of the inflammatory œdema observed in eczema. The prognosis is almost always good, but there are severe cases of many years' standing in which the nails have completely fallen, never to return. The treatment, as in all nail disease, is the same as for the skin, only one must remember that Roentgen rays have an atrophic influence on nails and hair, while they exert a tonic action on undifferentiated epithelium, and for this reason one cannot expect the marvellous and rapid results which one often experiences after subjecting chronic patches of cutaneous psoriasis to *x*-rays.

With the completion of the descriptions of the last five diseases, the most important part of nail pathology is finished, for in my experience eczema, paronychia, dermatitis venenata, felon or trauma and psoriasis constitute nearly eighty per cent. of all nail affections, and instead of finding any lesions pathognomonic of any given disease, we note how constantly the same lesions appear in the different processes. This is certainly disappointing; but as we continue the study of diseased nails, we shall be more and more struck by the frequency with which the same lesions occur over and over again in entirely different processes.

Pityriasis rubra pilaris.—Here we may find transverse depressions, subungual hyperkeratosis with increased convexity of plate and onychauxis, yellow discoloration, vertical ridges, and depressions and hyperæsthesia.

Lichen ruber.—The nails become atrophied, light yellow brown, fissured and brittle at the free end, and uneven upon the surface.

Psorospermosis.—In this rare affection the nails are almost always involved, and show one or more of the following abnormalities: thickening, opacity, vertical ridges and depressions, fragility at border, hyperkeratosis subungualis with elevation of the plate, gryphosis, crumbling away, and final loss.

Alopecia.—During the last three years I have observed five cases of partial or total alopecia with bad teeth and diseased nails. The nails exhibited round punctate and transverse depressions, vertical ridges, or subungual hyperkeratosis with subsequent separation of the plate from the bed, discoloration, and brittleness. In mild alopecia areata, one occasionally finds vertical ridges and an increased brittleness of the plate, while in the severe cases of nervous origin the nails have been completely shed.

Pemphigus.—As a rule the disease is not accompanied by nail disorders, but when the exception is present we find atrophy and brittleness of the plate. When, however, a vesicle or bulla forms under the nail, deformities inevitably result, the commonest of which are hyperkeratosis of the bed, vertical or horizontal ridges, discoloration, thickening, crumbling, and loss. If a bulla occurs in the matrix the plate is always shed.

Epidermolysis bullosa hereditaria.—This condition usually leads to atrophy and exfoliation of the plate, but examples of gryphosis have also been observed.

Hydroa æstivale.—When a vesicle or a bulla forms under or near the nail, we must have a resulting deformity, and in one case I noted vertical ridges and loss of the plate.

Dermatitis herpetiformis.—Usually the nail takes no part in this disease, but when the vesicles form near the nail or the process affects the whole economy, then we find round, punctate, or transverse depressions, vertical ridges, exfoliation on surface of the plate, or invasion of air.

Scarlatina.—Nail lesions are not common, but transverse depressions and loss of the nails are symptoms which have been recorded.

Dermatitis exfoliativa.—In light cases the nails remain perfect, but when the general condition becomes severe, then the most marked disturbances occur in the nail, including round, punctate, or transverse depressions, hyperkeratosis subungualis, discoloration, opacity, gryphosis, or breaking of the nail.

Pityriasis rubra.—Heller mentions as concomitants of this disease thickness, opacity, fissuring, crumbling, separations from the bed, and gryphosis.

Dermatitis calorica.—In mild cases of dermatitis following exposure to heat or cold transverse depressions, discoloration, separation from bed, and onychauxis have been recorded, but in severe cases the nails fall.

Dermatitis from Roentgen rays.—As in the case of the skin the involvement of the nails usually occurs in the operator rather than in the patient. After repeated exposure to the rays, the nails show transverse depressions, often very deep, increased convexity, vertical ridges, discoloration, separation from the bed, crumbling of plate, and finally total loss of all nails which has persisted in one of the writer's cases for three years.

Scleroderma.—Heller records many accidents upon the nails as sequelæ of this disease. As will be seen by the subjoined list, the variations in degree and variety are unusually large: gryphosis, local asphyxia of bed, thickening of the skin of the bed, vertical ridges of the plate, transverse furrows and ridges, increased convexity, brittleness, atrophy, erosions of plate, and loss.

Atrophoderma.—In this rare dermatosis the nails often become influenced and exhibit vertical ridges, brittleness, atrophy, and vertical depressions, while in severe cases the lunulæ disappear altogether.

Vitiligo may exhibit at times lesions on the nails, and in my experience I have observed transverse depressions and leuconychia.

Pruritus.—With any of the pruriginous diseases the nails may become altered and show transverse depressions, vertical ridges, or even koilonychia.

Syphilis.—Syphilis of the nails is not common, and forms only about five per cent. of all nail disturbances in my observations. Like the general constitutional disease syphilitic manifestations on the nail may be divided into those resulting from the primary lesion, from the secondary eruption, and from the late changes of the disease.

A chancre on the nail wall is followed in a short while by a series of parallel transverse depressions with or without discoloration, or the change may be more intense and the plate will ulcerate and drop off in part or *in toto*.

The secondary stage of the disease shows itself usually in one of two ways: first, by the formation of a papule on the bed, and second, by a general moist ulceration of the nail. The formation of a papule on the bed is indicated by a red spot in the plate, which becomes yellow with the subsidence of the lesion. The plate over the papule becomes thinner and may even be broken, while the horny layer of the bed thickens, and as a result leu

conychia may ensue. The secondary ulcerations of the nail are the most frequent syphilitic manifestations, and the disease is characterized by the large number of the nails involved. The first signs are redness and swelling of the last phalanx accompanied by pain. The nail walls become affected and the epidermis is raised by fluid and finally ulcerates. Pus appears from the eponychium and from under the plate on the sides, and causes the plate to look yellow. Blood is imbibed by the plate cells and the nails become red and later black. Ulcerations appear along the bed, and as a result the nails fall. If the matrix is affected, nails may not be reproduced, or may grow again gryphotically deformed. The restitution of such nails is always a long and tedious task, and must be brought about by mild local antisepsis and prolonged general antisyphilitic treatment.

The nail lesion associated with late syphilis usually assumes a dry form, and has been termed scabrities unguium syphilitica or onyxis craquelé. At the root of the nail white, punctate depressions form in vertical series brought about by parakeratosis and acanthosis of the bed. These pathological processes prevent the formation of onychin, and as a result we find hyperkeratosis subungualis with its usual sequelæ, or a thickened, yellow, crumbling plate.

In hereditary syphilis Neumann states that the nails may assume atrophic forms and appear thin and brittle, or poorly developed.

Lepra.—In pure cases of lepra tuberosa nail changes are rarely met with, but in mixed types or in pure anæsthetic forms all degrees of deformities are encountered, extending from simple brown spots to gryphosis and permanent loss.

Variola.—Virchow states that if a pustule of smallpox appears upon the bed, the plate will show a yellow, sunken spot, and may eventually be cast off; and if such an accident occurs, the loss will be a permanent one.

Addison's Disease.—In this affection the nail lesions are practically pigmentary ones. The nails appear white on account of the general anæmia and deposit of pigment in the nail bed or brown streaks or universal darkening of the nails may appear.

Cutaneous Tuberculosis.—The nails show involvement only when the tuberculous process exists in the neighborhood of the nail walls. Transverse depressions and ridges, vertical ridges, discoloration, hyperkeratosis subungualis with its resulting deformities, *i.e.*, raising of plate from bed, increase in convexity of plate, casting off of granular débris, thinning and breaking of nail, and final loss, which in this disease may be permanent, are the lesions usually experienced.

Morbid Processes in the Nail in Connection with Non-Cutaneous Diseases.

Phthisis Pulmonum.—Hippocrates was the first to describe the increased convexity of the nails in consumptive patients, and thus the term Hippocratic is used to denote the high arching which often exists, both longitudinally and vertically, in this disease. Women are affected in this manner oftener than men, and as a rule the thumb nail is the first to show the change. After the thumb the frequency of involvement extends seriatim to the little finger. A plausible explanation of this phenomenon is given by Pigeaux, who says that the regions farthest from the heart are subject to œdema, which lifts up the matrix of the nail and causes elevation of the plate, while imbibition of this same fluid produces a thickening of the plate itself. The dilatation of the vessel causes the disappearance of the lunula.

Empyema.—Hippocratic nails have been observed in this disease also, but have disappeared with the subsidence of the purulent fluid.

Rachitis.—Esbach has noted a shortening of the last phalanx.

Carcinomatosis.—In all cachexias nails become softer, probably on account of the anæmia of the matrix, bed, and walls. Observers have recorded also leuconychia and onychorrhexis.

Heart Disease.—Here, as in consumption, circulatory disturbances are at work, and consequently blueness and Hippocratic nails with "drumstick fingers" appear.

Embolism and Thrombosis.—Observations upon these accidents to the fingers are decidedly rare, but Heller speaks of blackness, gryphosis, and loss as possibilities.

Diabetes mellitus.—The presence of sugar in the blood or the subsequent changes in the vessel walls and tissues, induced by the circulating sugar, may produce transverse furrows, brittleness, exfoliation, or complete loss of the nail.

Malaria.—Writers have noted the phenomenon that before the advent of the chill the nail turns to a pale blue or slate color.

Scorbutus.—In this disease hemorrhage is apt to occur under the nail, producing the variations in color due to oxidation and loss of the nail involved.

Chlorosis and Anæmia.—The lack of nourishment brings about paleness, thinning, and tendency toward koilonychia, while in pernicious anæmia a different class of disturbances have been noted, namely, thickening of the nail with subsequent fissuring and crumbling.

Gout.—Here again apparently opposite results may be reached. On the one hand, the nails may become thin and brittle or, on the other hand, vertical ridges and depressions may form together with elevation of nail from bed, with brownish discoloration and subsequent gryphotic changes.

Rheumatism.—This affection may attack the nails, causing transverse depressions, elevations of the plate with yellow discoloration, brittleness, or gryphosis.

Changes in the Nails in Connection with Diseases of the Nervous System.

Peripheral System.—Paralysis or wounds of cutaneous vessels produce trophic alterations in the nails. Hypertrophic changes cause thickening, vertical ridges or gryphosis, while atrophic modifications are thinning, cracking, loss, slowness in growth, discoloration, vertical or horizontal ridges, and opacity.

Neuritis of Internal Origin.—Here changes are less frequent than after wounds of nerves, but nevertheless writers have described loss of gloss, discoloration, transverse and vertical depressions, brittleness, and bending of the nail.

Morvan's Disease is frequently characterized by disturbances of the nails, such as thickening, blackness, hardening, and gryphosis.

Raynaud's Disease.—Mild cases of this condition may exist without changes in the nails, but in the severer examples we find vertical ridges and furrows, increase in convexity and thickening, hyperæsthesia, and possible loss. When the disease is accompanied by panaritium, then we find the usual results of shortening, bending, vertical ridges, and gryphosis.

Erythromelalgia is often accompanied by nail changes, among which have been recorded transverse furrows, yellow discoloration, thickening of the bed at distal end, bending and thickening of the plate, and loss.

Spinal Diseases.—*Tabes Dorsalis.*—A very frequent concomitant of this disease is loss of the big toe nail, which may fall repeatedly. This phenomenon is caused by trophoneurotic changes and by the invasion of blood between the bed and the plate. Other nail changes are possible, and examples have been recorded of brittleness, thickening, hardening, and transverse and vertical depressions.

Syringomyelia.—The almost constant presence of paronychia and of panaritium in this rare affection accounts for the frequent and severe involvement of the nails. Here we find brittleness, lack of lustre, cracks, thinness, exfoliation, and after panaritium gryphosis, atrophy, loss and stumps of nails growing at various angles.

Anterior Poliomyelitis.—In this disease instances of softening and loss of the nails have been recorded.

Injured Spine.—After such an accident I have noted transverse depressions and ridges and hyperkeratosis subungualis.

Multiple Sclerosis.—The nail changes in this affection are very similar to those observed in locomotor ataxia: namely, brittleness, pain, and invasion of blood between bed and plate, causing the loss of the nail.

Brain Diseases.—*Apoplexy.*—The possible deformities of the nail resulting from strokes of paralysis are vertical ridges, transverse furrows, increased arching, thinness and greater transparency, smallness, brittleness, koilonychia, ecchymosis of bed with subsequent loss, and gryphosis.

Psychoses.—*Dementia Paralytica.*—The changes occurring in this disease are quite similar to those following apoplexy, and may consist of increased transparency, vertical and transverse furrows, subungual hemorrhage, transverse ridges, yellow or brownish discoloration, and gryphosis.

Melancholia.—In the course of this disorder different observers have noted transverse furrows, increased thickness, and slowness of growth.

Functional Neuroses.—*Hysteria.*—Nail changes are seldom met with in this condition, but instances of lack of lustre, vertical and transverse furrows, exfoliation, thickening and roughness of surface, and final loss have been recorded.

Epilepsy.—Another disease in which nail disorders are rare, but when present they may include thinness, brittleness, deep transverse furrows, roughness of the plate, and subungual hemorrhage.

Neurasthenia.—In this disease I have observed discoloration and transverse ridges.

Nervous Shock.—As a result of such accidents patients have come to my notice with transverse depressions and ridges, thinning, discoloration, and subungual hyperkeratosis with its usual results.

Trophic Neuroses.—*Myxœdema.*—In my experience the only changes in the nails in connection with this disease have been those of vertical ridges and subungual hyperkeratosis and its resulting deformities.

Diseases of the Bones.—Fractures are often followed by discoloration, which varies from yellow to black, by transverse furrows and by slowness of growth of the nails.

Acromegaly.—This interesting process is almost always accompanied by onychauxis where the nail is enlarged transversely and vertically and appears flat, brittle, and lustreless with vertical ridges upon its surface. In addition to these symptoms I have observed discoloration and subungual hyperkeratosis, but have not observed the usual sequelæ of this condition.

Arthritis Deformans.—In this disease I have recorded vertical ridges and depressions, transverse ridges and depressions, discoloration, thinning, and brittleness and koilonychia.

Acro-arthritis.—In this somewhat allied condition nails have been shown me bearing round punctate depressions, vertical and transverse ridges, discoloration and hyperkeratosis of the bed with subsequent elevation of the plate.

Nails in Connection with Youth and Old Age.

The sucking of nails renders them soft and small, while advancing years produce vertical ridges and a tendency toward increase in size.

Keratosis senilis.—In conjunction with this disease I have seen round, punctate, and transverse depressions, leuconychia, and subungual hyperkeratosis with increased convexity of the bed.

Intoxications.

Heller records the following changes in connection with the use of poisons:

Arsenic may cause pain, yellow or brown discoloration, raising of plate from bed with eventual loss. Brooke and Roberts observed in the recent English epidemic of arsenical poisoning from beer abnormally rapid growth of the nails with transverse ridges and subungual hyperkeratosis.

Mercury rarely produces changes, but transverse furrows, blackness, thickening, and loss of the nail have resulted from the abuse of the drug.

Nitrate of silver may be deposited in the tissues and discolor the nail bed blue or gray. I have recently observed a very marked example of this condition.

Lead has been known to destroy the nails.

When one has read the facts enumerated and described in the preceding paragraphs, I think one must be greatly impressed by the similarity of symptoms resulting from the many diseases which may induce changes in the nails. This is the effect produced upon the writer, who at the end of three years' special study of these affections feels more than ever that the physician who states that he can make a positive diagnosis from the nails alone is making a rash statement. In closing this article the writer wishes to acknowledge his great indebtedness to Heller, whose unique book, "Die Krankheiten der Nägel," has been the model upon which he has based this article.

Charles J. White.

NANTUCKET, MARTHA'S VINEYARD, AND CAPE COD.—The islands of Nantucket and Martha's Vineyard and the southern district of Cape Cod are climatologically

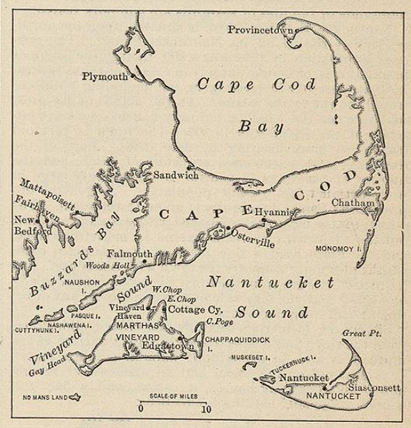

Fig. 3481.—Nantucket, Martha's Vineyard, and Cape Cod, Mass.

and structurally so similar, and are grouped in such close proximity to each other that it has seemed best in the present description to consider them under one head. Nantucket, as being situated farthest away from the mainland, is to be taken as the climatological type, its climate resembling most nearly the climate of the ocean as experienced on shipboard, of any island on the Atlantic seaboard from Old Point Comfort to the Grand Manan. The climatic attributes may be briefly summed up as follows: (*a*) as being at the ocean level the air contains the maximum amount of oxygen, aqueous vapor, and ozone; (*b*) it contains saline particles, *i.e.*, iodine and bromine; (*c*) it presents the most regular variations of barometric pressure; and (*d*) it presents the minimum diurnal variation of temperature. Other stations included in this article resemble it more or less nearly, according to their proximity to the sea and to modifying local conditions subsequently to be considered.