forms of epithelioma and to carcinoma of the skin. As an auxiliary phenomenon it occurs in various other processes, especially the so-called granulations, which we will discuss later among the chorioblastoses.

The term "papilloma" should be dropped altogether, since neither the warty nor the alveolar forms of akanthomata, individually or combined, can be designated by it. But we need not be too rigorous, and may apply the term papilloma in the future to cauliflower tumors.

In like manner, the term "carcinoma" is superfluous with regard to the skin, both from a histogenetic and histological point of view.

Moreover, the conception carcinoma, in general, is not a definite one, despite the sharp differentiation from sarcoma which Virchow attempted to make.

However, we may employ the term "carcinoma of the skin" when we wish to designate merely a certain group of alveolar akanthomata. These may be divided into two groups, one of which is characterized by marked cornification of the proliferating epithelial cells in the alveolar bodies (the cancer bodies of Waldeyer), in which manner the well-known laminated epithelial nests, horny layer nests, pearly bodies, cholesteatoma globes, etc., are produced. These should be called the true epithelioma of the skin (epithelioma keratodes of Waldeyer), while the other group in which this cornification is very slightly or not at all apparent, retains the name "carcinoma of the skin."

THE DEVELOPMENTAL ANOMALIES OF THE SKIN OF CONNECTIVE-TISSUE ORIGIN AND TYPE (CHORIOBLASTOSES.)

The developmental anomalies of the corium are characterized by the fact that the growth of the connective tissue in the diseases of this class does not reach the development of really higher types, but remains in an embryonal (cellular) stage, *i. e.*, presents a profuse proliferation of cellular connective-tissue elements, which persist as such (granuloma of Virchow).

These forms of developmental anomaly have a great similarity with a process which develops in the corium after inflammatory irritants, and also depends upon an abundant development of young connective-tissue cells, and is usually termed inflammatory granulation. This process, which terminates every inflammatory process in the connective-tissue layer, and constitutes the first stage in the restoration of wounds and ulcers, also presents some similarity clinically with granulomata. In the granulation of wounds we have to deal also with the formation of nodules from the connective-tissue elements, viz., the granulations of proud flesh, but this is a formation of atypical character with a regular outgrowth of the embryonal elements into bands of connective tissue, vessels, and nerves, and finally the formation of an epithelial covering over the corium which, at the most, has become more tense and devoid of papillæ. On the other hand, the diseases to which we refer now show similar processes, but in an atypical manner, inasmuch as the continuance of the embryonal character of the young new-formation becomes the prominent characteristic.

The diagnosis is evident if the other symptoms of the inflammatory process are sharply outlined, and, on the other hand, resolution of the inflammation occurs. But it has been mentioned heretofore that occasionally the inflammatory irritant is not recognizable distinctly, that furthermore the clinical signs of inflammation appear less sharply defined, that finally its course occasionally is a tedious one, inasmuch as the accumulated embryonal cells persist for a longer period in the tissues, and are only made to disappear by necrobiosis; in such cases the differentiation is indeed more difficult from the true granulations, as developmental anomalies of the connective tissue.

But another question arises: as is well known, the presence of bacilli in some of the

granulation diseases (as in leprosy) has been demonstrated with tolerable certainty; in others, as in syphilis, the infectious nature of the process and the probability of the circulation of a toxic substance in the economy cannot be denied. Under such circumstances, would it not be more logical to regard these features as the essence of the process, instead of the granulation due to the infection? Indeed the question might be raised further whether syphilis and leprosy should not be included rather among the acute infectious processes, such as scarlatina, measles, variola.

This may be answered as follows: Whether the infection is regarded as the essential feature of these processes or not, this much is certain that the injurious influence of the cause of disease must be sought in the fact that the development of the tissue elements occurs in an atypical manner. This it is which is known as syphilitic new-formation, etc. Irritative processes in Virchow's sense also occur, *i. e.*, those which bear the stamp of nutritive disturbances due to inflammatory irritants, but they occur only temporarily or constitute merely an introduction to the formative changes which develop gradually.

An anomaly of development is therefore the essential change which results from syphilitic and leprous infection.

I believe accordingly that we may retain these diseases in the class of developmental anomalies.

I now return to the general nosology of these granulomata, the first group of chorioblastoses, and will consider first those forms of disease included therein.

These are:

Lupus essentialis (idiopathicus) tuberculosus and erythematosus, scrophuloderma, tuberculosis of the skin, leprosy, syphiloderma, rhinoscleroma, granuloma fungoides; if the latter, as French writers now claim, should not prove to be a lymphadenoma.

The following features are common to all these granulomata:

1. They consist of small cellular elements, in an embryonal stage of development.

2. The point of departure and chief site of the granulation new-formation are exclusively the tissue of the corium.

3. The small-celled granulomata appear in more or less sharply defined spots which may be recognized externally by the formation of nodules. These nodules have a dark brownish-red color, firm consistence, often coalesce into flat elevations.

4. They undergo retrogression, inasmuch as they either break up, become cheesy, suppurate, ulcerate, or atrophy without having undergone a loss of substance, and then leave cicatricial depressions.

5. These processes are generally chronic. Many granulomata are distinguished by the high degree of resistance of their cellular elements to necrobiosis. These qualities are not possessed by all granulomata at every period; but they may be possessed or acquired by all, whatever the source of the infiltration has been.

The description of the histological appearances must be reserved for the special part of this work, and I will confine myself here to the following points.

Upon a section of lupoid infiltrated parts, there are found in the tissue of the cutis—embedded between the bands of connective tissue, the vessels and glands—accumulations of cells (granulations), partly in the form of isolated islets, partly scattered over larger surfaces, chiefly around the vessels and lymphatics. Some of these masses frequently present the giant-cell arrangement, *i. e.*, one or more layers of wandering cells which inclose epithelioid-cells in a reticulum which probably starts from the vessels, and in which are situated one or more giant-cells.

Various views obtain concerning the interpretation of the above appearances, *i. e.*, concerning the origin of the cellular elements in general and the giant-cells in particular.

Thoma, and with him Thin, maintain that the lupus elements are white blood-globules which have escaped directly from the vessels, while Lang describes appearances which represent an outgrowth and vitreous degeneration of the walls of the vessels themselves. Jarisch recently has again defended the original cellular proliferation theory and has depicted the gradual transformation from fixed connective-tissue cells into a meshed tissue and then into lupus elements.

It has been proven with regard to the giant-cells that they occur not alone in lupus and tuberculosis, but also in other cellular new-formations, in the later stages of syphilis, in scrofulous proliferations, etc. It is still a disputed question whether these giant-cell formations have been produced by the coalescence of granulation cells, whether they are exuded from the lymphatics or the blood-vessels, whether they are the result of a process of development or retrogression.

The clinical relations of the various granulation tumors to one another may be expressed as follows:

There are granulomata of the skin which possess a clinical and anatomical course similar to that of lupus and the connection of which with syphilis is undoubted. These may be termed syphilitic lupus. This is also true of decidedly scrofulous proliferations in the form of nodular infiltrations. Finally, there is one form of such infiltrations, concerning the etiological factors of which we are entirely in the dark. Hereditary and acquired syphilis may be excluded in such cases; neither glandular enlargements nor other symptoms point to the condition known as scrofula, and tuberculous infiltrations cannot be found; there can be no question of leprosy. And, nevertheless, the well-known infiltrations appear and develop steadily in the skin of such children who otherwise are apparently healthy. We speak of lupus in such cases, but its characteristics, as opposed to the other forms of granulomata, reside less in the clinical and anatomical signs than in the absence of a definite etiological factor. This lupus is nothing more than a granuloma with very marked persistence of its elements and very chronic course, the causes of which are unknown; this is the lupus vulgaris, simplex, idiopathicus of Willan.

But although in many cases of lupus true scrofulous deposits in other tissues are absent, nevertheless very good observers recently have laid stress upon the relations of lupus to tuberculosis and scrofula. The common argument that lupus occurs in otherwise healthy individuals is considered of slight import, for example by Volkmann, who points out "that frequently severe chronic diseases of the joints and bones—which present not merely the clinical peculiarities of scrofulous morbid processes, but in which amputation or resection is followed by manifest tubercular deposits in the synovial membranes or even in the medullary tissues of the bones—occur as the sole disturbance in otherwise perfectly healthy individuals, . . . furthermore, that mixed and transitional forms between lupus and manifest tuberculosis of the skin and mucous membranes occur, and that lupus of the tegumentary coverings develops occasionally from tuberculosis of the bones or lymphatic glands."

It is evident that the relationship of lupus of vulgaris to tuberculosis and scrofula is not denied to the same extent as formerly.

The second group of chorioblastoses is distinguished from the first, the granulomata, by the fact that they constitute heterotypes rather than paratypes, *i. e.*, there is an abnormal outgrowth of the connective-tissue elements, but within the bounds of well-known higher forms of development and types of tissue. I apply to them the term desmomata of the skin. They include:

Fibromata, with predominant development of the connective tissue of the cutis and subcutaneous tissue into fibres and bundles of fibres.

Osteomata, with predominant development of osseous tissue.

Chondromata, with predominant development of cartilaginous tissue.

Lipomata, with predominant development of fatty tissue.

Myxomata, with predominant mucoid degeneration.

Hyalomata and colloidata, with predominant hyaline (vitreous, colloid) degeneration.

Xanthomata, with predominant fatty degeneration.

Myomata, with predominant development of muscular tissue.

Neuromata, with predominant development of nervous (?) tissue.

Angiomata, with predominant development of vascular cysts.

Sarcomata, with predominant development of cell forms in an atypical condition.

More detailed consideration of these tumors must be left to special pathology.

Brief mention must be made of those anomalies of development which are characterized by atrophy or congenital defective development of the connective-tissue layer. This includes those changes due to age, and also a probably congenital general atrophy of which previous mention has been made, viz., liodermia essentialis.

The senile changes in the skin are confined to a wasting of the tissue of the cutis, which must be termed shrinking, finely granular opacity, and vitreous (hyaline) swelling, or "morphœa" (E. Wilson). In the epidermis, however, it may result in wart-like growths (irregular cornification), also in atrophy of the hair follicles and increase of pigment. The latter appearance is also peculiar to essential liodermia and is merely the constant pathognomonic expression of irregular atrophy of the skin.

THE MYCOTIC DISEASES OF THE SKIN.

The diseases caused by vegetable parasites, the dermatomycoses, are distinguished from the others by their peculiar development and course. I will not enter into any details concerning them.

In contradistinction to animal parasites, which also act as disease-producers upon the skin, I would point to the fact that the character of the diseases in question resides in the deposit of the parasite itself, and that the former disappears with the removal of the latter. This is different in the case of the zooparasites, which are partly, as for example, body-lice, not found upon the skin at all, or only accidentally after the removal of the impregnated clothing, while the disease proper—a superficial form of inflammation—may develop later.

In this category are included the diseases of the skin produced by vegetable organisms, which are divided into four groups: mycosis favosa; mycosis circinata (tonsurans, herpes tonsurans or ring-worm, eczema marginatum); mycosis pustulosa (including parasitical sycosis, impetigo parasitaria) and mycosis furfuracea (pityriasis versicolor).

II. GENERAL SEMEIOLOGY OF THE SKIN. ANTHEMATA AND SYNANTHEMATA THEIR DISTRIBUTION ON THE SKIN.

It is one of the most important objects of dermatology to recognize clearly those elementary changes in the general covering which constitute the basis of the complicated forms, to examine their pathological and anatomo-pathological significance, to define them accurately, and finally to mention the part played by them in the forms of disease themselves.

For this purpose we will discuss the subject analytically, and will present first the

most simple or elementary changes in the skin from a purely morphological standpoint.

We would propose the retention of the term exanthem for the production of a "skin eruption" over the entire body in the dermatology of all languages; and that their elementary forms be termed "anthemata," and finally that the groups which constitute the connecting link between anthemata and exanthemata, be called "synanthemata."

It will not be superfluous to call attention to the fact that these should not be mistaken for the diseases themselves, and must therefore be strictly defined. For example, we may not use the expression "nodules" or "papules" as synonymnous with "lichen;" or employ the term "vesicle" indiscriminately for "herpes." Nor may we speak of lichen or herpes, without further addition, as diseases. When nodules or vesicles of a definite and determined character and origin, are collected in groups, this results in a lichen or herpes. But this lichen or herpes is not yet the expression of a definite morbid process, but merely of a definite character and arrangement of the primary lesions, which may occur in various diseases. Only after the appellation of such a synanthem, for example, lichen or herpes, has been defined nosologically more distinctly, as is done best by the addition of an adjective, may it serve as the name of a disease, for example, lichen ruber or herpes zoster. If we do not wish to go to the length of avoiding all such terms entirely (which would meet with practical difficulties), nothing remains but to define their limits, and to employ them in a corresponding manner.

At all events I may maintain that the distinct recognition of, and adhesion to the following definitions will spare the student the laborious groping in the labyrinth of the previous nomenclature, will render study much easier, and will also appear to the advanced dermatologist as a suitable measure for the removal of the confusion which still predominates.

In the following remarks we will enumerate the morphological primary forms of skin disease, and will place in their appropriate positions the simple anthemata, and, in association with these, the synanthemata which are composed of one or more varieties of the former:

Spots (maculæ) are changes in the color, density and consistence of the surface of the skin without essential change in its elevation. Such "spots" may arise:

1. From congestion, hyperæmia. They are known in dermatology as "erythema" and "roseola." These spots, which always disappear under the pressure of the finger, are merely the expression of an excessive amount of blood within the vessels of the skin. When inflammatory œdema is also present, they are occasionally slightly elevated (erythema papulatum), and then present a faint yellowish color.

The congestive spots may be due to arterial fluxion, and then are bright red; or they arise from venous distention, and their color is then bluish-red, cyanotic. Such erythemata are known as roseolæ, when they are the expression of an exanthematic general affection, for example, in typhus and syphilis. The erythematous rings which develop ordinarily around spots of inflammation are called areolæ, halos.

2. From the passage of the coloring matter of the blood into the skin (hæmatochroses, hæmoglobinorrhœa). These spots occur in the form of yellowish, yellowish-white patches, as the result of incomplete mechanical venous stases.

3. From the passage of the coloring matter of the blood, together with blood-corpuscles. These extravasations are known as vibices when they occur in the shape of streaks, as ecchymoses and petechiæ when they are punctate. They may occur as complications of simple inflammatory and angioneurotic processes (hemorrhagic erythema), in simple and papulous purpura, or as hemorrhagic suffusions in erythema nodosum. If a dyscrasic basis predominates, these extravasations usually are called petechiæ.

4. From the more marked development of the blood-vessels of a region of the skin, usually under conditions which produce venous stasis, occasionally with coincident thickening of the walls of these vessels. This includes partly congenital changes—vascular nævi, birth marks—partly acquired ones. The latter are called teleangiectases, if they are confined to the vessels themselves; but if this is associated with chronic congestion or inflammatory œdema of the surrounding skin, they constitute the symptomatology of erythema angiectaticum, the acne rosacea of authors.

5. From changes in pigmentation (parachromasiæ). These occur:

a. As the remains of previous changes in the skin, especially inflammatory and hemorrhagic processes in the form of patches which are at first bluish-red, then greenish-yellow, then brown.

b. As excessive accumulation of the normal coloring matter (hyperchromasiæ), either of the normal yellowish-brown pigment scattered in the lowermost cell-layer of the Malpighian network, or in the tissue of the corium; either congenital as nævus spilus and pigmentosus, or acquired, as chloasma, lentigines, ephelides.

Or of black pigment in melanosis cutis and certain diseases of the internal organs or the entire organism in the cachexia of malarial fever, argyria, Addison's disease, finally in tattooing of the skin.

Or of yellow (bile) pigment in biliary effusions into the skin with jaundice.

Finally, this class includes the accumulation of a yellowish (sulphur yellow) mass in the skin, the character of which has not yet been determined; in xanthoma (xanthelasma, vitiligoidea).

c. As the absence or disappearance of pigment (achromasiæ), either congenital as albinismus totalis and partialis, or acquired as vitiligo, leucodermia. Such a loss of color in the skin occasionally is called "morphœa" by writers, especially when the spots are round, and surrounded by a violet rim.

As a rule, the patches previously mentioned are circumscribed, and the following changes are distinguished by more diffuse plaques or regions which are not distinctly circumscribed, or at least, merge readily into one another, and are of larger size, but always flat. The term "patch" is applicable to them only in part. They are usually the terminal forms of pathological processes upon which they impress their stamp so strongly that they may be placed in the same line with the morbid processes themselves.

These include: 6. liodermia, also called glossy skin. The skin appears thin, smooth, tense, less elastic, shining, slightly reddened, and usually somewhat drier. This change occurs most frequently as the result of neuritic processes; also from unknown, but probably congenital causes. The latter disease has been described by different writers under various names. Finger has also described a "liodermia syphilitica."

7. A condition of dryness and loss of gloss in the skin, which is caused by diminished secretion of the sebaceous or sudoriparous glands. This condition I term xerodermia. When due to diminution of the secretion of sweat, it is observed especially in the palms of the hands; in other parts of the skin, when it is due to diminished secretion of sebum, an increased desquamation of dry scales is usually present.

The term pityriasis is applied to the increase of the normal desquamation in the form of constantly produced branny scales, constituting an abnormality of cornification (keratolysis).

Pityriasis occurs only in two forms: as pityriasis simplex or alba, a simple keratolysis, which is independent of the sebaceous glands, and as pityriasis rubra (essentialis), also described by recent writers as "dermatitis exfoliativa," which is an independent morbid process of the entire skin of hitherto unknown origin.

8. Finally, this category includes the board-like and lardaceous œdematous infiltration of the skin, viz., dermatosclerosis or sclerema of the skin, which must be attributed to a general process of stasis. This terminates usually in an atrophic condition similar in appearance to liodermia.

Papules are elevations of the skin above the surface, which contain no free fluid, *i. e.*, accumulation among the prickle-cells of the epidermis. They are produced under various conditions:

a. By inflammatory processes in the skin. Such papules constitute larger or smaller circumscribed elevations, which are not connected necessarily with the follicles, but are produced by serous infiltration into the epidermis cells themselves; they are more or less of a bright-red color, solid, and either pointed or depressed at the middle. Central depressions are observed when the excretory duct of a follicle terminates accidentally or pathognomonically (in acne or sycosis) at the top of the papule.

b. By excessive cornification of the layers of epidermis lining the sheaths of the roots of the hair and an accumulation of the horny layer at the point of transition of the follicle into the surface of the skin. If marked hyperæmia is present in the cutis at the same time, the papules will have a reddish color; if the hyperæmia is absent, or there is more marked formation of scales, a whitish color. They are not converted into vesicles and pustules like the inflammatory nodules.

c. By an elevation of the hair-follicles, especially the downy hairs of the skin, as the result of muscular contraction or contracture. This includes the colorless nodules of goose skin and prurigo.

In this class may be placed most appropriately the synanthem which is commonly termed "lichen."

In the definition of papules given above, we have stated that the second form is distinguished from the others by the fact that they are produced by an accumulation of the epidermis stratum at the mouths of the hair-follicles, and are not converted into vesicles and pustules. The differentiation of this group from the others is necessary, and the term lichen in the dermatological vocabulary is commonly employed for such diseases the nodules of which develop from an accumulation of epidermis. This use, however, has been subjected to the most confusing abuse, and the term lichen is applied at times to diseases, at times to the formation of individual nodules. For example, in order to indicate that certain nodules are isolated in any disease, we speak of lichen disseminatus; to express a suffusion with blood, of lichen lividus, etc. In order to check this confusion, we will retain the term "lichen" as a synanthem, but under the above definition will contrast it with:

a. Inflammatory papules of a red color, which are often transformed into other primary forms (vesicles and pustules, wheals). This includes "lichen urticatus" (inflammatory nodules with an œdematous areola), "lichen tropicus," and "agrius" of Willan, which are merely forms of eczema, and "lichen lividus" or "hæmorrhagicus" of the same author.

b. Non-inflammatory and non-red nodules of prurigo, which likewise are not converted into vesicles and pustules, and which I attribute to the contracture of the musculi arrectores pilorum.

The term "lichen" may be applied properly to lichen pilaris acquisitus, lichen pilaris congenitus (ichthyosis sebacea), lichen ruber of Hebra, finally lichen scrofulosus.

Tubercles are those nodules which are produced by cellular infiltration of the cutis (granulation). The small or large size may not, as heretofore, be considered decisive with regard to the term papule or tubercle, since the elevations of lupus, which have long been known generally as tubercles, are distinguished by their small size so long as they do not coalesce. The differences in the anatomical and pathological characteristics of both forms constitute a sufficient reason for their differentiation.

The term "granuloma" or "granulation tumor," introduced by Virchow, is really a purely anatomo-pathological one for an infiltration of the cutis with cells which remain in an embryonal stage. It would be desirable to form a transition stage between the tubercle, the primary lesion of these forms of infiltration, and the developed morbid conditions such as lupus, syphilis, tuberculosis of the skin. The tubercle does not persist as a pure elementary form, but from it are developed a series of complicated transitional formations.

These transitional formations may be called granulations or granulomata, *i. e.*, cellular infiltrations of the cutis without special individualization into diseases. Wheals (pomphiges, urticariæ) are solid elevations above the surface of a flat shape, from the size of a pea to that of a dollar, often confluent; they are produced by œdematous swelling as the result of angioneurotic irritation. Morphologically, they constitute flat elevations of a round, oval, or irregular shape, which are usually pale in the middle, and grow redder towards the periphery. Here and there are observed white (anæmic) areolæ around red wheals. The individual wheals develop and disappear rapidly, and leave no traces of the local process. They are associated generally with violent pruritus, and are observed most frequently in urticaria.

Vesicles are elevations above the surface, containing a free accumulation of serous fluid.

It was explained above that this form of anthemata could be produced by the inflammatory process, as well as by the mechanical separation of the horny layer of the epidermis by fluid coming from below. Vesicles of the latter kind have been called akantholytic vesicles, and thus contrasted with inflammatory vesicles.

Occasionally the vesicles of both kinds have hemorrhagic contents; they may be large or small, tense or loose, of shorter or longer duration; they may remain isolated or coalesce. They are either converted into pustules (the inflammatory ones) or their covering bursts and leaves a spot which is still covered with the youngest layer of rete cells, and readily acquires new skin, or they give rise to an erosion in which the papillæ are laid bare, and over which the entire epidermis must be newly formed.

By the term "herpes" is meant the development of inflammatory vesicles (vesicles, pustules) in groups, with an acute and cyclical course. We retain the term herpes as a form of synanthem, *i. e.*, as an intervening link between individual efflorescences (vesicles) and forms of disease, and the individuality of the latter may be readily retained by the addition of some adjective.

By a strict adherence to the above definition, a differentiation may be made readiiy between the vesicular formation of herpes and

a. The non-inflammatory, akantholytic formation of vesicles in chronic pemphigus.

b. The non-cyclical formation of vesicles, which do not occur in groups, in various simple, inflammatory processes of the skin; for example, in eczema, the stigmatoses, etc.

c. The chronic formation of vesicles as the result of of dyscrasic processes, for example, syphilis.

The term herpes, as a synanthem form, is then retained for the following processes:

a. For the acute inflammatory formation of vesicles, occurring in groups and running a cyclical course, in herpes zoster.

b. For the acute inflammatory formation of vesicles, occurring in groups and running a cyclical course, in the diseases known as herpes præputialis, progenitalis, facialis, phlyctænoides.

c. For the acute inflammatory formation of vesicles and pustules, occurring in groups and running a cyclical course, in erythanthema neuriticum, toxicum, and essentialis; finally, the herpes impetiginosus, first described by me, which etiologically is still undetermined.

Pustules are elevations above the surface with purulent contents accumulated free

in the epidermis. They always develop from vesicles, and, therefore, indirectly from papules of an inflammatory character. Their anatomical structure has been discussed above.

The term ecthyma is applied to an eruption of large pustules, each of which is situated on a hard, elevated, red base, and terminates in the formation of dark, hard, greenish or dark-colored crusts, and then in the development of new skin.

This pustular formation, upon the basis of stasis, occurs in all cases in which the conditions produce, on the one hand, incomplete stasis, on the other hand, inflammation; most frequently, therefore, when an obstruction to the return flow of blood, produced by constitutional or mechanical causes (heart disease, varicosities from mechanical causes), is present, and in addition, inflammatory irritants act upon such parts of the skin.

Under the term erythanthema I refer to all those symptom-groups upon the skin which are characterized by the combination of various primary forms, such as nodules, vesicles, pustules, wheals, which occur with a variable arrangement upon a reddened (inflammatory) base.

Observation teaches that the same morphological combinations may occur as the result of causes directly known to us, as a result of angioneurotic irritants (toxic medicinal exanthemata) and also of neuritic processes.

The erythanthemata are referred to in the nosology, according to the cause of disease, as erythanthema essentiale (Hebra's erythema multiforme), erythanthema toxicum, and erythanthema neuriticum.

With the primary and elementary changes in the skin here mentioned, are associated a few more elementary forms, which, in part, are simple, direct effects of mechanical injuries, in part are the sequelæ of these primary lesions, their terminal stages of development, or their remains, and are called secondary efflorescences.

To this class belong:

The erosions (less properly excoriations), fissures and rents (rhagades), and ulcers. These three forms of loss of substance may arise from the most varied mechanical, chemical, or pathological processes. They are distinguished from one another merely by the depth and form of the losses of substance. Of chief importance is the circumstance whether the epidermis alone, and then whether the horny layer or the prickle layer has been affected by the lesion. Either superficial redness without a solution of continuity is produced, or a destruction of the upper skin in the shape of a circle or line with exudation of blood-coloring matter, or even of serous fluid or blood in substance, if the irritant has acted as far as the papillary layer. Rhagades, fissures with steep edges, may arise in this manner if the horny layer is especially thick or very tightly drawn (palm of the hand and skin of the external ear) or deep erosions may be produced. If the injury has destroyed in part the papillary layer itself, even deeper losses of substance occur with subsequent formation of cicatrices. Ulcers of the skin which naturally heal by cicatricial development alone, constitute a variety of such losses of substance which occur in morbidly changed tissues and constitute the terminal stage of their retrogressive metamorphosis.

Scales (squamæ) are the lamellæ of the horny layer which are loosened from the epidermis. This occurs physiologically in the form of small branny plates because new cells of the younger layer are constantly undergoing cornification and casting the old ones off. If this shedding process increases, we speak of scaling or branny scaling when smaller plates, and of desquamation when larger white plates of the horny layer are cast off. The first variety occurs in the disease known as "pityriasis," the latter as the

terminal stage in the superficial inflammations of the skin. Occasionally the cast off scales, which are still adherent to the surface of the skin in larger pieces, form hillocks like those found commonly in psoriasis.

Crusts and scabs are those secondary products of disease which are produced by the drying of pathological fluids excreted upon the surface of the skin. If they consist of pure serum, they have a darker, more brownish color; if there is an admixture of pus, a lighter bright-yellow to honey color, and from admixture with blood they are colored dark to blackish. They first constitute soft, then harder, inelastic friable masses. They may be more or less firmly adherent to the base.

Scars (cicatrices) are new-formations formed of band-shaped connective tissue, which appear in the site of losses of substance, when these have extended into the tissue of the corium. They contain vessels and nerves, but no glands and hairs, and the papillary shape of the surface is absent. Their coloration, from the most delicate white and rosy red (especially while they are young) to dark pigmentation, depends chiefly upon the distribution and depth of the new-formed vessels in them.

The forms of anthemata and synanthemata, just described, have long attracted the attention of pathologists by a form of arrangement, spread, and distribution indicative of a certain amount of conformance to law.

As a rule, the elementary lesions represent various figures: circles, segments of a circle, ellipses, biscuit shapes, concentric circles with or without a punctate centre. In addition, lineal figures may be constructed readily in each exanthem as the connecting lines between the individual anthemata, which have a fixed direction for each region of the body, on the back parallel to the ribs, lower down more horizontal, on the shoulders as circular girdles, on the neck or the upper part of the chest converging towards the manubrium of the sternum, in the groins parallel to Poupart's ligament, on the thighs parallel to the sartorius, etc. (O. Simon).

Another important feature is the very frequent symmetrical arrangement of the anthemata.

This symmetry finds its most frequent expression in the simultaneous occurrence of efflorescences upon both arms and both lower limbs, as well as on definite parts of the same; for example, both palms of the hands and soles of the feet, both elbows on their flexor and extensor surfaces, similarly on both knee-joints, both axillæ, both sides of the chest, neck and scalp. Symmetry is manifested likewise between the flexor and extensor aspects of the upper and lower limbs, the ankle and wrist joints, the legs and forearms, elbows and knees, arms and thighs, axillæ and groins.

However, there are other diseases in which the non-symmetrical arrangement is the rule; for example, in herpes zoster and nævi.

Certain other forms of regularity in arrangement also occur, such as the formation of geometrical figures in many efflorescences, furthermore the apparently linear arrangement along the ribs of efflorescences on the chest and trunk, the circular arrangement around the umbilicus; finally a certain kind of juxtaposition and development alongside of one another in certain circular anthemata, so that two scaly circles which touch one another at the periphery, for example, in psoriasis, instead of presenting doubly marked contours at these points, entirely lose their previous shapes and terminate in the formation of biscuit shapes, etc.

In attempting to explain these facts, a series of anatomical investigations and experiments upon the skin have been partly made directly for this purpose, partly utilized

in this direction. An unbiassed view of all the observations at our command teaches that the actual demonstration of a connection in the distribution of the anthemata with the branches of the nerves of the skin is afforded in but few diseases, viz., in herpes zoster and in leprosy, as well as in those other diseases which we have classed together as neuritic dermatoses. The proof has long been furnished that linear tracts assume a different direction in different parts of the body and that this direction depends upon the conditions of tension of the skin and subcutaneous connective tissue, the latter in turn upon the direction of the fibres of the connective tissue in and below the integument of the part in question (Langer).

This regularity is at the same time an expression of the general laws of development of the body, which occurs on the one hand in the direction of greatest tension, and on the other hand is dependent upon the points of fixation of the fibres upon the bones and fasciæ.

In addition to the direction of the fibres of the connective tissue and the varying tension of the skin produced thereby, the position and direction of the main trunks of the nerves and blood-vessels, and even the arrangement of the glands depend upon the same laws.

We may say, therefore, that the law of arrangement and distribution of the anthemata upon the skin, in accordance with the general laws of development of the human body, depends upon the direction of the connective-tissue fibres and the tension of the skin, but not upon the trunks of the nerves and vessels, the position and direction of which themselves depend upon the fibrillation and tension of the growing layer of connective tissue.

III. GENERAL ETIOLOGY OF DISEASES OF THE SKIN, THEIR RELATIONS TO THE GENERAL ORGANISM.

The general integument is distinguished from the other organs of the body by the fact that it is not subservient to the nutrition of the organism mainly in one definite direction, but that it subserves many, yes all, functions of the vegetal and animal sphere to an almost equal extent. Under certain circumstances, therefore, a disease of the skin may also mean a disturbance in the respiratory process of the body, in the secretion and osmosis of the fluids of the tissues, in the peripheral and central innervation and the sensations of pressure and touch due to them, in the distribution of blood over the entire body, in the production and maintenance of the heat necessary to life, etc. And for this reason the list of causes of disease presents a very varying picture. No wonder that pathology thought to find here an opportunity for the settlement of all possible disputed questions in its domain.

Charles Lorry, the real founder of dermatopathology, first made a division of diseases of the skin into those which are the result of a general morbid process (symptomatic), and those in which the integument suffers independently (idiopathic), and herein he has been followed by all dermatopathologists up to the present time, whatever their principle of classification may have been.

We will now consider these etiological relations more in detail.

1. It has always been held that the so-called acute exanthemata, likewise the various affections of the skin in typhoid fever, cholera, glanders, syphilis, scrofulosis, and tuberculosis; certain furuncular processes, the deposit of morbid substances, hemorrhages into the skin and subcutaneous tissue, eczema and the like, in diabetes, gout, rheumatism;

seborrhœa, acne, alopecia, eczema, urticaria in anæmia and chlorosis, furthermore in scorbutic and leukæmic disease of the blood and the like, must be regarded as diseases of nutrition.

2. In addition, a series of observations tend to show that diseases of individual organs of the body may act as the direct cause of skin diseases. As illustrations I may mention: affections of the central and peripheral nervous system, which correspond to the neuritic dermatoses, and affections of the vaso-motor centres which correspond to the angioneuroses of the skin.

Diseases of the circulatory organs, which are followed mainly by stasis dermatoses.

Diseases of the organs of the vegetal system, the gastro-intestinal tract, liver, spleen, kidneys, suprarenal capsules, to which the most varied forms of skin diseases may be due, such as erythanthemata, urticaria, pruritus, etc.

Diseases of the genital system, the sequelæ of which upon the integument (erythanthemata, diseases of the glands, changes in color), for example, chloasma uterinum, play a great part, particularly in the female sex.

3. Those physiological agencies which, under certain circumstances, may act as a cause of disease upon the organism in general, or upon parts of it, naturally act also as etiological factors in diseases of the skin.

This includes heredity, in part of individual diseases as such, for example, ichthyosis, birth-marks, psoriasis, prurigo, syphilis, scrofula, perhaps also gout and rheumatism, in part the disposition to certain diseases as to loss of hair or its excessive growth, to certain glandular and pigmentary anomalies of the skin, to catarrh of the skin, etc.

Furthermore, age, sex, occupation, food, dwelling, etc., in single individuals, climate, temperature, meteorological and telluric conditions in general (endemic and pandemic diseases of the skin). It must be left to special pathology to utilize these individual factors in the special forms of disease, since we have to deal merely with the general relations of the causes to the effects on the integument.

We shall therefore mention briefly with regard to age: that superficial catarrhs and excoriations, also accumulations of sebum are frequent in nurslings, that urticaria may occur during the first year of life as a premonition of subsequent prurigo, that scrofula also makes its appearance, as a rule, during the first years of life.

Psoriasis usually appears after the first decennium, acne rosacea during the second decennium; advanced life suffers from atrophy of the skin, constant pruritus, and new-formations of various kinds.

As far as regards sex, those diseases are more frequent in females which are connected directly or in a reflex manner with the genital system: chloasma, pruritus, acne, etc.

With regard to occupation, special mention should be made of a few substances and manipulations which give rise to diseases of the skin; either erythemas and eczemas when the substances are mild irritants, deeper spreading dermatitides when they are more concentrated. The occupation of sugar refiners (grocer's itch), of shoemakers (formation of callus upon the skin of the thigh from hammering), of washer-women and kid-glove makers, of workers in lime and metals, of bakers, etc., is as important an etiological factor as in those diseases of the skin which occur in tar, anilin, or paper factories.

Some progress has been made in the last few years in our knowledge of the effects upon the skin of general conditions such as climate, the soil, temperature, the atmospheric conditions.