The slightest cutaneous disease caused by the larvæ consists in an eruption of urticaria. The efflorescences show a special tendency to locate around the mouths of the follicles. If we carefully try to lift the epidermis in the neighborhood of the mouths of the follicles, the animalcules are almost without exception found beneath. Where the skin is sensitive and the irritation intense we observe a rapid transition of the urticarial eruption into a very itchy eczema, and a painful dermatitis. In such a case the skin becomes bright red, its temperature increases, and sometimes slight febrile movement is present. The inflammatory symptoms of the skin having reached their height after three or four days, and no fresh causes being superadded, they remain stationary for a short time, and then involution ensues, scratch effects and pigment spots being left behind.

Clothilia inquilina.—Under the heading "Eine Invasion von Holzläusen" Virchow[1] reports that the teacher at Parstein near Oderberg in Neumark was much annoyed by the appearance of an insect which spread from the living rooms over all the objects, clothing, etc., that were in them. Gestäcker states that it was an orthopter from the family Psocidæ, book-lice, the Clothilia inquilina of Heyden.

[1] Archiv für pathol. Anatomie und Physiologie, Bd. 54, p. 283.

THE NEW-FORMATIONS OF THE SKIN.

BY

PROF. E. SCHWIMMER, AND V. BABES, M.D.

INTRODUCTION.

BY

VICTOR BABES, M.D.

THE new-formations of the skin comprise those circumscribed, usually tumor-like structures which arise in the manner of embryonal organization; certain cells dividing and differentiating according to the same laws as those manifested in the formation of the tissues and organs of the body.

Especially during the process of division the cell manifests itself as a complicated organism, there being unfolded in it a plan-like plot of threads formed from the nuclear substance which in the first place leads to a strict partition of every formed nuclear portion. In the same way, the fecundated ovum likewise divides; portions of the parental organism are appropriated to each embryonal cell, and thus its qualities become hereditary in the offspring.

The organism would become normal if external influences or the heredity of abnormalities which originally come from without did not disturb its development. External conditions will modify the course of the cell more or less; there arise abnormalities which in part are probably equalized, eliminated, or made subservient to the purposes of the organism, but in part may endow the further development of the organism and its offspring with noxious peculiarities.

Thus we can artificially produce abnormalities which become hereditary (Brown-Séquard) and give rise to malformations by artificial influences on ovum and embryo (Dareste, Gerlach).

According to these reflections, we are justified in assuming that tumors likewise originally owe their existence to external influences, of the nature of which, however, only hypotheses are in our possession.

We can assert positively only that tumors may form in every stage of development or of retrogression of the organism, and that often the causative factors are laid by the parents in the plan of the new organism, which not rarely may remain hidden until the appearance of the tumor. Finally we must assume that in intra-uterine or extra-ute-

rine life external injurious influences may also create similar factors which manifest themselves subsequently as tumors, generally again through some external agency.

Such factors have also been called tumor germs, and this designation has been applied to the conception of a latent embryonal tissue; I shall apply the term tumor germ, or better, tendency to tumors, only to that material which is associated with arrangements by reason of which tumors arise at any time, from any cause.

Such tendencies to tumors might be: disposition to abnormal direction of growth; redundant or misplaced tissue material (Virchow, Waldeyer, Cohnheim, and others); a disproportion of the energy of growth of different tissues (Boll); a peculiar vascular arrangement; a diffuse or circumscribed evil power of proliferation of many tissues, etc. The more immediate cause of the formation of tumors, then, lies in external irritations, in trauma, cicatricical formation, perhaps also in a relaxation of the physiological power of resistance of the organism.

Besides these tumors, there are also some in which, after the external, generally intense disturbances, true tumor formation follows closely on the immediate reactive symptoms.

Only one thing seems to distinguish this form of tumor from those of early tendency. Namely, the longer an abnormality, for instance a tendency to tumor, remains latent in the plan of the organization (as a hereditary tendency) the more its manifestation seems to have adapted itself to the form of the normal development of tissues and organs. But in every case the tumor, whenever it undergoes development, precisely by reason of its present independence, will deviate from the laws of normal organization as a branch does from a trunk.

The external skin is first exposed in a high degree to such injurious influences as stimulate it to new-formation; then there will be a disposition to tumor formation at those places where in embryonal life it is easiest for a displacement, a malposition, or a retention of certain tissues in a state of proliferation to occur, as at the transition of the skin into mucous membrane, where different kinds of tissue become intimately united, at points where embryonal openings have closed. Then we often find accumulated by heredity abnormal tissue which persists in an earlier stage of development for some time or permanently (for instance, warts). Usually, however, it is again external causes which incite such places to excessive proliferation, to independent organization, to the formation of tumors.

But it cannot be denied that certain external influences likewise incite the skin to similar formations without previous disposition.

In most tumors, several of these etiological factors obviously concur.

Particularly in the explanation of the diffuse and the multiple tumors we cannot advise against the assumption of a congenital disposition to the progressive formation of a certain species of tissue. Obviously in these cases there is in the region of certain differentiated formations of the skin an abnormal arrangement by means of which tissue material accumulates locally, or rather tissue capable of proliferation which grows in such a manner as if it were to build new normal tissue. Thus for instance the epidermis, the papillæ, the glands and follicles, the cutis, the adipose tissue form general hypertrophies; while the sheaths of the glands, of the nerves, of the vessels, of the muscles, the vessels themselves or their rudiments, singly or in combination, may be the field for multiple processes of growth.

In order to explain metastases—emboli of tumors and their proliferation, then, infection by fluids, by molecular portions of cells or sprouts, have been made to do service,

but this latter assumption cannot be brought into harmony with our experience in the formation of cells. In this case, too, we can hardly deny that the formation of metastases is often nothing but the manifestation of the multiple tendency to tumors which was incited in the first instance by the irritation of a place locally predisposed somehow to the formation of tumors (primary tumor). It is probable for this reason that multiple tumors pass without sharp limitation into those forming metastases, and their differences lie mainly in the benignancy of the former, and the malignancy of the latter.

The tumors of the skin have been differentiated from very widely divergent standpoints, but in general we can assert that the finer tissue differences and localizations of tumor formation were neglected until the most recent times. Pathologists again looked upon tumors of the skin from their systems, without appreciating their peculiarities. But meantime it had been demonstrated by many investigators that the individual constituents composing the skin undergo new-formation separately and from various causes, and that the tumors thus varying in their nature correspond likewise to the clinical differentiation.

However, investigators also went too far in this analysis; they grouped, for instance, the well-known connective tissue tumors deliberately according to one portion of tissue chiefly implicated.

Therefore, in the following pages we shall, while considering the place of origin, bear in mind the insufficiency of every system, with due regard to the infinite multiplicity of the forms and transitions. In general, we must not lose sight here of the fact that the new-formations usually spring from one of the larger tissue germs, either the archiblast—that is, from the primitive trace of the embryo itself—or from the parablast growing from without inwards.

In the first place, we shall discuss the tumors of the parablast—that is, the tissue appertaining together, having its rudiment in the germinal welt[1] and forming the vessels and the connective tissue, which extends into the embryonal trace, where it forms vessels, deposits, and envelopes of connective tissue, and differentiates into endothelium, lymph-cells, and blood-cells.

These tumors develop, according to the formative laws of the parablast, in the direction of vessel and connective tissue formation. The parablast portion of the skin forms first a thin, dense, almost structureless and non-vascular subepithelial stratum pierced by nerve-fibres and lymph-spaces which enter into the rete Malpighii. The succeeding stratum forming the papillæ is close-meshed, lax, with wide lymph-spaces and a uniformly distributed, nearly independent vascular arrangement and elastic substratum. The stratum areolare is indistinct, with loose fibres, juicier and richer in cells, containing embryonal elements. Within it extend the deep vascular network and independent vascular arrangements for follicles and glands. Then follow coarse-fibred, wavy layers, with larger vessels and nerves embedded together in loose tissue. Finally, there follow fat-columns, with separate vascular apparatus, and between these a firm tissue in which run the vascular connections of the skin with the interior of the body. Lastly, the parablast furnishes envelopes for follicles, glands, nerves, and muscles of the skin. From each of them new-formations may arise; but in most tumors several of these differentiated constituents participate.

[1] Recent investigations, especially those of Waldeyer, have shown that in all ova we can distinguish two rudiments, one of which comprises the first furrowed portion rich in protoplasm (archiblast), while the other encompasses the adjoining elements, poor in protoplasm, but rich in nutritive material, which become furrowed later and extend into the archiblast (parablast).

Thus there are uniformly derived from the entire parablast: certain forms of pachydermia, of ichthyosis, of sclerema, of elephantiasis, the cicatrices. Mainly connected with the papillæ are: papilloma, some chronic inflammatory new-formations, condyloma acuminatum, polypapilloma tropicum; from tropho-nervous irritations there arise here: the neuro-papilloma and similar more ichthyotic forms.

Connected with the sheaths of the nerves, vessels, and glands as their true new-formations are: many hard, but especially soft fibromata; also some forms of lepra and elephantiasis mollis. The wall of the vein is chiefly implicated in rhinoscleroma (in chancre, in small-pox, in erysipelas—Recklinghausen). Cellular proliferation, with new-formation of blood-vessel walls, is generally found pronounced in syphiloma; hyaline degeneration of these parts, in cylindroma. Hyperplasia of the arterial wall is especially marked in some racemose angiomas, in scleroses, and in rhinoscleroma.

In certain vascular districts, congestion, especially in an early period of development, may incite not only œdema and vascular dilatation, but also new-formation.

More immediate causes of these are given in local abnormalities of the vascular system and its innervation, in some cases perhaps also in an hypertrophy of the muscular structures of the skin. These factors come into the foreground in myxoma (Köster) and lipoma, in xanthoma, in cases of elephantiasis lymphangiectatica, of pachydermia œdematosa, and of sarcomphalus.

New-formation with dilatation or infiltration of plasmatic channels of the cutaneous framework and the sheaths are found extensively (in acute inflammatory tumors) in tubercle, in lupus (around sebaceous follicles), in elephantiasis arabum, in xanthelasma (as new-formation and peculiar fatty degeneration of the endothelia), as well as in many fibromas and sarcomas.

New-formation of tendinous, elastic, hyalin tissue of the cutaneous framework is found chiefly: diffusely in scleroma; circumscribed, scar-like in keloid, in scleroses, in rhinoscleroma.

From the embryonal proliferative material, especially from rudiments of vessels at any point of the connective tissue of the skin proceed:

1. As new-formation of endothelia—soft uncolored or pigmented moles and warts (Recklinghausen). From these or primarily endothelial sarcomata arise. Endothelial proliferation also plays an important part in many (infectious tumors) angiomata and sarcomata, in xanthoma.

2. Sarcoma, with persistence in an embryonal stage and degeneration of the rudimentary vessels.

3. Most melanotic tumors with pigment degeneration of rudimentary vessels.

4. Angiomata advancing to excessive formation of vessels, or even superseding this process (as angioma cavernosum).

Finally there are developed in the skin, parablastic tumors which owe their origin to none of the normal constituents of the skin, which we must therefore ascribe to misplaced germs or to the formation of abnormal tissue in the skin. Among these belong—enchondromata, osteomata, lymphatic tumors.

CONNECTIVE TISSUE NEW-FORMATIONS.

BY

PROF. ERNST SCHWIMMER, M.D.

(Histological Part by V. Babes, M.D.)

1. THE CICATRICES OF THE SKIN.

Kinds of Cicatrices and their Production.—We apply the word cicatrices to those new-formations of dense or firm texture which develop in place of the losses of substance due to destruction of the skin and its papillary layers; they usually show a smooth, more or less glossy surface of white color, but when traversed by fine blood-vessels, the surface appears slightly reddened or pink. The epidermis of the cicatrix, in recent cases, is smoother than the normal surroundings owing to the obliteration of the efferent ducts of the glands and here and there also of the hair-follicles; when the cicatrix is older, its surface appears slightly glossy, here and there somewhat scaly, but in it, too, there is an absence of the well-known undulating lines and stripes corresponding to the papillary elevations of the cutis, for there is no reproduction of the papillæ when the skin is destroyed to some depth. Now and then observers have assumed a new-formation of the papillary body during cicatrization, but these structures are formations of tissue consisting merely of vascular loops resembling the papillary body, but containing no tactile papillæ (O. Weber).

Sometimes the cicatrices are at the same level as the rest of the skin; these are called flat cicatrices: sometimes they rise above the surface of the skin and form oblong or roundish thicker masses of tissue; they are then called hypertrophic: or when they lie below the level of the general integument in the shape of depressed or shrunken portions of tissue, atrophic cicatrices. When firmly united with the substratum and extending beyond the underlying connective tissue as far as the periosteum and the bone, the cicatrix is called fixed or adherent; but if it is freely movable, it is called a free or movable cicatrix.

The development of cicatricial tissue presupposes some essential lesion of portions of the skin; wherever the proliferating power of the skin is excessively augmented after breaches of continuity and losses of substance—*e. g.*, in consequence of some injury destroying the skin—repair of the loss of substance occurs. We observe the same wherever there has been inflammation with subsequent disintegration of the more plentifully