

II. *Hypertrichosis Acquisita* (s. *Transitoria*).

Abnormal trichosis from pathological influences acting during extra-uterine life is described:

1. As dependent on disturbances within the nervous system—hypertrichosis neurotica. Thus, Erb<sup>1</sup> and Schiefferdecker<sup>2</sup> reported abnormal increase in the growth of hair in some cases of spinal paralysis. The latter also observed manifold trophic disturbances occurring after gunshot wounds of peripheral nerves, and among these almost constantly increased growth of hair. The local hypertrichosis was present not only below, but also above the gun-shot wound. Leyden considered the hypertrophy of the epidermoidal formations a compensation for the atrophy of the muscular tissue. Fischer's<sup>3</sup> experience is somewhat different. After nerve lesions he found, as a rule, that the hair at first proliferated profusely, but fell out subsequently.

2. Cases of heterotopic pilosis after cutaneous irritations—hypertrichosis irritativa—are not very rare. The literature, however, certainly requires critical sifting. As examples of hypertrichosis irritativa we enumerate Rayer's observation of proliferation of hair on parts which had been irritated for months by the application of vesicants, and Kaposi's<sup>4</sup> report of the occurrence of long, woolly hairs on the wrist-joint of a puerpera after a daily inunction of gray ointment of mercury continued for three weeks.

NOTE.—It is customary to enumerate among the various kinds of hypertrichosis an excessive growth of hair in places even normally covered with close, vigorous, longer hair (scalp, region of the beard). I have left this group of cases out of consideration, because it is altogether too much a matter of subjective estimation to decide where the limit of the normal ceases and the abnormal begins.

Treatment.—Only some kinds of local trichosis form the object of medical treatment.

Smaller hairy moles are best removed by excision. For the local hypertrichosis on the unchanged skin (here the development of beard-hair in women comes specially under consideration) we possess palliative and radical methods of treatment. Among the former belong: shaving, pulling the hair with tweezers, and removal by weak caustic pastes. As none of these methods removes the follicular parts of the hair-shafts, the hair remnants showing through the skin of brunettes cause the formerly hairy spot to appear as a dark patch after palliative treatment. This defect of the method is especially conspicuous after simple shaving. Epilation with tweezers, except in the case of very small spots, is quite troublesome, and besides somewhat painful.<sup>5</sup>

The employment of medicinal depilatories is relatively most useful. On examining the number of chemicals recommended we become convinced that it is especially lime which has been in favor of old<sup>6</sup> for depilation, and a careful study of the formulæ teaches that nearly all of them aim at the formation of calcium sulphhydrate. This substance is prepared most simply by the introduction of sulphuretted hydrogen into calcium hydrate. It forms a grayish-green mass, the disagreeable odor of which is difficult to cover even by

<sup>1</sup> His "Handbuch," Bd. xi., 2.

<sup>2</sup> Loc. cit., p. 163.

<sup>3</sup> Berlin. klin. Wochenschr., 1871, p. 145.

<sup>4</sup> Hebra-Kaposi, l. c., p. 48.

<sup>5</sup> I have been unable to confirm the statement that after long-continued pulling the latter growth of hair gradually becomes more deficient in pigment.

<sup>6</sup> Comp. Galenus, De compos. pharmac., Lib. 1, Cap. 4, cited by Eble.

the addition of deodorants (tonca beans, orris root, oil of lemon). The paste (to be preserved in a well-closed vessel) is spread with a horn knife to a thickness of one line, and, according to the irritability of the skin, is allowed to act for five to ten minutes. Then scraping off of the rapidly drying paste with the edge of the horn knife, cleansing of the skin with lukewarm water, inunction with some vaseline, cold cream, or zinc ointment into the spot.

American physicians regard the electrolytic method as an effectual radical treatment. To the negative pole of a galvanic battery is fastened a very thin needle—the one used by Fox is modelled after the flexible steel points used by dentists for the extraction of the pulp—and inserted into the follicle of the hair to be removed. Strength of the current, ten to sixteen elements of a zinc-carbon battery. The positive (sponge) electrode is held by the patient in the palm of the hand. Ten to twenty seconds are required for loosening the hair in the follicle. In sittings lasting three-quarters of an hour, thirty to fifty hairs are removed. The painfulness of the process is very slight, the reaction on the skin generally quite trifling. Only exceptionally, it is said, punctiform, barely visible cicatrices are produced.

Bulkley's method is more simple of execution. It is based on inflammation excited in the follicle after thorough removal of the hair. The hair is grasped with tweezers and at the same time a small, sharp-pointed, triangular needle with cutting edges is inserted into the follicle by the side of the hair. While a light pull is given on the hair, the needle is pressed in, advanced to a depth corresponding to the bottom of the follicle and then turned several times around its axis.

With the like object, others insert into the follicles needles heated by fire or the galvano-cautery, or moistened with caustic fluid (for instance, carbolic acid).

Not without reason, Kaposi<sup>1</sup> points out how problematical it is to reach the papilla of the hair, by the destruction of which alone the effect is produced, owing to the oblique and quite incalculable direction of the several follicles. G. H. Fox admits that, on an average, thirty to fifty per cent of the hairs so treated grow again and make a repetition of the procedure necessary.

## ATROPHY AND DYSTROPHY OF THE HAIR.

The maintenance of a normal, equally dense growth of hair depends upon the fact that the hairs, falling after the lapse of their typical duration of life, are continually replaced by others formed anew; there is a constant balance between expenditure and receipt, between loss and restitution. Every disturbance of the relation to the detriment of the after-growth leads to defective growth, to alopecia.

An older nomenclature distinguished: 1. *Calvities*—the baldness of the aged due to natural causes; 2. *Defluvium capillorum*—a pretty uniform loss of hair occurring over the whole head or even over the entire body, in consequence of pyrexial and constitutional diseases; 3. *Alopecia*—loss of hair from local causes and on limited parts of the skin.

## ALOPECIA CONGENITA.

Alopecia may be congenital and may affect the entire skin—alopecia universalis congenita—or may be confined to isolated patches—alopecia localis (s. areata) congenita.

<sup>1</sup> "Pathol. u. Therap. d. Hautkrankh.," p. 524. Vienna and Leipzig, 1880.

*a. Alopecia Universalis Congenita.*

In many cases of congenital baldness, there is not a permanent arrest of formation, but merely delayed perforation of the hair through the epidermis. In children born bald, the scalp becomes covered with lanugo between the first and second year of life, and toward the end of the second year, or still later, is replaced by hair of normal thickness.

Such a case is at present under my observation. In this two-year-old girl, otherwise normal in every respect, the head is now only slightly covered with downy hair.

Luce made the following observation: A girl aged eight years had been born quite bald. In the sixth month, numerous small elevations on the scalp had shown themselves; the first hairs were noticed in the sixth year. When Luce saw the girl, he ascertained that there were a few blackish-gray hairs of normal thickness and a length of one and a half centimetres, besides the numerous downy hairs. The scalp showed firm conical nodules of unchanged color with a central black point. When the top of these nodules was lifted with a needle under a magnifying glass, a black mass was seen underneath, which could be recognized as a curled-up hair.<sup>1</sup> But the hairs in question showed in regular alternation thin and spindle-shaped thickened places.

Danz saw two adult persons who had never had either hair or teeth. Rayer also states that he has observed several cases of congenital permanent alopecia and reports the details in a patient aged 32 years.

Schede described two cases in the children of a peasant woman, a boy of thirteen years and a girl of six months; both had been born quite bald, and no hair had developed later. In addition there were neither eyebrows nor eye-lashes, and nowhere could a trace of lanugo be discovered. Otherwise both children appeared well-formed and of a development corresponding to their age. The parents were healthy and had a full growth of hair; this was true of two other children.

*b. Alopecia Localis (s. Areata) Congenita.*

If the congenital baldness is confined to a limited portion of the skin, it seems that restitution of the growth of hair is never to be expected.

I have seen two cases of this kind:

Case I.<sup>2</sup> is of interest from the fact that the congenital bald spot on the vertex "eddy" was followed in the fifth year of life by others, one slightly below the former, the other on top of the left parietal bone. The patient was a delicate, scrofulous boy without further developmental anomaly.

Case II. occurred in a vigorous boy aged fourteen. The relatives noticed in the first years of life a small bald spot a few centimetres above the right ear, at the junction of the temporal and parietal regions. The circumference of the oval congenital area is said to have gradually enlarged. At present the length of the bald spot is about three centimetres; its greatest width, one and a half centimetres. The otherwise unchanged scalp is covered here with a few longer and a number of downy hairs. Another anomaly in the boy's family is noteworthy: in our patient as well as in his father and two brothers, the two central upper incisors are several millimetres longer than the other teeth.

Nothing is known respecting the pathogenesis of alopecia congenita. As in hypertrichosis, abnormalities of the teeth have often been observed, and deformities of the nails more rarely. The not infrequent occurrence of congenital alopecia in brothers and sisters points to hereditary influences.

*Anatomy.*—Schede found, on a piece of the scalp excised from the older of the children

<sup>1</sup> Comp. F. Hildebrandt's "Handb. d. Anatomie." Herausgeg. von Weber. Fourth ed., p. 204. Brunswick, 1830. The above-described condition is generally termed lichen pilaris, after Willan.

<sup>2</sup> Already mentioned, l. c., p. 33.

with congenital baldness (see above) under his observation, the sebaceous glands well developed, and opening directly on the skin by a free channel. Rudiments of hair existed in the deeper layers of the cutis in the shape of short, straight or slightly convoluted tubules without perceptible internal cavity. In their whole structure (externally, long, narrow cylindrical cells with rod-shaped nuclei; internally, small roundish or polygonal cells) they corresponded to the external root-sheath. These tubuli were largely changed into microscopic atheromata by a central bulbous conglomeration of flattened epidermis cells.

Jones and Aitkens found that the cutis of the scalp in their case was replaced by a cord-like areolar tissue with interspersed fat-cells and accumulations of granules. Between them were altered follicles. Here and there indications of papillæ. The epidermis was atrophic.

ALOPECIA SYMPTOMATICA.

(Loss of hair from local causes and in circumscribed spots.)

All more important alterations of the hairy skin must necessarily lead to disturbances in the growth of the hair. Whether the alopecia of this character implicate only single hairs as in acne, or a large part of the capillitium as occasionally in erysipelas, it is always strictly confined to the limits of the affected portion of the skin.

Alopecia symptomatica may occur as a concomitant of parakeratoses; but, for obvious anatomical reasons, it is met with more particularly in inflammatory processes, in superficial or deep-seated, circumscribed or diffuse, infectious or non-infectious, acute or chronic forms of dermatitis (for instance, acne, eczema, erysipelas, variola, most of the mycoses, in papular, pustular, and ulcerous syphilides, etc.). Compression and tension of the hairy skin, *e. g.*, by tumors, are a not infrequent cause of regional loss of hair.

Like its development, the prognosis of symptomatic alopecia is dependent upon the character and the intensity of the primary cutaneous affection. In all destructive diseases ending in the formation of cicatrices, the consecutive loss of hair is permanent and incurable. In the treatment, too, the indications depend on the nature of the primary cutaneous affection.

ALOPECIA SENILIS AND PRÆSENILIS.

It is often stated that in advanced age, not alone the hair of the head, but also that of other parts of the body, the beard, the genitals, and the eyebrows, diminishes. In persons of very advanced age, we have not rarely seen the hair of these parts grow denser, and we believe that any considerable loss of hair in these parts can by no means be demonstrated as of frequent occurrence.

As has been stated in a previous section, a proliferation of hair on normally smooth portions of the skin develops not rarely in both sexes in advanced age; with good reason, therefore, we might speak of an occasionally increased tendency to the production of hair. Experience teaches, however, that such a disposition is never displayed on the scalp; on the contrary, the loss of the hair of the head in the aged is one of the most common signs of senile retrogression, whether the rest of the body is thickly or lightly covered with hair.

The baldness of the aged, as a rule preceded by a whitening of the hair, is more frequent in men than in women; it begins on a small spot, according to Pincus, almost always on the top of the vertex, and spreads very slowly forward, then sideways and backward. But in the small region, which is seized at once, lanugo soon takes the place of

the more vigorous hairs, and in a few months it becomes quite bald. Then it takes comparatively a long time until downy hairs grow at a place closely adjoining the former; but whenever this takes place, the process attacks the new region with equal intensity.

In not a few persons gradual baldness occurs early, generally on an hereditary basis. This condition is aptly termed alopecia præsenilis. Common to both varieties is the above-described progress of the affection; but in alopecia præsenilis the increase of the absolute daily loss of hair is less than in alopecia senilis; in the former, moreover, the intermediate lanugo-formation occurs only on a small part of the vertex, but not on the temples and the occiput (Pincus).

The skin bared by alopecia senilis or præsenilis seems thinned, somewhat tense, but easily displaceable on the underlying bone. If the individuals are otherwise well nourished, the hairless surface may show a certain fatty lustre. The follicular openings, unless the baldness is of very long standing, are still clearly recognizable and here and there covered with delicate downy hairs.

*Anatomy.*—Senile atrophy of the scalp is preceded by alterations in the blood-vessels. A fibrous endarteritis narrows the lumen of the cutaneous arteries; the ample capillary network, which otherwise spreads through the connective-tissue portions of the skin and especially surrounds also the hair-follicles, partially perishes. This primary involution of the blood-vessels is followed by an atrophy comprising all the cutaneous layers; the atrophy manifests itself in the epithelial portions by a thinning of the cell-layer, in the connective tissue by a contraction corresponding to the insufficient supply of nutrient plasma. The hair-follicles shrink considerably, but their openings remain comparatively wide, and their upper parts generally present the appearance of a funnel diminishing downward; they are filled either with loose horny masses or contain the finest downy hairs. More rarely we find at the bottom of the otherwise empty sac convolutions of pigmented roundish nuclei—an abortive attempt at hair formation. The cutaneous muscles are usually preserved, appear rather broadened, and finely granular from fatty degeneration. Perhaps the direction of their course has become generally more horizontal, more nearly parallel to the level of the surface of the skin. The glandular organs of the skin show the greatest power of resistance. At a time when the above-described symptoms are already completely developed, we find the sebaceous glands unchanged in size and structure. Nor does the process exert any material influence on the number and extent of the sweat-glands. For the present it may remain undecided what importance should be ascribed to an accumulation of lymphoid cells, which we have frequently found especially around the convoluted glands. Finally it must be emphasized that any considerable alteration in the nerves of the bald skin has not hitherto been demonstrated.

According to Pincus,<sup>1</sup> the anatomical examination of the cutis in advanced alopecia præsenilis gives essentially the same results as in alopecia pityrodes (comp. below), only that the thinning of the median layer of the cutis is still greater.

All experienced authors acknowledge that therapeutic measures offer no hope of success.

#### ALOPECIA PITYRODES (CAPILLITII AND UNIVERSALIS).

##### a. Alopecia Pityrodes Capillitii.

*Symptoms and Course.*—One of the most frequent affections of the scalp, the most

<sup>1</sup>L. c., No. 3.

common cause of premature baldness is *alopecia pityrodes* (Pincus) s. *furfuracea* (Kaposi). Its course of development proceeds about as follows:

In an individual of fifteen years or over, rarely before the commencement of puberty, there appears at first an insignificant, later gradually increasing desquamation of the scalp which affects the entire head pretty uniformly. After the lapse of five to seven years, as a rule, the patient notices a greater daily loss of hair than he had previously experienced. Female patients become aware in this stage already of the large number of shorter hairs, which rebelliously project from the middle of the plaits, causing a thinning of their lower portions. In men the scalp at first appears as dense as formerly, after two to four or six years, however, is thinned in some parts, especially the vertex and the forehead. The absolute number of the falling hairs now is materially increased; among the combings are found even in men a very considerable quantity of "pointed hairs," *i. e.*, such as may complete their typical course of life, owing to the short length of the hair worn by men, without falling a prey to the barber's shears (Pincus).

NOTE.—During the normal nutrition of the scalp the pointed hairs, having a comparatively short duration of life, are furnished only by the margins of the scalp, and occur merely isolated between the hairs destined for longer growth. (For further details compare the chapter: *Anatomy of the Skin.*)

Besides, some of the hairs already show the downy character; a great many have their transverse diameter much reduced. Thereby the onset of the second stage of the malady is marked. In abnormally rapid change of hair, every after-growing hair on the median and partly also on the anterior part of the head, much less pronouncedly on the lateral and posterior portions, is shorter and thinner than its predecessor produced by the same follicle, and in this way all the hairs of the diseased places are gradually changed into lanugo. Meanwhile, the pityriasis has decreased apace and thereafter is but very slight in those regions of the head where the greater part of the hair already shows the character of the downy hair. In the further course, baldness ensues in the median part of the head, owing to the steady deterioration of the substitute for the falling hair; in the temporal regions and the occiput alopecia pityrodes does not lead to an equally high degree of alteration in hair production; here final baldness is produced only by senile alopecia.

The first stage of alopecia pityrodes, therefore, is characterized essentially by progressive decrease of the typical longitudinal growth of the single hair of the head, conjoined with a pityriasis extending over the entire scalp, but particularly pronounced in the median portion. The characteristic factor of the second stage is a decrease of the transverse diameter of the single hair. Even in the beginning of the affection it may be at the same time demonstrated that the after-growth of hair has often a considerably shorter term of life than the preceding.

It must furthermore be emphasized that women are much more rarely affected with alopecia pityrodes than men.

The first symptom, the pityriasis capitis, is in many cases obvious even at a distance, by a glance at the coat collar of the patient. White, dry, flour-like scales are detached from the scalp by the slightest motion, and fall on the clothes. The hair, too, is covered with these scales, and so amply as to appear as if dusted over. Frequently, the dandruff is of a more greasy quality and is then of a dark-gray color, because the atmospheric dust is intimately mingled with it. Combing does not clear the scalp from the adhering scales, this requires a thorough washing with soap; then the desquamation soon forms afresh.

Ordinarily we may, from the intensity of the cutaneous desquamation, deduce a like intensity of the abnormal rapidity of the hair change, and the intensity of the pityriasis on the various regions of the head proceeds *pari passu* with the degree of the hair disease.

Examination of the scales in question has shown that they consist largely (three-fifths of their weight—Pincus) of morbidly altered, "abnormally firm" products of secretion of the sebaceous glands.

Kaposi (l. c.) sees a reason, in this fact especially, for maintaining the seborrhoeic character of the pityriasis capitis which by Hebra has been termed *seborrhoea sicca*. However, as here we have by no means only an increase of the sebum, but the production of "grease drying upon the surface of the skin" (Hebra, "Lehrb.," 2d ed., Vol. I., p. 90), the technical term chosen by Hebra might easily give rise to an erroneous conception of the process.

While formerly it was assumed that alopecia began only after the pityriasis had existed for years, the simultaneous occurrence of both processes has been determined by Pincus.

As regards the development of alopecia, it should be mentioned that the alteration of the typical longitudinal growth at the start seizes all the hair of the head, but after a few years it proceeds more quickly in the median part of the head than in the other regions, the hairs of which, as may be most distinctly seen in women, permanently maintain an average length of eleven to sixteen centimetres (four and one-half to six and one-half inches).<sup>1</sup> The clearing of the scalp in the second stage of the disease first appears in the shape of a strip, two to four centimetres broad, which begins about two centimetres behind the anterior margin of the growth of hair; often also at the same time at the vertex eddy, so that there are at first two clearings, later bald spots, corresponding to these localities (Kaposi). At the anterior margin of the hairy growth, the median part above the glabella resists the disease much longer than the external parts situated above the frontal eminences. Much more rarely the loss of hair first manifests itself at the frontal edge; then, too, there is generally a second centre at the vertex eddy.

The aspect of the scalp after removal of the scales shows no deviation, but we can determine, often even in the beginning of the disease, a firmer attachment, a diminished pliability in the median part of the head.

Many persons suffering from alopecia pityrodes state that they feel a "prickling" headache, conjoined with a certain sensation of heat, lasting for hours, or even days, in the region of the vertex. The sensibility of the diseased scalp is intact.

These are the main points of the morbid picture described by Pincus. In a few particulars, our experience differs from that of the author named. For while, according to the latter,<sup>2</sup> the perspiration at no time shows any perceptible alteration, we have heard numerous patients complain of increased disposition of the scalp to perspire, and at times convinced ourselves of the correctness of these statements.

*Diagnosis.*—Alopecia pityrodes can be diagnosticated as soon as the above-mentioned firmer attachment of the scalp shows itself together with increased desquamation. Even without the presence of the former symptom, chronic pityriasis capitis always gives rise to the suspicion of commencing alopecia, for experience teaches that, at least in the majority of cases, the hair becomes thinner after the pityriasis has existed for several years. In order to ascertain the beginning of alopecia early, Pincus advises the collection of the falling hair on four successive days by means of combing with a fine comb,

<sup>1</sup> Ibid.

<sup>2</sup> Pincus, l. c., 2, p. 333.

and the determination of the proportion of the pointed hairs to the total loss. Should this amount to one in eight, with an average length of the hair of thirteen centimetres, or one in ten, with that of five to eight centimetres, it is abnormal. A moderate quantity of absolute loss of hair need cause no inquietude, inasmuch as the limits thereof seem to be rather extensive even in the normal state. Respecting the decrease of the typical length of the female hairs, which are all pointed, we can easily convince ourselves by measuring the lost ones.

In the differential diagnosis from alopecia senilis, we can utilize the observation that senile alopecia sets in with rapid increase of the absolute loss of hair, an equally rapid spread of the loss of pointed hair, and a rapid diminution in the transverse diameter of many hairs.<sup>1</sup> In alopecia præsenilis, there is an absence of the pityriasis, and the clearing of the scalp ensues gradually from a small centre, not as in alopecia pityrodes, rather uniformly over the whole median part of the head.

*Prognosis.*—The prognosis is most unfavorable where there is a hereditary tendency, but even here treatment can be made effective in the first stage. In the second stage, in general, we must renounce the hope of seeing the thinned hairs grow thicker again; but frequently it is possible to keep in their present condition those hairs which have lost little or nothing of their transverse diameter. Of importance for the prognosis, moreover, is the age at which the first symptoms present themselves; the earlier after puberty this has been the case, the more rapid as a rule is the course. A criterion of the intensity is furnished in the first stage by the degree of the pityriasis and the proportion of the pointed hairs to the total loss; in the second stage, by the number of falling, short, fine, lanugo-like hairs, continually increasing with the rapid progress of the alopecia.

*Anatomy.*—Pincus compared the skin of the top of the vertex where the disease had farthest advanced with the still normally coated skin of the occiput of persons dead of intercurrent diseases, and found the transverse diameter of the epidermis layer equal over both parts; but on the diseased parts the layer of the cutis tissue proper, between epidermis and subcutaneous cellular tissue, was thinned, the degree of thinning being proportioned to the stage of the hair affection. The transverse diameter of the fatty layer was usually greater on the affected than the healthy places, and the fatty layer of the former regularly showed an ample fibrous framework explaining the tight attachment observed clinically. Pincus particularly emphasizes that he could observe no pathological alterations in the vessels.

It should be added that microscopic examination of hairs epilated during the development of alopecia pityrodes from the morbid regions shows nothing characteristic. Most of these hairs display the same alterations which occur during the normal change of hair on those which are about to fall. Especially noticeable is the dry root deficient in nuclei and pigment; it has either the form of a narrow solid club becoming pointed below, or else it consists of ray-like diverging fibres—prolongations of the cortical substance of the hair shaft. As improvement sets in, more nearly spherical, at least well-rounded full roots are encountered, such as correspond to hairs which have for a greater length of time remained in the bed-hair stage. Increased brittleness of the shaft is largely observable, as in all processes leading to atrophy of the hair.<sup>2</sup>

*Etiology.*—The most important etiological factor is inherited tendency which may manifest itself in otherwise perfectly healthy persons. Next in order are numerous pro-

<sup>1</sup> Pincus, l. c., 2, p. 342.

<sup>2</sup> Comp. v. Bärensprung: "Die Hautkrankheiten," p. 112. Erlangen, 1859.