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THE HAIR

Its Treatment

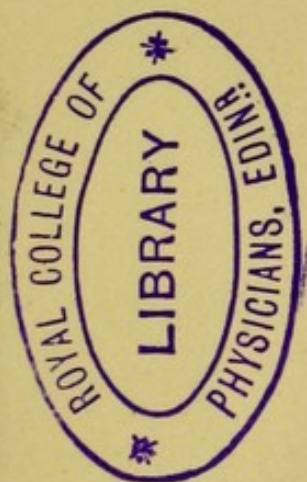
IN

HEALTH, WEAKNESS, AND DISEASE

BY

DR. J. PINCUS

OF BERLIN



London

CHATTO AND WINDUS, PICCADILLY

1882

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THE HAIR.

PART I.

THE ANATOMICAL AND PHYSIOLOGICAL RELATIONS OF THE HUMAN HAIR.

§ 1. *The Structure of the Human Skin.*

THREE layers are distinguished in the human skin. These are closely connected with one another, but have entirely different structural arrangements.

The outermost layer (epidermis) consists of cells, of which twenty to fifty placed close together would equal the thickness of a millimetre. In general, they are arranged according to the system of honeycombed cells; that is, smooth wall next to smooth wall, but sometimes the walls have a considerable number of prickles on their outer side, that fit into one another like the fingers of clasped hands. This latter mode of union strengthens the connection between the single-skin cell, and on this depends the great power of resistance of the epidermis to the various and considerable mechanical attacks.

The middle layer (dermis)—the 'flesh' of the human

body, in the language of painters and sculptors—consists of extremely fine fibres, very elastic, and capable of contracting of their own accord. They run in a double direction, most of them parallel with the upper surface of the skin. They are collected into bundles of various thickness. The separate bundles are constantly interchanging their fibres, and thus become entwined into a firm tissue. The smaller number of bundles run slanting, or even perpendicular to this direction from the inner side towards the surface. They form the supports of the whole structure, a most ingeniously constructed edifice. If we examine these intertwined rows of fibrous bundles under the microscope, we are struck with reverent admiration. The connecting rods on the roofs of our giant railway stations and walls of our bridges give us a feeble representation of the natural arrangement of these fibrous bundles in our skin covering.

The lowest layer (fat-cells) consists of a delicate structure of fine fibres, and a number of good-sized cells filled with fat. The fibres are the offshoots of the joists of the middle layer. The whole layer of fat cells is loosely built ; it forms the connecting link between the outer surface and the deeper-lying organs. It is the looseness of this connection that enables the skin to follow the pliable movements of the body and limbs without leaving any gap. This very construction enables the whole quickly to absorb large quantities of a fluid, and to give it out again as quickly. It is thus that the discharge of fluid known as dropsy is brought about. In this layer

the gradual deposit of fat takes place, causing the roundness and fulness of the human body.

§ 2. *The Structure of the Human Hair.*

The hair is imbedded in the skin. An examination of fine skin segments of animals that have died in the earliest stage of their being, long before the natural time of birth, has taught us the mode in which this embedding takes place. The best idea is obtained by imagining a pressure from above to be exercised upon the three layers of the skin. This pressure forms a little sac in the skin, in the same manner as the depression of a finger causes a little cavity in a feather-bed. The side walls of this little bottle-shaped cavity thus contain all the separate layers of the whole skin.

It is in this sac that the hair is formed. It is an extremely elaborate and elegant workshop of ropes; elaborate, since the hair does not, like a common rope, consist of the same threads throughout its whole thickness, but of a large number of variously constructed layers placed concentrically round one another like the annual rings of an oak; elegant, since the forces that form this comparatively extensive work of art are extremely tiny.

If we examine the diameter of a hair microscopically, we distinguish three different constructions, corresponding to the structure of the skin. The outer covering (the cuticle) consists of a number of smooth firm cells; these enclose the hair from without and resist pernicious influences. The structure and position of the cells are suited

to this purpose ; they resemble the tiles of a house and are arranged one upon the other in such wise that each single one is four-fifths covered by its neighbour. Sometimes the same piece of hair is enveloped by a five-fold covering. The free ends of these tiles are turned towards the point of the hair ; therefore if we take a hair between the finger and thumb and gently move them backwards and forwards, this movement exerts a strong pressure upon the free ends of the cells. These retreat, and thus the whole hair is pushed back towards the root until only the point remains in the fingers. By this simple means we can easily distinguish in every piece of torn-off hair the direction of the point or root. In chronic hair diseases such torn-off pieces are frequently found, and it is interesting to account for their original direction.

Since educated unprofessionals now very frequently possess microscopes, I will state the needful proceedings required to attain a microscopic picture. A piece of hair is laid upon the object-glass, and a drop of sulphuric acid poured upon it ; it is then covered by a layer of thin glass. We can now observe the gradual loosening of the single tiles, by moving the upper glass gently to and fro. At first the hair shows sharp edges ; after a time we observe projections close together along the sides, resembling those of a rack ; a little while after each tooth separates itself from the hair, and only remains connected by its narrow end. What we see on both sides of the hair has taken place throughout its whole extent, only we cannot see it unless we roll the hair over.

If we desire to accelerate the detaching of the cuticle, we can warm the hair by holding the object-glass over a spirit-lamp ; this must be discontinued as soon as the first little bubbles appear on the hair, because if the warming be too long continued the whole hair will dissolve.

If at the same time we treat similarly upon the same object-glass the hairs of different persons, or a fine and a coarse hair of the same person, or even the point and the root of the same hair, we shall observe unequal effects. Whilst the first toothing appears on the edge of the one, the scales may be widely extended on the other. Thus we gain insight into the difficulty of treating with organic nature, because the importance of the individual is so great that general principles can only be broadly indicated. The art of education, like the art of healing, presupposes the art of individualising.

The middle layer (the cortical substance), again, forms the chief portion of the whole structure. Spindle-shaped fibrous cells are connected with one another along the length of the hair. If we allow sulphuric acid to operate some time, the hair divides into a number of narrow strips, in which we can discern the outline of the separate cells. It is the firmness with which the separate cells are connected that gives resistance to the hair. When this consistency is naturally slight, or is impaired by disease, the hair splits. This generally takes place near the point, but also in the hair-shaft, and is an indication of insufficient nourishment.

If hair be magnified in the scale of say 300, we observe that the single cells of the cortical substance do not always touch closely, and thus form air cavities at intervals. It seems to me to be probable that in the healthy living hair these cavities are filled with the oil prepared in the sebaceous glands. When, in consequence of skin disease, the nature of this oil is changed, and becomes thick and sluggish it can no longer penetrate the cells and enter the air cavities. This changes the look of the hair; its natural gloss disappears, it seems dull and dead. This hygroscopic peculiarity of the hair is used in the construction of toy barometers.

If these cavities are numerous, the hair loses in consistency; this causes an illness, the untwisting of the hair, that occurs most frequently in the beard. A single hair shows two or three grey-white places that prove to be, on microscopic examination, a subdivision of the single hair. Hence those cases when a single hair is more or less regularly sprinkled with light and dark spots, arranged in order like rings of colour, similar to the hair and quills of some animals.

The innermost layer of the hair (the pith) consists of firm, comparatively large cells, arranged in two rows alongside the length of the hair. This pith-layer is not found in all hairs. A considerable number, especially fine hairs, consist only of cuticle and cortical substance. The origin and importance of the pith are not yet sufficiently known. On the whole, my observations justify this statement: the more single hairs possess the pith, the

stronger and therefore the more lasting the whole hair will be.

§ 3. *The Colour of the Hair.*

The colour of the hair is caused by a pigment deposited in the cortical substance. It is found in two forms; as fluid equally saturating the single cells, or as little hard granules, generally collected in the centre of each cell. Generally both kinds of pigment occur, but in light hair there is only fluid pigment; but I have never found granulous pigment without also observing some in a fluid condition.

The quality of the colour depends on the quality of the fluid pigment and of the granules, the intensity only on the number of the latter; thus the separate granules have the same colour in black as in brown hair. The black appearance is only caused by the presence of a larger number of granules in each single cell. If we examine a fair hair containing a pith layer, magnified on a scale of 100 to 150 by the usual microscopic illumination (the reflected mirror-light), the hair appears pale throughout the cortical substance, and dark in the pith. Hence it was supposed that the pigment was chiefly deposited in the pith layer; but if the hair be permitted to suck up a fluid, such as turpentine oil, all the dark colouring of the pith vanishes and it appears quite light.

This experiment is very instructive when the hair projects beyond the covering glass. The observer should look through the magnifying-glass, and let an assistant

pour a drop of the fluid on to the projecting end of the hair, which slowly absorbs it, while the dark colour gradually vanishes before the eyes of the observer.

This explains the phenomenon: the cells of the pith-layer consist of an imperfectly elastic inflexible substance, cloven by splits and fissures; these fissures are filled with air; the air has a different refractive index from the substance of the cells; besides these, cavities filled with air are situated in different planes of the hair. The rays of light which fall from below upon these fissured cells are now broken in different directions, and are mostly led away from the observer's eye; *i.e.*, as it does not receive light it gains the impression of darkness. As soon as the little fissures are filled with the fluid, which has a similar refractive index to the substance of the cells, the ascending rays may pass undisturbed through cells and fluid to the eye of the observer, consequently the pith appears light.

To prevent any misunderstanding of a microscopic picture in the matter of colour, it is advisable to illuminate the object by means of a converging lens in such a manner that the rays fall upon the upper surface of the hair. A large number of experiments concerning the condition of the hairs turning grey afforded this result: the colour observed in the hair of living persons is almost entirely caused by the nature and intensity of the colouring in the outer layers of the cortical substance assisted by reflected light. The outer layers of the cortical substance act like a mirror that retains a part of the falling rays.

§ 4. *The Laboratory of the Hair.*

The impression in the skin which forms the laboratory of the hair is called the hair-sac.

The length and thickness of the hair-sac is in direct proportion to the length and thickness of the hair that is to be formed. The fine short hairs covering the greater part of the body (down) have short narrow sacs; they only extend through the epidermis into the beginning of the dermis. The sacs of strong hairs reach as far as the fat-cells. The hair-sac in the skin of the head is only four to six times as long as the sac of a downy hair, but the hair formed by the former becomes 300 times as long as the production of the latter.

The longitudinal axis of every hair-sac makes an acute angle with the upper surface of the skin; the sacs are not planted perpendicularly in the skin, like ears of corn in the ground, for if this were the case all the hairs would stand out in the air. This implanting at an acute angle enables the hair to incline towards the surface. It is evident that the separate layers of the skin are found in the laboratory of the hair. On the inner side, round the outer periphery of the hair there is a layer of firm cells corresponding to the uppermost cells of the skin; next comes an envelope composed of elastic fibres. The direction of this fibrous tissue is such that the fibres of the neighbouring skin gradually unite parallel to the surface at an ascending angle, so that they surround the innermost layer of the sac in a ring. Beyond this follow

the fat-cells in the long sacs, while this third layer is wanting in the short ones.

At the base of each sac is a little cone (the matrix) which is always absorbing juices, forming them into cells and uniting these little soft forms into the firm tissue of the hair.

§ 5. *Sebaceous Glands.*

The gloss and smoothness of the hair is caused by an oil pressed into it just before it leaves the surface of the skin. This oil is prepared in glands of which each hair owns one, standing in the same relation as regards their origin to the hair-sacs as these do to the skin, and it may be indirectly regarded as an impression in the skin. It forms the oil and conveys it through a little passage into the sac. Here it lies loosely upon the hair, and would penetrate it but little (only according to the law of capillarity) if it were not for a wonderful though simple natural provision. Immediately above this place the sac is slightly narrowed. When the growing hair touches the spot, and in consequence of the *vis à tergo* tries to force the pass, the pressure from the side is increased, and it presses the oil into the innermost layers of the hair.

If a general relaxation of the skin takes place (and this is sometimes a consequence of chronic disease) this passage becomes enlarged, and the hair and oil can easily pass the narrow place beside one another. The pressing in of the oil no longer takes place; the hair appears rough and without gloss; the oil dries on the outer surface of the

hair and on the skin into little sebaceous scales, one of the causes of scurf.

Near the base of the sebaceous gland a narrow muscular knot is joined to the hair-sac which tends towards the epidermis at an acute angle. Cold and mental agitations have the effect of contracting this little muscle and causing the base of the sac to approach the upper surface of the skin, and to form a little granulous projection discernible to touch and sight. This appearance generally extends over large tracts of skin ; it is known as goose-skin.

§ 6. *Growth of the Hair.*

Every hair has a certain date of growth, which varies in each individual, and differs on the same person according to the part of the body where the hair is situated. Every hair has also a limit to its growth; a certain length it cannot exceed. This is called the typical length. In general this law holds good: the greater the original typical length of the hair, the more quickly it will grow.

The life of a single hair (except during childhood) is, according to my observations, two to six years. When the hair is just shooting forth, it grows quickly; according to observations made by Berthold, Donders, and myself, from 2-5 millimetres every ten days. But when the hair has reached middle age, and has been standing two years, and become about 10-14 inches long, it begins to grow at half the previous rate, and towards the end of its existence it is only every six weeks that careful measurement betrays a slight increase.

It is an important question for the preservation of hair, how long a single hair can remain without being pushed out after it has finished growing. We have no sufficient observations on the subject, but these may be undertaken by any unprofessional interested in the question. I know from the statements of my patients that the current representations concerning the absolute length attained by hairs are erroneous. I have measured hundreds of hairs, some of them belonging to ladies with abundant growth, and I have found the average length of hair to be from 22-28 inches. I know that some ladies have hair 36 inches long, but these are exceptions ; and when it is to be decided whether the hair shows decreased shortness or not, these numbers may be taken as a normal measure. The natural unchangeable conditions of hair-growth necessitate that after every hair has existed a certain time it falls out, and is replaced. This is the normal loss. The length obtained by the hair before this change principally depends on the original constitution of the hair-sac of the matrix. Other influences have only a subordinate effect upon this typical length. There is a general opinion that frequent cutting increases the length. Cutting has a different effect from that generally supposed. This is a matter of such importance for the treatment of hair, that I will quote some of my observations concerning it.

On the heads of healthy men I cut off circles of hair about an inch in diameter, and from week to week compared the intensity of growth of the shorn place with the

rest of the hair. The result was surprising. In some cases the numbers were equal, but generally the growth became slower after cutting, and I have never observed an increase of rapidity.

As a rule, among the hairs daily falling out we shall find short ones, even in the best growing hair. Sometimes they are torn-off pieces, but as a rule they have point and 'root,' and have therefore entirely completed the course of their existence. These are generally furnished by the edges of the whole hair. Where the hair leaves off there is a narrow transition strip on which short hairs are produced; sometimes they appear amongst the rest. I have attempted to rest the knowledge of the whole first stage of chronic hair-wasting on this basis. Because the hair itself is not supplied with sensitive nerves, and also from a certain resemblance it bears to a blade of grass, the hair has been regarded as a vegetable structure; hence have arisen ideas concerning what is called the hair-root that require rectification. The root is the foundation of the plant; a plant torn up by its root is cut off in its existence: in this sense the hair has no root. But the part which nourishes the hair always remains in the skin as an integral part of the same. On every hair that falls out we observe at the lower end of the shaft a little knotty swelling of somewhat paler colour. This swelling, resembling a bulb, has received the name 'hair-root;' and although this designation is quite inapplicable, it appears it must be considered firmly established, and I will also make use of it for the sake of shortness.

But I wish expressly to state that this knot is only the termination of the hair ; it never was the matrix, for this remains in the skin. It may wear away and lose its productive power, but it never falls out with the hair. There is a frequent complaint that the hair falls out with the root, and thus makes after-growth impossible. This fear is groundless ; every hair that falls must have a root-knot : and as a rule, I may make the comforting statement that the stronger the root-knot the greater is the hope of a good substitute.

§ 7. *Normal Loss of Hair.*

The whole care of the hair and healing of its diseases depend upon our knowledge of the laws by which the normal loss is regulated. I have, therefore, attempted to examine the hairs daily shed by healthy persons of various ages, and I will state the law which appears to me to hold good during our whole lifetime (except in early childhood).

Even in the best hair-growth, and with careful treatment, not all the hairs attain the average length. The strips round the edges produce typically shorter hair ; besides this, it appears to me beyond doubt that on the rest of the head a considerable number of hairs fall out, after a comparatively short existence, whose length is less than the typical. But I am hitherto unable to say whether the falling out of short hair in the middle of the head is caused by a slight diseased interruption of the growth of hair originally destined for a longer existence and greater length, or whether the same anatomical and

physiological conditions which normally bring about the short growth round the edges are regularly or irregularly, but still normally, dispersed.

The law may be most fully recognised in those persons whose hair is unshortened as in women. Here the rule is, in a woman's daily healthy loss of hair, not more than a quarter of the hairs should measure less than six inches. The question whether the loss is normal or abnormal cannot be easily answered for men or women with short hair. Owing to the short hair worn by men, it is very seldom that they lose hairs more than six inches in length ; therefore mere measurement cannot help to a conclusion. But still, we may gain some general information by the examination of these hairs ; we may find among them some that show no trace of the scissors, and have fallen out with their points ; that is, have completed the course of their existence before they have attained the average length of the rest of the hair.

I call these hairs 'point-hairs,' as opposed to the usual hairs which show traces of the scissors. These point-hairs in men sometimes correspond to the short hairs in women ; after a little practice anyone may easily distinguish them.

Since the absolute number shed is often inconsiderable, and it is important to distinguish real point-hairs from torn off pieces, I will give a short account of the characteristic marks of the completely developed hair. Each hair forms an attenuated spindle ; its point quickly increases to the thickness of the shaft ; it retains this thickness for three or four fifths of its whole length, then

becomes slightly thinner and terminates in a little knotty swelling. Where the hair begins to grow finer, its colour also loses in intensity. One of my cases was a doctor, aged twenty-five. His hair was brownish-black, of medium fineness, very thick. The skin of the head had desquamated for several years. Average length $4\frac{1}{2}$ inches. Sometimes the minimum of daily loss amounted to 60 hairs, the maximum 112, medium 76. The ratio of the point-hair to the general loss was 1 to 5.353.

At the time I very imperfectly understood the diagnosis and therapeutics of hair diseases. My colleague's hair looked rich, had a good natural gloss ; still, this proportion of the point-hairs to the general loss startled me. Every fifth hair had completed its existence without attaining a length of more than $4\frac{1}{2}$ inches. The year after, the disease had considerably progressed ; it was no longer necessary to count the hairs for drawing the diagnosis. The thinning of the hair was quite evident.

§ 8. *The Gregarious Growth of Hair.*

If we examine the hairs near the skin, we can easily see that they are arranged in groups of two or three, rarely four ; the original architectonical tendency of the individuals of one group is such that they would never all end their growth at the same time ; besides this, the hairs in one group never have the same typical length or the same rate of growth. They are to a certain extent independent of one another. When one hair is near the end of its existence, the second may be at its height and the third

only at the first quarter. This inequality of epoch prevents the hairs from falling out in a circle. The places where the falling out takes place are at wide intervals. If it were not for this arrangement there would be little bald spots in our hair. Such bald places do occur, but only in a state of disease.

When a hair falls, the space is left free. The roots of the two others make use of this: they increase their extent and absorb the nourishing juices in such a manner that they ensure increased strength for the greater part of their existence. The place for the root of the fallen hair now patiently awaits the moment when the decrease of thickness in the diameter of the other two permits it to develop its dormant power of formation. From that moment it again becomes important, and for a time the strongest of the group.

These conditions of growth may be closely observed in the hairs of the first joint of a man's finger. When they have attained a certain strength, if the hairs in one group are cut off close to the skin, one hair will be seen to grow more quickly than the others. This is often the youngest. It then survives the others, and still continues to exist when these have fallen out. It is often in middle age, next to a hair that has just begun existence, and another near its end. I strongly recommend this observation, which requires only moderate attention and a certain amount of perseverance; it is very interesting, and teaches more about the connection between individual existences in organic nature than a long discourse could do.

PART II.

THE DISEASED STATES OF THE HAIR, AND THEIR
TREATMENT.§ 9. *Acute Diseases of the Hair.*

I CALL those diseases of the hair acute whose duration does not exceed three to four months. This division of time is arbitrary, it is not found in nature ; but some limitation is desirable for our mutual understanding, and a careful observer will find that the one I have chosen is correct in the greater number of cases.

Acute hair diseases may, or may not, be accompanied by inflammation and eruption of the skin. When these do not appear the patient always observes a sudden and very considerable increase of loss of hair, from 30-50 to 200, 400, even 600, per day. With the exception of slight headaches, there are no unpleasant sensations in the skin ; the amount of scurf is generally increased. If there is also inflammation or eruption, there is no lack of painful sensations, such as straining, painful pressure ; rarely really acute pain.

It is important for the treatment to ascertain, when the

disease commences, whether it be acute or chronic. I therefore give what I have always found to be a characteristic mark. In acute diseases a comparatively large number of hairs are suddenly cut short in their typical existence; they fall out long before they have completed the time originally destined them.

Sometimes, among the hairs shed, a large number do not show any decrease of thickness or colour towards the root, and appear to have the root-knot in the middle of the cleft.

By the increase and decrease of the loss we may tell whether the disease is augmenting or diminishing. The diminishing takes place very slowly; the number of hairs with unchanged roots gradually increases, until the proportion of 1-5 or 1-4 is again established.

§ 10. *Treatment of Acute Diseases.*

Acute diseases ought, if possible, to be watched and cured by a professional. I am in favour of enlightenment as to medical matters, but I do not acknowledge any other direction than the doctor's in acute cases. In acute diseases the separate phases follow one another quickly, and individual natures also require to be considered. Therefore it is not possible to give detailed advice that is always applicable. In popular writings, only such measures should be suggested as may be undertaken without harm; therefore those who cannot consult a doctor may follow this general advice:

(1.) In acute diseases without local skin disease, irrita-

tion and general excitement of the nervous system should be avoided as far as possible.

Therefore the skin should not be irritated by sharp combs and brushes. It should be remembered that the comb is not for the skin, but the hair. The daily use of a brush for the skin is admissible, but it should not be too hard. Temperance should be observed in eating and drinking, and in doubtful cases it is better to be somewhat sparing. Mental agitation should also be avoided.

(2.) If there is also inflammation of the skin, and if this is at all extensive, absolute rest and strict diet are necessary.

(3.) In real eruptions, washing is the most important remedy ; not a violent tearing off of the crusts and scabs, but a gentle loosening by soaking. At night, plentiful application of lukewarm olive-oil, by means of a feather, sponge, or soft shaving-brush. In the morning, wash this off with lukewarm water with a little lather of soap.

In half the cases, the observance of these general rules would suffice to cure the disease. Only at last a medication is required to restore to the skin elasticity and freshness. In other cases, direct medical treatment is advisable from the first, chiefly to prevent an acute disease from becoming chronic.

§ II. *Chronic Diseases.*

Chronic diseases seldom increase the amount of the loss of hair ; they generally begin by a gradual decrease

of the original length of the single hairs. The new hair-growth becomes shorter, but since there is no diminution of the former thickness, the whole hair appears as strong as before. Consequently, men do not become aware of disease during the first few years. Women notice it through the decrease in length. But neither do they know that this shortening will be followed by a thinning in course of time. Only when this occurs, after from two to five years, do they seek assistance, in many cases too late. It is rare that hair which has gradually lost both in length and thickness can be restored to its former condition.

That period of chronic disease when the hair loses in length, but not in bulk, is the first stage of hair-wasting. As soon as the diameter begins to decrease, the second stage begins. All states of disease take a normal course. Healthy hair shows a gradual but constant decrease of diameter in the last stage of its growth ; but this is only three-fifths of its normal thickness. The decrease which takes place in the second stage of hair-wasting occurs in the same manner, but in a much higher degree. When this thinner hair falls out, its successor shows none of the original thickness, and gradually the later aftergrowth acquires the character of down.

Chronic diseases have a progressive nature. This progression may take place in two ways ; in one case a great part of the skin of the head (generally in the middle) is attacked in such a manner that in every group one hair loses in diameter, while the others retain their former

thickness. The head would appear to have plentiful hair, only rather less close than before. In the course of a few years the other hairs of the groups are drawn into the process of disease, and a bald place is formed. In the other case, the disease attacks a comparatively small place of the size of a shilling, either on the top of the parting or an inch below the front edge of the hair, rarely elsewhere. On this spot nearly all the hairs lose length and diameter in the course of a year. The general appearance gives the idea of a tonsure on a strong head of hair. Only after this bald spot has been formed does the disease spread.

In general we may say that the former proceeding (when a large portion of the skin is affected in such a manner that hairs in the same group show at the same time the various stages of the disease) is more common in youth; the second (the tonsure), in middle life.

It is owing to the circumstance that during the first stage the diameter of the single hairs, and therefore the general thickness, is not materially diminished, the patients have no idea that disease exists. They do not observe the shortening of the hair, and do not know that after a time this is followed by thinning. They do not notice the evil until it has entered the second stage, when it is usually too late to stop the incipient baldness. It is therefore necessary to recognise the evil early.

The easiest means for this recognition may be deduced from the laws of hair development. On three successive days, collect the fallings morning and evening; and it

the hair be worn long, separate those over six inches from the shorter ones. If the number of short ones is one-third of the whole, there is disease. If the hair be worn short, those hairs which bear traces of the scissors should be separated from the point hairs. If the hair be worn 4-5 inches long, the number of those point-hairs must not exceed one-fourth or one-fifth of the general loss.

Formerly, premature loss was regarded as the consequence of general or local weakness. This opinion was formed because after weakening influences acute hair disease appeared ; and reasoning by analogy, it was assumed that some such weakness preceded the chronic diseases. Ever since the days of Samson strong growth of hair has been regarded as a sign of a powerful constitution. The inference was natural that the decrease of original strength of the hair-growth only reflected the decrease of the general health. This inference quite disregards the fact that a great number of robust persons grow bald early. The idea of weakness was still retained, and help was sought in tonics and stimulants. This opinion of former doctors was gradually communicated to the public, and there became established. Almost all my patients have used such stimulants for months before coming to me (spirits, brandy, eau-de-cologne, castor-oil), and have done themselves much harm. All these stimulants shorten the existence of the hair, or, to make use of a metaphor, they exhaust the hair-soil.

I wish to caution against these tonics. The diseased head-skin cannot endure them. It is not weakness but a

diseased irritation that has to be dealt with, and our task is to cure this; or if it is no longer possible, at least to lessen it. This can be done, but not by any general remedy. Many patients come to me, supposing me to have a certain 'hair remedy.' There are no such remedies; there are only certain medicaments which counteract the causes of premature wasting, shortening, and thinning. But these medicaments must be chosen, and the dose altered according to the nature of the case, the stage and cause of the disease, and the general constitution. A remedy suitable to-day may be unsuitable in four weeks' time, or no longer suitable in the former dose. Chronic hair disease must, like any other chronic disorder, be watched by a physician. Still I shall be able to give a remedy for the whole first stage of chronic hair disease which can never do harm, and which will be of considerable advantage to almost all patients. It may be modified according to the age of the patient and duration of the cure.

§ 12. *Causes of Chronic Wasting and Measures for its Prevention.*

HAIR TREATMENT.

In one out of three cases of hair-wasting, the disease is inherited. Fortunately this inheritance is not a natural necessity. In a family inclined to hair disease not all the children will suffer from premature baldness; and even where the disposition has been transmitted, it may be

checked by preventing those evils known by experience to affect the hair.

In all these cases much depends on right treatment. In my opinion there is certainty concerning the essential points in hair treatment. In general we must remember that the hair is like the whole body in this particular. A very strong constitution may endure a great deal without injury, but it is useless to judge from individual cases in which a certain kind of treatment may have had good results. Originally strong hair can bear much, but weakly hair requires careful treatment, which must be early commenced.

In the first place, the eruptions of the head occurring in early infancy should be more carefully treated than is customary. Formerly it was assumed that all such eruptions resulted from acidity; and no attempt was made to check them, as they were regarded as a safety-valve to prevent the acidity from throwing itself upon nobler organs. We now know that this idea only holds good in exceptional cases, and that these eruptions are generally local diseases which should be cured as quickly as possible. If they are of short duration, they merely become a stronger incentive to the growth of the hair, and after a time the hair appears even more plentiful than before. After long duration, this incentive is so great that exhaustion of the skin takes place. But the complicated, slow conditions of growth prevent the exhaustion from becoming apparent until many years later.

According to my experience, the pernicious effects of

eruptions and rough treatment of the hair are of great importance in early youth. In later years many persons irritate their skin by a too frequent and too hard brushing. If the brush is daily passed once or twice gently over the head, this does not injure the hair; but it is very pernicious to the hair to work away at the head, to smooth naturally curly hair, or, as is sometimes intended, to curl smooth hair, or to remove all the scurf from the head. Let the brush be soft. I have no objection to the American steel brushes.

From time to time fashion condemns the use of hair oil. Some ladies desire that every hair should assert itself, look rough and therefore plentiful. It is only strong hair that can bear this. Attentive persons notice that some days their hair appears fuller than others. This fluctuation is partly caused by the various degrees in which the hair is filled with water, according to the various conditions of fulness of the skin; partly by the unequal saturation with natural oil. In this latter case the living hair becomes hygroscopic, and changes according to the greater or lesser moisture of the atmosphere. A hair which often experiences such fluctuations displays, among other unpleasant appearances, the disastrous one of splitting. Notwithstanding I must remark that splitting may be brought about by other causes. This evil may be effectively obviated, and one remedy is the plentiful application of oil.

I have often been asked whether oil or pomatum is best. For most heads they are equally permissible.

Since oil gives a softness to the hair which may easily cause it to appear thin, I have no objection to the use of pomatum for those who desire to avoid this appearance, but it must be fresh and well prepared ; that is, besides pure grease, harmless colouring matter, and some scented oil, it should not contain any other irritating component. If the pomatum is very firm (*i.e.* contains much wax), little of the grease penetrates the hair ; it remains on the surface and thus makes the hair appear rather fuller. If this is to be attained, a waxy pomatum may be used ; but it will not saturate the hair with oil.

I would advise the purchasing of pomatums and oils in very small quantities. Sometimes the fat decomposes quickly, and the product of this decomposition (fat acids, whose smell we designate as rancid) is very pernicious. Where the hair requires careful treatment, I would advise the use of an animal or vegetable oil without addition of scent. It is then easy to ascertain whether the smell is quite pure or becoming rancid. If an addition of scent is desired, in itself harmless, a drop of eau-de-cologne, or other perfume, may be added to the oil before using.

If the hair is often oiled, there is a need for frequent washing. How often should this be done, and with what fluid ?

Some people's heads perspire so little, their skin desquamates so little, and they use so little oil or pomatum, that the daily combing of the hair suffices for cleaning, and no washes are required. If washing be necessary, but only required every month, soapy water may be used. On the

other hand, constant use of soapy water causes considerable irritation and a sensation of strain and dryness, often followed by increased formation of scurf. Against this only mild remedies should be employed ; honey-water and violet-water are very good. Yolk of egg, which is much used, is very mild, but requires rather too much water to wash it off ; therefore it is better to use the white, which is equally efficacious. I think the following wash preferable. It is the least irritating, and may easily be prepared at home. A tablespoonful of *pâte d'amandes*, wheat, or rye-bran should be put into a saucepan of boiling water and boiled from two to five minutes, strained through linen, and be used lukewarm or cold according to choice or custom, for either is permissible.

Delicate persons should avoid a chill for one or two hours after washing, and should oil the hair a little as soon as it is quite dry ; the oil then penetrates best. If the washing is followed by any feeling of strain or dryness in the skin, this may also be slightly oiled. Concerning feminine headdress, I will say that pads, whether formed of one's own hair, strange hair, or other material, should be avoided by those who have weak hair, or are liable to congestions or nervous headaches ; they weigh and pull, and they collect dust and perspiration, and spoil the hair. But I have never observed pads do any harm to good hair and really healthy nerves ; though I am entirely opposed to the heavy false plaits that weigh on the middle of the head, and to large chignons, which always harm even the best hair and healthiest nerves.

I consider it advisable for ladies to loosen their hair at night, to undo their plaits, comb the hair and then wear it in a net, tied loosely with a broad ribbon ; this gives easement to the skin.

Concerning night-caps, it is a matter of inclination during youth whether they be worn or no ; but if worn, they should be made of some light network. I recommend their use in advanced years, and do not object to their being warm or lined when the sensitive skin requires a covering ; only they should not be heavy.

I would give this advice to those who are forced by illness to remain much in bed. The hair should be daily oiled, and then combed with a coarse comb ; the skin should be washed twice a week with a sponge and a little soapy water. The water should be cold, lukewarm, or warm, according to custom, or the state of illness. If circumstances do not permit this treatment, the hair should be shortened by a third or half its natural length, so that the fluff and dust may be diminished as much as possible.

This advice is the most important for hair treatment. It holds good both for healthy and diseased hair, and its observance will suffice to enable most persons to preserve their hair ; but those whose skin has suffered from diseased irritation will require other remedies to prevent hair-wasting.

There is an opinion prevalent that gradual disappearance of the hair is owing to weakness in the body, or in the skin of the head. It appears to me that is only true in a

few cases. Loss of hair is generally occasioned by a permanent irritation; it is not a mere wasting, but an induration of the skin, which causes the loss. But the induration results from diseased irritation, either of the skin itself (and this is the more usual) or of other organs, which is transmitted to the skin of the head by the nerves.

Regarding local irritation, there can be no doubt that even the hair of adults, if naturally weak, may be injured by a coiffure that drags, or heavy head-covering. Still more dangerous is a form of irritation supposed by many persons to be beneficial. I speak of daily shower-baths on the head. Much premature baldness has been caused by this unsuitable application of cold water. The daily washing of the skin covered with hair is an irritation which brings about a quicker change of hair; but daily shower-baths, continued for months, greatly affect the hair, especially during youth and early manhood. If the general health demands the shower-bath, the head should at any rate be protected if possible, by bringing it out of reach of the downpour. If this cannot be, for medical reasons, a bathing-cap should be worn.

It is easy to believe that injuries done to the skin of the head may affect the hair, but it is less credible that the irritation of other distant organs can communicate irritation to the skin of the head by means of the nerves. Still the assertion is correct, and there are especially two groups of organs whose injuries affect the skin of the head—the bowels, and the centre of the nervous system.

Among actual diseases of the bowels, acute inflammations often have injurious effects on the colour of the hair, and to these may be traced many cases of premature and sudden greyness. Among chronic disturbances, the permanent catarrhs of stomach and intestines, and irritations of the liver, often affect the hair itself. Many states of exhaustion induced or attended by chronic diseases of the bowels have the same unpleasant effect upon the hair.

During these illnesses the advice concerning treatment of the hair should be especially regarded; and the remedies against the disease are also of beneficial effect upon the hair, although it often happens that the diseases depart without the hair being benefited. In this case the skin of the head should be locally treated.

The reaction of the centre of the nervous system upon the skin has been frequently asserted and much combated, but appears to me undeniable. Tiring brain-work, strong mental agitation, silent grief, continued disturbance of sleep (which, medically speaking, are all irritations of the brain), exercise a reaction upon the hair-growth. Now it is impossible to banish trouble, care, and excitement, nor would I advise against mental exertion merely to prevent the hair from suffering; but experience teaches that a strong physical and mental organization can resist all pernicious influences, and all mental exertion, without harm even to the hair. Therefore we should strengthen ourselves in time by practice and habit that we may have a store of strength in trouble;

and those who are weak should avoid, not exertion, but over-exertion, and should bear inevitable evil with calm resignation.

The causes that induce premature hair-wasting are found in all climes ; they are not always the same, but unfortunately all have the same final result. Besides this, it appears to me beyond doubt that a part of these causes is connected with man's intellectual work and with education. Tacitus said of the ancient Germans, 'they retain their healthy hair and teeth to an advanced age.' Has humanity degenerated? Decidedly not! In the many thousand years that education has laboured, our organization has suffered no change in its original nature ; only our battles have ruffled our outward appearance.

The result of more than twenty years' labour has convinced me that the universal consideration of the advice here given would secure to the rising generation more lasting hair than we have at present. The causes that bring about chronic disease should be as much as possible avoided ; and where danger is suspected, the loss of hair should be counted in the manner I have described (§ 7). The counting is somewhat troublesome, but the labour of twelve years' counting and examining an immense number of hairs has afforded me this law : 'As a rule, when the hair is worn long, not more than a quarter of the fallings should measure less than six inches ;' and the treatment advised in the following section is the result of eight years' continued experiments.

§ 13. *Medical Treatment of the First Stage of Chronic Hair-wasting.*

Where the suspicion of hereditary tendency, or a scurf formation of many years' standing, or diseases of the bowels or nerves, have induced to the counting of the fallings, and where this has shown that chronic hair disease was beginning, I should advise the following treatment.

Dissolve 2-4 grammes of bicarbonate of soda in 100 grammes (about 12 tablespoonfuls) of distilled water (rain or spring water, filtered through fine linen, will do). Very delicate persons should rub from one to two tablespoonfuls of this, on two consecutive days of the week, very carefully into the skin with a hair-brush or sponge, especially on the front and middle of the head, as these are the parts most endangered. The rubbing should last from two to five minutes, and care should be taken that the fluid comes on the skin, not on the hair. For this purpose it is better to make little partings with a comb. The hair must be gently dried with a soft cloth, and for the next hour the head should be carefully preserved from chill. During this time the hair should be left to hang loose.

This rubbing may be done at any time of day. On the three or five days that it does not take place the hair may be dressed in the usual manner.

On the first or second of these off-days some oil (which must be fresh) should be rubbed into hair and skin. The

first favourable results may be perceived after four or eight weeks, when the counting shows a decrease of the loss. The wash should be continuously (from five to twelve to eighteen months) applied in this manner, until the counting shows that the short hairs number between one-fifth or one-fourth of the whole loss. For the next month the rubbing should be omitted for one day in the week. (Thus from one to three times a week.) Those who then still use the mixture more than once a week should every month omit another day in the week. When only one day a week is left, the rubbing should take place once every fortnight, during the next three months.

The cure is then completed. As a rule, it lasts from one to two years. It seems long, but surely it is well worth while to preserve the hair into old age.

When the cure is over, the loss of hair should be tested from time to time; short disturbances need cause no alarm. They result from temporary states of irritation, and will vanish of their own accord. But if, after some time, permanent departures from the normal condition should occur, the treatment should again be resumed for two or three months. It will then generally suffice to use the mixture two days a week for the first month, and only once during the second. It is seldom necessary to undertake a third cure. This rarely happens, except when there is a decided hereditary tendency for generations, or from both father and mother.

If the skin is very hard and the scurf abundant, a

tablespoonful of pure glycerine may be added, with a drop of perfume, if desired. Of course, the before-named incitements to disease must be carefully avoided during the cure, whether they are direct on the skin of the head, or indirect on distant organs. It is as well to mention to the family doctor the intention of using this treatment, for sometimes certain peculiarities of constitution, such as liability to rheumatism, nervous or congestive headaches, render small deviations from the usual method desirable; or it may be advisable to use internal medicines at the same time. The doctor will doubtless give the necessary directions.

I call attention to one of the effects of this treatment, as it might alarm the patient: in some cases the medicament changes the colour of the hair—it gives a tendency to auburn. Some do not dislike this change, but most people prefer their natural colour. If the fluid is carefully dried from off the hair, this change of colour will not occur, or will be very inconsiderable; and even without the careful drying, the natural colour will return after the completion of the cure.

Those who are anxious that the colour of their hair should remain unaltered, should use other medicaments having the same effect as bicarbonate of soda; but these can only be prepared by a druggist, because very small quantities have to be weighed, and the dose must be frequently altered, and because the head becomes accustomed to the medicament, which is not the case with the

soda. The whole cure must then be conducted under a doctor's guidance.

Since I first made public this treatment, it has been used in all civilized countries, and I receive letters from all parts of the world, telling me of its successful result. The cost of the cure is inconsiderable, the trouble small, when after the first few weeks the counting of the hairs has grown customary; while the advantages are so apparent and so satisfactory that the trouble is quite repaid. It should be remembered that the treatment is only calculated for the first stage of chronic hair disease; as soon as the course of several years has gradually brought about the visible thinning of the hair (second stage), and as soon as the change in the skin has become considerable, there must be serious disturbance, requiring constant medical treatment, because no general directions can be given.

§ 14. *Medical Treatment of the Second Stage of Chronic Hair-wasting.*

The second stage of chronic hair disease is characterised by a loss of thickness as well as length in the single hairs, which at last become quite fine. These little fine hairs, which are found on the surface of the whole body, are called down. The head which to-day is entirely bald still possesses as many hairs as ever; but they have nearly all become so fine that they no longer cover the head, and can only be seen when the light falls upon them in an oblique direction.

The transition from the first to the second stage is gradual; and it often happens that some of the hair-groups already show a considerable decrease of diameter in some of their hairs, while the greater number of groups are still in the first stage of the disease.

I have before referred to a doctor in whose hair the second stage was gradually developed. I found the absolute loss of hair to increase with the advance of the disease. In the first stage the average of the daily loss was 76; in the second it rose to 135, then to 250, then to 300. These latter numbers far exceed the normal proportion; but they do not occur until a stage of the disease when it only requires a careful glance at the head to show the advanced degree of the mischief. Even more striking than the absolute loss of hair was the abnormal ratio of the point-hairs to the general loss. In the first stage this was 1-5,353; in the second, it increased to 1-24.

This proportion between the hairs living a normal life, and those living a short one, can only be regarded in the right light when the loss from the front and middle of the head is taken into consideration alone. This may be done by careful separation with the comb. I only once undertook a similar counting. For a week there fell out daily from the healthy parts of the head, on an average, 108; from the diseased parts, 227. (It was the middle of summer, and the average of absolute loss greater than usual.) The diseased parts of the head covered about half the extent of the healthy; but their loss was daily

more than double that of the healthy part ; *i.e.*, the life of the single hair on the diseased part was only a quarter of that on the healthy. Besides this, the proportion of point-hairs to those without points was 1·4 on the healthy skin, 1·1 on the diseased.

The intensity of disease is shown in the second stage by the increased loss of downy hairs, even more plainly than by the increase of the absolute hair loss and the number of point-hairs. When I first commenced my observations I was of opinion that the diameter of a natural hair never descends to this minimum until its typical length is reduced to about an inch. Careful sifting of the fallings proved this opinion to be erroneous. In the second or third year, after the commencement of the second stage, downy hairs are found measuring six inches or more.

Now what can medical skill do in this stage of disease? Every part of an organic being is only maintained in its integrity by its power of entirely resisting pernicious outward influences, or quickly recovering from their effects. This power is the fundamental attribute and also a measure of the vitality of each single organ, as of the whole organism. Now if pernicious influences continue to operate, this power of vitality is partly lost and the organ has become more or less powerless against outward influences and succumbs early. It is a characteristic of all chronic diseases that the diseased organ no longer has the power to regain its healthy form (*i.e.*, the basis of its former strength). There is another law relating to

organic beings ; organic nature cannot stand still, it must either advance or recede. If an organ has taken a diseased direction it moves in this direction like a ball along an inclined plane ; the movement towards the fatal end continues to accelerate.

Therefore in treating chronic diseases a doctor should be modest in his expectations, and his patients should recognise that it is only an exceptional case if a chronic disease, after lasting some time and causing certain changes in form of the organs, is completely cured. If this is borne in mind the causes of disease will be more carefully avoided and the diseases themselves earlier combated.

These general axioms may be applied to hair disease. When a large portion of the hairs have suffered considerable loss in diameter, it is only an exceptional case if the hair can be restored to its former state. For the same reason it is rarely possible even to stop the advance of disease, for as soon as it has once taken root the tendency is implanted to go on producing thinner hair, and finally only down. In this stage medical skill can still do three things :

(1.) Those parts of the skin where the disease is in a state of transition between the first and second stages may be entirely preserved from passing into the second. Sometimes these places may even remain in a condition to produce strong hair.

(2.) Those places where the second stage has already commenced may be so far influenced that the rapidity of

the progress may be retarded by some years. A general result of these two statements is this: one part of the head may be entirely preserved from baldness, while the baldness of the rest may be retarded by from six to ten to fifteen years.

(3.) The frequent depression of the nerves of the head may be entirely cured. I shall discuss this point in a special section (19), therefore I need not mention the details here.

I have given a mode of treatment for the first stage which anyone may use without medical advice. It is impossible to give similar instructions for the second, because the manner of its advance varies more according to the individual than that of the first stage, because the irritated appearances of different organs are unequal, finally because the habits of living (eating, drinking, bathing, etc.) demand special directions for every individual.

In this second stage a cure should only be attempted when the patient or his friends consider that a postponement of baldness for a number of years is a matter of importance, or when the condition of the nerves of the head requires to be improved. Whoever does decide to attempt a cure, even in the second stage, should carefully follow all the directions given him by the doctor, and he will rejoice in the result.

§ 15. *Unusually Acute Course of Chronic Disease.*

The course of the first stage is generally so slow that from two to six years elapse before the single hairs begin

to grow thin. It sometimes happens in exceptional cases that the whole stage is compressed into a few months ; a head, well covered a few months ago, may now appear thinly covered or even bald. I have only seen this intense rapidity in two cases :

(1.) After certain intense mental agitations requiring action of the part of the person. Silent grief cannot have this effect, only such conditions as, besides causing disturbance day and night, require increased mental activity. Thus the preparation for a difficult examination, upon whose result the whole future life depends ; the founding of a business whose formation was expected to be easy, but which proved the contrary ; the preservation of fortune and good name when they are suddenly threatened ; or the sudden promotion to a post of responsibility.

(2.) Hair-wasting sometimes has a similarly acute course after some severe disease (nervous, or scarlet fever, inflammation of the bowels), and after some acute or chronic contagious diseases. In all these cases the change in the nature of the hair soon becomes so considerable that no counting is required. It can neither escape the patient nor his surroundings.

Medical skill has only a limited effect on this kind of disease. As a rule I have rejected every treatment ; but if it be accompanied by an unpleasant sensation of pressure and strain, and if this is so considerable that all pleasure and power of work seem gone, this nervous ailment may be successfully treated. This is best done by a regular doctor's treatment.

For those patients who are unable to obtain medical advice, I counsel the following: Iodide of potassium 1-4 grammes, dissolved in 250 grammes of distilled water. It is best to use 1-2 tablespoonfuls of this solution every morning after rising and before washing the face. It should be gently applied to the skin with a soft shaving-brush and rubbed for three minutes. After four or six weeks patients will find considerable alleviation. The diet to be observed should be moderate, and stimulants should be used in very small quantities. I name this since experience has shown me that patients of this kind often make use of stimulants on account of a feeling of weakness and depression and increased perspiration.

I further advise a lukewarm bath twice a week, the temperature $25-27^{\circ}$ R., duration fifteen to twenty-five minutes. It is sometimes advisable to add salt or bicarbonate of soda to the bath, but no general directions can be given as to the advisability and quantity of this addition, as the individual case has to be considered.

§ 16. *Fungous Diseases of the Hair.*

Everywhere in the world (in Europe, more especially in the East and South, than in the West and North) there are found two microscopic kinds of fungus which induce very serious diseases of the hair. The Latin names of these diseases are *Herpes tonsuraus* and *Favus*. Children are the most frequently attacked. Sometimes it begins with an eruption of pustules which burst and the matter that flows out sticks the hair together. The drying of the

matter forms scales of a white, yellow, or brownish colour, covering large tracks of the skin.

Sometimes only yellow scales are formed without any appearance of moisture. The separate spots melt to the size of a farthing and they are generally hollowed in the middle. The course of both these diseases is chronic, after a time they destroy the hair. They are both contagious, and the same patient may be several times attacked by them. They are both curable, but the cure must be performed by a doctor. As a rule it is better to send patients to a hospital. Generally most of the hairs have to be singly extracted with pincers, and this should be done by an experienced hand, which will make the operation less painful.

The remedies are medicaments which experience has shown to kill the fungi without injuring the skin of the patient. These are solutions of bi-chloride of mercury and sulphate of copper, etc. The dose should at first be weak, gradually be strengthened, and at last weak again. Washing with soap, twice a day, will remove the scales, and plentiful rubbing with lukewarm olive oil an hour beforehand will facilitate the washing.

In the interest of the patients and their belongings, it is desirable that the cure, which is finally inevitable, should be undertaken as early as possible. It is also advisable in every case to attempt to discover whence the infection comes ; it is generally communicated by a human being, but sometimes by a mangy animal (dog or cat).

If the illness is not conquered, it may be inherited

from generation to generation. In districts far removed from civilization, or where the public health was much neglected, I have found whole villages thus infected. The unfortunate children had suffered from this disease in their general physical development. The prejudice prevailed among the whole population that these eruptions drew the bad juices out of the body, and were therefore very healthy, and must not be removed. Repeated friendly advice, especially to the most important families, had the effect that the treatment of some few patients was permitted, and when the result was proved satisfactory, and the general health was improved, this prejudice was gradually overcome, and young and old willingly submitted to the treatment. In such a case the doctor should carefully inspect the whole village after the lapse of six to seven months, so that wherever infection still lingers it may at once be removed.

§ 17. *Plica Polonica.*

This is the name given to a state of the hair when the greater part of it appears to be stuck together in a more or less connected mess. For centuries this state was held to be a disease, but during the last generation it has been ascertained that the *Plica Polonica* is only the result of not combing or washing the head for many years. There are whole districts on the Eastern frontier of Germany, in the territory of the Lower Danube, where the prejudice prevails that this feltering of the hair is a protection against serious internal disorders. Partly on this account, partly

for convenience, even the simplest care of the hair is entirely neglected. Dust and dirt clot the hair, and gradually work it into a fluffy web. The name *Plica Polonica* was given to it because it was first described by doctors in Poland, but it also appears far from that country.

The doctor must chiefly endeavour to overcome the above-mentioned prejudice. When he has succeeded in so doing, the complaint may be cured in a week. It is not at all necessary, or even desirable, to cut off the hair close to the skin. The head should be plentifully oiled several times a day, and washed with common soapy water. It should dry, and then be again oiled ; all the dirt will soon be removed, and the skin appear clean. For some time it remains susceptible to the influence of weather, and this is why I do not advise cutting off the hair. During the next four to eight weeks the head should be kept warm, but scrupulously clean. The patients and their friends are generally surprised at the scanty appearance of the hair after cleaning. As long as the *Plica Polonica* lasted, the head appeared covered with a forest of hairs. This was a false impression, caused by the mass of dirt accumulated. A few weeks after, the patients experience an agreeable sensation. Sometimes it is possible gradually to improve the hair, so that there are no after effects from this condition, even when it has lasted for years.

§ 18. *Alopecia Areata.*

Alopecia Areata, or *Area Celsi*, occurs in the following manner: in the midst of the healthy hair there suddenly appears a little bald spot, generally round. After a time a second shows itself near to the first, or at some distance, then a third and fourth. These places gradually unite, and a large part of the head becomes bald. In about half the cases the disease stops at this point; in the other half it goes further. All the hairs of the head drop off, then the eye-brows and lashes, and the beard in men, and finally all the hairs of the body.

If the complaint is confined to a small area of the head, it may be hidden by toilet remedies; but when it attacks the eyebrows and lashes, it causes a considerable disfiguration, and perhaps only artists have realised how much the appearance of the face is affected by the presence or absence of these lines. I will mention two other symptoms of this complaint, which have helped to direct me in discovering a medical treatment. Certain places on the nape of the neck appear sensitive to pressure, and the uvula is seen, when the breath is regular, to be slightly directed to one side.

Sometimes it is possible to discover the cause of the disease: it may be an injury to the nape of the neck, from a blow or bite, or a fall with some concussion of the spine; the influence of high temperature, or of a cold wind upon the unprotected head or neck. In some cases it follows eruptive diseases, such as measles or

scarlet fever, rarely small-pox. It is often impossible to discover the cause, and yet the complaint may take a very rapid course. It is almost always curable. Sometimes the treatment is so satisfactory, that the advance of the complaint is almost immediately checked ; it stands still a time, and then the bald places are once more covered with healthy, normal-coloured hair. In other cases the doctor's chief care must be to preserve the hair on the face, if the disease appears so intense in the hairs of the head that he feels powerless to save them. He must then attempt to prevent the disease from spreading beyond the head. When this is attained it is generally possible gradually to cause a new growth of hair on the head.

In a third case it is useless to attempt to stop the disease. It continues its course until it has destroyed all the hairs of the body ; but still it is possible to induce a new growth. They do not always grow with their original colour, but are generally somewhat lighter ; and hair, formerly smooth, often becomes curly, and *vice versâ*. Sometimes these abnormities may afterwards be cured, and a complete restoration of the healthy condition attained.

The mere description of the complaint will show that general advice cannot be given ; besides, it can attack any age. My youngest patient of this kind was a little girl two years old, and the eldest, a healthy man of sixty-seven, among whose plentiful grey hairs there was a large tract of baldness on the left temple. The disease attacks people of all professions, and in all climates, perhaps

more rarely in the Highlands. It is not contagious. It has often been supposed to be so, and the assumption is natural, since it may sometimes happen that three boys, sitting on the same bench at school, are attacked by it almost at the same time. The reason is probably that where the bench stood, the same cause of disease operated. Medical help should be sought as early as possible, when the advance of disease can still be checked.

§ 19. *Diseased Sensations in the Skin of the Head.*

In a state of health, we are not conscious of the existence of the skin of the head. Abnormal sensations occurring in a state of disease have very various natures and intensity. If occurring rarely, and if their intensity is slight, they have no effect on the temperament and power of action ; but if the contrary is the case, they can make life wearisome. One of the most frequent complaints is headache. Headaches arise, first, from diseased changes in the skin, or in the organs lying under the skin (bones, bone-skin, swellings, inflammatory processes) ; secondly, from immediate or indirect excitement of the nerves of the head. Now, about half the number of cases of chronic hair diseases are accompanied by an irritation of the nerves of the head, which evinces itself in two ways :

(1.) As hair-ache ; the use of comb and brush, sometimes the lightest touch, communicates a painful sensation to the root of every single hair.

(2.) A more or less painful feeling of pressure, strain or heat occurs, generally towards the crown of the head, which causes little inconvenience the first few years, but gradually leads to a constant feeling of mental depression.

According to my observations, these nervous diseases originate in the following manner: During most chronic hair diseases the skin and the cellular tissue below gradually lose some of their natural softness. At the same time the whole skin is contracted. In the cellular tissue of the dermis are imbedded a large number of fine nerve fibres, which are pressed by the diseased skin against the bone, and are partly crushed. This continued pulling, pressing, and squeezing of the finest nerves naturally causes very unpleasant sensations, and the reaction upon the brain afterwards causes the change of temperament and the incapability of continued intellectual activity.

In almost all these cases a complete cure is possible. After a few months the patient begins to feel his head freer, the unpleasant sensations gradually depart, and the return to the normal condition shows itself in a decided feeling of well-being. In all such cases, to prevent relapse, I advise that the medicaments be still used for some months after the cure, but in smaller doses; that is, not in smaller quantities, but weaker and more rarely.

§ 20. *Greyness of Hair, Premature or Otherwise.*

Simple greyness, when it accompanies advancing age, generally commences on the temples, spreads to the crown, and then attacks all the rest of the head. It may

proceed in two ways : in each hair-group only one hair may be attacked, while the others retain their colour ; or all the hairs in one circle may suffer at once. In the latter case the remaining circles of hair retain their colour, so that in any case the whole hair has a mixed appearance. This is the physiological law of proceeding ; there are some exceptional cases, but I shall not refer to them here. At the same time very distant spots are attacked, and only when a change at these places has reached a certain intensity are the neighbouring spots attracted into the process. General observations have taught us that this process always occurs at a certain epoch of our development. In normal conditions the course of development is such that the blanching of the hair is preceded by a number of other changes of the whole body, brought on by age. The greyness is then in accordance with nature, and harmonises with the general course of human existence.

But this normal development is rare. As a rule the bleaching in colour is accompanied by another change ; the hair loses in length and thickness, and this proceeding may also occur in two ways, either one hair in each group loses its dimensions, or this shortening and thinning occurs in all the hairs, but in only very few groups. In the former case there is an equal thinning of the whole hair ; in the second a tonsure is formed. Sometimes the processes are mixed.

If this disease in the hair-growth occurs with the change of colour in advanced life, both may be considered as inevitable. If, however, this condition begins at

the age of fifty, or if the hair-wasting takes place more quickly than the change of colour, there must be disease. It was formerly assumed that the bleaching of hair in old age was the result of a change in hair that had long completed its development. The hair was supposed to be something stationary and unchangeable, like the nails; the constant loss and compensation were never thought of, nor was it supposed that greyness could attack a newly-forming hair. The only question was whether the bleaching first attacked the point or the root, or the whole length of the hair. Even in the present century it was just as firmly believed that coloured hairs could never be bleached, but that they fell and were replaced by colourless ones.

There are three ways of deciding which of these opinions is correct: examination of the fallings, microscopic examination of the grey hairs, and observations on the living hair. It is contrary to the result of all unbiassed examination to assume that the colouring matter once deposited in the hair can vanish or be dissolved. It is easy to destroy the colour in a loose hair by a little chloric gas or hydrochlorate. A dark hair soon appears colourless, but it has never been observed that there is any body with similar effects to chlorine formed in the skin itself.

In my opinion this is certain: where microscopic examination shows no colouring matter in hair just removed from the head, there never can have been any. But there is another possibility: two cases of peculiar hair formation have been known; the one forty-five years

ago in Greisswald ; the other six years ago in London. Both cases were young men whose hair consisted of alternate pieces of white and colour. Some few hairs were completely coloured ; none were quite white. Most had one piece light, the next dark, then another light, and so on. These mottled hairs are very common among animals, but extremely rare among men ; at any rate, only these two cases have been made public. But microscopic examination has shown these hairs to be essentially different from those of animals. They have been examined by many people, and all agree in this result, the colouring matter is plentifully deposited on the white spots, but it does not convey the impression of colour to the eye, because the outward cortical layers are loosened, and between the fibres are a large number of air-cavities, which being arranged on one another in various directions, reflect the falling light with considerable lustre, and prevent the rays from penetrating to the coloured granules, and thus, by means of the reflex, cause the white appearance.

In the following paragraphs I shall dwell in detail on this point. This action of air can be only of very slight moment in the premature or gradual greyness which is under discussion. I have never observed it in these conditions, but have always found almost total absence of colouring matter.

To explain the condition of the whole hair, I will quote some of the results of three cases of normal greyness, greyness with incipient waste, and premature

greyness of healthy hair. The first and last relate to mother and daughter, and the latter had inherited the tendency to premature greyness from her father.

The longer the life for which a hair is naturally destined, the longer in proportion is the root-piece, which differs from the rest in colour and diameter. In normal hair this piece occupied one-third of the length in 77 per cent. of the hairs. The numbers of the other three ladies were 62, 67, 27. The more elastic a hair, the longer it keeps its point. The most elasticity is found in youth, therefore the young lady showed the highest percentage of point-hairs.

Most readers will be surprised to hear that the general loss (451) of the first lady, whose hair was healthy, though grey, was greater than that of the second (438), who, besides greyness, suffered from incipient hair-wasting; and this cannot be explained by supposing that in consequence of this complaint the lady had fewer hairs than she had had formerly, or than the other lady. There was no perceptible difference in quantity between the hairs of both, but the hair-growth of the second lady looked thinner because a considerable number of the single hairs had already lost in diameter. I again repeat, it is not the absolute amount of the loss which shows incipient or even existing chronic hair disease, but the quality of the fallings; *i.e.*, whether they contain many short or fine hairs. The normal bulk was 46 per cent. for the first lady, and only 39 for the second.

The lady who suffered from simple greyness lost 40

per cent. of white hairs; the lady who suffered from hair-wasting 12 per cent., and the young lady 2·7 per cent. These numbers were quite in accordance with the appearance of the hair, only the general impression of the young lady's hair was rather greyer than the small number 2·7 per cent. would have led us to expect. The reason is that the grey hairs are the youngest, and have their whole development before them; therefore a smaller fraction of these fall out than of the coloured. Patients generally express this by saying, the grey hairs are more firmly rooted than the coloured. A part of the latter have completed their typical existence, they are ready to fall, and therefore yield to the slightest touch.

It is very rarely that only the point turns grey. This happens oftener to the root. It is, therefore, beyond doubt that the laboratory, in the process of forming one hair, may lose the power of producing colouring matter. Most white hairs are colourless throughout their whole extent. After the falling out of the coloured hairs, these white ones are formed in their places. It rarely happens that both point and root are white and the middle piece coloured, or *vice versâ*; and only on one single hair have I observed several variations of colour. The hair was 24 inches long, its point-piece 3 inches white, then 9 dark, then 5 white, and the end somewhat light, but still coloured. In all these cases the colouring matter was wanting in the white parts. It remained where it had been originally deposited at the time of the formation of the hair, but at times it had been deposited and at others not.

This discovery was one of value to me; it has awakened the hope that medical skill may succeed in recognising the cause and conditions of greyness in detail, and in influencing them to a certain extent. If the greyness appears at an advanced age, it is no subject for medical interference; but what can our skill do for premature greyness? I will give a summary of my experience. In some cases of extensive premature greyness, it was possible in the course of from one to three years to substitute coloured hairs for the white ones. These were all cases where there was no hereditary tendency, and where greyness was the result of other complaints, such as Alopecia Areata, or fungus disease, or inconsiderable nervous irritations.

In some of the cases it was possible to prevent the further advance. The grey hairs remained, but did not increase in number, so that the general appearance of the hair was youthful. In many cases treatment was useless. Therefore I only attempt the cure when the personal concerns of the patient render it essential to prevent premature greyness; and if there is hereditary tendency, I only try to cure in the first stage. If every fourth hair is white, I refuse it.

When the tendency to premature greyness is accompanied by a tendency to thinness, or when unpleasant nervous disturbances occur, a remedial treatment is often necessary and successful. There are two questions usually asked by patients whose cure I refuse: 'Shall the white hairs be pulled out?' Where there are only a few

single white hairs, the pulling out is harmless ; although it sometimes seems as though the neighbouring hair or the whole group were thus inclined to turn grey more quickly but even this is of small consequence, and those who dislike the silver threads in their hair may fearlessly remove them. If the greyness is extended I strongly advise against pulling out.

‘Shall white hairs be dyed?’ On principle, I am against this. White hairs are caused by trouble and severe study ; not as is often supposed by a loose life, and need not be hidden. Still there might be circumstances rendering the concealment of grey hairs desirable. In such cases it is permissible. What dye should be used ? Vegetable dyes are in general uncertain ; the desired colour is often obtained by their help, but sometimes the result is an undesirable grey, green, or violet. Among mineral dyes, lead, formerly much used, should be avoided. It is a malignant poison, and it can be easily spared. After considerable experience, I recommend as certain, harmless, and comparatively not troublesome, the application of nitrate of silver (lunar caustic).

The grease should be removed from the hair, so that the silver may penetrate deeply and evenly. The grease may be removed by lukewarm soapy water, or a solution of soda, or spirits of sal ammoniac. The soda is the most convenient, and I would recommend always trying it first. The solution of soda should be prepared, and the most suitable concentration discovered by trial. A large quantity of the solution should then be prepared with

distilled water, and put aside for later use. In some cases, where the skin is not sensitive, such careful weighing of the dose is not required.

The solution should be rubbed in with a sponge or shaving-brush. The hair should be dried as quickly as possible, and the evaporation hastened by fanning. The more carefully the hair is dried, the more even will be the dye. Then apply the solution of lunar caustic :

Lunar caustic	.	.	.	1-4 grammes.
Distilled water	.	.	.	20-50 „

I do not think it necessary to exceed these numbers. The solution should be applied with a soft long-haired toothbrush and rubbed on the hair, partly towards the root, partly towards the point. The movement towards the root is more effectual on account of the arrangement of the little tiles. The process of dyeing is the following : the contact with the organic matter of the hair and the influence of light, decompose the medicament. The silver oxide is separated into little round granules ; silver oxide has a black colour, and it communicates this to the hair. The mixing of these granules with the pigment granules, which are almost always present, causes the general impression to be, not black, but brown, or brownish-black, which very nearly resembles the natural colour of dark hair.

Especially when the hair is not very abundant, it is almost impossible to prevent some of the solution from falling on the skin and dyeing it black. To remedy this

these places should be washed, if possible while still wet, with a solution of iodide of potassium, or sodium sulphide.

Iodide of Potassium	.	.	1-2 grammes
Distilled water	.	.	50-100 „
Or Sodium sulphide	.	.	2-4 „
Distilled water	.	.	50-100 „

The washing is best done with a little sponge. The hair should hang loose till it is dry. The proceeding is then completed. The evening is the best time for this operation. It is impossible to do this by one's self. The whole operation lasts from one to two hours. It is as well to mention that even with the most skilful assistance the whole proceeding cannot be a very pleasant one, though entirely painless. I have no occasion to advise against it in my medical capacity.

Every four to eight to twelve weeks the process must be repeated, partly because the granules of silver oxide being only deposited on the exterior are mechanically rubbed off, and partly because fresh grey hairs appear. Where a paler brown is desired, a weaker solution of lunar caustic may be used. I have never used any of the other medicaments that are recommended to me, such as permanganate of potassium 1 to 20-30 water. Even fair hair may be attained by means of lunar caustic.

§ 21. *Sudden Greyness.*

For centuries it has been stated that the hair of some persons has turned white in a night or in a few days, after

unusual mental agitation. The best known case is that of Marie Antoinette. Twelve years ago an interesting case was made public by a well-known doctor at Greisswald. A young man was taken to a hospital in an unconscious state, after having endured severe mental agitation, his hair, which according to his statement had been dark, was found sprinkled with grey. The microscope showed the pigment on these grey spots, but the fibres were loosened and the hair filled with air. His friends after his recovery were greatly surprised to see him grey-headed.

Personally I cannot lay much stress on this statement, because the hair had not been microscopically examined before the event by a trustworthy person. If this sudden greyness of the completely formed hair be really possible, it still happens very rarely, and repeated experience induces me to point out a source of error. When persons have gone through great trouble and anxiety it sometimes happens that the powerful effect upon the organism may also influence the laboratory of the hair. Part of the hair then formed contains no pigment. People then say, 'his hair has turned grey.' If one of these hairs is carefully examined it will be seen that often only that piece of the hair nearest the head is colourless. In such a case, unless there had previously been grey hair, I have never yet found a single hair white throughout its whole extent, or on any place far removed from the skin; and microscopic examination has shown that the pigment was really wanting in the parts which appeared colourless. In my

opinion this very interesting question stands thus: it has never yet been fully established that a coloured hair has become white. As far as exact observation has determined, the bleaching occurs by the piece of the hair, which grows afterwards, being formed without colour, or by the coloured hair falling and being replaced by a colourless one, which really comes to the same thing, though a single sufficiently authenticated fact would definitely settle the question. The possibility that a completely formed hair should turn grey cannot be denied, and a very important communication has been made concerning it. A famous Frenchman, Brown-Sequard, relates the following: 'One morning I found in my dark beard a few grey hairs on one spot. I was astonished, and to watch this process of turning grey I carefully extracted the hairs with pincers. On the following day I found some more grey hairs close to this spot. These I also pulled out, and next morning I found some more.' Unfortunately this statement, though made by a distinguished professional, does not entirely satisfy the requirements of exact science. The length of these hairs is not given, and microscopic examination is also wanting. If, as I think probable, the pigment was entirely preserved in the hair, the possibility that something analogous might occur in the hair of the head is increased, though the structure of the hair in the beard is different from that of the head. The former permits a much greater separation of the fine cortical layers, and therefore renders the presence of little air-bubbles possible.

I will here mention a few remarkable cases of sudden greyness told me by colleagues and patients :

Dr. A., of Berlin, relates : 'Twenty years ago, my wife and youngest daughter travelled to Salzburg. I awaited news of them. One morning I received a letter containing the news that my daughter had died after a short illness. Immediately my hair turned grey. I did not remark it until in the afternoon, when my friends called my attention to the change in my appearance. I looked in the glass, and found my hair was white. I must here state that I have always had a good constitution, and am still strong and healthy.'

Dr. K. A. writes : 'I can answer for the truth of the following : one day a vigorous young friend, aged thirty to thirty-five, entered my study, and I was amazed to see his black hair had turned grey. On my expressing surprise, he told this story : some weeks previously he had been walking along the harbour of Rotterdam, and saw a crowd assembled, calling for help. A child had fallen into the water and had sunk to the bottom. Being a good swimmer, he plunged in, dived, and brought up the child, who was dead, whom, to his horror, he found was his own boy. At that moment his hair turned white.'

Another doctor tells how a young lady of his acquaintance lost a valuable necklace, given her by her intended bridegroom. Regarding it as an unhappy omen, she fretted through a sleepless night, and next morning her chestnut hair was white. He enclosed some of these hairs.

A proprietor of forests in Carpathia relates how the

long hair of one of his workmen turned white in a night. He had been indirectly the cause of his brother's death, having incited him to a quarrel which caused his assassination. He sat beside the wounded man during the whole night, watching his death agonies, and next morning found him white-headed from anxiety and conscience scruples.

A doctor in Hamburg tells the following: 'In a cellar-dwelling I was treating a boy with severe scarlet fever. His father, a middle-aged widower, clung to him passionately, and never quitted his bedside until I could pronounce him out of danger, for the boy had sunk into a quiet sleep. The father then went to bed, and slept so heavily that he did not hear the warning cannon-shots that told the Elbe was rising. In the middle of the night he was awakened by the sound of water. He sprang up, and found the water already a foot high in the little bedroom; the second room, being nearer the street, and several feet lower, was already filled with water. In the general excitement, the inhabitants of the house had forgotten the unfortunate people in the cellar. The water continued to rise, it covered the man's knees, he sat on the bed with the sleeping boy in his arms. At the last moment help came in a boat. The boy recovered, the father survived the terrible double fear of death; but his hair, which hitherto had been dark, turned grey that night.'

Some cases have been communicated to me of a wonderful and puzzling nature, hitherto unrecorded in medical literature. According to these statements,

naturally dark hair turned grey for one day or more, after certain periodical irritations of the nerves of the head, and then returned to its normal colour. A case was communicated to me from Riga, about a lady who suffered from nervous headaches, and whose hair turned grey after each attack. I have also received statements to the effect that certain spots, especially the temples, suffer a temporary change of colour, generally turning yellow, during disorders of the bowels. When I examined these hairs microscopically, I always found the well-known signs of premature or circumscribed greyness. I have never yet had the opportunity of medically treating a case of sudden greyness ; but I think it is possible to give help in such a case.

§ 22. *Diseases and Treatment of the Beard.*

I. ALOPECIA AREATA OF THE BEARD.

This complaint often appears in the beard without occurring in the hair. If medical examination shows that there is no fear of a spread of the evil, and if its extent is not considerable, I would advise against any treatment. It is generally sufficient to shave on both sides corresponding to the bald spots, or, if the spots are very small, to let the hairs grow a little longer to hide the baldness. If the complaint has a progressive nature, I would advise a regular cure, to prevent the disease from spreading to the brows and lashes.

II. PREMATURE GREYNESS OF THE BEARD.

Where this occurs without premature greyness of the head, I think it is only in exceptional cases that a treatment should be attempted. Still I would almost always permit the use of the dye, and I recommend a lunar caustic solution.

III. KNOTTY UNTWISTING OF THE BEARD.

Whitish-grey knots appear on the single hairs, which make the beard appear sprinkled with grey. Microscopic examination shows that the single fibres have separated at these places, like the threads of an untwisted piece of string. This naturally impairs the firmness of the connection, and a sharp pull of the hand, comb, or brush, causes the hair to break. The cause of this loosening in the web is partly a diseased function of the matrix, and partly insufficient activity of the sebaceous glands. The medical treatment generally lasts some time. It is often better to use no treatment, and simply to shave the beard, when the slight complaint gradually heals, generally in about a year's time.

IV. FUNGOUS DISEASES OF THE BEARD.

These often occur without any participation of the hair. Sometimes they are surface inflammations, sometimes deep sores filled with matter. They are quite curable. The chief condition is that every diseased hair should be extracted with good pincers. It is seldom

necessary to go into an hospital. The treatment must be continued for some weeks after completion of the cure, although during this time the extraction of hairs is not necessary. To cure the irritation of the skin, which is an after effect, lasting for some time, I recommend the use of lukewarm douches similar to the eye-douches; immediately after every douche the patients experience an agreeable soothing sensation.

V. CARE OF THE BEARD.

I am opposed to shaving during the development of the beard. During youth the natural course of growth should not be disturbed, but shaving is a strong incitement: it causes the single hairs to become prematurely strong and hard. The colour also suffers; examination has shown me that the quantity of the colouring matter found in the root of the hair does not keep pace with the more rapid increase in thickness. This gives the original colour an undesirable tendency to red or brown. During middle age shaving does not have these drawbacks, and those who desire it need not fear the consequences. If there is any tendency to rheumatic toothache I would advise allowing the beard to grow; it prevents the nerves of the teeth from being so sensitive to the change of temperature. Oil and brush may be applied to the beard according to inclination.

To a certain extent it is possible to assist the scanty growth of the beard. The most convenient means is to shave daily and afterwards rub in such medicaments

(salves are best) as increase the local change of material. The dose of these medicaments should be weak during the first weeks to prevent eruptions. The dose may be slightly strengthened after a few weeks.

§ 23. *Diseased Growth of Hair.*

I am sometimes asked for advice how to remove superfluous hairs. The place where they most frequently occur are between the eyebrows, when they grow together, round the mouth and the arms.

I would recommend men to abstain from any treatment for this little abnormal deviation; but there are cases when it is advisable for women to effect a change, and I will therefore state what medical skill can do in this direction.

There are medicaments that destroy the skin as far as its lowest layers, and thus effectually prevent any new hair formation, but these medicaments, are corrosive. They cause a complete destruction of the skin, and form scars which appear first red and then white, and thus they only replace one disfiguration by another. I have never made use of such medicaments, and do not intend to do so. There are other medicaments which destroy the substance of the hair itself and only superficially attack the skin, such are combinations of lime and sulphur, or of lime, sulphur and arsenic. If the medicament is placed in the form of a salve upon the hairy spot, and removed after from 20 to 120 seconds (according to the strength of the single hair), all the hairs are loosened

as far as they project beyond the skin. These medicaments have much the same effect as a razor or a fine pair of scissors. On the other hand the proceeding strengthens the hair like shaving, and is combined with an equally severe unpleasant irritation of the skin nerves.

If every single hair is extracted with fine pincers in such a manner that the pulling of the hand follows the natural direction of the hair, it is possible at the same time to extract a considerable piece of that part of the hair situated in the skin itself. By this means the part of the skin thus treated appears smooth and white, not leaving little points of hair showing, as is the case after shaving. It is of no consequence of what material the pincers are made; gold, silver, ivory, iron, are all suitable, but the lower end which seizes the hair should not be a sharp edge, but a little plane. It is best to have small oblique ridges attached to these planes, for then the finest hair may be safely grasped.

The proceeding is on the whole not particularly painful. Of course it has the effect of making the after-growth gradually stronger. When the patient desires to prevent this, and entirely to subdue the evil, medicaments should be painted into the skin after the extraction of the hairs; which, to a certain extent, cause a destruction of the hair-bearing vessels. By these means a good condition may be brought about, even by women of advanced years. The cure can be performed by any doctor; the dose is chosen in such a manner that the

skin of the face shall not be inflamed ; but the proceeding lasts more than a year, and the patient's perseverance must not fail. With the required patience a good result may be attained without any disturbing effects.

What I have said of other hairs applies also to the hairs on moles. I never use corrosives, but I recommend the cutting out of the whole diseased skin, if the extent is not too great, or of single creases, so as to limit the disfiguration by the ensuing contraction into a scar.

§ 24. *Quack Remedies.*

There is scarcely any domain on which more tempting recommendations of secret remedies have been made to the public, than on that of hair disease. Many hundred years ago, doctors believed that for every human disease a remedy could be found in Nature. To find this, it was necessary to try experiments. They held Nature to be benevolent and kindly to assist our understanding ; might she not give some sign to help in the choice of a remedy ? Might not a plant with heart-shaped leaves be meant as a cure for heart disease, or a kidney-shaped root be a cure for diseases of the kidneys ?

Thus when they saw those parts of a plant that are plentifully covered with little hairs, they considered that Nature plainly pointed to the diseases of the hair. These plants were therefore eagerly sought, boiled and extracted, and the juice rubbed on the bald pates of credulous persons ; and without awaiting any result, the remedy was held assured, and the discovery made public. A

part of these supposed discoveries, when rejected by doctors, were seized upon and made use of by charlatans.

Since the end of the last century the great advance in natural science has destroyed the idea of the finger of Nature. At the end of last century and early in this, these quack remedies were infusions of these hairy plants ; then metals were used, because these were more frequently prescribed by doctors. Afterwards, when the use of metals was much limited in medical circles, the secret remedies always bore the inscription, 'prepared from vegetable matter only.' When the concoctors rejected medical influence they hit upon such ideas as this : because the bear has a thick fur doctors assumed many centuries ago that there must be in the fat of its cellular tissue some especial hair-producing power. A pomatum was therefore made from this fat and given to the bald to rub on their heads. The rubbing was of no avail, the bald remained bald and the doctors abandoned this wonderful notion. But the fundamental idea of the hair-producing power in the fat cells of the bear remained among the people, and the makers of pomatum utilised the idea abandoned by the doctors. The pomatum penetrated into countries where there were no bears. Of course it was useless. It was a matter of wonder where all the bears came from, and at last it could no longer be concealed that all the bear's grease came from harmless sheep, bullocks and pigs. This manufacture then lost its principal market, but still so firmly is

popular prejudice rooted that bear's grease is used to this day.

Till within the last fifteen years all these secret remedies against baldness were as harmless as this bear's grease, but for some time past there has been a change. The wonderful salves and lotions frequently contain powerful, even poisonous substances (PicROTOXIN); I therefore think it my duty to caution everyone against the use of quack medicines for any illness whatever; they will not cure the disease, but will often cause a new one.

THE END.



