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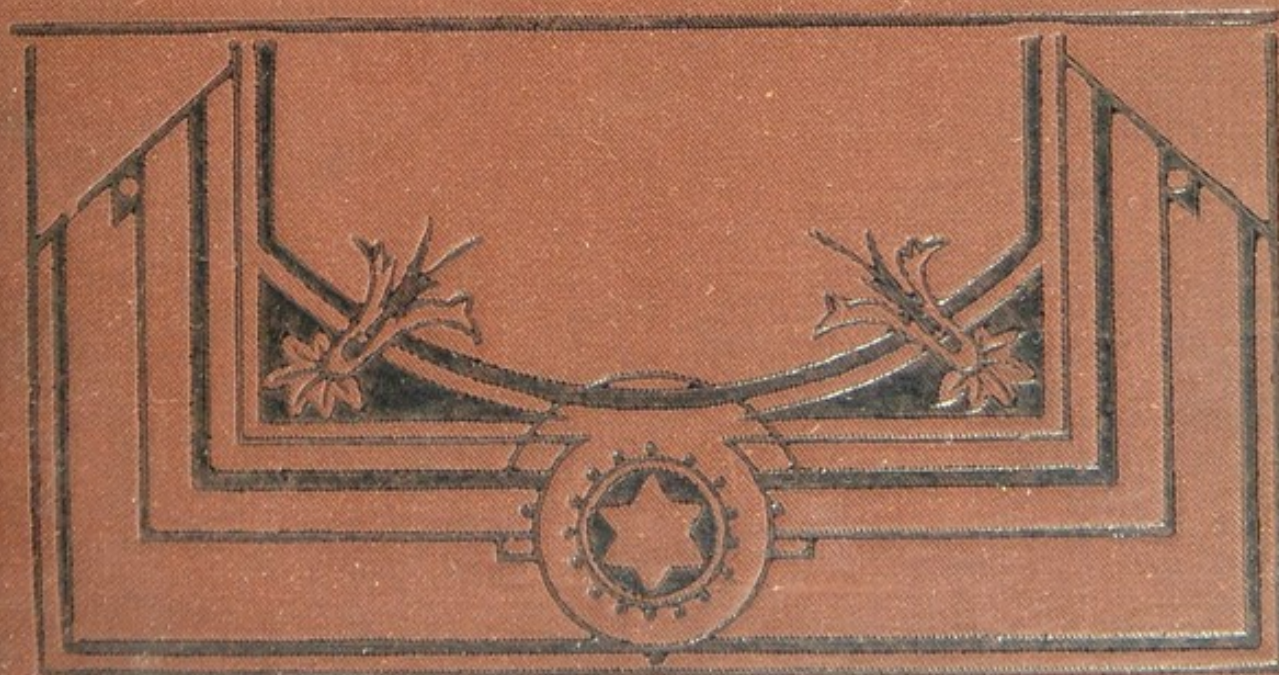


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THE HAIR

C. H. LEONARD. M.D.



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THE HAIR:

ITS

GROWTH, CARE,

DISEASES AND TREATMENT.

BY

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Michigan College of Medicine; Member of the American Medical Association;
etc., etc.

"We loved that time the best
Before the hair was turning gray."

Illustrated by One Hundred and Sixteen Engravings.



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PREFACE.

The present work has engaged the attention of the Author for the past six years. It is intended simply as an introduction to a second and larger and more scientific work that the Author hopes, in the near future, to have time to prepare. The purpose of the larger work is to show the possibility of the classification of animals from the differences in the microscopical structure of their hair-shafts. He has examined the hairs from a very large number of the different animals of the globe, specimens of which he now has in his possession, and believes such a classification possible.

This treatise is of as much value to the laity as the profession, hence he has avoided, as far as possible, purely technical terms, and has also translated each prescription into its English equivalents.

Numerous authorities have been consulted, and their text and illustrations have, in many instances, been altered to suit the views of the Author, and so used, or else have been copied entire. While it is impossible to here mention all the names, yet the Author feels himself under special obligations to the following works and authors: ANTHON, ARISTOTLE, BEAL, BENNETT, THE BIBLE, BOGUE, BULKLEY, COTTLE, DARWIN, DUNGLISON, ENCYCLOPÆDIA METROPOLITANA, FLINT, JR., FOX, FRY, GODFREY, GOSSE, GRAY, GROSS, HAECKEL, HERODOTUS, HOMER, HORACE, KIRKE, KITTO & BOND, KÖLLICKER, KÜSS, LARRY, LAYARD, LIVINGSTONE, LUBBOCK, MARTIAL, NAYLER, NEILL & SMITH, NEUMANN, OVID, PIFFARD, RAWLINSON, RAYNALD, ST. JOHN, THE TALMUD, TANNER, VERRILL, VIRGIL, WELLS, WILSON, WITHOF and THE ZEND AVESTA. In most instances the authority quoted will be found named in the text.

DETROIT, 52 Lafayette Ave., January, 1880.

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HAIR :

ITS

GROWTH, CARE, DISEASES AND TREATMENT.

CHAPTER I.

THE CHEMISTRY, ANATOMY AND PHYSIOLOGY OF THE HAIR AND FOLLICLES.

Hair, though seemingly a small and unimportant subject, when but a single shaft is considered, is, withal, one that much can be said about.

As a commercial commodity, hair is of vast importance. Thousands of people, from the wealthy wig-seller, whose customers are of royal birth, down to the poor peasant girl who grows her locks but to be shorn—for the girls of Brittany and the lower Pyrenees repair annually to their fairs in droves, each in turn surrendering her rich long hair, hanging down to her waist, to the buyer's shears—make a fair amount of their living from traffic in this material. Fashionable Paris alone, and London as much more, consumes *annually* over *one hundred thousand pounds* of human hair in the manufacture of her chignons and wigs, an amount that would load down, from its bulk and weight, *twenty* of our largest freight cars. Just think of this for a moment; two cities alone consuming annually two freight-train loads of human hair! What must be the amount

when we take into consideration that used by the cities and towns the world over? As the weight per head averages from one-half to three-quarters of a pound, it is quite easy to see how many individuals sacrifice their cranial coverings upon this altar of mammon annually.

Convents usually furnish a large amount of fine, luxuriant hair for the French, Spanish and Italian markets, and it is known to the trade as "church hair."

Black hair comes usually from Spain or Italy; golden hair from Germany, and yellow from Holland. In England the red hair comes from the Danish descendants of the northern counties; the black, or bluish-black from the Celtic descendants of Wales; the brown, with a shade of the flaxen, from the Saxon element in the south.

The quantity of long black hair from a French head averages about five ounces; the hair from an Italian about six ounces; from a German, about ten ounces.

The prices paid for hair average usually from five dollars per head, down to twenty cents, all depending, of course, upon the quality and color of the material. Some unusually fine heads bring double or triple this price, and some heads of rare qualities are fairly weighed against gold.

Golden hair is one of the most valuable colors in the English market, bringing as high as two dollars per ounce, if of fine quality. A fine article of white hair sometimes sells as high as five dollars an ounce. The dealers detect the quality of the hair by the touch and smell. Indeed, some nationalities have an odor to their hair peculiarly their own, as notably that of the Chinese, whose hair has a musky smell; certain diseases will develop an ammoniacal odor to the hair as well as the perspiration; the odor of violets has also been distinctly noted in one or two cases: the sense of touch enables

them to judge of its smoothness, evenness and fineness: the sense of smell enables them also to judge whether its color has been tampered with by dyes or bleaching agents, and how it has been packed for market; sometimes, also, whether it was from a living body or from one in the charnel house.

As a rule, the hair-growers are a degraded race of people, filthy in their habits, living in low mud huts, and wearing but excuses for clothes. Closely fitting caps are worn by them, to protect the hair from injury, and also to avoid the necessity of pinning it up or frequently combing it, as either of these procedures would endanger its breakage, or the straining of the roots of the hair, and so get, by these means, an uneven or imperfect growth. Their riches consist not in their flocks, but rather in the hirsute growth that they themselves may produce.

THE CHEMISTRY OF THE HAIR.

By chemical examination we find the hair to be composed of the same elements (and in nearly the same proportions) as are found in the horns and hoofs of animals, the baleen or bone from the mouth of the great sea monster, the whale, the nails and feathers of fowls and birds, the nails of our own fingers and toes, and even the outer or epidermal layer of our skin. The resemblance of these several bodies in their chemical composition is as similar as their physiological formation. Besides the animal matter which they all contain in common, we find this to be the result of the analysis of each:

	Hair.	Another analysis.	Epidermis.	Horn.	Whale-bone.
Carbon.....	50.65	49.90	50.28	51.03	51.86
Hydrogen.....	6.36	6.40	6.76	6.80	6.87
Nitrogen.....	17.14	17.10	17.21	16.24	15.70
Oxygen.....	20.85	21.60	25.01	22.51	21.97
Sulphur.....	5.00	5.00	0.74	3.42	3.60

It will be noticed that there is but little more variation

between the chemical analyses of the different substances given than there is between the two different analyses of the hair itself. This variation is in part due to the fact that no two heads of hair are exactly alike in their chemical composition; they vary much with the color of the hair too. Thus, for instance:

Brown hair gives us the largest proportion of carbon, while sulphur, oxygen and hydrogen are found in a smaller ratio.

In *black* hair we find a larger amount, comparatively, of oxygen and sulphur, but a smaller amount of carbon and hydrogen.

Fair hair is the richest in oxygen and sulphur, but has less carbon and hydrogen than hair of any other color.

In *red* hair is found a reddish oil, a small quantity of iron, but a large quantity of sulphur.

White hair, besides the sulphate of alumina, yields the phosphate of magnesia, a whitish oil, and, in the aged, a large amount of the phosphate of lime.

The *beard* gives us more carbon and hydrogen than the head hair, but less oxygen and sulphur; the quantity of nitrogen is, however, about the same.

Upon the variation of the amount of these different chemical constituents present in hair of a given color, depend the different shades of color caused by the use of the same dye, as spoken of in the chapter devoted to the consideration of hair-dyes and bleaching agents.

The peculiar offensive odor noticed on burning hair is due to the decomposition of its nitrogenous or animal substance, called *keratin*, thus setting the previously combined sulphur free. This substance, which goes to make up the bulk of the hair, is soluble in alkalies, with the formation of ammonia, and strong sulphuric acid; but insoluble in boiling acetic acid, which dissolves the nails, horn and epidermis, and hence distinguishes

hair from these very similar products. *Liquor potassæ* also dissolves it quite readily.

When hair is reduced to ashes, by burning, the ash is found to yield calcic sulphates and phosphates, ferric and manganic oxides, and ferric silicates; the ash from white hair yields sulphate of alumina and lime, and phosphate of magnesia.

ANATOMY AND PHYSIOLOGY.

Hairs are an appendage of the skin, the same as are the nails; both are but modifications of the epidermal or surface-layer of the integument. In this respect also resembling the claws and feathers of birds and fowls, the claws, hoofs and horns of animals, the scales of fishes, and the tough, overlapping mail of the alligator and crocodile.

Hairs are found everywhere, as a rule, upon the human body, excepting upon the palms of the hands and fingers, and the soles of the feet and toes; though none are found on the upper eyelids, on the pulp of the lips, the dorsal surface of the tips of the fingers and toes, inner surface of prepuce, on the glans penis, mucous surface of the labia, mucous surfaces generally, and the globe of the eye. To this last, however, I know of a noted exception among the animals, that of a calf born with a hair-tuft springing directly from the front of the eyeball.

Hair is found also on or within many of the internal organs, and notably so in pathological formations, or tumors, of the ovary. In the normal state these hair-growths are microscopical, being only *cilia* in most instances. Upon the inside of some of the ovarian cysts, though, I have seen it in large tufts, or handfuls, growing luxuriantly from the cyst-wall.

Hairs vary in length, size and color in different individuals, and also according to the place whereon they are found in the same individual. Thus, on the back of the fingers they are

very short, and shorter still on other portions of the body, where the microscope is necessary to reveal them, as they barely reach out of the skin-follicle containing them. On the head they become of great length, in some instances, as I shall give further on, trailing on the ground. The beard and eye-lashes are remarkable for their comparatively great size; the former, in some individuals, grows also to be of great length, as for instance that of the authentically recorded case of the Burgomeister Hans Steiningen, whose beard was so long that he trod upon it one day, when ascending the stairs to the council chamber, and so stumbled and fell down and was killed.

Hairs are cellular in structure, being made up of an aggregation of cells, that are variously shaped and altered from their primary spherical condition.

Hair begins its growth by the formation of a follicle, through a downward budding-like process, from the *corpus* or *rete*

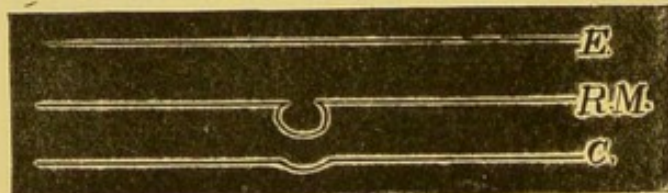


Fig. 1.

mucosum, the middle layer of the skin, thus: In Fig. 1, *E* represents the epithelial or outer layer of the skin, the scarf-skin,

in other words; *R. M.* the middle layer or *rete mucosum*; *C* corium, or true skin.

The hair follicle is formed early in intra-uterine life. As early as the third month of foetal existence the involution of the skin commences, and with it the papilla and the commencing hair-bulb are seen. When further advanced in the formation, the follicle will assume the appearance, on microscopical examination, of that seen in Fig. 2. This represents a cross-section of the follicle at the 16th week of

embryonic life; 1 represents the external skin layer (*E* of Fig. 1); 2, the *rete mucosum* (*R. M.*, Fig. 1); 4, the *hyaline* membrane of the follicle formed from the corium (*C*, Fig. 1); 3, 3, 3, represent the original spherical and ovoid cells of the rudimentary hair.

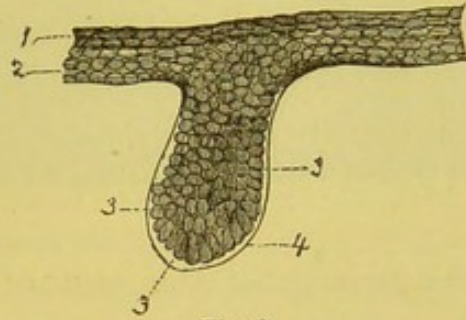


Fig. 2.

The eyebrows, *supercilia*, and the hairs upon the forehead, are the first to begin their growth, then those of the upper lip and those around the mouth are the next in order; following these, in the order given, are the hairs of the scalp, back, chest, fingers, external ear, and, lastly, those on the end of the nose. By the end of the sixth month of fœtal life, the body hair is visible. The infant, at birth, is covered with a fine downy growth, that Larry has likened to the bloom upon fruit. This is all shed in time, and hairs of new growth, or extra-uterine development (as in the case of the permanent teeth), take their place.

THE FORMATION OF THE PAPILLA, BULB AND SHAFT.

The formation of the papilla, bulb and shaft is in this way: The mass of cells, 3, 3, 3, Fig. 2, divide themselves by aggregation into three portions; those near the edge of the hyaline membrane or envelope, 4, flatten out and go to form the internal root-sheath of the hair; the central mass come more compactly together, deepen in color and go to form the bulb of the hair at its lower portion, and the shaft at the upper portion; those in the lowest portion of the follicle go to form the papilla. Originally none of these cells can be distinguished from the other cells of this same skin-layer. Diagrammatically, then, we

would have about this condition of affairs: Fig. 3, 1, repre-



Fig. 3.

sents the internal root-sheath; 2, the newly forming hair shaft; 3, the newly forming bulb, and 4, the newly forming papilla. It will be noticed that there is an apparent cup-shaped depression in

the bottom of the root of the hair into which the papilla fits closely. As it becomes more and more developed this condition remains permanent through life, and it is this, the many clinging cells of the papilla to the hair root, when it is forcibly pulled from its follicle, that gives that paint-brushy appearance to the hair, when its root is examined with the microscope; this same condition may be detected with the unaided eye, when the clinging cells are more than ordinarily numerous.

The hair papilla is not unlike the many other papillæ found in the corium to which it is intimately attached, and from which it receives its nourishment. It is highly vascular, there being a fine capillary network of blood-vessels in its interior. Its nervous supply is deficient, though nerve filaments have been detected in the papilla, the nerve fibres of the cutis usually terminating close to it in the follicular layers.

Biesiadecki has demonstrated two arteries entering the papilla, uniting near the summit, where they afterwards subdivide into minute capillaries, making their exit from the papilla as veins. Nerve fibres have also been traced by him up into the same organ. In the external root-sheath Langerhans has also demonstrated nerve structure.

The height of the papilla is always greater than its breadth, being about double it; the average being about the $\frac{1}{100}$ of

an inch on perpendicular section. Each papilla is made up of undeveloped, nucleated connective-tissue cells commingled with a few free fibres. It is from these microscopic organs that the hairs of our bodies derive their nourishment and elements of growth.

The formative cells are continually being pushed upwards from the soft bulbs of the hair, taking with them the coloring granules; they then arrange themselves about the centre of the shaft forming its pith, and part of the fibrous portion. Then, from the combined action of the hair bulb and the hair follicle, new aggregations of cells are made, which, as they are elevated to the surface of the skin, are contracted and flattened to the shape that we find them in the shaft without the follicle. The growth of hair, then, being but the gradual pushing upwards (out of the follicle) of previously-formed cells by the new ones that are being formed continually below them. This explains why the hair will grow after it is plucked out "by its roots." So long as the papilla, with the follicle, is in a healthy condition, so long will a new hair be ready to spring up from the same follicle. Thus in the case of eye-lashes, they are renewed in 150 days.

To return now to *a further description of the follicle*. Each one is from $\frac{1}{12}$ to $\frac{1}{4}$ of an inch in depth. As they are formed by an induplication of the skin, their lining membranes partake, of necessity, of similar connective tissues and epithelial elements. From minute and careful microscopical investigation, it has been found that there are three distinct (from their cellular arrangement) membranes, going to form each follicle, after the indenture in the corium has been made by the downwardly budding *rete mucosum* (Fig. 3.) The *outer* membrane, Fig. 4, 6, is made up of fusiform, connective-tissue cells, arranged longitudinally, with elongated nuclei, and is from the $\frac{1}{2000}$ to

the $\frac{1}{1000}$ of an inch in thickness. It is freely supplied with capillary blood vessels, and nerve fibres have been discovered

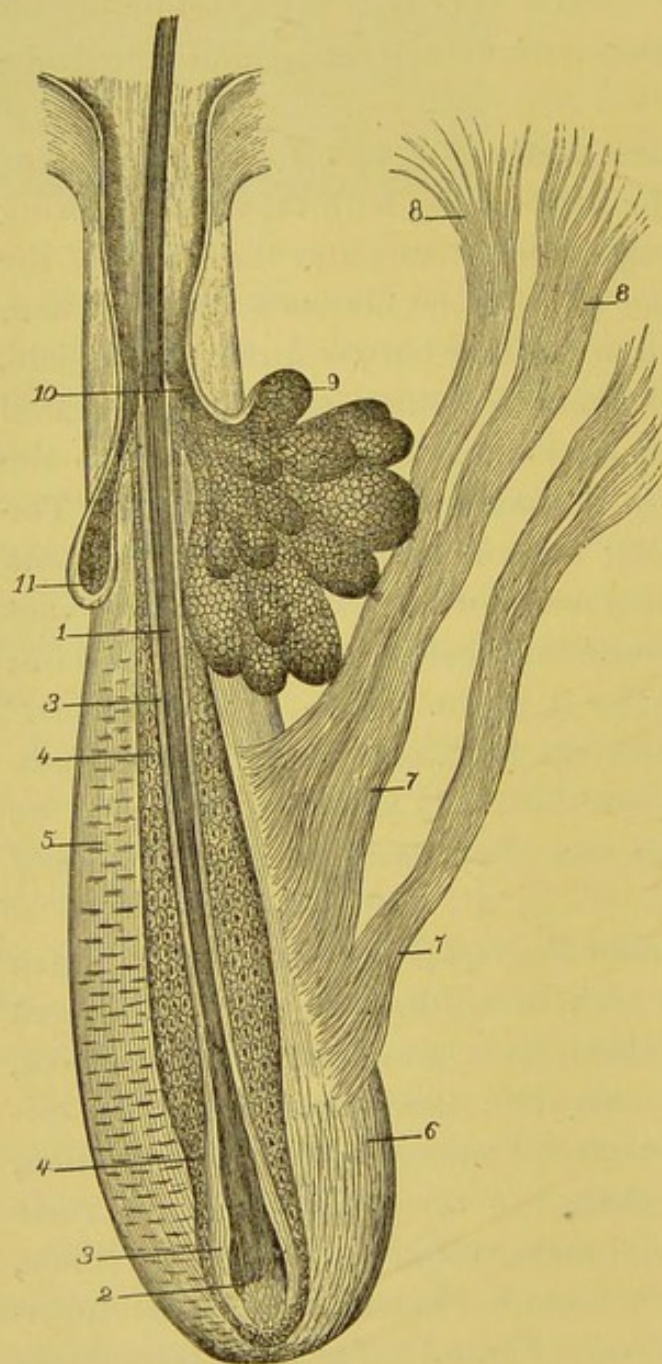


Fig. 4.

in it. The *middle* membrane is nearly triple the thickness of the outer layer, and is made up of fusi-form connective-tissue fibres, arranged transversely. It is not seen all the way up the follicle, but ends, usually, at the place of entrance of the ducts, 10, of the sebaceous glands (simple, 11, and compound, 9), which accompany each follicle. In this layer there is also found free capillary circulation, with a tendency of the vessels to cross the membrane transversely. The *inner membrane* lining the follicular depression, and which surrounds the hair, represented by Fig. 4, entirely, though it is not represented in the cut,

is structureless; it is the limiting or hyaline membrane,

as it is sometimes called. It is not readily acted on by acids and alkalies, hence differs very materially from the other follicular membranes. Between it and the middle layer is a lymphatic plexus, and, in the case of tactile hairs of animals, notably those of the feline class, there is a highly developed vascular plexus. Running downward from this hyaline membrane, continuing in the same direction as the follicle, as in the case of the longer and larger hairs, there is a stalk-like projection seen passing through, and below, the true skin-layer into a subcutaneous connective-tissue layer, there uniting and inosculating with its fellows.

The hair follicles, in the majority of instances, do not descend perpendicularly into the skin, but take an oblique course. This gives a "set" to the direction which the hair-shafts take when out of the body, and which will be treated of further on.

THE SEBACEOUS GLANDS.

Each hair follicle has one or more sebaceous glands emptying into it near its outlet; these glands may be either simple, Fig. 4, 11, page 18, or compound, 9, of same figure. From these glands are poured out the oily material that goes to lubricate the follicle, hair and scalp. The "dandruff" seen upon the scalp is a production of the dried material from these glands, commingled with the dust and filaments of the clothing that find lodgment in the hair, together with the exfoliation of the scarf-skin of the scalp. Besides these sebaceous glands there are sweat glands also opening into the follicle.

THE MUSCLES OF THE FOLLICLE.

Referring again to Fig. 4, page 18, there will be noticed, on the right-hand side of the plate, two bands of muscular tissue, 7 and 8, running diagonally upward from the lower portion of

the follicle. These are called *erectores pili*, the erector muscles of the hair. By the contraction of these muscles the hair is elevated, with its follicle, and protruded from the skin, giving the condition of affairs known as "goose pimples" or "goose skin" (*cutis anserina*.) Through the same physiological action upon the hairs and follicles of the scalp, one's hair is made "to stand on end," as is popularly said. During the contraction of these muscles the contents of the follicle and the sebaceous glands are also squeezed out more abundantly than when the follicle is in its usual distended, or quiescent, state. It is these muscles that also give the tactile movements to the "whiskers" of the feline, canine and leonine species, only they are more developed in them than in man.

CHAPTER II.

THE ANATOMY AND PHYSIOLOGY OF THE HAIR—(Continued.)

THE ROOT-SHEATHS.

Investing the roots of the hair are two layers of cells, or membranes, called the outer and inner root-sheaths.

The *external sheath*, 4, Fig. 4, is continuous with the bulb of the hair, and resembles, closely, the *rete mucosum* (Figs. 1 and 3), from which it is formed. It is made up of numerous rounded and nucleated cells, which vary from the $\frac{1}{4000}$ of an inch to the $\frac{1}{800}$ of an inch in diameter. Those situated nearer to the surface of the hair cylinder are somewhat flattened. This sheath is three or four times thicker than the inner root-sheath.

The *internal root-sheath* is more transparent than its fellow, the outer, and seems to be made up of two layers of flattened cells; the layer, 1, Fig. 5, lying adjacent to the hair cylinder, is of non-nucleated, elongated, transparent cells, varying from the $\frac{1}{100}$ to the $\frac{1}{75}$ of an inch in length, and is known as Henle's layer. The outermost layer, 2, is known as Huxley's, and is made up of nucleated polyhedral cells, with axes parallel

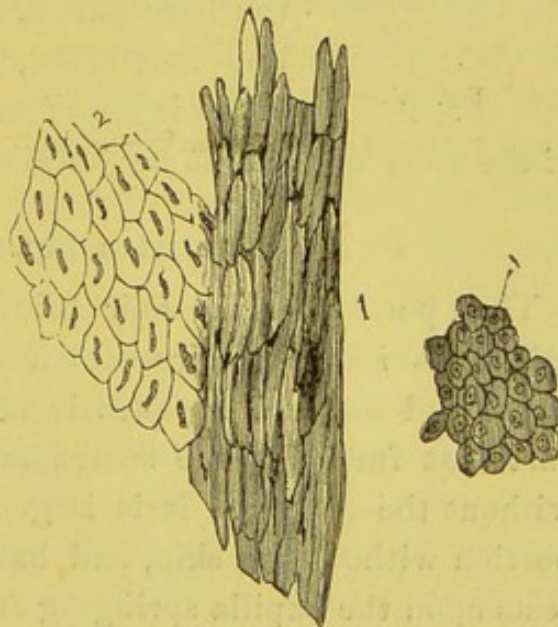


Fig. 5.

to the shaft of the hair. These are also transparent, and are not so compressed as those forming Henle's layer, and their longitudinal axis is shorter. At 3, same figure, is shown, in contrast, some of the cells from the external root-sheath. At the bottom of the follicle there is only one layer of the nucleated cells forming this sheath, and, similarly to the outer root-sheath, it ends near the entrance of the ducts of the sebaceous glands.

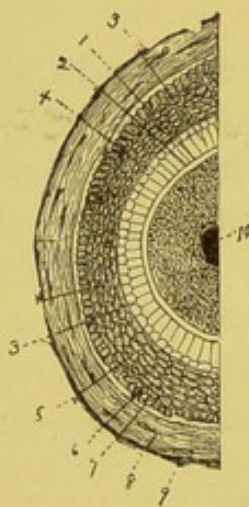


Fig. 6.

A transverse section of a hair and its follicle, at the middle of the follicle, would show all the different layers and membranes we have gone over in the following order (Fig. 6): 1 is a portion of the hair; 2, the epithelial layer of the hair shaft; 3 and 4, the inner and outer layers of the internal root-sheath; 5 and 6, the thick, outer root-sheath with its two different layers of cells, the outer lying transversely to the long axis of the follicle; 7, 8, 9, the hyaline membrane, with its inner, middle and outer layer of cells; 10, the pith or medulla of the hair, which is to be described on a following page.

THE HAIR BULB OR ROOT.

That portion of the hair below the surface of the skin is called its *root*. It presents a bulbous enlargement at this point, and hence is frequently termed the bulb. This is the part that furnishes the sustenance to the existing hair shaft without the follicle. It is larger, whiter and softer than the portion without the skin, and has a hollowed-out base, which rests upon the papilla springing from the bottom of the follicle, and is connected with it by the interlacement of the cells forming the papilla and the bulb proper of the hair.

An examination of the structures of the root of the hair is

best made by chromic acid preparations; this hardens the cellular structures so they can be easily manipulated. In the bulb proper, throughout its entire mass, with the exception of a thin cortical covering, we find the same round, nucleated cells seen in the external sheath layer, and shown at 3, Fig. 5. They are also seen in Fig. 7, at 6 and 8. Sometimes these cells are pigmented, especially in the upper shaft portion; they go to make up the fibrous part of the hair, 10, and the medullary portion, 8, as they are further

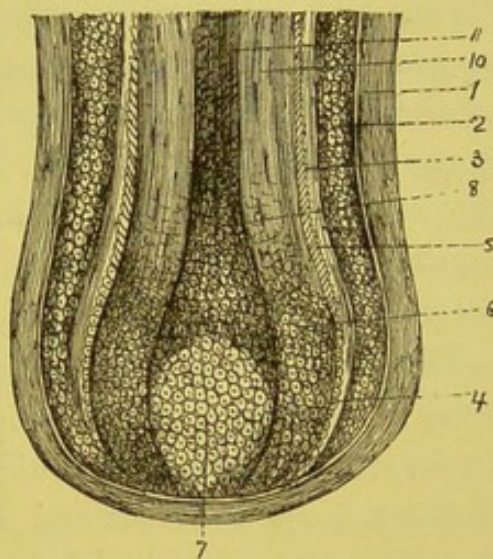


Fig. 7.

developed. They first become, with their nuclei, elongated for the cortical portion, 5, and this process continues till they are still further narrowed and lengthened, and their nuclei become but thread-lines or are lost entirely. The cells overlap each other closely, and somewhat regularly, and in a healthy hair-cylinder it is impossible to separate them without chemical reagents, of which sulphuric acid is the best. This layer will be further treated of when we come to speak of the shaft of the hair, for, in the attenuated and hardened state of the cells, it is continued on to the tip of the hair without the follicle. The length of these cells, in their mature state, ranges from the $\frac{1}{600}$ to the $\frac{1}{300}$ of an inch, and their width from the $\frac{1}{600}$ to the $\frac{1}{300}$ of an inch. Between the plates of this layer are found granules of pigment matter—for this is the layer that gives the color to the hair—and also a few narrow air chambers.

The *axillary and medullary portion of the hair* (8 and 11 of Fig. 8) is the most recent formation from the papilla, and you

notice it is intimately connected with it. In young hairs this portion of the hair is not found, all the material going to form the fibrous and epidermal portion. The cells that go to make this up are the same as those found in the newly-formed portions of the fibrous part just described; the same as are also found in the papilla. As the hair is pushed gradually upwards, by the newly-forming cells below, they shrink up, become less regular in form, lose their nuclei, and leave vacant spaces between their walls for quite a large supply of residual air.

The portion marked 5 in Fig. 7, is the outside or *epidermal layer* of the hair. Its origin, 4, is also in more or less spherical, nucleated cells, in common with the root-sheaths, which, as they are pushed further and further from the follicle, become flattened, lose their nuclei, and finally lie in imbricating layers, covering the entire circumference of the hair shaft. They are thin and transparent, when fully matured, and require the use of caustic soda solutions, or sulphuric acid, to separate them from their fellows, and show their form and structure. Their size varies from the $\frac{1}{1000}$ to the $\frac{1}{800}$ of an inch in diameter.

Of the remaining portions of Fig. 7, 1 represents the hyaline membrane, or outer follicular layer; 2, the external root-sheath; 3, the internal root-sheath; 7, the papilla.

EXIT FROM THE FOLLICLE.

At the first formation of the hair-cylinder it does not issue point first from its follicle, but it is bent over upon itself, so that a loop is formed; this loop gradually pushes its way through the follicular opening, and then, from its elasticity, the shaft straightens itself out. Indeed, it is the law of almost all growths, that the point does not issue direct from the parent-cell or follicle, but is bent downwards till the exit-making loop is formed. This you witness in the fullest degree in the growth

of plants from their seeds. Sometimes, for various reasons, prominent among which is the sealing of the follicle with sebaceous matter, or its being covered over by the scales of the scarf-skin, or the outer walls adhering together, the hair cannot make its exit at all; in this case it keeps on its growth—for the papilla, as long as blood is sent to it in proper condition, never ceases its work—and doubles more and more upon itself until the follicle is fully distended. This produces intolerable itching, and hence attention is directed to the seat of the malady.

The imprisoned hairs are readily set at liberty by the use of strong alkaline washes (strong soap-suds is as good as anything), and frictions with coarse towels. The condition can also be recognized by the sight, the coiled hairs showing themselves as little black spirals beneath the skin. Occasionally the hairs will be found to be one-half an inch, or more, in length when released. Sometimes a whole limb may be thus affected. Aristotle (384 to 322 B. C.) has described the condition quite fully, although it is quite a rare malady.

SHEDDING AND REGROWTH OF HAIR.

In the former chapter we spoke of the shedding of the fœtal hair. This process, with the regeneration of the hair, was first noticed by the German physiologist Kölliker. A diagram will perhaps aid us in more completely understanding this physiological process, see Fig. 8.* In this, 1 represents the eyelash of a child that was of intra-uterine growth, and is now about to be thrown off; 2 is the bulbous portion of the old hair severed by the constricting follicle, 3, from its papilla, 5; the new hair, 4, is just beginning to be formed, and is gradually

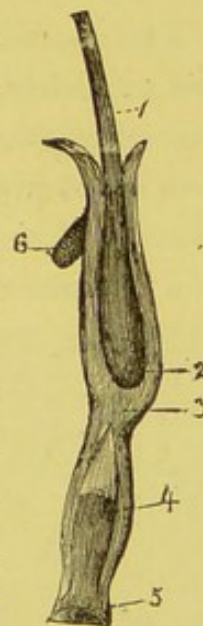


Fig. 8.

pushing the old one out of the follicle; 6 is a sebaceous gland, with its short duct emptying into the hair-follicle.

The natural loss of hair, either through disease or the age of the hair itself, is through this same way, when the papilla is left uninjured.

As a first step to this process there seems to be a fatty degeneration of the cells at the summit of the papilla, induced either by improper blood-supply or through some slight injury, as pulling the hair. Since it is the tendency of the follicle to keep contracted, of course, if the cellular elements are diminished for a time, a constriction must necessarily take place; when once started, the nourishment of the hair is so materially lessened by the severing of the connection of the root-sheaths, which the constriction causes, that the hair must become ultimately separated from all nourishment, and hence supplanted by one of more vigorous and healthy growth.

The shedding of the hair-coats of our domestic animals, and the moulting of our fowls and birds, is from a similar physiological cause. The hair shaft has lived its life, the cell formation is not sufficient to keep so long a hair in a live, or growing, condition, so the old hair is thrown out of the follicle by the new growth forming below.

CHAPTER III.

THE ANATOMY AND PHYSIOLOGY OF THE SHAFT EXTERNAL TO THE FOLLICLE.

We have come now to the consideration of the hair-cylinder as it exists without the follicle. Usually there is but one shaft having exit from the same follicle, yet two or more are sometimes seen.

Each hair is properly divided into three anatomical portions: 1st, the *bulb*, which has already been described; 2d, the *shaft*, external to the follicle; 3d, the *tip* or point.

The tip of the hair can be dismissed in a few words. Hairs, when healthy, have an acutely-shaped point. It is, like the sting of the bee, a typical point; indeed, Nature, when she makes a point, makes one that will bear the closest scrutiny. You put a hair under the microscope, and it there remains the same regularly and finely pointed object it resembles to the naked eye; not so, though, the pointed objects that man may make. You examine the finest cambric needle, and it is a rough, notched and blunt object. Fig.

9 gives a very good comparative illustration of the two objects, seen under the microscope; *H* representing the hair point, and *N* the point of the needle. When the hair becomes diseased, then the point splits up into several

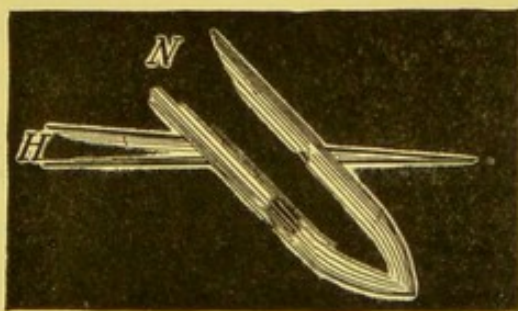


Fig. 9.

layers, and if the split ends are not clipped off, as they should be, the cleft extends farther and farther up the shaft, until the

greater portion of it is ruined; as the ragged ends are continually snarling, and are being broken off by friction in combing, or by the clothing worn, or by the pillow.

THE SHAFT OF THE HAIR.

The shaft of the hair, as seen without the follicle, is also divided in three portions:

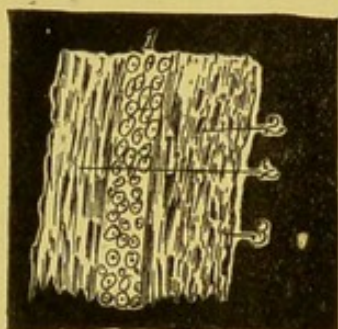


Fig. 10.

1st. The medulla, or pith, represented diagrammatically by 1, Fig. 10.

2d. The fibrous portion, 2, 2, Fig. 10.

3d. The epithelial portion, 3, of the same figure.

The Medulla or Pith.—This portion of the shaft is quite distinctly cellular, resembling the same portion found within the follicle, and occupies the center of the hair-cylinder. It grows gradually less marked until near the point, when it is entirely lost sight of. It is wanting in the fine, or downy hairs, and in some of the finer hairs of the head. It is from $\frac{1}{4}$ to $\frac{1}{3}$ of the diameter of the shaft, and is composed of small nucleated cells, from $\frac{1}{12000}$ to $\frac{1}{2000}$ of an inch in diameter; they are best brought out by soaking, for several days, in a two per cent caustic potash solution. It is seen most prominently in the thick, coarse hairs, as the eye-lashes, beard, and in the head hairs of the aged. The finest natural specimen that I have ever seen, showing the medulla as distinctly marked as in Fig. 10, was from the head of an Egyptian mummy, which, through the kindness of Bela Hubbard, Esq., of Detroit, I was permitted to unwrap; and from which I obtained many specimens of the beard, head hair and eyebrows. I shall speak more fully elsewhere of my examination of the

hairs from our friend who trod the streets of Thebes three thousand years ago.

In animals this medullary portion is very much more marked, and in fact is quite characteristic. The rabbit, rat, skunk and mink have each a cellular arrangement of the medulla, of the hair-shaft, peculiar to themselves; and it is quite easy, with the aid of the microscope, to distinguish one from the other. In the fallow deer, 1, Fig. 11, the whole shaft of the hair, excepting the thin outer layer or cortex, is entirely cellular. 2 represents the larger hair from a rat, while 3 shows the cellular arrangement seen in the hair from a white rabbit. Very similar in arrangement of its cells as here seen, 3, Fig. 11, is the hair of the ordinary squirrel; the main difference is that in the squirrel these cells are opaque.

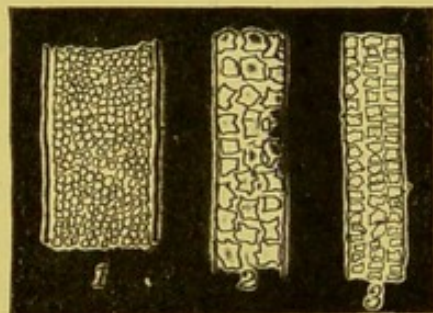


Fig. 11.

* So constant is the characteristic difference in the medullary cellular arrangement seen in hairs from different animals, that it is quite easy, in most instances, to name the species from which it was taken. The frauds of fur dealers may, by the means of the microscope, be thus detected, as these cellular markings are tell-tales that they cannot by any manner of means disguise, without destroying the texture of the hair itself.

This portion of the hair is the more recently formed portion of the hair-cylinder; and between the cells themselves there is considerable residual air, thus tending to give a white color to the shaft. In gray hairs it becomes more marked, as a natural process of physical degeneration; the cells themselves having become filled with air, and the fluid, natural to them in youth, becoming more or less absorbed.

The Fibrous Portion.—This portion of the shaft which lies just beneath the epithelial or outer coating, and surrounds the medullary portion on all sides, 2, 2, Fig. 10, goes to make up the bulk of each cylinder. The cells forming this portion are elongated, contain long nuclei, and are grouped together in

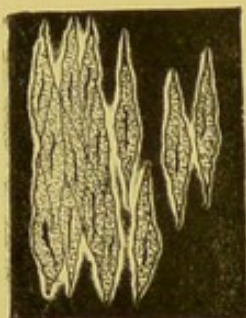


Fig. 12.

fusiform bundles. Their length is $\frac{1}{500}$ to $\frac{1}{300}$ of an inch; their breadth $\frac{1}{6000}$ to $\frac{1}{3000}$ of an inch. A few air cells are also found in this coating in the lighter colored hairs, but in the black their place is fully taken by the increased number of pigment granules. These cells are best brought out by treating the section to be examined with a drop of strong sulphuric acid (sometimes it is necessary they should

macerate in the acid half an hour, before showing them nicely), then pressing the covering-glass firmly down upon them, so as to separate the cells as much as possible.

This portion of the hair is the *chief source of its strength*, for hair has a great deal of strength, when it is taken in the aggregate. A single hair will support, if healthy, four ounces. The supporting power, though, varies with the size of the hair-cylinder, as found in different individuals, and also with its color and with the age of the individual, and the state of the health of the individual from which it is taken. Thus, a hair, light brown in color, and from a person aged eighty, would support but one and one-quarter ounces without breaking. A blonde hair filament from a child ten years of age, broke under a strain of two and one-quarter ounces; another blonde filament from a young lady, twenty-five years of age, broke on two and one-half ounces; a dark brown hair from the head of a lady, aged seventeen years, broke at the same weight; a dark brown hair from a person aged thirty-eight, a red one from another

aged twenty-four, and one from a lady twenty-five years, broke on three ounces; a light brown one from a healthy girl, aged six years, broke on a strain of three and one-half ounces; a dark brown one from a young lady, twenty-four years of age, held four ounces suspended; another hair of the same color and one from a lady of same age, held suspended over four and one-quarter ounces without breaking.

From this it will be readily seen that the assertions we are about to make admit of mathematical proof, and that hair, in the aggregate, has a *great deal* of strength. A single head of hair of average growth and luxuriousness, in any audience of two hundred people, will hold supported that entire audience, and yet have a large quantity of supporting power to spare.

Putting it still in a little different light, the hairs from the heads of the citizens of Detroit (present population, 130,000), if taken collectively, represent a breaking strain of quite 2,000,000 of tons; a load that would take about 5,000 of our locomotive engines to transport.

Still making a larger illustration, the hairs from the heads of the present inhabitants of the globe, could hold supported in space, against the gravity of the earth, the planet Vesta, and yet have 7,000,000,000,000 of *tons* of strength to spare; an amount of reserved strength that if represented in *miles* would take the earth, moving at the rate of 1,600,000 miles per day, 1,458 years to traverse. Surely then, hair, in Samson, was a fitting emblem for his strength, and when Delilah shore him of his locks no wonder he lost his strength also.

The elasticity of the hair also resides in this same portion of the cylinder. The long, spindle-shaped cells that go to form it, allow a still greater elongation of themselves, only to spring back again, from their resiliency, to somewhat near their former length. This extensibility equals, on the average, nearly

one-third the normal length of the hair. Thus, if a hair 36 inches in length be carefully stretched to its full capacity, it would then measure 48 inches. After the weight was removed it would gradually retract, but would never regain its prior dimensions.

This property of the hair is not constant, as it varies with the size of the hair, its color and the person from whom taken, as this table of the results of experiments will show:

Color.	Age.	Measured.	Stretched to	Contracted to
Dark brown.....	25	36	46	40
Dark brown.....	24	31	36	34
Light brown.....	80	7	9	7½
Red.....	24	12	16	
Light brown.....	6	13	17	
Dark brown.....	17	27½	34	
Dark brown.....	38	11¾	14½	

The coloring matter of the hair is found in this fibrous portion, as before announced. The cells are pigmented, either light or dark, according to the prevailing tint of the hair; pigment granules are also found between the cellular layers. The pigmentation is not evenly distributed, either within or without the cells, but seems to be somewhat linear in its arrangement, although it is not deposited in continuous lines. In some animals, as for instance the rat, the cells are (irregularly) alternately colored and uncolored; the result of this is that it gives a sort of a gray look to the hair, which we call "mouse color." One or two instances of human hair being somewhat similarly colored are on record; we give them in full in the chapter upon the Color of the Hair.

This brings us now to the consideration of the third or outer covering of the hair.

The Epidermal Coat.—This is an imbricating cellular layer; that is, the flat, quadrilateraloid cells, see Fig. 13, forming it

overlap each other, just as the tiles or shingles do each other on our houses, or the scales upon a fish's body. The scales are hard, dry, thin and transparent, and need the use of strong sulphuric acid or caustic potash to bring them out. They contain no nucleus or nucleolus, and are about the $\frac{1}{1000}$ of an inch in width, their length being some five or six times that. They are analogous to the outer covering, or scarf-skin, of the hand, or any portion of the human body.



Fig. 13.

The scales were originally spheroidal cells, but by process of age, and from the moulding influence of the root follicle, their contents have become absorbed and they have gradually become flattened until they have acquired their present condition and arrangement. They are all placed somewhat regularly about the cylinder of the hair-shaft, and all with their free edges toward the point of the hair. This gives a somewhat serried look to the edges of the hair, when seen through

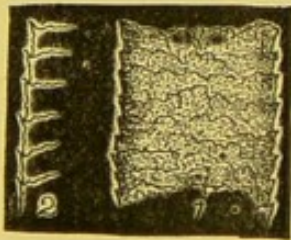


Fig. 14.

a microscope, as is represented in Fig. 14; 1 shows the shaft itself; 2, the edge of it as it is more highly magnified. The imbrications will not be so plainly marked except in specimens that have been subjected to the action of reagents. The more usual appearance of the hair, as seen under the

microscope, is that seen in Fig. 15. This is from a child, and is magnified three hundred and seventy diameters. In children, however, the imbrications are not shown as distinctly as in the hairs from adults. This peculiarity of arrangement of the scales can be detected by the touch; thus drawing the hair briskly through the fingers, from the tip to the root, it

will then seem to be rough and uneven. Often when quite firm pressure is used a humming sound may be produced by

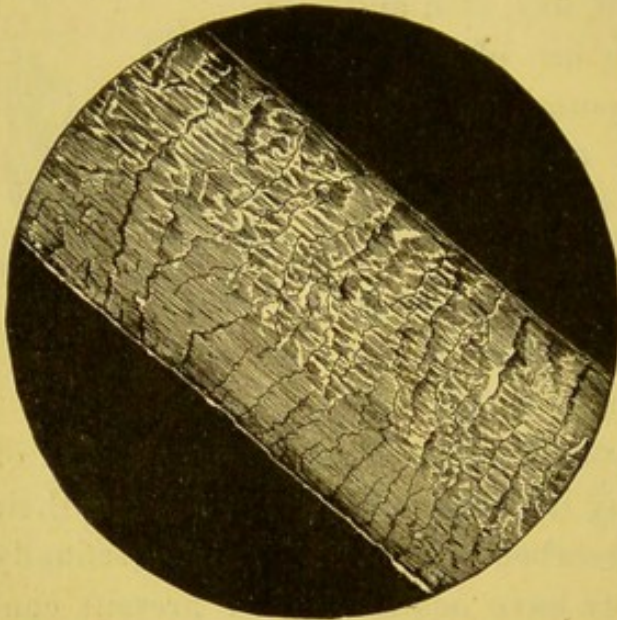


Fig. 15.

this manœuvre. You can by this means always tell which is the root-end and which the tip-end of the hair, as the overlapping layers lie *from* the roots. Now if you turn the hair, end for end, and draw it from the root to the tip, it will be felt to be smooth and even. Advantage has been taken of this fact by hair dealers and dressers, in arranging

their stock. Where the hair has become disarranged, that is, a part with the roots one way and the remainder with the tips in the same direction, the whole is thrown upon a smooth, hard surface, and rolled briskly back and forth with the palm of the hand, or pulp of the fingers, when those with the roots in the same direction will begin to "back out" from the mass, and can then be easily sorted out and arranged in a proper manner. Were this caution not taken (to have the points all one way) the hair would never lie evenly and smoothly upon the head. This same "rolling" process, in a minor degree, takes place at each twist of the head on the pillow, and hence explains why our ladies' hairs are less snarled and tangled than they would otherwise be after a night's repose.

This principle is also taken advantage of in the case of hairs (wool) from sheep and goats. The manufacture of felting is possible only upon this natural condition of serration and imbrica-

tion of the cortical layer of cells about the shaft of the hair, since they allow a sort of "interlocking," when under pressure, to take place, and so form that thick, firm article known as "felt cloth." Wools differ in the fineness of these serrations, and upon this their commercial value is graded. In Leicester wool the serrations are 1,850 to the inch; in South-down, 2,080; in Merino, 2,040; in fine Saxon, 2,720. The finer the serrations, as a rule, the closer and finer is the cloth woven from it.

The shrinking of woollen goods by washing, etc., is owing to a closer interlacement of the wool fibres, through the friction of the wash-board and agency of the hot water.

In some animals we have this outer covering greatly developed.

In the India bat, for instance, see Fig. 16, 1, they stand out trumpet-shaped, resembling lilac blossoms threaded one within

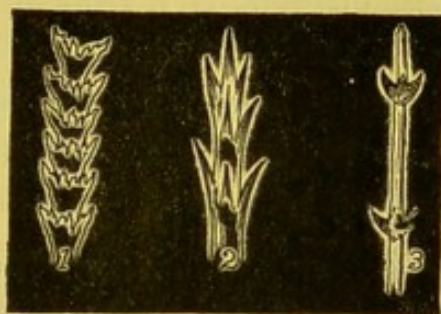


Fig. 16.

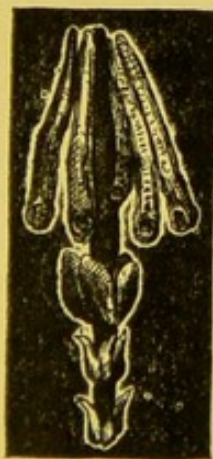


Fig. 17.

the other, as children are wont to string them together for necklaces. Fig. 2, of the same plate, shows the imbrications as still more prominently developed; they whorl about the shaft as so many spikes; this is from the caterpillar. In swans' down used in winter trimming of ladies' and children's cloaks, the imbrications, see 3, same plate, resemble shallow cups, trans-fixed by a long central shaft, or honeysuckles strung together by threading one within the other. Another very singularly marked hair is from the *Dermestes lardarius* in its larval state.

This insect is found frequently in our museums and cabinets, feeding upon fur, skins and other animal substances. There

are four or five spines in each whorl about the cylindrical shaft, the top of which is surmounted by a whorl of six large pendant filaments, Fig. 17.

This coating of the hair is exceedingly thin, being but the $\frac{1}{8000}$ of an inch in thickness upon the external shaft. Lower down, in the follicle, it is considerably thicker and softer, and is in two layers at the lower portion of the root.

Notwithstanding that this layer is so very thin, were it possible to remove it from all the hairs from the heads of the people of Detroit, and pile each layer one upon the other, we would have a higher than Ossa on Pelion, for the mass of imbricating hair scales would measure over *twenty miles* in height. Or, taking it from the head-hairs of the citizens of Chicago, and placing the layers edgewise, you will have a foot-walk *over one hundred miles* in length.

CHAPTER IV.

THE HAIR-SHAFT—(*Continued.*)

On transverse section the shaft is seen to have an irregularly ovoid or cylindrical shape, though this varies exceedingly with the individual from whom it was taken, and the part from whence plucked. Nationality has much to do with the shape. The Aryan races have an oval outline, whereas the Semitic have a more or less angular contour to the hair. In Europeans, and the light-haired races generally, it is quite a regular oval, as in the cut here given, Fig.

18. 1 represents the medulla; 2, the fibrous portion; 3, the epithelial portion; 4, a more cylindrical hair, one characteristic of black-haired races, like the Chinese or East Indian, and is not marked by a pith. In the North American Indian it is cylindrical, and in the Malay and Japanese nearly so.

In the African it is what may be termed elliptical, or eccentrically elliptical, and sometimes it is even kidney-shaped. In the Bushmen it is ribbon-like; the race being what you might denominate a flat-haired one, as their hair is four or five times as broad as it is thick. The hair of the Negro has no central canal or medulla, and the coloring matter is pretty generally scattered all through its substance. The Negro's hair will "felt," whereas the European's will not.

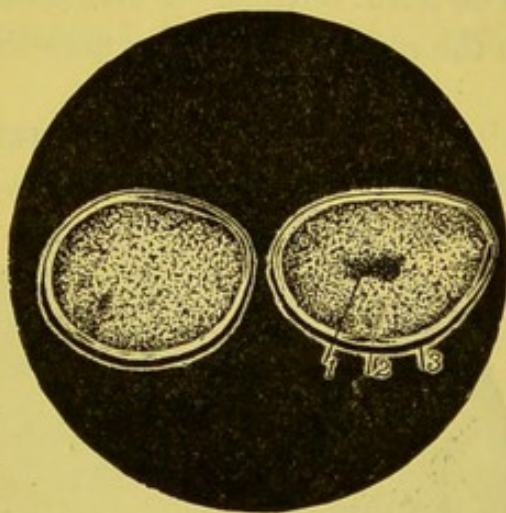


Fig. 18.

The ancient Egyptians had almost cylindrical hair, as my specimens show, and hence there would be but little tendency to curling of their hirsute covering; indeed, all their pictures on their monuments represent them as people of straight hair. They were a dark-haired race also.

In the ancient Assyrian sculptures we see the Assyrio-Ninevitic race with a profusion of curls, hence their hair must have approached the Anglo-European type, ovoid on transverse section.

The hirsute specimens I have examined from the heads of the Peruvian Incas, given me by that industrious collector, Prof. Steere, of Michigan University, show a decided tendency to the cylindrical outline. Further on I shall devote a special chapter to the consideration of these three varieties of hair.

WHY HAIR CURLS.

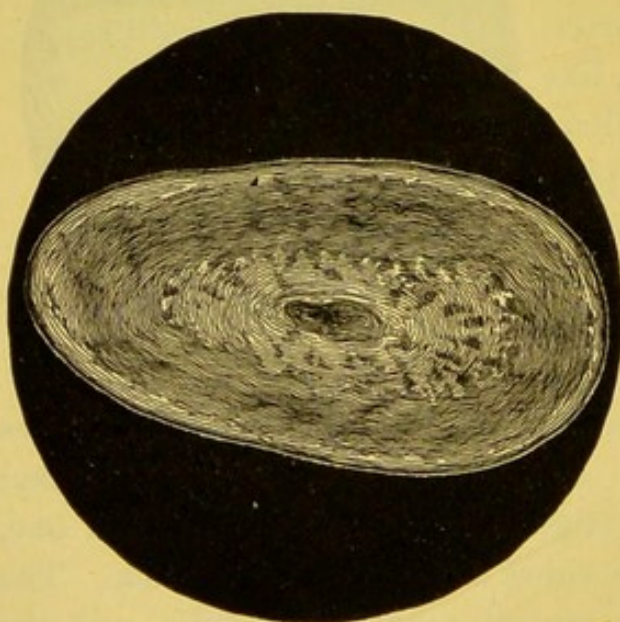


Fig. 19.

On this ovoid condition of the hair, depends, in a great degree, its curling or non-curling qualities. The beard is decidedly elliptical, and we all know how much more curly it is than the shafts of our head coverings. Fig. 19, is a very highly magnified section of beard-hair, and shows the central pith very distinctly. The reason of its curling prop-

erties is this: You will remember in a former chapter I spoke of the elasticity of the fibrous layer, that layer made

up of long, nucleated, extensile and retractile cells; the one that makes up the chief bulk of the hair and surrounds the medulla or pith.

In the straight-haired races the fibres of this middle layer are deposited regularly and evenly about the central pith, and hence a perfect cylinder is the result. As this fibrous portion is the seat of elasticity and strength, it follows that the tension must be equal on all sides of a shaft of this shape, and hence there is no twisting of the hair upon its central axis; in other words, no curling results. The small downy hairs of the body belong to this class.

In hairs of ovoid form, as in the wavy and curly-haired races, the fibrous portion being unevenly distributed about the axis, it follows that tension is unevenly distributed, and hence a coiling or curling ensues.

In the elliptical or kidney-shaped hairs, as belong to the negro families, this coiling tendency is greatly increased, for the distribution of the fibrous portion is more unevenly distributed about the medulla than in the oval-haired races.

Hair being *hygroscopic*, it is from this fact liable to have its curling properties influenced by the state of the atmosphere. Our young belles complain of this quality very bitterly, when, after an hour's exposure in a crowded ball-room, their "frizzes" and crisp "curls" become lank shreds of their former selves. The aqueous vapor thrown off from the lungs and bodies (through transpiration) of the dancers has been absorbed by the dry and crispy hairs, and hence their beauty of form quickly vanishes away. The fibre-cells of the hair-cylinder which have been stretched, and then dried, into an abnormal position by the hot curling-iron, becoming moistened, soften down and finally assume their normal condition, which results in an untwisting of the crimps and frizzes. Until something can be invented

that will absorb the exhaled and transpired material from our bodies—for the lungs and skin are the main sewers—just so long will society be imposed upon by this “undoing” quality of fashionably-dressed heads of hair.

This hygroscopic quality has been taken advantage of in the manufacture of certain scientific instruments. Thus, in certain of the so-called aneroid barometers, the working force is but the extension and contraction of hair under the influence of moisture, and the measured amount of this extension or contraction is read upon the dial plate in the translated terms of either fair or foul weather.

In hot, dry climates the hair of a straight-haired European assumes the locks of the ancient Jove. A good instance of this is given by Mr. St. John, in his “Travels in the Valley of the Nile.” He says: “The effect of the climate of Egypt upon the hair is remarkable. Why, our beard, which in Europe [all Europeans have an ovoid hair, and hence it is curlingly inclined from this anatomical peculiarity] was soft and silky and almost straight, began immediately on my arrival in Alexandria to curl, grow crisp and strong, and before I reached Es-souan resembled horse hair to the touch, and was also disposed in ringlets about the chin. This is, no doubt, to be accounted for by the extreme dryness of the air. * * * On my return to Malta my curls had all disappeared.”

Mr. St. John accounted for the curly-headed condition of the Negro in this wise: “The extreme dryness of the air, which, operating through several thousand years, has in the interior changed the hair of the Negro into a kind of coarse wool.”

Undoubtedly Mr. St. John is partially right, for it is the tendency of all ovoidal hair to curl, and especially so in a dry climate, or under anti-hygroscopic conditions. As to the hair of the Negro being “coarse wool,” one of our most competent

observers avers that the individual hairs of this race are finer than in the European.

THE SIZE OF THE HAIR.

The diameter of a hair-shaft varies with the nationality, color, age and sex of the individual, as well as the locality from which the specimen is taken. The beard is notoriously coarse and harsh; so also the pelvic and axillary hairs, the eyebrows and eyelashes.

In the aged the hairs of the head are coarser than in youth, and in youth coarser than in babyhood.

In the New Zealander they are coarser than in the South American Indian, whilst the Indian's are coarser than the European's. In the first they average $\frac{1}{350}$ of an inch in diameter, the extremes being, of fifty hairs examined, $\frac{1}{450}$ and $\frac{1}{200}$ of an inch; in the second, from the $\frac{1}{300}$ to the $\frac{1}{450}$ of an inch in diameter, the extremes being, of one hundred and fifty-five hairs examined, $\frac{1}{1000}$ and $\frac{1}{210}$ of an inch; in the third, the European, their diameters averaged from the $\frac{1}{550}$ to the $\frac{1}{400}$ of an inch, the extremes being, of two thousand hairs examined, $\frac{1}{1500}$ and $\frac{1}{140}$ of an inch; probably $\frac{1}{400}$ of an inch is the general average diameter.

Small though a single shaft may be, that is, it will take four hundred of them laid side by side to measure one linear inch, yet when you come to take them in the aggregate, the surface they would cover is really immense. For instance, taking our Detroit illustration again: If the hairs from the present population were laid side by side, we would have a foot-walk, averaging about twelve inches in width, over *six hundred miles* in length. Or, from the citizens of Philadelphia, a hirsute walk, six feet in width, could be laid upon every street of their city throughout the street's entire length. Or, from the cities

of New York and Brooklyn combined, a hirsute walk one foot wide that would much more than reach from the north pole to the south pole, were it possible to lay it on the earth's axis. Or if taken from the inhabitants of the whole earth, the twelve-inch hirsute walk would belt the globe 280 times at the equator, or could furnish thirty, each a foot in width, to reach the moon. In fine, to briefly formulate these facts, it is safe to say that any city can pave its streets with human hair, to the width of six feet, throughout the entire length of the same.

I have just said that sex had much to do with the size of the hair; *the hair of men*, although common opinion be to the contrary, *is finer than that of women*, the difference being in favor of the former by some $\frac{1}{1500}$ of an inch, when contrasting the coarsest hairs of the male (European) with the coarsest of the female of same nationality. A like increase of the size of the hair-shaft, on the part of the female, is noticed when comparing the finest hairs from the two sexes. These figures are the average, as deduced from the careful examination of the hairs from thirty-six individuals, eighteen being male and eighteen being female, and with a total number of one thousand and sixteen hairs examined from the males, and nine hundred and forty from the females. The measurements were carefully made by one of the greatest of English physicians, Dr. Erasmus Wilson, one whose recent work in *great* things, although the object has a diminutive name, has made his name prominent among all nations; I allude now to his removal from the banks of the Nile, at Alexandria, Egypt, *Cleopatra's Needle*, and its setting up upon the banks of his home river, the Thames.

On the same head, even, there will be a great difference in the size of the hair-shafts. Thus, from a table given by Wilson,

we deduce the following results, from the examination of upwards of fifty hairs from each of six individuals:

	Number of hairs.	Finest.		Coarsest.		Average.
(1)	67	$\frac{1}{1500}$ of an inch.		$\frac{1}{230}$ of an inch.		$\frac{1}{450}$ of an inch.
(2)	79	$\frac{1}{1250}$ "		$\frac{1}{230}$ "		$\frac{1}{450}$ "
(3)	81	$\frac{1}{1500}$ "		$\frac{1}{300}$ "		$\frac{1}{400}$ "
(4)	97	$\frac{1}{750}$ "		$\frac{1}{250}$ "		$\frac{1}{400}$ "
(5)	64	$\frac{1}{500}$ "		$\frac{1}{240}$ "		$\frac{1}{400}$ "
(6)	57	$\frac{1}{550}$ "		$\frac{1}{210}$ "		$\frac{1}{250}$ "
Total,	445	$\frac{1}{1008}$ "		$\frac{1}{243}$ "		$\frac{1}{391}$ "

Color has much to do with the size of the hair-shafts; not, perhaps, as *prima causa*, but as an incidental accompaniment. The dark-colored hair belongs to the coarser variety. The size of the shaft as regards the color, is graded in this way:

Flaxen hair is the finest, averaging from the $\frac{1}{540}$ to $\frac{1}{400}$ of an inch; the second on the list is chestnut hair, measuring $\frac{1}{525}$ to $\frac{1}{350}$ of an inch in diameter; the third is red hair, measuring the $\frac{1}{450}$ to $\frac{1}{400}$ of an inch; the fourth is dark brown hair, measuring the $\frac{1}{500}$ to the $\frac{1}{300}$ of an inch; the fifth, light brown, measuring the $\frac{1}{500}$ to the $\frac{1}{250}$ of an inch; sixth, black, measuring the $\frac{1}{400}$ to the $\frac{1}{350}$ of an inch. Taking the average of all these we find that $\frac{1}{408}$ of an inch is the average diameter; taking this with the average given in the above table, we get $\frac{1}{399}$ of an inch as the average size of the hair-shaft of the adult scalp; hence, in round numbers $\frac{1}{400}$ of an inch should be taken as the average diameter of the head-hair of the civilized races.

HAIR IN ITS SOCIAL BEARINGS.

From a closer examination of the first table it will be seen that the ratio existing between the coarsest and the finest hairs

is as one to five, in the general average, and that it holds pretty constantly the same in the individual cases; that is, that the coarsest hairs will be five times the diameter of the finest. Now, in the less civilized nations there is not near so wide a range, neither is there in the hair from children, for in them the size of the hair cylinders is pretty nearly the same. Thus in the South American Indian's, the ratio is as one to three. In the New Zealander's (a more limited number of examinations, however, yet there were fifty hairs carefully measured), the ratio is as one to two. Would it be stretching the point too much to affirm, then, that the progress of civilization and culture can be marked, to a certain degree, by the amount of variability in the size of the hair-shafts of the head? It would seem not, from the figures and ratios just given.

NUMBER OF HAIRS TO THE SQUARE INCH.

Intimately connected with the size of the hair is its thickness of growth, or the number of filaments that are to be found upon a square inch of surface. The coarser (darker-colored) it is, the thinner it will be, and *vice versa*.

As our flaxen hair is the finest, it follows then that the owners thereof are the richer in their comate possessions. Thus, it is nothing uncommon for them to brush out and untangle *seventy miles* of golden locks when making their morning toilet, whilst some luxuriate in the richness of ninety, and even one hundred miles of these aureate possessions. The only wonder is that the delicate threads are not more kinked and knotted after a night at the ball.

The scalp bears more, in the same superficial measurement, than any other portion of the body, and even hereon they vary much in number, according to the portion from which taken: thus, on the crown they are the most plenty; on the back of

the head next in quantity, and on the forehead still more scattering. On the chin there are some one hundred and sixty to the square inch; on the pelvis, one hundred and forty; on the forearm one hundred; on the back of the hand eighty; on the thigh, anterior surface, forty-five.

The *number* of the hairs upon the head also vary with the color grown by the individual. Thus, of the black, we have five hundred and ninety-eight to each square inch; of the chestnut, six hundred and forty-eight; of the flaxen, seven hundred and twenty-eight. This is in about the same ratio as the variability of size in these same colors. It would also follow as a corollary (as the hair is coarser) that the female has fewer than the male, in the same amount of cranial surface. As there are some one hundred and twenty superficial square inches of the average sized scalp, it would follow that a black-haired individual has some (in round numbers) seventy-two thousand hairs covering his head; the chestnut-haired person, some seventy-eight thousand; the flaxen-haired some eighty-eight thousand. Another author, however, has made the estimate much larger, as he has recognized the fact, in his computations, that many of the follicles give exit to two or more hairs, and so puts the number of hairs in an average sized head, and of average luxuriousness of growth, at 120,000. From my observations this would seem the more correct estimate. The significance of the saying "Even the very hairs of your heads are numbered," can now be more fully appreciated.

Whilst our "blondes," then, are so rich in their wealth of golden tresses, their darker-haired sisters are compelled to be satisfied with fifty, forty, yes, and some red-haired sisters, with but thirty-six miles of this covering that St. Paul says is "a glory to her." While the first has the *more* from which to tie true love-knots, nature has allowed the darker-haired ones to tie

theirs the *stronger*, a more than compensating result ensuing; for, as I shall show further on, the darker-haired may have *three* husbands to the golden-haired's two.

Although 120,000, the average number of hairs of an average head (but not of an average man, I am sorry to say, for such often have no cause for comate boasting) may seem a large number to put upon so small a surface as the scalp, yet it is absolutely nothing when compared with the amount found upon animals or insects. For instance, on a single square inch of surface of the coarse-wooled English breeds of sheep, there are from 5,000 to 6,000 filaments, and on the Merino-blooded, there are some 50,000, instead of the average 1,000 as found upon our heads; and upon the feet (pulvilli) of the common house-fly, I have counted them repeatedly and found them to be at the rate of over 80,000,000 to same amount of surface; an amount which if in miles and multiplied by one hundred and twenty (the number of square inches in our scalps), would equal a distance that would take a railroad car, going at the rate of a mile a minute night and day, *over eighteen thousand years* to traverse; a time represented by more than three times the interval that separates the birth-time of Adam from this the nineteenth century.

CHAPTER V.

THE HAIR-SHAFT—(*Concluded.*)

"Fair tresses man's imperial race ensnare,
And beauty draws us with a single hair."—*Pope.*

THE HAIR CURRENTS.

On examination you will notice that hairs do not all point in the same direction, but they seem to assume geometric curves about the body. This is because the follicles themselves are placed at varying angles in the skin; they do not, as a rule, pierce it perpendicularly, but at some oblique angle, and point in different directions.

To this anatomical peculiarity is due the possibility of arranging the hair artistically, as well as the possibility of its easy sweeps and curves about the body, when left in its disheveled state. There are several centers for this capillary radiation, not only on the cranial surface, but on the limbs, as well as trunk.

When these centers of the scalp are, from some freak of nature, misplaced, we have the rebellious "frizzle tops," that admit of no special influence of the boudoir comb or brush, but seem always free to assert their criss-cross-lying independence. Many a poor mother has half worried her life out trying to train her Johnny's rebellious locks into better ways, believing it was Johnny's own perverseness of manners that induced such dilapidated-looking head-gear, when it really was none of Johnny's fault at all, but simply a freak of nature in misplacing the radiating centers of his hirsute covering.

So, too, many a belle, in and out of her teens, has "banged" these same rebelliously acting locks of hers, to the distraction of her better temper, oftentimes, no doubt, and yet with no more lasting impression upon the refractory hairs than Johnny's mother made upon his.

On the crown there is usually but a single center, and from this point the hairs radiate downwards on all sides, in gentle sweeps, until the whole scalp has been covered. If there should be a radiating center placed low down, towards the forehead, then we get our rebellious "cow-licks," as they are generally called; if two radiating centers on the crown, then the "frizzle tops" just described. Still, with perseverance on the part of the mother *and* child, this natural cosmetic deformity may be, in a great measure, overcome; for a hair bulb that, at first, persistently turned its shaft to the right, may be educated to turn it to the left; thereby restoring harmony among these more weakly members of our bodies.

On the forehead the curves radiate from the median line to the right and left, with a curving sweep downwards over the temples, forming the outer half of the eyebrows, and, in men, the upper, or aural, portion of the whiskers. On the cheeks the currents are downwards, curving round on the lower jaw to the chin. On the upper lip the moustaches are formed by two outward sweeps from the median line. On the body there is a main center at each arm-pit; from these points a current sweeps forwards over the chest, to the median line, where it descends to the umbilicus. Another current, from the same centers, in an easy double curve, covers the abdomen, thence is continued down the thighs to the knees, where it seems to split and surround the leg at this point. From the arm-pit, as a center again, a third current sweeps round to the back, whilst another encircles the arm at the shoulder, running therefrom

down to the hand, where it has an outward deflexion. On the front of the forearm is a downward and bilateral current, that meets with divers others, and the combined currents cover this member completely, so far as its hirsute growth is concerned. On the thigh, besides the downward and inward current just referred to, there is another one that sets in at the middle of the outer portion, and continues down it, and the leg, then turns somewhat diagonally across the instep to the first toe-cleft. On the back of the leg there is an upward current, a sort of a resultant from the union of the two outward flowing currents, that covers the remaining portion of the limb with its hirsute apparel.

There is, in fine, in the direction of these hair currents, as they surround the body, much to remind one of the oceanic currents, as seen enveloping the continents on a Mercator's projection; the main currents of the one correspond, figuratively, with those of the other; whilst the minor currents of the body will represent those seen on the map in the gulfs, seas and bays.

Much of this same regularity of hirsute covering is seen in animals; and in all there is a unity of design that is little thought of by the careless or hurried observer. In *all* the fine hairs follow the course of the medullary arteries of the long bones. In swift-footed animals the direction of the sweep of the currents is *from* the wind when in flight. This same principle is also seen in the arrangement of the feathers on our birds and fowls, and the scales on our fishes; the evident design being to facilitate locomotion by offering as little frictional resistance to the surrounding medium as possible.

In burrowing animals this same backward-flowing of the hirsute currents is noticed, except in the species noted for digging very small, and closely-fitting burrows; never making them large enough to allow themselves to turn about in them,

so as to be able to come out head first. These animals have the power of changing the currents of hair-growth, from the usual course of before backwards, to from *behind, forwards*; this being taken advantage of when in its burrow, allows it an easy egress from its narrow, single-entranced habitation. Moles, shrews and the platypi have this peculiarity; the stem of the hair being filamentous, but the terminal portions broader, it is easy for them to make the change in the direction of their hair currents.

Sometimes in fowls a somewhat similar arrangement will be seen (though the deformity remains permanent) in the contrariwise arrangement of its feathers. My father once possessed a hen whose feathers all ran the wrong way; those on the legs ran up towards the body, those on the body and neck up towards the head. This gave her a perpetual "out of sorts" look; and when the patient biddy would essay an aerial sail, she was doomed to continual disappointment; for the result was always that which befell "Darius Green" with his flying machine.

A few varieties of our domestic pigeons have a rough neck-gear all the time; whilst others have the power of assuming one as the occasion may demand, just as Tabby erects the hair on her back and tail when Fido approaches too near her. These all are but rudimentary examples of the phenomenon seen in the burrowing animals just spoken of.

In man we also get a hint of it in the erection of the hairs of the head, when frightened, and also in the "goose skin" condition spoken of on page 20, which is developed on exposure to cold, and sometimes to fright. Virgil has spoken of it in this wise:

Obstupui, steteruntque comæ.
I stood aghast! and my hair rose on end.

But the oldest reference to this condition of the hair and flesh is found in the book of Job (1520 B. C.) chap. iv, verse 15, where Eliphaz, the Temanite, describing his sensations when a spirit passed by, says: וַיֵּחַל אֵלַי רֹחַ אֱלֹהִים וְשָׁעַר שְׂעָרַי בָּשָׁרִי:

Then a spirit passed before my face;
The hair of my body stood up.

THE LENGTH OF HAIR.

Among members of the same races there is a great variation of the length of the hair. Between the sexes there is also a great difference noticed in the length of the cranial hirsute covering, that of the female being usually much the longer. There are three important physiological reasons why a woman's hair is longer than her husband's. The first is, that since nature has withdrawn from her the hair-growth of the face, and in a major degree that of the body, a larger supply of hirsute-forming material is left for the scalp. The second is, that the hair having a larger diameter of shaft, it is stronger, and hence less liable to break; also the formative power of the papillæ is increased. The third reason is that she is usually less engaged in mental labors, or business worry, and so there results more constant and even supply of blood to the scalp.

That her head is less constantly covered, and even when covered, ventilation of the scalp and hair is so much better, might also be adduced as another reason for finding longer hair in the female. Darwin gives still another reason, that of "sexual selection:" that is, man admires now a fine head of hair in the opposite sex; it is fair to suppose this preference has always existed; hence, as the result of centuries of such selection, the hair must have been developed in a greater degree in the female in each succeeding generation.

The political significance of long hair, in a nation that, as a

whole, wear the hair short, as worn by the male, is that of hostility to both church and state; in Austria, so well has this feature been understood, that it is made a political offense to be so attired. It signifies, in such persons, an *outréism*—a rebellion against general customs, tastes and thought.

Between different nations there is a great difference in the length of their cranial coverings; those of cylindrically-shaped shafts have the longest hairs, as notably the Chinese, Malay, and some of the Indian races. The more irregular the shape of the shaft, as a rule, the shorter is the cranial covering, as notably the Negro races.

In the Malays, hair seven feet in length is occasionally seen; whilst it is not so very uncommon to see it trail on the ground when walking.

The longest hair that I have seen in the female is that belonging to Mrs. Dr. Prittie, of Detroit. She is now twenty-eight years of age, and her hair measures some fifty-eight inches in length; it is very dark colored. I have measured the diameter of the shaft and find it to be $\frac{1}{300}$ of an inch. Luxuriant hair-growths have been characteristic of her father's family, especially among the male members. Latterly the excessive growth she carries has begun to make quite a serious drain upon her system, though in former years no ill effects were noticed.

Dr. Wilson says that a lady writes to him that she is five feet eight inches in height, and that, when standing, many of her hairs trail three or four inches upon the floor. She is twenty-eight years of age, hair wavy (hence of the ovoid shaft) and it gives positive pain to have one pulled from the follicle.

A lady in Massachusetts is reported to have refused \$1,000 for her head of hair, which is quite thick and heavy, and measures five feet and eleven inches in length.

The Empress of Austria is said to have a head of thick, golden hair reaching down to her feet, when standing erect.

White speaks of an Italian lady whose hair trailed on the floor when she walked; in Greece it is occasionally seen of equal length.

In 1814, in Fleet street, London, a girl was exhibited having a head of flaxen hair five feet and nine inches in length. Then there was Lady Godiva, of Coventry, celebrated in verse by Tennyson, who rode through the streets of her town with no covering but her hair, in order to save the yeomanry from unjust oppression. You all know the fate of Peeping Tom on that occasion. The lady was the wife of Leofric, Earl of Mercia, and her hair, of beautiful flaxen, is said to have reached below her knees. Then there is the legend of St. Agnes (A. D. 304) who, condemned to the stake, used her hair, when stripped of her clothing, to protect her person from exposure.

In 1786 a woman gave exhibitions in London, of the length and strength of her hair. She would stoop down and encircle a large anvil, weighing some two hundred pounds, with her locks, and then easily raise it from the ground.

The ancient Briton females had hair that grew to immense length also; indeed, to this day it is quite common, in alluding to such a covering upon a fair-skinned English lady, to liken her to the old type of beauty common in Britain's early history.

It is evident, also, that Mary Magdalene, who washed our Saviour's feet with her tears, and then "wiped them with the hairs of her head," must have had hair of luxuriant and lengthy growth. Then there is the Juliet who flung her tresses to her lover over the terrace wall, when he came too late at night to find entrance at the castle's gate, so as to aid him in scaling the otherwise impassable barrier. All these are more or less familiar examples of the exceptional luxuriance of hair growth.

The average length, in women of the Anglo-Saxon race, is from eighteen to twenty-four inches; though thirty-six inch hair is not at all uncommon for the darker hues, and is even quite frequently seen in light-colored heads of hair. In men, of course, there is no "average length," as it is usually kept closely cut; it is probable, reasoning upon the physiological fact that they grow beards and whiskers, and that more hair is found generally over the body, that there is less hair-forming pabulum circulating in the tissues of the scalp, and hence its growth would be less excessive than that seen in women, if allowed to remain uncut; though a Prussian officer, during the earlier part of the century, boasted of a head of hair that, when undone, would reach the ground.

Godfrey, who has devoted considerable attention to this subject, gives this classification:

1st. The long, soft hairs, as those of the scalp, vary from one foot to three feet in length, and from $\frac{1}{20}$ to $\frac{1}{50}$ of a line in diameter; the average length would then be about two feet. His diameter is too coarse.

2d. The short, stiff and thick hairs, from $\frac{1}{4}$ to $\frac{1}{2}$ of an inch in length, as the eye-brows and the like, vary from the $\frac{1}{15}$ to the $\frac{1}{3}$ of a line in diameter.

3d. The short, fine hairs, as the "down" that coats the body, vary from one to six lines in length, and from the $\frac{1}{100}$ to the $\frac{1}{166}$ of a line in diameter.

Taking now, as a basis of mathematical computation, the average number of hairs, and the average length as previously given, we find that every female, reaching the age of sixteen or eighteen years of age, has from forty to eighty miles of comate covering, and that every male has an average of from eight to ten miles. Making our average again, we find that, taking the run of population, young and old, male and female

together, that from twenty to twenty-two miles per head can be safely assumed.

On this basis, were it possible to place end to end the hirsute covering of the heads of Detroit's citizens, we would have a hair-line long enough to more than reach *thirteen times* to the moon, or one that would belt the earth some *one hundred and twenty* times at its equator.

If the computation be made for the citizens of New York city and Brooklyn, it will be found that the line will stretch out to so vast a distance that it would take a railroad car, traveling at the rate of one mile each minute of time, and constantly running night and day, the time of two generations of men to traverse.

Or, take the hairs from the heads of the people of the United States, and place them end to end, and you could stretch a line from the earth to the sun, the sun to the planet Jupiter, and from Jupiter back to the earth again, and yet have 110,000,000 miles to spare—enough to cable the earth to the moon more than four hundred and sixty-two times.

Or, the hairs from the heads of the present inhabitants of the globe would, if placed end to end, stretch out a line such a vast distance into space that if a cannon were fired from one end of the line when Adam was created, the sound thereof, although traveling at the rate of 1,120 feet each second of time, both night and day, would not yet have *near* reached its journey's end; many generations would yet pass away before its mission could be accomplished.

RAPIDITY OF HAIR GROWTH.

The rapidity with which hair grows is subject to great variations, even among individuals of the same race; it is influenced greatly by the health of the individual, his occupation,

and his age. In the young and middle-aged the growth is the most rapid; and the same condition is seen in those living an active, out-door life in preference to an indoor or sedative one. The growth of the beard is undoubtedly accelerated by frequent shaving; and, in a minor degree, the cutting of the head-hair is also conducive to its more rapid growth. A thorough stimulation of the scalp, by rapid brushing each morning and evening, is also conducive to the longevity of the hair, and consequently to its more lengthy growth. Other hygienic influences are equally influential.

From several careful computations made by Withof, it is found that when a man of average health, and hirsute tendency, has reached his eightieth year, he has, if he has been pretty closely shaven, or has kept his beard pretty closely trimmed, cut off some thirty feet of this hirsute material; its average growth being some six and one-half inches annually.

The growth of the head-hair is of about equal rapidity, six inches being its average growth per year, if kept pretty closely trimmed. Of course when allowed to remain long its growth in length is retarded, since much or most of the formative pabulum is exhausted in sustaining the life of the hair already without the follicle.

Between the ages of seventeen and twenty-four years it is at its maximum of yearly growth; it grows faster, too, in summer-time than in winter; faster by day than by night, and faster in the warm climates than in the cold. As a rule, the longest hirsute growth is seen in the torrid zone; and of course, for physiological reasons, it is hair of the largest diameter.

WEIGHT OF HAIR.

The weight of hair stands, usually, in direct ratio to its fineness; that is, the finer the hair the heavier it will weigh. The

French, as a rule, have coarse, dark hair, and the usual weight cut from their heads, for manufacturing purposes, is about five ounces. The Italian hair-growers usually furnish six ounces, whilst the flaxen-haired Teutonic girls furnish fleeces that weigh ten or twelve ounces. These are the average weights; many fine specimens will weigh considerably more than this, so much so that some authorities have given from eleven to twelve ounces as the usual weight; this, I think, is too high an estimate; very few American heads, anyway, would yield such a crop.

The heaviest weight of hair on record is that found in the Bible accredited to Absalom. The records say that he "polled" or cut his hair, yearly, and the growth was so luxuriant that each "polling" weighed some six and one-sixth pounds avoirdupois.

"And when he polled his head, for it was at every year's end that he polled it (because the hair was heavy on him, therefore he polled it), he weighed the hair of his head at two hundred shekels after the king's weight."—2 SAM'L, xiv, 26. (1024 B. C.)

As the old saying is, "it is but a step from the sublime to the ridiculous;" with this as a plea I offer the following, as showing to what base uses we may be put. A barber living on Grub street, announced himself by a sign illustrating Absalom hanging by his hair in an oak; beneath it was this doggerel:

"O! Absalom, my son, my son,
If thou had'st worn a periwig thou would'st not been undone."

USES OF THE HAIR.

The ancient Egyptians made it emblematical by making it the badge of youth. The young princes used to wear a certain

styled lock back of their ears, which finally got to be the emblem of juvenescence itself. (Harpocrates.)

Besides as a means for protecting the head from extremes of heat and cold, or sudden changes of temperature, it is also anti-frictional in its action. The portions of the body which are subject to constant irritation from extraneous bodies, as notably the wrists, where the cuffs are continually sliding back and forth over them, will be found to have the hairs worn closely off, they having furnished, in no little degree, protection to the sensitive skin beneath.

In animals we see the uses much more plainly marked; those of the northern climes having the protection of a thick coating of fur. The northern wild boar is thus protected, besides having the bristles common to the genus in the south. The ancient elephant, and the rhinoceros, of the north, were similarly protected. Yet in the south, the representatives of these same species bear but coarse bristles, and many have no hair at all. The bottoms of the feet of camels and dromedaries are also protected by hair from the irritation of the hot sands of the desert. Ruminants of the larger species, who practice prolonged grazing, have their coats of hair well oiled, so as to protect themselves against storms of sleet, snow and rain, as well as to keep their bodies warm. So excessive is this secretion in some of the antelopes that it has led to the giving of them specific names from this fact alone. All this class of animals (ruminants) shed their hair annually; our sheep would if not already relieved by shearing. Our horses shed their coats also; but their tails and manes are exceptions to this rule, being retained indefinitely.

Hair is also made use of in surgery for stitching up wounds, and for the drainage of wounds, sinuses or deep abscesses. This last is done by inserting a tuft of hair down to the

bottom of the abscess, or drawing one through the sinus; it furnishes a means for capillary attraction, and so the easy discharge of pus.

Our masons could not plaster our houses, were it not for the hair to help hold it together. Our shoemakers would be equally at a loss if the hog's hair bristles were taken from them.

Hair also furnishes us with over one-half of all our clothing: this is seen in all of our woolen goods, felting, mohair and camel's hair goods; our silk is also very nearly akin to hair, it being the filamentous covering that the silkworm has spun for self-entombment.

INDESTRUCTIBILITY OF HAIR AND ITS POST-MORTEM GROWTH.

Hair is one of the least destructible parts of our body. In the grave it is the last of all the tissues to yield to decay. From the ancient catacombs it is taken in a state of excellent preservation. The cranial coverings that once bedecked the citizens of ancient Thebes, have survived the mouldering influences of the tomb, unaided by embalming, some four thousand years. Hair is as lasting as the Karnack pyramids and the Sphinx itself; aye, more lasting, for these are now crumbling through their weight of years, when some of the wigs of human hair, exposed to the mould and moisture of their entombed apartments for these thousands of years, are even less attacked with decay than the funereal monuments themselves. Flesh and bones pass away before the disintegration of hair commences. Many even suppose that it derives elements of growth from the decaying elements about it, but this is not to be credited.

Its growth after death is more a horrid fiction than anything else. It is entirely at variance with scientific and physiological facts and principles. I am well aware that many instances are quoted, by those that delight in the marvelous, of such growths.

But hair-growth is just as much a *living* physiological process as the beating of the heart; both depend upon *circulating blood* for their food, and when this is denied them, both cease to live. Even the heart receives no life from the blood it propels throughout the system, except it first force it into the arteries that feed its muscular substance; it draws no nourishment from the mass of blood that surges through its ventricles every twenty-four hours; it would cease to beat instantly if left to this alone for its life. So, too, the hair; concentrate all the blood in the system at its roots, and it will get no nourishment unless the blood first traverses the minute capillaries that go to feed its papillæ, which furnish life and substance to the cells ceaselessly at work therein, building up the hair-shaft cell on cell.

I admit an apparent growth of hair after death; but there is a vast difference between this growth and a genuine one. The apparent growth is made from just the opposite conditions that would favor an actual one; for the "apparent" is seen only on the shrinking up of the skin tissues, squeezing the blood and nourishment out of them, thus allowing, through the contraction of the skin, a more projected appearance of the hair-cylinder, which, to an unpracticed eye, would simulate real elongation. I have had anatomical specimens in my possession for months, and only this "apparent" growth, through shrinkage of tissue, of either eyebrows, hair or beard could be detected. I have seen, though, what I took to be a slight whitening of the locks, in an aged specimen, due probably to atmospheric influences entirely. But as to the absolute growth of hair after death, I believe it to be the wildest vagary.

CHAPTER VI.

THE COLOR OF THE HAIR.

"Faith, his hair is of a good and excellent color."—*Shakspeare*.

In a former chapter, page 30, I spoke of the fibrous portion of the shaft as being the seat of its coloration, to which page I refer you for an account of the manner of the distribution of the coloring pigment-cells and granules.

Mr. H. C. Sorby has succeeded in extracting the coloring matter of human hair, and found that there are three coloring pigments, yellow, red and black, and that all the shades are produced by the mixture of these three primary colors.

In the pure golden, yellow hair there is only the yellow pigment; in red hair the red pigment is mixed with more or less yellow, producing the various shades of red and orange; in dark hair the black is always mixed with yellow and red, but the latter are overpowered by the black; and it seems that even the blackest hair, such as that of the Negro, contains as much red pigment as the very reddest hair. He concludes from this, that if in the Negro the black pigment had not been developed, the hair of all Negroes would be as fiery a red as the reddest hair of an Englishman. He found that dilute sulphuric acid proved to be the best solvent.

CLASSIFICATION OF RACES BY THE HAIR.

Scientifically, hair has received these two general divisions:

Ulotrichi, or the races with crisp, woolly hair, and of dark color. In this division are placed the Negroes, Bushmen, etc. The other main division is the

Leiotrichi, or races of smooth hair, as the Anglo-Saxon, Germanic and kindred races.

These two divisions have also been subdivided into the following five minor classes:

1. *Australoid*, being the races found principally in Australia.
2. *Negroid*, best represented by the African Negro tribes.
3. *Mongoloid*, represented by the Chinese races.
4. *Xanthrochroid*, to which belong the Slavonic, Teutonic and Scandinavian races.
5. *Melanochroid*, represented by the Iberians and the black Celtic races.

The *Australoid* group, as reported by Huxley, are men of dark complexions, ranging to chocolate, with smooth, soft and wavy hair, neither crisp nor lank, nor yet straight. Their skull is long; that is, its breadth is but $\frac{8}{10}$ of its length; the stature varies considerably. The best representatives of this group are the natives of Australia. Wavy, silken hair, dark complexion and eyes, are then, with a long skull, their prominent characteristics.

The *Negroid* group is made up of men with long skulls, differing considerably from the *Australoid* in their general shape; with black eyes and hair, the hair being crisp and woolly, and the skin varying in dark shades to black.

The *Mongoloid* group are men of a yellowish to olive tint, that have black eyes, and long, straight, black hair. The skulls of this group differ from those of the two just described, in that they are frequently of the broad type, although there is a range of great variation.

The *Xanthrochroid* group embraces the *blonde races* with which we are all so familiar, and which is represented by heads ranging from the broad-skulled German to the long-skulled Scandinavian. The skin is fair and delicate, and the hair of a yellowish hue, the eyes being blue. In stature they are usually tall, though they may vary in this considerably.

The *Melanochroid* group embraces, chiefly, the Spanish, French and Portuguese races. They have broad skulls, dark eyes and olive complexions, and long, black, wavy hair.

The *American Indians* would constitute a type by themselves, were you to take the general shape of the head alone into consideration; but, hirsutically, they fall properly under the *Mongoloid* type, as their hair is black, long, lank and straight. The high cheek bones, thus making a broad face, and copper-colored skin, are entirely unlike the other groups, hence would make a new and distinct group of them if classified from these features.

It may be well in this connection to refer to the classification of the races of men as usually given by our anthropologists:

First we have the *Caucasian* race, known by its fair skin; hair of varied color, but fine, long and curling, and beard abundant.

Second, the *Mongolian* race, with sallow or olive-colored skin; hair long and straight and of dark color, whilst the beard is scanty, or there is none at all.

Third, the *Ethiopian* race, with dark skin and hair crisp and curly, with little or no beard.

Fourth, the *Malay* race, with reddish-brown skin, and hair black, coarse and lank.

Fifth, the *American* race, with copper-colored skin; hair black, long and lank, and little or no beard.

Sixth, the *Papuan* race, with purplish-hued skin; hair wiry, coarse and frizzled, and with little or no beard.

From this it can be fairly formulated that the light-skinned races only have long curly hair, and grow a beard. And if a line were to be drawn to roughly separate the light from the dark races, in the old world, you would only have to extend a line from the north of Ireland through to the Himalaya

Mountains, and those north of that line would represent the light-colored races, whilst on the south of this would be the dark-haired races. This same line would also pretty generally separate the light-haired and bearded races from the dark-haired and beardless races. Some have been wont to infer from this that climate has had everything to do with this difference of color, but this is not so; for when you get to the most northern latitudes, as in the east of the upper part of Norway, in Lapland, you meet with the dark-skinned Laplanders. The same dark-hued race is also met with in Greenland.

THE TEMPERAMENTS.

Aristotle (B. C. 384-322) referring to the different temperaments met with in the two races, of light and dark hair, remarked: "The people of the North are generally manly, and have strong hair; whereas those of the West are more timid, and have more flexible hair." Also that "weak hair betokens fear, whilst strong hair denotes courage," in which view he will be upholden by any careful observer of to-day.

Claudius Galenus, or Galen, as he is commonly called, who was born at Pergamus, a city of Asia Minor, A. D. 132, divided mankind into four general temperaments, and which were transcribed by Paulus Ægineta (who lived in the seventh century of our era) and have so come down to us. These temperaments are as follows, as quite freely rendered from the original Greek :

I. "People of hot and moist temperament have soft, fleshy and quite hairy bodies; their hair is straight and yellowish, but does not soon fall out. They cannot endure vigils; are prompt to action and anger, though easily appeased." It will be noticed that this corresponds to our later division of temperaments known as "Sanguine."

II. "Those of a cold and moist temperament have narrow chests, hairless bodies, soft, white skins, feeble muscles, ill-formed joints and invisible veins. Their hair is light-colored, especially in youth, and they do not become bald [early?]. The more morbid the temperament, the lighter the hair." This, it will be noticed, corresponds with our "Phlegmatic" temperament of to-day.

III. "The hot and dry are very shaggy; the hair of the head being very black, thick, strong and curly; it grows rapidly, though they early become bald. Their veins and arteries are large and the pulse strong; the body is firm, muscular and lean, and the skin is hard and dark. Their excretions are small, and they require but little sleep. They are active, passionate and implacable." This might be properly termed the modern "Choleric" temperament, to which our generals, and the like, might be referred.

IV. "Those with the cold and dry temperament have a white skin, a slender body, fine muscles, though somewhat fat. Their joints are small, and they have but little hair, and this is tawny." In our times this class should have black hair instead of "tawny," and would be known as the "Nervous" temperament.

HYGIENE AND SOCIOLOGY OF HAIR COLORATION.

Hymeneally there is an item of great interest connected with hair coloration, for we find that a greater proportion of light-haired women live and die unmarried, and without offspring, than the dark-haired. Statistics seem to show that our "beautiful blondes," as they are familiarly called, although much is talked about them, stand in the actual matrimonial market three chances of failure to complete a life-contract, to two chances of failure on the part of their darker-haired sisters. Just what sort of a philosophy induces the sterner sex to talk so much to

and of blondes, and yet, when it comes to the actual business phase of life, should propose to the brunettes, is entirely beyond my comprehension. Dr. Beddoe, who has recognized this peculiarity, has seen fit to call this sort of flirtation "conjugal selection." The result of this "conjugal selection" is, that fair-haired ladies are getting rarer than they were in years gone by. Mrs. Somerville also noticed this some years ago, and remarked upon it in her "Physical Geography." Now, whether the cause of all this can be reduced to Darwin's theorem—the survival of the fittest—I cannot say; though true it is that light-haired people usually have weaker constitutions than the darker-haired. Yet, in the light of the facts in the case, so far as now known, I think I am justified in warning our flaxen and golden-haired ladies of the inevitable doom that must await their species in the future.

In a careful examination kept of seven hundred and thirty-seven women, applying at the Royal Infirmary, thirty-two per cent of the fair-haired were single; whilst but twenty-two per cent of the dark-brown haired, and only eighteen per cent of the black-haired remained unmarried. Taking the seven hundred and thirty-seven, and dividing them into two general classes, the light and the dark-haired, we find that out of three hundred and sixty-seven fair-haired women, thirty-two per cent were single, whilst out of the three hundred and sixty-nine dark-haired women, but twenty-one and five-tenths per cent were similarly conditioned.

It is a notorious fact of history, also, that the blondes are disappearing from the Caucasian race. In Cæsar's time the Britons, Celts, Saxons, Gauls and Germans, were blue-eyed and had either red or flaxen (yellow) hair. At the present time the Celts have become a dark-haired race, and among the Anglo-Saxons a darker type of hair and much darker eyes is

the rule. From statistics kept of 1,410 individuals it was found that 30 were *red* haired, 108 *fair* haired, 338 *light brown* haired, 807 *dark brown* haired, and 67 were *black* haired; thus showing conclusively the predominance of dark hair among a race (the English) that sprang from a light-haired one.

I find also some quite interesting statistics in the *hygienic department of sociology*; for from carefully kept records I deduce the following:

1. Black-haired people are most prone to consumption; the brown-haired the least so. Another author has added cancer and cataract to the evils in the black-haired list.

2. To the brown-haired individuals is ascribed acute rheumatism, heart disease and eczema (popularly known as "salt rheum.")

3. To the red-haired individuals belong more especially pleurisy, pneumonia, ague and neuralgias.

4. Individuals with blonde, or light-colored hair, are most subject to some one of the skin diseases.

In matter of *dispositions* we find that, as a rule, those having blonde or auburn hair, are tender-hearted, hence are apt to be imposed upon by those who plead poverty or physical distress. They are usually representatives of delicacy and refinement, and are classed among those of lymphatic temperament.

Red-haired people are firm in their convictions, and are great lovers of their mother country, people and church; notably so are the Scotch. Their morals are of the sturdy, Puritanic type. Such people are classed as of sanguine temperament. When the hair is coarse and harsh, brutality and sensuousness marks the character of the possessor.

Black-haired individuals are positive, powerful characters, and hence are either very good or else are very bad; there seems to be no mid-way ground with them. The coarser and

straighter the hair, the more noticeable is the characteristic of revenge, if the passions have not been educated to be held in check by moral suasion and the force of the will. You see this disposition markedly in the Indian and Malay. They represent the bilious temperament.

The midway tint between the dark and the light, as the brown-haired individuals, have combined in themselves the strength, in a great measure, of the black-haired, and the exquisite sensibilities of the light-haired. From this class come our philanthropists (but not our generals, as a rule), our painters, musicians and authors; those that unite the tender feeling and sympathy of the woman with the stronger will-force of the man. Hence our Homer, Virgil, Raphael, Titian, Handel, Mozart, Tasso, Chaucer, Burns, Keats, Longfellow, Lowell, Whittier, and a host of others.

The darker-haired races are usually people of the torrid portions of the temperate zones, and the torrid zone itself; whilst the lighter-haired races belong to the cooler countries of the temperate portions of the continents. Taking the world, all in all, it is peopled mostly by the dark-haired races.

THE HAIR OF THE PRESIDENTS.

There is preserved in Washington, in the Patent Office, among other curiosities, specimens of hair of each Presidential head down to Franklin Pierce's time. The locks are kept in a neat frame, covered with glass, and properly labeled.

The hair of Washington is nearly a pure white, fine and smooth in its appearance.

That of John Adams is nearly the same in color, though perhaps a little coarser.

The hair of Jefferson is of a different character, being a mixture of white and auburn, or a sandy brown, and rather

coarse. In his youth Mr. Jefferson's hair was remarkable for its bright color.

The hair of Madison is coarse and of a mixed white and dark.

The hair of Monroe is a handsome dark auburn, smooth and free from any mixture. He is the only ex-President, excepting Pierce, whose hair has undergone no change in color.

The hair of John Quincy Adams is somewhat peculiar, being coarse and of a yellowish gray in color.

The hair of General Jackson is almost a perfect white, but coarse in its character, as might be supposed by those who have examined the portraits of the old hero.

The hair of Van Buren is white and smooth in appearance.

The hair of General Harrison is a fine white, with a slight mixture of black.

The hair of John Tyler is a mixture of white and brown.

The hair of James K. Polk is almost a pure white.

The hair of General Taylor is white, with a slight mixture of brown.

The hair of Millard Fillmore is, on the other hand, brown with a slight mixture of white.

The hair of Franklin Pierce is a dark brown, of which he had a plentiful crop.

It is somewhat remarkable, however, that since Pierce's time no one has thought of preserving the hair of his successors. There are vacancies in the case; and there is no hair either of Buchanan, Lincoln, Johnson or Grant for the inspection of futurity.

Grant's hair is, however, of a dark brown, and his whiskers were inclined to be sandy at the aural portion.

Lincoln's hair and beard were quite black, though they had become considerably grayed before his death.

Hayes' hair was, in his youth, a brown with a slight reddish tinge. It is now quite tinged with gray. His beard is also quite gray.

PERSONAL APPEARANCE OF THE SAVIOUR.

St. Clement, of Alexandria, in writing of the Saviour, thus says: "Jesus had no beauty of face; his person offered no physical attractions; he only possessed beauty of soul, which is the true beauty." St. Irenæus, a disciple of St. Polycarp, who was a disciple of St. John, wrote that his master had often heard the beloved disciple say that the hair of Jesus had already turned white when he began his mission. All pictures of him represent him with long, curling locks, that are characteristic of auburn-hued hair, and with a long, curling beard. Such hair belongs rightly to the temperament of one whose life would be marked by a keeping of the moral and religious precepts and doctrines which the Saviour taught and practiced.

SINGULARLY COLORED HAIR.

In the chapter upon "Trichonosis Decolor" this subject has been quite fully considered, as sometimes it is a symptom of a disordered or diseased system. Several cases are there recorded of banded, green, blue and white and woolly hair, to which the reader is now referred.

The Cape mole has a very singularly constructed hair, in that it is *iridescent*, the only instance I know of of such a condition of the hair in either man or animals. So marked is this iridescency that it has furnished it with its generic name, *chrysochloris*. Humming birds also have this quality present in the feathers upon their neck and breasts, and so do a few of the Polynesian birds. In the lower orders of animal life, as the fishes, crustaceous iridescent-coatings are common.

CHAPTER VII.

HAIR IN SINGULAR PLACES.

In animals we sometimes get a singular placement of the hair-follicles, as notably that of the instance, recorded on page 13, of the tuft of hair springing from the front of a calf's eyeball.

Then, in the *fœtal whale*, we find a *growth upon the upper lip* that some of our aspiring young men, whose moustaches resemble markedly Paul's definition of faith—"the substance of things hoped for, but the evidence of things not seen"—might be pardoned for coveting. Yet, when that fœtal,

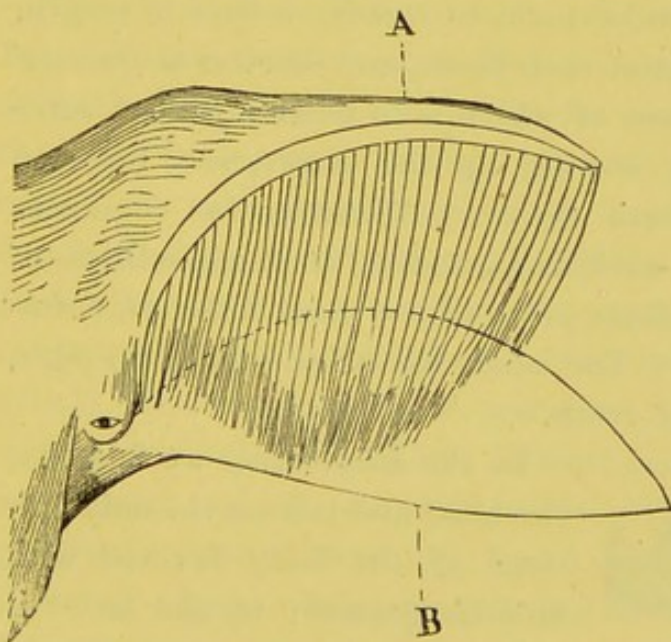


Fig. 20.

moustached, aquatic mammal reaches adult life, the hair evidently seems to have, as the boys say, "struck in;" for you find it then only in the animal's mouth, hanging down from around the upper jaw, and filling its immense gullet; it thus acts as a strainer to catch and entangle the small crustaceous fish (about the size of an

ordinary house-fly) on which the monster feeds. In the whale's upper jaw recesses are cut, so that, when the mouth is closed,

the hair is folded away into these pockets out of harm's way. See Fig. 20, A being the upper jaw, or crown bone, and B, the lower jaw. The cut shows the baleen strips as they are when the mouth is open for feeding purposes.

These hairs spring from the sides of the strip of baleen, or whale-bone, as our ladies would term it, for it is this substance which they use to stiffen the lining of their dresses and corsets, and is not bone at all, although so-called. It is simply a mass of agglutinated hair, glued into thin laminæ by the drying of the peculiar viscid secretion furnished by the mouth of the Greenland whale. There are 289 of these hair-formed blades upon the right side of the jaw, and 286 on the left. At the center of the jaw, in front, the blades are placed $\frac{3}{4}$ of an inch apart; but backward, towards the throat, the space is diminished to $\frac{1}{4}$ of an inch. The free hair fringing these blades varies from an inch, to twenty inches in length, being longest at the point of each blade, and shortest at the roof of the mouth; the purpose of which is to make a perfect seive of the baleen strips by closing up the interspaces between them. The old and acute observer, Aristotle, was cognizant of this mechanism, and said, as quoted in the Latin edition of his works, *Mysticetus etiam pilas in ore intus habet vice dentium suis setis similes*. "The whale has hairs, just like a pig's, in his mouth, in place of teeth."

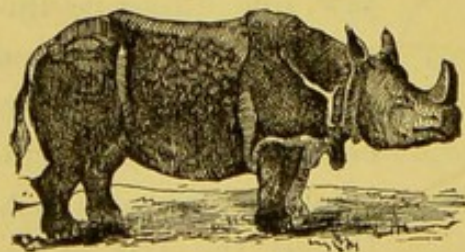


Fig. 21.

In the *Rhinoceros* we find that the head and tail are the only portions of the body favored with hirsutic growth; on the latter it is little else than a clump of stiff bristles just at its tip; whilst on the head it is wholly confined to the nose, here being seen, as agglutinated together, to form

either one or two horns, according to the species. In this respect the horns of the rhinoceros resemble the baleen of the whale, as both are built up by the cementation of an immense number of hairs.

In the case of the *elephant* a very similar condition of affairs will be noted, as regards the paucity of hair upon his body; a few bristles only are found on the trunk, ears, back and the tip of the tail. Its early progenitor, as now found imbedded in the frozen marshes of Siberia, was entirely covered with hair. Dr. Laman, a noted traveler, and who spent some four years in the wilds of Siberia and Chinese Tartary, tells me that he has seen the wool on such a carcass that would measure six or eight inches in length; that it was firmly matted together, or capable of being easily so matted, and was of a brownish color; that it would furnish a coat almost impenetrable to cold.

The elephant's tusks, however, are entirely different from the horns of the rhinoceros, as they are more like the hugh tusks, or teeth, seen in such animals as the *sus scrofa* (wild boar), in that they have a bony socket: whereas, the rhinoceros' horn, as regards its roots, resembles beauty, in that it is but skin deep; for, in flaying the animal, the horns are removed with the skin. In the human being we find, frequently, this rhinoceros-like tendency to the growth of a tuft of upwardly-projecting, bristly hairs from the tip of the nose. This may be a relict of our close relationship to our Darwinian ancestry; but be that as it may, one of my professional friends, a surgeon, is so peculiarly marked that way, that I rarely look at him without thinking of that hairy-horned individual which ploughs the African jungle, and delights in a goring operation upon any playful elephant that may chance to offend his majesty.

The *hippopotamus* is also noted as having hair only at the tip of the tail.

A hairy water-tortoise from China. This terrapin, or water tortoise, has hairs growing out from its back. It will snap at and devour little bits of meat, fish, shrimps, etc. As the little animal swims the fibers hang away from him so as to give him the appearance of an animated bunch of weeds. His face is very intelligent.

I do not know whether the growth upon this terrapin's back has been produced artificially or naturally. It is simply a water-grass, something like the weedy material growing on decaying wood-work and lock-gates of rivers. It is possible that the ingenious Chinese may have some way of doctoring up the living specimens of terrapins, of which I understand considerable numbers exist in the ditches and marshes of China.

The tortoise being a sacred emblem in China, the Chinese make pets of the hairy tortoise, which they keep in basins of water during the summer months, and bury in sand during winter. A small lake in the province of Kiang-su is famous for these so-called hairy tortoises, and many persons earn a livelihood by the sale of these curious little pets, which are about two inches long.

In the *human being* we know that during the last three or four months of intra-uterine life the whole body is covered with a quite thick, and long crop of hair, or wool—*lanugo*, as it is scientifically termed; and when children are born, before the full time of gestation, their bodies being so covered are, for a time, a source of annoyance to the mother, who fears this will be a permanent condition of affairs. This is not so, however, for in a short time the *lanugo* disappears, and the secondary, or extra-uterine, growth of hair of lighter color takes its place on those parts where we are accustomed to see it. In some instances there is an exception to this rule, and the hair remains growing from the whole surface of the child. These

cases are to be regarded as monstrosities; some of the more noted of which are given in the chapter upon "Polytrichia."



Fig. 22.

This *lanugo* is looked upon, by the Darwinists, as one of the important proofs of man's close relationship to the anthropoid apes, and animals even lower, since it so closely resembles the hirsute condition of these species. Figure 22 is a good picture of the nose-ape (*Semnopithecus nasicus*) of Borneo, showing quite a similarity, in looks, with characters we frequently meet

upon the streets; certainly quite as intelligent-looking as are occasionally seen.

What is a singular fact, is that this intra-uterine hair-growth, *lanugo*, is of dark color, although the parents may be of the blonde type of feature and hair; there seems to be no difference in the foetal coloration whether the parents are light or dark-haired.

Something of the same coloring of the *hair* is seen in that found *growing in ovarian tumors*, as spoken of on page 13, "dermoid cysts," as they are properly called.

The usual color of hair so found is that of a light brown or pale yellow tint; sometimes actually gray hair is seen, as the case reported by Axel. Sometimes long black hair has been found, and also red hair. Wool has also been found in dermoid cysts from sheep; feathers, from those in birds, and hair, from those in other animals.

WHY HAIR GROWS IN TUMORS.

At one time it was thought these growths were the result of blighted conception; but as they have been found in children

who had never menstruated, in many other parts of the body than the generative organs, and even in males, this theory must be abandoned. My opinion is that these hairy-growths may arise in one of these three ways:

I. Sometimes as the result of a blighted conception or incomplete fructification of the egg, the ovum not entering the uterus, but lodging upon, or near the ovary, thus producing many of our dermo-ovarian and uterine tumors.

In these tumors other substances than hair are frequently found. Thus I have seen bones, teeth, and cartilaginous substances that were removed therefrom. Brain-matter, sweat and sebaceous glands have also been discovered in these cysts. Sometimes when these tumors are so situated that they will admit of being punctured and the contents removed (when the complete removal of the tumor has been, for some reason, made unjustifiable) it has been found that the hair and teeth will grow again, just the same as witnessed in the human being. Barnes says he has extracted tufts of hair, at intervals, from the same tumor, for several years. Meckel says this kind of teeth are subject to just the same laws of development and duration as mark the growth of normal teeth; the intimate attachment of their follicles, as well as the follicles of the hair, to the cyst-wall insures the reception of sufficient pabulum to keep up their growth and regeneration when shed.

II. As the result of a double fructification, one ovum containing the other. This process gives us our double monstrosities, as children or animals with supernumerary legs, arms, bodies or heads. A good case in point is that of Velpeau's, where a young man, aged twenty, was admitted to the hospital, of whose surgical ward he was in charge (Charité), who had quite a large tumor connected with one of his testicles, which had existed since birth. On operation, it was found that the

tumor was imbedded in the substance of the testicle; it gave exit to several bones and parts of a fœtus. The presence of hair was not recorded in this case, although it has been so noticed in this organ by other observers.

III. As a result of the induplicature of the *skin-sensory* layer of the germinal membranes. This is one of the four primitive germ-layers that give us our epidermis, brain, spinal cord, ovaries, breasts, oviducts and vagina; and when united with the *skin-fibrous* layer, gives us our cerebral and spinal nerves, the organs of touch, taste, smell, sight and hearing; also our kidneys and urinary ducts, testes, spermatic duct and penis. (The skin-fibrous layer has its origin from the skin-sensory.)

This is not the place to go into the details of ontogeny; but if the organs above enumerated are held in remembrance, as being *formed from identically the same germ layer*, it will be easily seen how it is possible for one to be readily encysted, within the other, through an induplicature of the primitive membrane. This theory will be still more plausible when we remember that bones, teeth, hair, brain and muscle are formed from the same primitive layers, and that (so far as my observation goes) these dermoid cysts are found only in some one of the organs above named; there originating from the skin-sensory and skin-fibrous germ-layers. Until the contrary shall be shown, I shall be inclined to refer most of these dermoid growths, except when occurring in the ovary, or contiguous thereto, to this third principle for their cause.

An excellent illustration of this principle is the following interesting case, which occurred in New York city quite recently:

A young man was afflicted with a tumor of the tongue, one of the dermoid variety that I have just been describing. It was one of those recurring hair-growth tumors; for as often as it was lanced a discharge of hair would take place only for the

cyst to refill again. Several hundreds had been discharged, being of all colors, white, red, brown and black. Their length was equally variable, being from one-half an inch to three inches; sometimes they would be straight, sometimes curled; then again quite a lock of them would come out together. It really seemed as if the body of his tongue was made up of hair. The opinions of the young man's attendants were, that it was congenital, and the result of some inflammatory process. To the former view, its being congenital, I unhesitatingly subscribe; *i. e.*, that it was formed before birth; but as to the inflammatory part of the process, induced by some irritation, as they averred, I do not believe. The only cause at work was the slight infolding, and retention, of a small portion of the germ-membrane that ultimately produces hair, within the membrane that evolves the tongue; and hence the imprisoned hair-producing membrane, in the production of the hair within the tongue, was but performing its proper physiological function, although under abnormal conditions.

Perhaps I can make my meaning clearer by the use of the following diagram: In this, Figure 23, A represents the com-

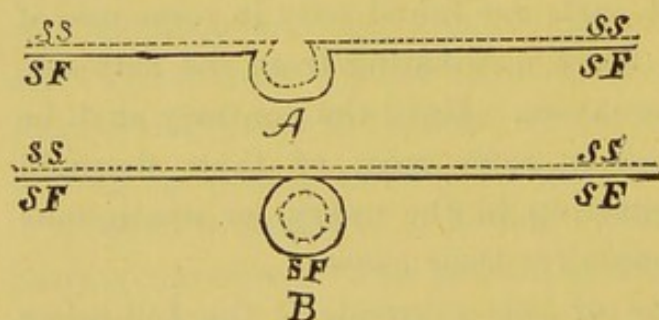


Fig. 23.

mencement of the induplicature of the skin-sensory germ-layer, represented by the dotted line *ss*, and its infoldment in the skin-fibrous germ-layer, *sf*. B, of the

same figure, represents the completion of the process of the surrounding of the skin-sensory layer by the skin-fibrous layer; the letters *ss* and *sf* having the same reference as in the A diagram. The *sf* and *ss* layers in B, can also very properly

represent the tongue, in the case of the young man, and the dotted ring within the ring s F, the imprisoned hair growing within the follicle. Until this tumor is opened and the hair papillæ lining the follicle destroyed, hair will be reproduced as often as it is taken away.

Amatus Lusitanus mentions a case very similar to this one, though he omits to give the sex, where he had seen hair growing from the tongue.

A similar process of infolding of the germinal skin-sensory layer into the skin-fibrous germinal layer readily explains the formation of the tuft of hair upon the calf's eye-ball, as previously noted; both are formed from the same primitive germ-layer, along with the teeth, tongue, bones, etc.

In the mastoid cells, and from the tympanum of the ear, as well as in the bladder, brain and abscesses of other parts of the body, hair has been found to grow; and in all of these from the physiological cause just given.

FABLES.

The following cases should receive no weight from a scientific point of view, but I give them because once they were firmly believed in and respected as truth:

The Messenian warrior, Aristomenes, who died 668 B. C., at Jabysus, a maritime city of Rhodes, was believed by Pliny and Valerius Maximus to have had his heart covered with hair. Such, at least, was the fable that had come down to them, and such they firmly believed and promulgated as being true.

Leonidas, the great Spartan, who fell at Thermopylæ, 480 B. C., is credited, by Plutarch, with a similar hirsute condition of the heart, as found after his death.

Hermogenes, of Tarsus, Cœlius Rhodiginus averred, was also blessed with a heart that was covered with hair.

Tyson claims to have found hair floating in the blood of a young lady, and Slonatus claims to have found the same in the blood of one of his female patients, and also in a Spaniard.

Possibly an explanation of the condition of the heart ascribed to Leonidas and Aristomenes can be given, if we look upon the phenomena as a result of pericarditis,—an inflammation of the sac surrounding the heart. In this disease, a fiber-forming exudation takes place, which, in more advanced and severe cases, forms a meshy net-work of organized fibrine-strings upon the walls of the heart and its pericardium. Possibly this is what the ancients took to be tufts of light-colored hair growing from the heart itself.

BEZOARS, OR HAIR BALLS.

Somewhat closely allied to the subject proper are the masses of hair found in the stomachs of the ox, and deer kind, known as Bezoars. I have seen them equal a diameter of three inches the long way and two inches the shorter, and some are reported as being six inches in diameter, that were found in a California cow. They are usually of this egg-shaped form, and resemble, outwardly, a smoothly-polished, dark-colored stone. As soon as taken in the hand the notice of absence of any appreciable weight dispels this illusion at once. On sawing them asunder they are found to be made up of an immense number of hairs, licked from off the animal's body, and which are held together by some gelatinous product; probably the result of the action of the stomachic juices upon the hair. By being continually rolled around, inside the stomach, the masses have assumed their ovoid form, with a finely polished surface. Oftentimes these

masses kill the animals by getting wedged into one of the stomachic orifices.

Cats also are troubled with the formation of these hair balls within their stomachs, and many die victims to their fondness of lapping each other's furry coats.

Recently, from an alligator's stomach there was taken a hard, round mass, about the size of a base-ball, which was found, on section, to be made up of innumerable hog's hairs and bristles, thus testifying pointedly to the pork-loving taste possessed by that denizen of Red river.

In this same connection might properly be related that unique case of Mr. Knowsley Thornton, as detailed in "The Pathological Transactions for 1876." This was a female who died with a very large abdominal tumor. On tapping the woman some eighty-six pints of fluid were evacuated, and with it a large number of *little brown balls* came out; these little balls proved to be made up of short red hairs, crystals of cholesterine, epithelial scales and fatty matter, matted and rolled firmly together.

Then there is the interesting case, given by Mr. Carver, surgeon of Enfield Highway, of a *post-mortem* held upon a woman, soon after delivery, where a large mass of hair was removed from her stomach, which proved to be a large chignon, weighing one-half a pound. The stomach contained not only the hair, but also a piece of blanket, Berlin wool, thread and string, which the demented woman had swallowed. These blocked up the intestinal, or pyloric, orifice of the stomach and so killed her.

CHAPTER VIII.

HYGIENIC TREATMENT OF THE HAIR.

"If a man have long hair, it is a shame unto him.

But if a woman have long hair, it is a glory to her."—*St. Paul.*

A fine head of hair, has, in all ages of the civilized world, been looked upon as an essential element of beauty. While it is not possible for every person to have an exuberant growth of head-hair, or of the beard, it is possible, with proper care and attention, for all to be the possessors of a respectable hirsutic covering. To secure this, in its greatest degree, the hair should receive proper attention, and care, from infancy up. Campbell, though a poet, recognized this fact, for he says in one of his poems:

"To form a head of beauteous hair,
Children claim our greatest care."

"Cleanliness is next to Godliness," is an old aphorism, that might, to suit hirsutic hygiene, be changed so as to read *Cleanliness insures a good head of hair*. Many parents are loath to wash or cleanse their children's heads. I often see babes in arms, with a thick, scurvy crust upon the scalp, through the neglect of the parents to insure proper cleanliness of the child's head; this crust, being left on for a time, irritates the skin, and an eczematous eruption ensues, giving us our scall-head, as it is popularly called. Under a proper head, see the chapter on Eczema, this subject will be remedially treated of. But this condition of affairs should not be allowed to take place, and it would not, if proper attention were paid to the child's scalp. Washing the baby's head in lukewarm water, with Castile

soap, twice or three times a week, or oftener if necessary, should be practiced from birth up; then a daily brushing of the scalp and hair should be made. For a very young infant the softest brushes only should be used; but as the child increases in age, two should be employed; a rather harsh one to be used first, to loosen the dirt, dried sebaceous material and epithelial scales, from the scalp, and brush it out; and then a soft, fine brush to polish the hair and make it lie smoothly upon the child's head. A fine comb should *not* be used on a child's head, and a coarse one would be of no special use except to part or lay the hair.

A PROPER BRUSH AND COMB.

In the purchase of a brush or comb, care should be exercised to see that a properly manufactured one was selected. It may seem like a little matter to attempt advice on so, seemingly, unimportant a subject; yet a great deal really depends upon it. "For want of a nail," you know, "the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the officer was overtaken and slain by the enemy." So, too, if you get a hair-brush, or comb, with slivery bristles or teeth, or teeth too sharp, the scalp will be scratched by the one and the hair will be broken with the use of the other.

A *proper brush* is one made up of bristles, varying with the individual as regards the stiffness of them. The clusters should be evenly set into the back, equidistant from each other, so that the whole surface of the scalp, to which it is applied, will be touched by some one of the bristle-bunches. Then the clusters should be made up of bristles of slightly unequal length, so as to still farther favor the brush in covering every portion of the scalp; by this means every hair will be rubbed down on all sides, and there will be no streaks, or spots, of the scalp left untouched.

A *proper comb* is one whose teeth are even and regular, with points not sharp, but rounded. It should be held up to the light so as to detect any splitting, or roughening of the teeth on the sides; for if they are so roughened, injury to the hair, through breakage of the shaft, will surely result. Should the teeth, through any cause become so split, as you value your hair, the offending members should be carefully cut from the comb; the slight space of the scalp that would thus remain untouched would be of no moment, as a comb is not an article that is used for cleansing purposes, as is the brush.

A word might be properly said here on the *wire brushes* now in use. In action they are really a comb, nothing more, nothing less. As to their promulgated virtues of magnetic influence on the scalp and hair, why this is all nonsense. They are no better than a metal comb would be. However, as a stimulator of the scalp—that is by the friction of the teeth upon the scalp-surface a glow may be produced—if not used too harshly, they work very well, though are not equal to a good bristle-brush.

THE HAIR OF ADULTS.

In coming now to the consideration of the care of adult hair, we should remember also that cleanliness of the scalp is a custodian of the hair's longevity, as well as a condition favorable for its growth. Hair is not a collection of filamentous plants, or weeds, depending upon dirt for sustenance; but rather it is a physiological organ, one whose life is kept up by the same delicate life-giving material that furnishes food to the brain-cells for thought, and to the retina for sight. Some of the ancients, I know, had not over-cleanly notions on these matters; but personal discomfort, and loss of hair, was their sweet reward.

Socrates, it is said, and also his followers, did not wash themselves, because cleanliness led to vanity, they thought; and it

took so much of their valuable (?) time. If this was really the case, who can really blame Xanthippe, his wife, for being such a scold?

Archimedes, paradoxical as it may seem, invented pumps for watering the gardens of the Nile, and yet never used water, when he could well avoid it, for ablutionary purposes.

Aristophanes, in one of his satires, tells us of the wealthy Athenian Patrocles, who never washed, for he says: "I have just come from the house of Patrocles—the man who has not washed himself since his birth."

Ælian avers that the Dardans washed themselves but three times in their whole lives.

Now, there may be a very good apology offered for this apparent uncleanness, through the non-use of water, on the part of these ancients, in that they substituted oils and pomades in place of the water. We all know that they were very fond of anointing their bodies, from head to foot, with some sweet-smelling pomade. This, if applied regularly, and properly removed, would keep the body clean. Perfumes undoubtedly owe their origin to this. Pliny, who wrote in the first century after Christ, in speaking of them, so says; but adds that the Persians used them to counteract the odors of their persons, occasioned by the dirt upon them. This last I can hardly accept, as the ancient Persians, or Fire Worshipers, were most careful of their bodies. The Zend Avesta (*Vendidad*, *Fargard* xii, v. 6), their bible, plainly says: "Three times let them wash the body, three times let them wash the clothes." In another place (*Yaena* xxxviii, iv, 9) occurs these words: "The water well-flowing, well-washing, desirable for both worlds." And still in another place (*Khorda Avesta*, *Patet Aderbat*, xlv, 7), this passage: "If I have omitted the recitation of the Avesta, and have strewed about hair, nails and

toothpicks, or have not washed the hands, and all the rest which belongs to the category of dirt and corpses,—if I have thereby come among sinners, I repent of all of these sins, with thoughts, words and works, corporal and spiritual, earthly as heavenly, with these three words: Pardon, O Lord! I repent of sin.”

Then, too, the ancient Greeks were very careful to make themselves clean before their gods by many and careful ablutions. Homer’s “Iliad” is replete with such instances. Hector would not even make a libation, to the god Jupiter, with unwashed hands. Ablutions of the whole body were required to properly purify the person, so as to permit him to attend a sacred sacrifice; in case of the deities of the lower world, sprinkling would suffice. In Euripides’ “Ion,” written 450, B. C., we read this: “Ye Delphians, ministers of Phœbus, go to the silvery waters of Castalia, and, having cleansed yourselves, then go to the temples.”

Indeed, the burden of the history of the priesthood, Biblical, Egyptian, and of the later eras, Incan, is that of bodily purification. No better hygienic code can be framed for a nation under similar conditions, than that found embodied in the book written fifteen hundred years before Christ, and known as Leviticus. Probably the origin of the phrase “Cleanliness is next to Godliness,” is due to the fact of that close connection of personal purity, or cleanliness, that was exacted of the priesthood of all religions, before communion could be had with the God of Christendom, or the gods of heathen worship.

Men, as a rule, are more negligent of their scalps than the opposite sex; probably because it is so little bother to them to arrange the hair, that they overlook the brushing and washing of the scalp almost entirely. Now, the adult scalp should be thoroughly washed as often as once a month, at the very least;

a daily brushing will not suffice; brushing does not remove the oily particles from the scalp, except when dried down with dust and the scarf-scales of the skin. One of the best cleansing substances I know of, for either male or female to use, is the yolk of an egg. This should be well rubbed into the roots of the hair and upon the scalp; then the whole washed out with tepid water and Castile soap, rinsing with clear cold water. This done, it should be thoroughly dried by brisk rubbing with towels, so as to get a roseate glow to the scalp, thus bringing a larger supply of blood to the hair papillæ; if found too dry, a little pomade could be applied. The cocoa-nut oil is probably the best of any. Among the proprietary preparations Burnett's Cocoaine is probably the best, as it is made up almost entirely of cocoa-nut oil. Purified beef's marrow could also be made use of, though vegetable oils are the best to use, as they are less apt, than the animal oils to become rancid.

It is quite a popular belief that bear's oil or hedge-hog oil is the best application to make to the hair; but this is an erroneous idea. It has a smack of superstition about it. Bear's oil was undoubtedly selected because that animal has a very hairy coat; the hedge-hog, because his quill-hairs are of very strong and rank growth; the idea being that these productive qualities were given to the oils of these animals, and that man, in using, would imbibe the similar characteristics. The Malays eat the tiger for a similar reason—they think it makes them more ferocious. The Dyaks, of Borneo, will not eat deer flesh, lest it make them as timid as that animal; the women and children, however, are allowed to eat it. The Caribs will not eat pig or tortoise flesh, lest their eyes become as small as those seen in these animals. New Zealanders ate their most formidable enemies in order to make themselves more ferocious. The Dacotahs eat dog liver, that they may

become as sagacious and brave as that animal; and in olden times people, desiring children, used to eat frogs, because these animals were so prolific in eggs. The Esquimaux, for the same reason, tease for pieces of the shoe-sole of the European discoverers to hang about their persons, as this nation is so much more fertile than theirs. But these examples might be prolonged indefinitely. While bear's oil, if pure, is a very wholesome and sweet oil, I do not deem it any better, or even as desirable as the oil of the cocoa-nut.

A proper amount of pomade is not only harmless, but really useful to some scalps; especially those which furnish little or no oleaginous material to keep the hair supple and glossy. When used in excess, or to cover up dandruff or dirt, then it becomes harmful; when so used oils are apt to become rancid and so irritate the skin beneath. Usually, however, a single "oiling," after a washing of the scalp, is all that is needed; and the frequency of the washing must depend entirely upon the individual, as to whether his head sweats much, or the sebaceous glands pour out an extra amount of material; also upon what his occupation is, whether dusty or not, and whether it is summer or winter.

As to *cutting the hair*. In men, taste and present style demand that it should be kept pretty closely clipped. In ladies all hair should have the ends trimmed off every month or so, in order to keep the growth even. If there is any tendency to the splitting of the hair, all hairs should be trimmed back to a point above the terminus of the cleft, as it is the tendency of the cleft to extend further up the shaft. If the hair becomes very uneven, it is best to have considerable trimmed from the ends, that the papillæ may have more matter left to instill a vigorous growth to the existing shafts; otherwise the hair will be thrown off entirely. The frequency of

this trimming will depend upon the individual, hence no general rule can be made.

There is no doubt that *frequent trimming*, or polling, as it was anciently called, of the hair, *is conducive to its rapid growth*. Absalom trimmed his once a year, and the fleece he shed was enormous, see page 57. The Egyptians cut theirs once or twice a week; indeed most of them, the males, kept pretty closely shorn. St. Paul wrote that Nature taught us that if a man had long hair it was to his shame; and the Church has fulminated this as a dogma for nearly eighteen hundred years. There is a canon, of the year 1096, still extant, which declared that those who wore long hair [referring to the males, probably] should be excluded from the Church, and should not be prayed for when dead. Serlo, a bishop in Normandy, on a Sabbath, turned barber, and cut the hair of his whole congregation.

Superstition has also had a controlling influence over hair-cutting, as it has had over almost everything else. The Fire Worshipers used to employ a priest to bury the hair shorn from their heads, lest the devils should get hold of it, and so curse the bearers. The Romans made it unlawful to pare the nails, or trim the hair, when on ship-board, unless it was during a storm. The penalty was forty stripes. "Love-locks" were often cast upon the turbulent waters to quell their fury. In Greenock, Scotland, the peasantry will not allow their clipped hair to be blown promiscuously about, lest the birds get hold of it, to build their nests with; it is all carefully picked up and burned. This superstition is even more ridiculous in its precepts when we consult some of the more uncivilized races.

BRUSHING THE HAIR.

The hair and scalp should be brushed daily. In this procedure too much violence should be carefully guarded against. What is wanted, is to cleanse the scalp of dandruff and dust, by the use of the harsher brush; and then to smooth and polish the hair-shafts, and lay them evenly in their places, by the use of the softer one. This process is to be looked upon as a friction bath to the scalp. A cautious writer has observed that you cannot brush the *scalp* too much, nor the *hair* too little. The point is, the scalp should receive enough of the friction to induce a roseate glow to its surface. This insures a quicker circulation in the follicles about the papillæ, and hence the growth is invigorated. This is the same action we expect from the use of tonic hair washes, viz., a stimulating effect upon the skin capillaries. A scalp that has grown a scanty covering for itself, may, frequently, by this means alone be made to produce an increased crop of hirsutic material, and so insure the possessor with a very fair head of hair. Fine toothed combs should be avoided, as a rule, as they peel off the scarf-skin, and leave a denuded surface below, which is apt to end in veritable disease, the mildest being pityriasis. (See chapter on this complaint.) The morning is probably as good a time as any to do this brushing, as neither the stomach nor brain are needing blood for their work, and so the circulatory fluid can well be spared, for an hour or two, to the scalp. At night, just before retiring, is equally a favorable time, as the glow started up by the brush-friction, will, by the warmth of the pillow, be kept up for some considerable time. The end we seek, in building up a scanty hair-crop, is a proper amount of blood supply, through frictions and hair tonics, to the lethargic papillæ; then the growth will, as a result, be duly

accelerated, or in cases of certain kinds of baldness, be started anew. As a tonic, when such may seem to be indicated, the following will be found quite efficacious:

- R. Tr. cinchonæ rub. (tr. red cinchona bark), ʒj (1 fl. oz.)
Tr. nucis vomicæ (tr. nux vomica), ʒij (2 drachms).
Tr. cantharidis (tr. Spanish flies), ʒss (½ drachm).
Aq. cologniensis (cologne water),
Ol. cocois (oil cocoa nut), aa. q. s. ad ʒiv (of each enough to make 4 ounces).
M. S. Apply once or twice a day to the scalp by means of a soft sponge.

TREATMENT OF LADIES' HAIR.

The general principles just enounced should govern the ladies in the care they bestow upon their hirsute treasures. As they have from forty to one hundred and twenty miles of these possessions, it naturally follows that the care devolving upon them, for keeping them in proper healthful order, is greater than that upon men. Still, wig-makers would ply less of a vocation if the few hygienic measures I have given, and those that follow, were heeded. As "fashion rules the world to a great degree," I cannot really expect that all of this advice will be very closely heeded. Yet, the hair should be brushed, rather than combed, daily; its "tangles" carefully unraveled, its split ends cut off, and when done up, it should be bound in as easy rolls and coils as possible: one reason for this is to allow as free ventilation as possible for the scalp; the other, that you may not break the hair or strain the roots, by tight tension upon them. Many a lady has lost a luxuriant head of hair by persisting in crimping it closely to the head, then binding it in coils, as tightly down as possible, thus severing the connection (partially it may be) of the hair-bulb from its living papilla at the bottom of the hair follicle, when death to the shaft is sure to result.

Again, don't crimp or curl it to death. Hair was never intended to sleep in the worse than a straight jacket—crimping

irons—nor to be broiled or steamed on a curling tongs that bears the temperature of a gridiron on which Biddy broils a steak. You must not blame your hair for rebelling at this cannibalistic treatment, in the way of becoming irremediably stiff, harsh, wiry, broken and stunted in its growth.

Don't bleach it out of its healthy color (should blonde hair be the fashion when nature has made yours brown or black) by the use of strong caustics. You might as well try to bleach the healthy color from your lips, by unhygienic procedures, and then expect health to remain. The hair-bulb itself keeps pretty close watch on your manœuvres, and if you get to carrying your proceedings too far, ends up by tossing it all off from your head—about the same line of treatment your stomach adopts for ridding itself of a late supper of green cucumbers, lobster-salad, fried oysters and fruit cake. After a time you may get your hair all back again, when so lost; but it never is so healthy and thrifty as before.

It is strange, this never-ending feeling of dissatisfaction with nature that lurks in the human breast. From Astyages on the throne, down to our maids in the kitchen, we find this longing for a cranial covering differing from our own. Some want white, some black, some red, some blue, and some the hair of golden hue; and modern chemistry seems to have done its utmost in providing us with means to reach these artificial wants that society may demand. However, as the ruling passion with us, just now, is to paint the mile-stones black, which stand out like whitened ghosts to tell the many annual rounds we have walked with time, we will speak more particularly of this, and leave the Parsee, with his indigo bag, and the Briton, with his coloring fire, to themselves. (The Felatah ladies, in central Africa, also stain their hair carefully with indigo.)

All the so-called hair dyes, which might more properly be termed paints, depend upon the chemical action of minerals for their blackening process. All of them, with hardly an exception, contain lead, in some form, either the acetate, carbonate or oxide. This is usually in one liquid; then the other preparation, to be applied afterwards, holds in solution some form of sulphur. By using the first, a deposit of lead is held upon the hair-shaft, by the imbricating scale-layer; by using the second, sulphur is washed upon the lead, a chemical change takes place, and you have the black sulphide of lead resulting. Some dyes do not use the second wash; these are either made up from argentic nitrate (lunar caustic), which turns black on exposure to light, or else the manufacturer relies upon the sulphur in the hairs, or the free sulphur in the air, in the form of gases, to produce the chemical change in the lead wash. In spite of this discouragement to the use of these dyes, as an answer to the crying "demand of the times," I have given, further on, a chapter upon the subject of hair-dyeing. I give it, though, under protest; it is decidedly unhygienical, although I have selected as harmless compounds as possible.

Some of our belles who believe in painting, as it is popularly called, when the palette is a lotion bottle, the brush, a piece of flannel, the canvas, a face seen in the mirror, are sometimes exposed to laughable incidents, when the carbonate of lead has been given them wherewith to whiten themselves; for when so lotioned, or powdered, a few hours' exposure in a ball-room, or in the private parlor, results in a brunetting, if not positive negrofying of their faces; the sulphurous acid gas, given off from coal, or the sulphureted hydrogen in the air from various other causes, unites with the lead, and the black sulphide is the result, just as in the hair painting. In one instance I have heard of, a lady who went in a blonde but came out a mulatto, in

looks. This same sulphurous element is at work upon our houses, that are perennially painted white; the lead in the coating being soon acted upon by the sulphur, the sulphide of lead is formed, and a dirty white color is the result.

I have spoken of these dyes as being constitutionally, as well as hirsutically, harmful; they are so only in the fact that they are liable to be absorbed by the skin, and paralysis, neuralgias, and the like, are then liable to result. While there is not so much danger from hair-dyes as from the facial cosmetics—from the fact that the dyes are less often used—yet it is better to leave them all alone. In several of my lady patients I have seen what was, to me, unmistakable evidences of the pernicious effect of the use of these lead hair-washes; leastwise their neuralgias of the face and head were much benefited by leaving the dyeing alone. As to the facial cosmetics, many deaths can be clearly traced to them; notably the late G. L. Fox, our whilom Humpty Dumpty. *It is much better on the whole, to leave all such sophistications—perhaps “society” would hardly sanction so strong a term as that—entirely alone.* Nature is a pretty good judge of how things should be, or at least she ought to be, living as long as she has.

CHAPTER IX.

POLYTRICHIA.

EXCESS OF HAIR GROWTH.

Synonyms.—Hirsuties, Trichauxis, Trichosis, Hypertrichosis.

Derivation. From the two Greek words *πολύς* meaning many and *σπίξ* hair; the whole word meaning many hairs, or many-haired.

Causes. It is not definitely known what is the specific cause of this general growth of hair upon the human subject. Sometimes the complaint is plainly traceable to heredity; in other cases to nervous troubles; whilst in middle-aged females, who are afflicted with uterine or menstrual malfunctions, and who are unmarried, a growth is quite common upon the upper lip, and upon the cheeks; in other persons an inflammatory action of long standing, as a blister long kept open, is apt to occasion a local growth of hairs. Sometimes, after a severe fit of sickness, the hair of the head will take on an exuberant regrowth. Again, through some freak, the head hair will be of slow growth or positive loss, whilst other parts of the body will be producing it in abnormal abundance.

Godfrey gives a case where a lady, thirty years of age, who had always enjoyed good health previously, was subjected to a severe fright; this checked the uterine function *entirely*. She became excessively nervous and irritable, and general hair-growth took place upon all parts of the body; it was dark brown in color, and the razor was in constant use to trim off the beard and mustachios.

Ollivier also details one, a young lady of remarkably fair skin, though black hair, who, after a fever, noticed her skin to become "goose pimply," the summit of each "pimple" being surmounted by a small black hair; these rapidly grew, and by the end of a month her whole body, and limbs, were covered with short black hair, about an inch in length.

Wilson, in 1875, says he was consulted by a woman, thirty-three years of age, for loss of hair, and complete baldness at the summit of the head. She formerly had had a plenitude of hair. The hair-building materials were found to have been given to the body and face at the expense of the head. She had to shave daily, to keep down a thick beard, whiskers and moustache; whilst on her body the hairy coat, thick, harsh, and black, measured from one-half an inch to over two inches in length. A broad hairy belt covered her loins, and a thick fringe hung down from her buttocks, whilst from the whole length of her spine the profuse growth resembled a mane. With all this covering of hair she complained of constant chilliness.

Rayer gives a case of a medical student, who was fond of bathing in salt water, and whose body was exposed to the sun, when drying himself, soon discovering upon himself numerous sallow spots from which hair was starting quite abundantly.

Somewhat similar to this is Cattle's case, where a young lady, twenty-five years of age, who had for some years resided in South America, found that on the portions of the face and neck exposed to the sun there was a strong growth of light colored hair; some hairs measured an inch in length, and no such growth existed there prior to her trip to South America. Her complexion was "fair," and her head-hair was light brown in color.

In some instances the hairs are greatly increased in length,

rather than that the growth covers the whole body; thus, those of the axillæ or pubes may measure three or four feet in length. In other cases the excess of growth is confined to the head, or beard, or to both. Thus, in the case of Absalom, it is narrated that he polled yearly from his head some six pounds of hirsutic material.

Again, paralysis of the muscles sometimes leads to an increased growth of hair. Thus, Paget reports a case of a child whose left arm and shoulder (paralyzed) were covered with a thick fringe of hair. Nayler had a case of partial paralysis of the leg, where the skin changed to a mottled color of brown, which grew long fine hair.

Epileptic, idiotic and insane individuals sometimes have excessive growths of hair. Godfrey speaks of one epileptic that consulted him that grew a famous moustache and beard; she was then but thirty years of age. Her mother and one sister were in an insane asylum, and another sister was nearly raving from neuralgic pains. Mitchell tells of an idiot that had very heavy eyebrows, and short, stiff hairs growing from his face and cheeks; whilst Pinel speaks of another whose hairs, on the back and loins, measured two inches in length.

Another case also is reported of a precocious child, afflicted with encephaloid cancer of the liver, that died, when three years of age, at St. George's Hospital, and which was pretty well covered with hair. Consumptive children, or children from phthisical parents, usually have nice heads of silken, glossy hair, but it is easily shed.

The advent of puberty is always a period of accelerated hair-growth in both sexes.

Diagnosis. This is of course easy enough, as it depends upon the visible growth of hair in abnormal places, or upon an over-growth in customary hairy localities. Moles, or birth-

marks, are usually sites of stiff, bristly hair growth; the hyperæmia of the adjacent tissue serving as extra nutriment to the hair-shafts, that would otherwise be but imperfectly developed.



Fig. 24.

Recently there has come to our notice the case of Edwin Smith, of Fairfield, Lenawee Co., Michigan, who has a local notoriety for his long beard, and rapid growth of head hair. He was forty-five years of age, when seen, and his beard measured seven feet in length. When standing upon an ordinary chair, it would lap over on the floor. If the longest hairs were taken, and straightened out, they would measure *seven feet, six and one-half inches in length*. The beard had been twelve years making this enormous growth. At fourteen years of age he had a heavy growth of beard, measuring, at one

time, six inches in length, though he usually kept it closely shaven. When reaching manhood he usually wore his beard at a length of six inches, until, when out of mere curiosity to see how long it would grow, he began its present lengthy growth. He has a twin brother who shows no evidence of this marvelous hair-growing; neither is it seen in any of his family. The head-hair of Mr. Smith possesses a similar exuberance of growth, though not to the same degree per-

haps; he has it cut every month, when some two inches of its length is removed each time. He has always enjoyed good health till within a year, when, through the protracted sickness, and finally death, of his wife, he became very much reduced, and has never seemed to have regained his former health. There has been nothing extraordinary in his mode of living, his diet being that of the ordinary farmer. Undoubtedly the continual draft upon his economy, that his luxuriant hair-growth is making, is a prime factor in keeping him in ill health.

The earliest record that we have of excessive hair growth is found in one of the Hippocratic treatises [about 500 years B. C.], where Phætusa, of the Thracian city, Abdera, and wife of Pytheus, awoke one morning with a loss of her beautiful voice, and with pains in her joints, and a heavy growth of hair starting from her chin.

Apropos of the case of Mr. Smith, Eble informs us that, in the Prince's Court of Eidam, there is a life-size portrait of a carpenter represented, whose beard was *nine* feet in length; he carried it in a bag when at his work. Mr. Smith, by the way, has his braided in long narrow strands, and these rolled up into a ball, one over the other, and then tied, hanging beneath the chin; the shorter hairs, therefore, cover it up, so any one would not suspect the enormous beard-growth that he carries with him.

Then we have the case of the burgemeister, Hans Steiningen, whose beard was so long that, when ascending the steps to the Council Chamber, one day, he stepped upon it, and so fell and was killed.

An Amazon was taken in the battle of Pultowa, who was the possessor of a beard that measured four and one-half feet in length.

Evelyn relates a case that was exhibited in London, in 1657, where a young married woman, Barbara Van Beck, had a long lock of hair growing from each ear, a full beard, mustachios, and long hair growing from her nose. This hair was soft, and brown in color.

Wilson gives a case, which he had seen, where a lady, twenty-eight years of age, and five feet five inches in height, had hair which trailed on the ground three or four inches when walking. Her hair was wavy, and it gave positive pain to pull a healthy shaft out.

Damascenus relates that, at Pisa, a girl was born that was "all over hairy." This was supposed to have been a birthmark, caused by the mother's habit of rumination, and the frequent seeing of the picture of John the Baptist, which hung by her bedside, dressed in a hairy garment.

Ruggieri gives an account of a woman, twenty-eight years of age, who was covered, from her shoulders to her knees, with soft and black woolly hair, like unto that seen on a fashionable poodle dog. This was in 1815.

In 1829 the English Embassy to Burmah (report of Crawford) saw at Ava a man, Sheve-Maon, who was covered with hair from his head to his feet; that upon his face, ears and nose, was upwards of eight inches in length, whilst that upon his shoulders measured four to five inches. It was of a silvery gray color, straight and silky. At birth only the ears were involved, which presented hairs two inches in length and of silky-flaxen color. At six years of age it appeared on his forehead, and spread gradually all over his body. He was deficient in teeth, and otherwise stunted in development and growth. He did not obtain his permanent teeth till he had arrived at the age of twenty years; signs of puberty appeared also at that time. He married shortly afterwards, and his wife

has presented him with four children, all girls; the three elder have escaped any hirsutic tendency, as reported by Captain Henry Yule, in 1855; the youngest, though, presents unmistakable evidences of inheriting her father's hirsutic tendencies. Maphoon's (for this was her name) face was covered, with the exception of the upper lip, with hair that was brown in color, silky in texture, and four or five inches in length. The ears were covered so completely, from the outgrowth of silky hair, that only the lobules were visible; it hung down to the length of eight inches. Her neck, bosom and arms were covered with a fine, pale down. The daughter, as well as father, was lacking in the canine teeth and molars; a hard ridge taking the place of the grinders. Maphoon also married, and has borne two children, boys. The elder (then five years of age) presented nothing abnormal; but the younger, then fourteen months old, and still nursing, had but little hair upon the scalp, though his ear bore a lock of long, silken floss, coming from the meatus; and he had a beard and moustache of silky down that would delight many a beardless youth.

Some races are characteristically prone to this excessive growth of hair; notably the inhabitants of the Island of Yesso, the "hairy men," as they are called. These are the Mosinos, and they number about 100,000 souls; they inhabit the two cities, Mato-mai and Hako-dadi. They are a short, thick-set, clumsy, uncouth race; though have well developed foreheads, and dark, expressive eyes. The head is covered with a gigantic mass of matted hair, and their beards are long and thick, and the whole of their bodies is covered with an extraordinary profusion of hair. The women stain that portion of their faces, which corresponds to the bearded portion of the males to a dark color.

History also tells us of the hairy St. Angus, who was so

untidy that seed, from his crops, took root in his shaggy covering of nature, and so sprouted.

Then there was the Spanish dancer, Julia Pastrana, who used to exhibit herself for pay, that was profusely covered with hirsute material; she, with the Burmese family previously mentioned, was lacking in dental development.

Still more famous was the bearded virgin of Dresden, who lived during the earlier portion of the 18th century, whose portrait still adorns the king's gallery at Poland. Michaelis says that her beard was of snowy whiteness, and was three inches in length. Her moustache was jetty black, though short. She was bold and courageous, and ate enormously; her voice was strong and powerful.

Eble also details the case of a young woman, in the time of Marie Theresa, who served in the ranks for many years as a hussar, and gradually worked her way up to a captain's commission, that sported a fine mustachio.

A somewhat similar case, in which sex was seemingly disguised, was that recorded by Dr. Chowne, in 1852, of a young lady, born in Switzerland, that applied at Charing-cross Hospital for examination, in order to secure a certificate of her sex, so that she might consummate marriage; the minister to whom she had applied doubting her sexuality. She was then five months advanced in pregnancy. She stated that when born hair was on her face, and when eight years of age it was two inches in length; her upper and lower lip were, however, hairless. Her whiskers and beard, at the time of her presentation for examination, were very bushy, and measured four inches in length. Upon her body the hair was considerably, but not excessively, developed; otherwise she was not so very different from other women of her nationality. Her brother was as remarkable for a *deficiency* of hair growth, as she

was in its excessive abundance; and her sister, younger by two years, had a similar peculiarity of exuberance of hirsutic growth.

Gross relates the case of an old lady who is compelled to shave weekly to keep down the excessive hair growth from her chin, cheeks and lips; her whole aspect, excepting the length of her head hair, is decidedly masculine.

Robb details the case of a girl, four years of age, that he saw in 1877, that was covered with soft downy hair, excepting in the palms of her hands and the soles of her feet (the parts always devoid of hair in all hirsute individuals). There is also constant and profuse perspiration of offensive odor; it is of a dark yellow color, and of great specific gravity; it is so profuse that, half an hour after being washed and cleanly dressed, she will be as wet as if a bucket of water had been thrown over her. Her voice is coarse, like a man's, and she is very large and strong, weighing one hundred pounds. Her form, however, is perfect; the mammæ are fully developed, and she menstruates as regularly as ladies at the ordinary age of puberty. She is *nearly five feet in height* and measures eighteen inches across the chest. Up to February of the year previous there had been no extra growth of hair, or this sweating; a little after that time she became suddenly warmer than normal, and the growth of the soft downy hair, the color of that on her head, commenced, and now it hides the skin completely.

Treatment. From the numerous cases given it is evident that no one plan of treatment will suffice. Undoubtedly the cases of general hairiness are beyond the reach of medicine, or surgery; still, it is interesting to note that in *all* there was evidence of general nervous disturbance; the teeth, in most cases, were poorly and insufficiently developed; in such cases reme-

dies addressed to the nervous system generally would be indicated. Other food-like medicines, as cod-liver oil, extract of malt, the hypophosphites and iron would be indicated. In phthisical or strumous cases, this plan of tonic treatment would be imperative. The use of the tincture of the chloride of iron, or at least iron in some form, with cod-liver oil, is a remedy that should be persisted in for months in these cases of general hirsuties. The manner of administration should be changed frequently, so the stomach will not tire of it.

Godfrey recommends the brushing of the hairy surface with a solution of equal parts of liquor potassæ and alcohol, at night, then following in the morning with a tepid bath, and pretty free use of soap. If used carefully no damage will be done the skin, and the hairs will be dissolved by the action of the potash. It is doubtful, however, whether the papillæ, the parts really at fault, will be destroyed by this treatment. Still, a thorough trial should be made of something of this kind. Sulphuric acid also dissolves hair, but it is slower in its action than the liquor potassæ.

When the Polytrichia is more local, other methods should be adopted. If dependent upon uterine malfunction, as is usually the case in females, this should be looked to from the first. As a rule, too, the same general treatment of tonics, mentioned above, should be adopted, for the system is a general sufferer. Let one organ get diseased, and all the other organs suffer in a minor degree.

A pleasant form for the administration of iron, in these cases, is the citrate, combined with the cinchona bark, thus:

- R. Ferri citratis (citrate of iron), \mathfrak{z} ss ($\frac{1}{2}$ ounce).
 Tr. cinchonæ comp. (compound tincture cinchona), \mathfrak{z} iij (3 ounces).
 Vini xerici (sherry wine), q. s. ad \mathfrak{z} viij (enough to make 8 ounces).
 M. S. Dessertspoonful, in $\frac{1}{2}$ wineglass of water, at meal time.

The bowels should be kept in a proper condition, and movements should be had daily. This can be done by the use of a rhubarb pill, or, what I prefer, with one of the fluid extracts of the buckthorns, combined with a little nux vomica, thus:

- R. Fl. ext. rhamni frangulæ (buckthorn bark), ℥ ij (2 ounces).
 Fl. ext. nucis vomicæ (nux vomica, fl. ext.), ʒ j (1 drachm).
 Syr. toluani (syrup tolu), ℥ ij (2 ounces).

M. S. Teaspoonful two or three times a day.

As a local application, some one of the numerous depilatories can be made use of. The most ancient is fire. This is a sure one, but it is very painful, and is apt to scar. Dionysius (B. C., 430) of Sicily, who wished to appear effeminate, used to singe his beard off with walnut shells heated to whiteness; and Aristophanes tells of a dame that used to remove her superfluous beard and mustachios by the use of a lamp.

In the eastern harems the ladies use a compound known as *rusma*. Its composition is as follows:

- R. Arsenici tersulphur. (orpiment), ʒ ss (½ drachm).
 Calcis (quick lime), ʒ ss (½ ounce).
 Farinæ tritici (wheat flour), ʒ ij (2 scruples).
 Aquæ ferv. (boiling water), q. s. ut pasta ft. mollis (sufficient quantity to make a soft paste).

This is then put on the part to be depilated, with a wooden spatula, to the thickness of a knife blade, and left for from five to ten minutes, or until it begins to sting; then scrape it off with a blunt-edged knife, washing the skin with warm water. Some rice or starch powder may then be dusted on the parts, or the whole covered with the officinal unguentum zinci oxidi (oxide of zinc ointment). This is to be repeated, every day or two, till the superfluous hairs are removed.

Boudet's depilatory is composed as follows:

- R. Sodii sulphatis (sulphate of soda), ʒ iij (3 drachms).
 Calcis (quick lime), ʒ x (10 drachms).
 Amyli (starch), ʒ x (10 drachms).

These are to be finely powdered and intimately mixed, and kept in a ground-glass stoppered bottle. When used, enough water should be added to a little of the compound powder to make a thin paste, and it is to be applied as in the preceding preparation.

Rayer's depilatory is as follows:

- R. Calcis (quick lime), 3 ij (2 drachms).
Sodii carb. (sal.soda), 3 iij (3 drachms).
Cerati simp. (simple cerate), 3 ij (2 ounces).
M. This is to be applied as the two preceding.

Most of the patent-right depilatories, found in the market, contain arsenic; anyhow they should not be used, as their composition is unknown.

The following is the way the English belles, of some four centuries ago, had for doing these things; it is taken from the first work on midwifery published in the English language, and is known as "The Birth of Mankinde; Otherwise named the Woman's Booke. Set forth in English by Thos. Raynald, Physitian, London. Printed for A. H., and are to be sold by John Morret, at the two Tuns, in little Britaine, 1634."

"TO TAKE HAYRE FROM PLACES WHERE IT IS UNSEEMLY.

"*Item*.—Sometimes hayre groweth in places unseemly and out of order: as in many maidens (*i. e.*, women) the hayre groweth so low in the foreheads and the temples, that it disfigureth them. For this yee may use three wayes to remove them: either to plucke up one after another with pincers, such as many women have for the nonce, other else with this lee following.

"Take new burnt Lime foure ounces, of Arseneck an ounce, steepe both these in a pint of water the space of two days, and then boyle it in a pint to a half.

"And to prove whether it be perfect, dippe a feather therein, and if the plume of the feather depart off easily, then it is

strong enough: with this water then anoynt so farre the place yee would have bare from hayre, as it liketh you, and within a quarter of an houre pluck at the hayres and they will follow, and then wash that place much with water wherein Bran hath been steeped: and that done, anoynt the place with the white of a new laid Egge and oyle Olive, beaten and mixt together with the juyce of Singrene or Purflaine, to allay the heat engendred of the foresaid lee.

“The third way to remove hayre, is a Plaister made of very dry pitch and upon leather applyed to the place, the hayres being first shaven, and cut as neare as can be with a payre of Scysors.

“Now, when the hayres be up by the rootes, then to let them that they grow no more, take of Alome the weight of a groate and dissolve it in two spoonefuls of the juyce of Nightshade, or of Henbane, and therewithal anoynt the place two or three times every day, the space of nine or ten days, and hayre will grow no more in that place.”

Late years a minor surgical procedure has been adopted for getting rid of these superfluous hairs, that are a “thorn in the flesh,” as it were, to some of our ladies, and this is done with the aid of electricity or some potent caustic. When the former is used, a constant battery of from six to ten cells should be employed. The negative pole of this is attached to a fine cambric needle, mounted in a suitable handle, whilst the positive, by means of a soft sponge, is put in communication with an adjacent part of the body from which the hairs are to be removed. Each hair is seized with a pair of forceps, and partially withdrawn from the follicle (it is left partially in as a guide), when the cambric-needle, in connection with the negative pole of the battery, is thrust carefully down to the bottom of the follicle, and retained a few seconds, or until a

white line shows the operation as completed. A lens of fifteen diameters' magnifying power is quite an assistant to the vision. This is a modification of Michele's method, and is not a very painful one. As many as a hundred and sixty hairs, in the space of a half an hour, have been removed by this method.

Another method, Piffard's, is somewhat similar to the above, only the battery is dispensed with. In this case, after the hair is partially withdrawn, a fine, three-cornered surgeon's needle, securely held in a needle forceps, is forced to the bottom of the follicle, and rapidly twirled back and forth two or three times; this usually breaks down the papilla, and the succeeding inflammation generally obliterates it entirely. If the needle, previous to its being used upon each hair, be dipped in a solution of carbolic acid in olive oil (equal parts of each), it will be found to be of advantage. Another authority has recommended an injection of a drop of the following solution, by means of a hypodermic syringe, into each follicle:

R. Zinci Chloridi (chloride of zinc), 3 ij (2 drachms).
Aquæ (water), 3 iij (3 drachms).

but this has no special advantage over the needle method previously given. The success of the needle method averages about fifty per cent; that is, about one-half of the hairs so treated will return again in time, and their follicles will need to be treated as before.

Still another method is to seize the hair firmly in the bite of the forceps, stretch it taut, but not enough to withdraw it from its follicle, then push down to its papilla a fine cambric needle that has been previously coated with a thin film of nitrate of silver. The cauterizing effect of the silver destroys the papilla, and the hair drops out, of its own accord, in a short time.

CHAPTER X.

CANITIES.

BLANCHING, OR TURNING GRAY, OF THE HAIR.

Synonyms. Trichonosis discolor, or cana; Poliothrix, absence of hair pigment.

Derivation. From the Latin word *canities*, meaning white or light gray color (*canus*, hoary).

Description. I have, in a previous chapter, that upon the Chemistry of the Hair, spoken of the different chemical elements found in hair, and especially of the large amount of phosphate of lime found in the ash of gray hair. A rule of the whole physical economy of the aged is that fatty degeneration of tissue, and phosphatic deposit, shall be taking place everywhere. This is really but a process of living animal decay, and which we call "the decline of the aged." As regards the scalp, the tone of the blood vessels and nerves is lessened, and hence perfect hair-cell growth, either of coloring or formative matter, is impossible. The final result of all this is a gradual blanching of the color of the hair. Light hair is slower to make this change than the darker colored, from the fact that a maximum amount of coloring matter was never secreted, and hence the papillæ and pigment-making materials are not so soon exhausted.

Usually the beard is the first to show the approach of age, turning gray at its upper portion, near the ears, first of all. At about the same time the hair, over the region of the temples, begins to show the presence of "silvery locks." Creeping therefrom, the whiteness extends up to the crown of the

head, and down to the forehead, and with this there is apt to be a gradual loss of the hair. Yet, by no means should it be understood that because the hair is gray it is *always* of lessened vitality, since for years it may grow as strong and luxuriant as when of brown or raven hue. The upper portion of the papilla, or that which gives the coloring cells to the hair-shaft, is undoubtedly the seat of disease in these cases; the lower portion remaining free, of course the formative cells of the hair-shafts are furnished in normal quantity, and hence the shaft preserves its growth in length.

The cause of the growth of white hair after burns of the scalp, or quite severe *local* inflammations, both in man and animals, is explainable on this same basis. The burn, or inflammatory action, has extended deep enough to destroy the *top* of the papilla, but not enough to implicate the base, and hence a white hair is the result. If we represent the papilla in the follicle diagrammatically by the letter A, then that portion above the cross-bar in the letter will represent the color-forming part of the papilla; that below, the hair-forming portion.

Dr. Wertheim, of Vienna, who has made many experiments and examinations upon the papillæ of gray hair, has found the papillæ to be in the different colored stages of black, dark-red, blood-red, reddish yellow and white, progressively; the black papilla, giving a dark-colored hair in each instance. When the papilla was red, or reddish, the hair springing therefrom was losing its normal dark color; when white, nothing but white hair was produced therefrom. In the falling out of the hair, it was found, on examination, that the *pigmentary cells at the top of the papilla* became loosened, and the hair was thrown out by the contraction of its follicle. As hair is nourished by minute vessels that come into close contact with the bulb, yet do not enter it, it is evident that but a little perverted nervous

influence is necessary to check the formative growth of the pigmentary and forming cells, for a time, and hence gray hair, or even a total loss of hair, would soon be the result. For further reference to this part of the subject, see the chapters upon the Anatomy of the Hair and Follicle.

The three microscopical conditions found in gray or white hair, as first described by Dr. Pincus, of Berlin, are as follows:

1. The pigmentary cells and granules disappear from the external layers of the cortical substance. If any hair is watched in its growth, for several years, it will be found that it undergoes several minor changes or alterations in color. This is the most usual form.

2. In the cortical and medullary portion of the hairs of stronger growth there occur little interspaces between the separating cellular imbrications; in some instances they become, comparatively, quite large. If, however, this is more marked in the medullary portion of the shaft, the cortical portion being only slightly affected, the hair assumes more of an iron-gray color.

3. The cortical portion of the hair may become split, or roughed-up, like a brush-head, in many places, and if these spots be found closely together, a gray color of the hair is sure to result, as the little interstices are colorless.

CONGENITAL CANITIES AND ALBINISM.

This is the second variety of canities, and with the exception of the race known as Albinos, is only partial, as regards its extent, upon the head or body. A single lock, it may be, is alone transmitted from generation to generation. Sometimes, however, the whole scalp will be spotted with tufts of white or gray hair.

Bartholin reports a case of a babe that he saw, which had

one-half of its head covered with white, and the other half with jet-black hair.

Sibley gives a case where a girl, of Somersetshire, had one side of her head covered with jet-black hair, whilst the other side was covered with hair of a reddish yellow. The body hair was as characteristically marked. The mother's hair was a carrot-red. Another case, the same author details, is that of a son of a white father, but negro mother, who had the hair on the right side of his head long and brown, like his father's, but on the left side short and woolly, like his mother's.

In a case where a Negro married a white woman, and had two sons and three daughters, the eldest son was curiously marked in having the lower portion (below the navel) of his body with black skin and curly hair, like his father's, whilst the upper portion of his body was like his mother's, as regards the skin and hair.

Dr. Rizzoli narrates a case of the hereditability of white locks in the person of a young girl that had a lock of long, thick white hair growing from her forehead, whilst the rest of the hair of her head was jet black. This white lock had been congenital in her family for over two hundred years; twenty-three individuals, in six generations, had each borne his mark.

Dr. Naylor narrates the case of a boy, ten years of age when he saw him, that had a patch of white hair on his eyebrow, and a streak of the same color across the scalp, near the forehead, that was one inch in width by three inches in length. This was a hereditary peculiarity, his mother and one of his brothers being similarly marked.

The same author also reports a case he had met, in which a band of white hair encircled the occiput from one ear to the other. The band was one-half an inch in width and was up about an inch from the inferior margin of the scalp. This had

existed from birth. The normal color of his hair was brown. In a gentleman with a head of long black hair, a white lock was seen that had always been of that color from the first growth of the beard.

Dr. Hodgkin also gives an instance of a white lock of hair descending through several generations. Darwin, also, of an Irish gentleman with dark-colored hair, who had a white lock on the side of his head. His mother had the same hirsute marking on the *opposite* side of the head, though his grandmother had one on the *same* side as his was on.

Such changes as these could only be possible where the condition of the papilla was such as we have just indicated, viz., injured at the top, where the color-producing elements are found. Were it due to a *general* disease, then all the hair follicles must suffer in an equal ratio; that is, all the hair must become gray; yet, in these cases the gray hair was of as thrifty growth as the colored, hence proving that the formative portion of the papillæ remained uninjured, although the upper, or coloring portion, was destroyed.

As regards *Albinism*, it is usually looked upon as a sign of physical deterioration. Albinos are found everywhere. Yet the term was originally used to designate white children born of black parents. They are found among all nationalities as well as among animals, and it is a notorious fact that cats with blue eyes and white fur, are always deaf. White horses, and white pigs or cows are less robust than their fellows. White sheep are poisoned with food that black sheep eat with impunity. This is made practical use of by the inhabitants of Tarentino, who only raise black flocks, as the white sheep are killed by eating of an herb, *Hypericum crispum*, that grows in abundance thereabouts; the black eat it with impunity. Even the ordinary buckwheat plant, when in flower, it is said, is injurious

to white or spotted pigs feeding on it, if they are exposed to the direct rays of the sun; yet black pigs, under the same conditions, are uninjured. Darwin asserts that Albino Negroes suffer more from insect bites than the regular blacks, that white chickens are more puny than colored, that white-horned cattle suffer more from flies than darker colored, and that white terriers are more liable to distemper than colored dogs. He also relates a case of a gentleman's turning a drove of fifteen horses into a field of mildewed tares; the spotted (white) chestnuts and bays were seriously injured by the formation of angry sores about the white spots. The bays with no white spots were uninjured.

Even in the vegetable world the same peculiarity is observed; white onions, white verbenas and other white flowering plants are more susceptible to disease, mildew and parasites than those of darker hues.

In Prussia it has been found that vetches, which have become mildewed, sicken and sometimes kill the horses with white spots that feed upon them; the white spots becoming inflamed and gangrenous, although the dark-haired portion of the skin remains unaffected.

The condition *Albinismus* may be general, or it may be partial, as regards an individual's body. The former is represented by persons wanting of pigment everywhere about their bodies; the iris itself being blood-red from the want of the coloring substance to modify the hue of the circulating blood therein; this delicate member is kept, in daylight, in a state of constant contraction, so as to shut off as many of the light rays as possible from the over-sensitive retina. As a rule, the intellect is also weakened in these unfortunate cases.

The Dutch, from the natural proclivities of Albinos to be abroad only in darkness, gave them the name *Kaker-lachen*

(cock-roaches). The inhabitants of Java call their Albinos *Chracrelas*; those of Ceylon, *Bedhas*; the Africans call theirs *Dongos*, and the Portuguese call the same African tribes, *Lank Æthiopes* (*Leucæthiopes*, or white negroes); whilst the Hindoos term their Albinos *Pândan*, and endeavor to destroy them as soon as they come into the world, believing them to be begotten in and of sin.

This abnormality is most frequently met with in African and East Indian tribes. In certain respects the Hindoo belief, though savoring much of barbarianism, is not far out of the way. Consanguineous marriages really should be looked upon as a crime, since offspring from all such matrimonial alliances are so commonly demented individuals, or inheritors of sickly, puny constitutions. The only reason why there is not more of albinism and imbecility from consanguineous alliances is from the fact that such marriages are so often sterile. Dr. Devoy reports the marriages of two brothers to their two first cousins (sisters); the *seven* children born to these two families were all victims of Albinism, though there was no previous history of this condition in their families.

Dr. Godfrey gives the instance of a physician marrying a near relative; he had two sons, each an Albino, though they did not seem to suffer in intellect.

Delacouse asserts that the Albinos of the western continent are incapable of producing offspring, and that they are of either a scrofulous or lymphatic diathesis. Devoy also supports this assertion.

Partial albinismus, of which we have given several instances in the preceding pages, is a hereditary peculiarity, the markings appearing in the family history for several generations; whereas *general albinismus* is a congenital disorder, the result, nearly always, of close intermarriages.

SUDDEN BLANCHING OF THE HAIR.

This is the third variety of canities, and one, next to senile grayness, the most frequently seen. A part, or all, of the scalp-hair may be the portion blanched; though the more usual way is to have but a portion of the scalp showing the whitening of its hirsute covering. This is due, mostly, to some severe nervous disturbance, induced by either fright or disease. Some strange freaks of nature are observed in the matter of this sudden decoloration of hair; for often, in a single night, or in the space of a few hours, or even moments, hair, which was formerly of a dark color, is changed to a silvery gray. Many of these cases are historical facts, as notably that of Marie Antoinette, the Queen of Louis XVI., whose magnificent auburn tresses changed to gray in a single night (1791), when the royal party was arrested at Varennes. Another royal instance is that of Mary, Queen of Scots, whose auburn hair, through fright and grief, was changed to gray in the course of a few days. Miss C. D. Brent, of Washington, has in her possession a lock of hair of this unfortunate individual. It is of silky texture, and of a beautiful pale auburn color. Quite a history is attached to this lock:

When Mary was a prisoner in the castle of Lochburn, in the winter and early spring of 1658, she drew young George Douglas, the governor of Lochburn, into her favor, for the purpose of effecting her escape. The youth was won completely. On the evening of the 2d of May, 1658, the keeper and his family being at table, George seized the keys and fled across the lake with the royal prisoner. For this romantic allegiance Queen Mary presented to George Douglas a lock of her hair. Now it so came about that, as time rolled on, this lock—of a silken texture and beautiful pale auburn—was found

among some old papers at Wishaw, one of the estates of the Douglas family. And as time again passed, when the late John Carroll Brent visited the late Mrs. Catharine Pye Douglas, of Rose Hill, Scotland, a relative, she showed him the lock, and, dying seven years later, in 1847, bequeathed it to him. At the death of John Carroll Brent it fell into the possession of his sister, Miss C. D. Brent, of Washington, D. C.

Prisoners of war, and condemned criminals, also present examples of this sudden blanching of the hair. Byron has made an interesting point of this in his "Prisoner of Chillon," whom he makes to say:

"My hair is gray, but not with years;
Nor grew it white
In a single night,
As men's have grown from sudden fears."

Shakspeare, in Henry IV., has also made note of the sudden blanching of the hair. Thus, he has one of his characters say:

"Worcester is stolen away to-night;
Thy father's beard is turned white with the news."

Scott has also taken advantage of the same physiological fact, and says, in "Marmion:"

"For deadly fear can time outgo,
And blanch at once the hair.
Hard toil can roughen form and face,
And want can quench the eye's bright grace;
Nor does Old Age a wrinkle trace
More deeply than Despair."

It is also authentically stated that the hair of Sir Thomas More turned gray on the night preceding his execution; and Dr. Parry relates the instance of a Sepoy, of the Bengal army, aged twenty-four years, who was taken prisoner in 1858, and, while under examination, his hair, which was the jet black of

the Bengalee, turned gray, all over his head, within the space of half an hour.

Very similar to this last is the case of a Mr. Anderson, a circus performer, and friend of one of my patients. His age was thirty-nine at the time of the sudden blanching of his hair. During an accident to one of the cages, he got confined between a large bear, that had just broken out, and an elephant which he had made angry by giving it a mouthful of tobacco a little while previously. He was expecting immediate destruction, and his hair, which was quite dark, in the space of a few moments changed to gray, never to regain its normal color.

Turner relates a case of a young man, Don Diego Osorioso, who had been seized by the king's guard, when holding a stolen interview with a young lady of the Spanish court, and so incarcerated. This was a capital offense, and it so terrified the man, when sentence was pronounced upon him, that in the same night his hair was turned to gray. The occurrence, however, was fortunate, as it saved him his life.

In a railroad accident that occurred recently in California, where a miner fell under a car and had both of his legs amputated, a young man, by the name of Weston, seeing the ghastly wounds, fainted; on being restored to consciousness his hair, which previously was black, was, as the account says, "as white as snow."

In a railway accident in England, Dr. Ellis reports that a young man was so severely frightened, by being thrown from the car, although uninjured, that his brown hair was changed to gray, especially that over the temples, on the following morning. His age was thirty years.

Dr. Cassan notes the case of a lady who was summoned to give evidence upon a trial in progress before the House of

Peers, and which occasioned such fright, that in a single night her hair was turned to gray. She was thirty years of age.

A German physiologist has observed that several of his delirium tremens cases, which he had in the hospital, have been affected with a sudden blanching of the hair. He examined the hairs under the microscope, and found that air was infiltrated throughout their substance.

In the late notorious Tichborne trial, Abbé Lefevre gave testimony that he had dreamed that he had seen the murder of his father, in all of its horrid details, and as a result of the fright his beard turned to gray that night.

Again, in Cæsar's time, a young nobleman was cast into prison, and he was so exercised thereby, fearing execution, that by the next day his hair and beard had changed from their original dark color to a gray. The emperor suspected counterfeiting, at first; but on examination, finding it to be a freak of nature, dependent upon fright, forgave him the crime for which he had been incarcerated.

A case is related to me of a soldier in the War of the Rebellion, who was wounded in the chest—shot through the lung—and so lay sick a long time in the hospital, who, on his recovery, found that the hair, growing from the center of the forward portion of the scalp, had changed to a gray color. This gray tuft continued for years, and so far as my informant knows, to the present time. It would be hard to account for this freak of nature as the head was entirely uninjured.

In the confinement of Mr. Stokes, of our own time, for the shooting of Jim Fiske, the early turning to gray of his hair was a constant theme for newspaper discussion.

In 1872 Dr. Wilson reported the case of a lady who, during pregnancy, had received a severe shock, the result being a complete loss of hair, for a year, from a portion of her scalp.

It then began to grow over the bald portion, but it was white in color; in two years more the white hair had changed to even a darker hue than the rest of her hirsute head-covering.

Boyle tells us that an Irish captain, who had delivered himself up to the British forces, on the ground of pardon proclaimed by Lord Broghil, and learning of the Lord's absence from the place of encampment, was so fearful lest he might be executed before his Lordship's return, that his hair assumed a piebald condition; a part being white, and the rest the normal reddish hue.

Captain P., of Vermont, when taken prisoner by the British in 1813, on the Canadian frontier, was told that he would be shot on the coming morning; the fright was so severe that during the night his hair, which was previously jet black, was turned to gray.

A professional acquaintance of mine once became the victim of a sudden blanching of the hair; in a single night his hair changed from a raven-black to silvery whiteness. Rumor saith that he was under the pernicious influence of "seventy miles of golden locks" at the time; in other words that he was jilted.

As a supplement to this is the case of a lady of London who, on receiving the news of the shipwreck, and drowning, of her affianced, when on his way to complete his engagement, by marriage to her, fell into a swoon. On the following morning her hair, which had previously been dark brown, was found to have turned to silvery gray, though her eyebrows and eyelashes retained their normal hue.

Moreau records the case of a man, thirty years of age, losing by death a dearly beloved wife; on the morning following her demise his hair, through grief, was found white as snow.

To turn the tables, and show that love *may* work mightily in

an opposite direction—though this might not have been the reason for the freak of hair-blanching in this case—I give the following: A gentleman, forty years of age, possessed of a luxuriant growth of dark hair, was married to the lady of his choice, and took the customary bridal tour. Now, we have no means of knowing what his lady said to him, when away, but it was a fact, lamentable though it may seem, that his hair was so completely snow-white on his return, even to his eyebrows, that his own personal friends doubted his identity.

Causes. These have been given, incidentally, in the cases representing the three varieties of canities, narrated in the preceding pages. The nervous system is, undoubtedly, primarily at fault, in most instances. In old age the nerves are among the first of the wheels of life to tire out, and break down; the many instances of blanching from fright and sorrow are also so many instances of perverted nervous action; even in the congenital cases it is the transmission of nervous (hereditary) impressions from the parents to their offspring that leads to premature grayness, or albinismus, even. Among dyspeptics, too, gray hair is a common sign; and even here it is undoubtedly a reflex nervous action that induces the decolorization of the hair, rather than the non-digestion of the food, *per se*; of course the dyspepsia is the exciting cause.

It is also quite well authenticated that cold weather, if prolonged, induces grayness of the beard. Captain Markham, who once commanded a vessel on an exploring expedition to the Arctic regions, noticed, as a curious fact, that those who were for a long period absent from their ship had their hair on their faces bleached nearly white. The loss of color was gradual, and, although noticed, was never alluded to; each one imagining that his companions' hair was turning gray from the effects of hardship and anxiety. It was only after their

return to the ship that those possessing beards and moustaches discovered the change of hue in their own hair. And yet the color gradually returned in about three or four weeks, after being less exposed to the inclement weather. Hairs of animals are equally subject to this change of color through the influence of cold; it is supposed that the color of the hirsute coating of the polar bear is due to this cause, in great measure, as it is continually exposed to the coldest of weather, and for prolonged periods. The lemming has been proven, by Sir John Ross, to whiten its coat, if exposed to severe weather. Exposing one to a temperature of 30° below zero, it was found, on the next morning, that white spots of fur were on each cheek, and on each shoulder; the day following, the back part of the body and flanks were of a dirty white color, and by the end of the week the whole animal was white, excepting a small spot at the middle of the back. The white hairs were the longest of any in the body, hence proving unquestionably that the original hair-cylinders were blanched, and that it was not a new growth of hair.

Somewhat akin to this is the fact that human hair also grows faster in summer than in winter; also faster by day than by night. All these conditions, I think, are clearly explained by the perverted nervous action induced by the cold and absence of the usual amount of daylight. The skin is shrunk by the action of the cold, and hence, from this, as a mechanical cause, less blood is brought to the scalp, less nutriment is supplied the papillæ, and so grayness or blanching results.

The graying of the hair, as an effect of prolonged financial and business worry, may be explained in a similar way. Numerous instances are on record of the speedily turning gray of the hair after business reverses, the same as after grief following the loss of friends. Wearing of closely fitting and

ilily-ventilated hats, especially in the house, or office, is another predisposing cause for early grayness.

Heredity also has much to do as a predisposing cause, though it is not so much the white hair factor that is handed down, as it is the perverted nervous influences, vitiated constitutions, scrofula, and the like, that are transmitted, and which speedily induce, secondarily, early or premature grayness, or even albinism.

Neuralgias, and nerve injuries, are frequently followed by a turning gray of the hair upon the parts supplied by the diseased nerve. I have several ladies under my professional care whose neuralgic headaches (confined to the summit of the head) lasting, usually, two or three days at a time, are followed by a marked grayness of the scalp over the painful region, though the normal color returns after a few days. Dr. Anistie is himself a victim to the blanching of the hair upon the right side of the head, owing to persistent attacks of supra-orbital neuralgia and migraine. There is no falling out of the hair, and in a few days, following the attack, the normal color is nearly or quite restored. Dr. Paget, in his "Surgical Pathology," relates the case of a lady, subject to nervous headaches, who, on the morning following an attack, finds her hair, in spots, as white as if powdered with starch; in a few days the normal color returns again.

Some authors, as Vanquelin, have argued that an acid condition of the blood is generated in the animal economy, and this causes the sudden cases of decolorization; possibly this is an important factor in many cases of sudden blanching of the hair. Additional weight is added to it from the fact that, as is well known, an acid or poisonous condition of the nursing-mother's milk is induced by severe fits of anger, or prolonged mental worry, and her child is speedily made sick by drawing

such nourishment; indeed, cases are on record of a child's speedy death from such a cause. Still, the most important factor in the case I believe to be the want of proper and regular supply of blood—hence, formative materials—to the hair papillæ, the pigmentary-forming portion suffering most of all; and this, through a vicious action of the sympathetic nervous system. Concerning the further action of this system, and its direct influence over circulation, through its vaso-dilator and constrictor branches, it is not our province herein to treat of, as it is now generally conceded by all physiologists.

Other authorities, as Dr. Landois, have looked upon the phenomenon as being due to the collection of air-globules in the fibrous portion of the shaft; this view would be tenable if the case were always of slow growth, and the air-globules entered into the shaft at its root, where all the cellular elements of the hair-cylinder are formed and moulded together; but this is not usually the case, although it was the condition actually found by Dr. Wilson in the interesting case of variegated hair, which I give in the following chapter.

Treatment. In a general way this is referable to two plans—Preventative and Curative. The blanching of hair from fright, the condition known as albinismus, and the progressive whitening from age would come more directly under the first division, as curative agents are rarely of avail. The chapter devoted to the Hygiene of the Hair can be referred to as a matter of general preventatory treatment; to this should be added the inferences that may be drawn, from reading the many instances cited in this chapter, of what should be avoided, so far as possible.

As to curative measures, some one or all of the stimulating washes recommended in the chapter upon Alopecia, or Loss of Hair, will be good to apply. Frictions of the scalp, with a

bristle brush, night and morning, bathing the head with cold water, and if the scalp be unduly dry and harsh, a dressing, like the following, will prove of service:

- R. Olei cocois (cocoa-nut oil), \mathfrak{z} ij (2 ounces).
 Tr. nucis vomicæ (tr. nux vomica), \mathfrak{z} iij (3 drachms).
 Spr. myrciæ (bay rum), \mathfrak{z} j (1 ounce).
 Ol. bergami (oil bergamont), gtts. xx (20 drops).

As, in most cases, the nervous system is exhausted, remedies addressed thereto are of value. Nux vomica and phosphorus, combined with iron or arsenic, will be indicated. Cod-liver oil is also an excellent adjuvant. There is a pill already prepared, in coated form, that is composed of phosphorus, $\frac{1}{100}$ grain; strychnia, $\frac{1}{60}$ grain; carbonate of iron, one grain, that will prove as valuable as any extemporaneous formula. The compound phosphorus and quinine pill will also prove of value; this is composed of phosphorus, $\frac{1}{60}$ grain; reduced iron, one grain; strychnia, $\frac{1}{60}$ grain; quinine, $\frac{1}{2}$ grain. Either of these pills can be given in increasing doses as occasion may demand. Of arsenic, the best form for administration is Fowler's solution, the following making a very eligible preparation:

- R. Lq. potassii arsenitis (Fowler's solution), \mathfrak{z} j (1 drachm).
 Tr. ferri chloridi (muriate tr. of iron), \mathfrak{z} iij (2 drachms).
 Tr. cinchonæ comp., \mathfrak{z} ij (2 ounces).
 Tr. cardamomi comp. (comp. tr. cardamom), q. s. ad \mathfrak{z} iv (enough to make 4 ounces).

M. S. Teaspoonful four times a day.

If neuralgia is a prominent symptom, this must also be met by remedies calculated to overcome the cause; if this be found to be dependent upon carious teeth, a dentist should be consulted, and the offending members withdrawn; if upon uterine derangements, which is one of the most common causes for early graying of the hair in the female, these should receive

their proper local and constitutional treatment; if upon some vicious cicatrix, a surgeon's services should be secured, and the irritation, from the contracted cicatrix, relieved.

Sulphur, administered internally, is thought by some to prove of benefit, in supplying one of the elements to hair-growth to the waning papillæ. The yolk of egg, which contains sulphur and also iron, applied locally, is also of service; besides this it is oleaginous, and so supplies this element to a harsh-feeling scalp. An iron solution, applied to the hair, will also prove of service, as, for instance, the following:

- R. Ferri citratis (citrate of iron), ʒ ij (2 drachms).
 Tr. nucis vomicæ, ʒ ij (2 drachms).
 Ol. cocois (cocoa-nut oil), ʒ iss (1½ ounces).
 Spr. myrciæ (bay rum), ʒ iss (1½ ounces).

Gray hair, when the filaments are scattered, should be removed by the use of hair-dressing tweezers; as a rule these hairs so treated do not return. If the hair is split at the ends, or inordinately long, it should be clipped back, and so save the drain upon the other parts of the scalp as much as possible.

But in spite of all treatment hair *will* turn gray when "old age" comes on, though

"We fain would hide
 This sign—how long with time we've been,"

and so the services of the dyer and dyes, and the professional wig-maker will be required to aid those who, though old, would still look young. But in a following chapter I will speak of this more particularly. It remains but to notice in this one that sometimes hair will not turn gray as age advances, as notably the case of Mrs. Sally Davis, of Kentucky, who is a venerable woman over seventy years of age, and is the possessor of a suit of hair that might awaken envy in the breast of many a fair maiden of "sweet sixteen." It is soft, brown and silky, with

no suspicion of silver among the glistening threads, and it falls in luxuriant profusion far below her waist, a marvel to all beholders.

Sometimes, too, *gray hair will turn to darker hue* without the aid of either chemist, or physician. These cases are very rare, still a few have scientific accreditment.

In the last century (1774) at Vienna, the case of a Mr. Nazarella, aged 105, is recorded, who, at this extreme age, was presented with a new set of teeth, and a re-colorization of his white hair to the black of youth.

A John Weeks, as recorded by Wilson, who died at the ripe age of 114 years, was also blessed with a rejuvenation of the color of his hair some years before his death; the gray giving place to the brown hue of youth. Another case, reported by Sir John Sinclair, was that of a Scotchman, dying at 110 years of age, whose hair, during the latter years of his life was restored to its color of youthful days.

Dr. Richards, of New York city, reports the case of a man who has had three changes of his hair from black to white, during his life, the first change occurring when about thirty-five years of age.

To the Academy of Medicine, of Paris, there was reported by Dr. Bruley, in 1798, the case of a woman, 66 years of age, afflicted with phthisis, whose head hair was of a clear, silvery-white color, and which color, four days before her death, was changed to a jet black; the bulbs are stated to have been distended with black pigment, and of unusual size, whilst the bulbs of the remaining fair hairs were small and shriveled up.

In the Encyclopedia Metropolitana is given the case of Susan Edmonds, who, when 95 years of age, had her gray hair change to black, and then change back to gray again before her death, which occurred at 105 years.

CHAPTER XI.

TRICHONOSIS DECOLOR.

ABNORMAL COLORATION OF THE HAIR.

Derivation. From the Greek words *τριχός*, meaning, "of the hair," and *νόσος*, disease; also the Latin word *decolor*, from the verb meaning to deprive of color; the whole meaning "a decoloring disease of the hair."

Description. *Trichonosis dis* (or *de*) *color* is usually given as a synonym for canities, described in a previous chapter. I have seen fit, however, to limit its meaning to the conditions described in this chapter, viz., the chromatogenous changes in the hair *other than from dark to gray*.

There is a condition of the hair known as "variegated hair," which is alternately banded black and white. But three or four such cases are on record. One was reported to the Royal Society, by Dr. Wilson, in 1867; it was on the person of a young lad of some eight years; the hair looked as if it were made up of dark shafts finely ringed with white. The segment of the hair remaining of normal color (brown) was measured, and the band was found to be $\frac{1}{50}$ of an inch in width; that of the white, something less than the $\frac{1}{100}$ of an inch; both together measured the $\frac{1}{36}$ of an inch; that is, there would be thirty-six double bands of brown and white in the space of a linear inch of the shaft. This alternate banding of the hair began to show itself when the child was between two and three years of age. There was no apparent diminution of the diameter of the hair-cylinder at the white spaces, and the perfect decoloration was seen throughout the diameter of

the segment. On microscopical examination it was found that the brown segments would transmit light, whereas the white would not; a closer examination showed the white portions to be studded with minute interspaces, which were filled with air (?) In the medulla the cellular interspaces were particularly marked. The doctor reasons upon the peculiarity in this way: as the hair grows more rapidly in day-time than at night, then the brown segments must represent day-growth, and the white segments night-growth. As hair usually grows but from the $\frac{1}{60}$ to the $\frac{1}{60}$ of an inch in a day (24 hours) we shall have to assume a more than usual rapidity of growth in this case, in order to meet the doctor's argument—not a very specious one at its best.

A similar specimen of alternate marking of the hair is also preserved in the museum attached to St. Bartholomew's Hospital, London; Dr. Wilson's is kept in the Hunterian museum, attached to the Royal College of Physicians and Surgeons of England. Professors Schultze and Baum have each described a case, and Dr. Landois has also written a report upon a similar case which he has seen.

It is not so very unusual, after a fit of sickness which occasions the loss of hair, to have the new crop come in of a different hue, as well as of different texture; heads that formerly grew rather coarse, straight hair, sometimes present a secondary growth of hair of a curling tendency, or of smaller shaft. But, a few cases are on record where, without the intervention of sickness to occasion the loss of hair, the color has been changed; thus a prolonged stay in a hot or tropical climate may change the color, as well as the texture of the hair. A case is related by Bogue of a young gentleman, possessing a fine head of brown hair, going to Samatra for a few years when, on his return, his friends found it difficult to recognize him, as the

brown hair of his head was replaced by that of a positive red color. Travelers long exposed to the dry atmosphere and scorching sun of Egypt, remark upon its peculiar stiffening influence upon the hair.

Villermé gives a case of a young lady, thirteen years of age, who lost her head-hair; some months after a woolly product was grown from a part of the head, and brown hair from another part; after a time a part of both faded into gray, and some fell out, leaving a sad condition of affairs—a part being white and a part brown. It is impossible to account for any such freak as this.

Somewhat analogous to it is the case of the Philadelphia negro, whose hair had changed from the characteristic wooliness of his race to that of the European, in both texture and color, and who, therefore, had the honor of being introduced to Washington.

The *American Journal of Pharmacy* gives a case where, after death, a head of red hair changed, in the course of a few hours, to a blonde, and, within thirty hours, finally to a gray color.

As a change after illness, Alibert gives a case where red hair took the place of dark brown; another case where jet black hair took the place of brown; but he neglects to specify whether the original hair was first shed, or whether the change was affected in the coloring matter of each shaft as it grew from the follicle.

Dr. Isoard speaks of a deaf mute, seventeen years of age, a female, who experiences a change from a beautiful blonde head of hair to a dusky red, after each attack of fever that she is subject to. After the abatement of the fever the hair becomes gradually restored to its normal color.

Green and *blue* hair have been described by some authorities,

but these colors owe their production to the influence of the surroundings in which their subjects live; the green hair belonging to those who work in copper mines; and blue, to those whose occupation is cobalt mining. Workers in indigo, also, have blue hair. These colors are, of course, but on the outside of the shaft, and are, generally, easily removed by the free use of water. In Tripoli and Turkey it is said to be customary for ladies to *paint* the hair of their children a vermilion color.

Treatment. There is but little that can be said under this head, as usually but little can be done; indeed, in many cases nothing is really so desired, as the victim of the chromogenous change is usually well enough pleased with the color of his dress. Of course, where the change of color is clearly traced to the exposure incident to one's occupation, a change of labor, with proper cleanliness, will be sufficient to restore the hair to its normal color. The ordinary treatment for stimulating the hair follicles, as recommended in the chapters on Alopecia and Canities, would also be in order.

CHAPTER XII.

ALOPECIA.

BALDNESS.

Synonyms. Trichorrea, Defluvium capillorum, Porrigo decalvans, Ophiasis, Athrix, Calvities.

Derivation. From the Greek word *άλωπηξ* meaning a fox; so termed because the ancients noticed that foxes generally had bare spots upon the skin, due, of course, to the "mange" with which they were afflicted.

History. From all time the human race has been afflicted with baldness, and it has always been looked upon as a scourge. Isaiah, 760 B. C., prophesied this calamity upon the daughters of Zion because of their iniquity (Isaiah, iii, 16-24), for instead of well set hair, baldness "was to come upon them, and a scab upon the crowns of their heads." Among this nation, the Hebrews, baldness was considered a reproach, and a person so afflicted was incapacitated for the priesthood; yet Elisha was bald (901 B. C., when called by Elijah), though a young man, for we read of the destruction (2d Kings, ii, 24) of the forty-two children for calling him the baldhead; this was 896 years before Christ.

Moses, 1490 B. C., in writing of this (Lev. xiii, 40, 41) says: "The man whose hair is fallen off his head is bald, and yet is he clean; and he that hath the hair fallen off from the part of his head towards his face, he is forehead bald; yet is he clean;" thus plainly intimating that baldness was apt to be classed with uncleanness (leprosy).

The ancient paintings and sculptures at Thebes also give us

accounts of bald-headed individuals, although Herodotus plainly states that the Egyptians were never bald. Wilkinson, in his book upon the discoveries among the ruins of ancient Egypt, gives a transcript of a deed—for the Egyptians were always very careful to furnish a lengthy genealogy, and minute description of the contracting parties, as well as witnesses, when making out a conveyance of property—and which reads as follows: “Pamonthes, aged about forty-five, of middle size, dark complexion and handsome figure, *bald*, round-faced and straight-nosed,” etc., etc. It was in the time of Cleopatra Cocce and Ptolemy Alexander I. that this was written; hence, you see, Herodotus was a little hasty in his conclusions. As a rule, though, the ancient Egyptians were possessors of much hair, although the males kept it pretty closely trimmed.

The god of medicine, Æsculapius, and the father of medicine, Hippocrates, are represented as bald-headed individuals; and so far is the mistaken notion, that age necessarily denotes medical learning, now carried, that gray hairs, or the lack of hair at the top of the head, in a young medical man, is considered a pretty good fortune for him to begin on.

The disease was so well recognized by the ancients that Aristotle (384 B. C.) and Cræsus both use the term at the heading of this chapter for describing the complaint; it was then a term in common use.

Among the other noted Greek writers there is the sarcastic poet, Aristophanes, who alludes to himself, in his writings, as the “bald head,” “the most noble of poets with a shining forehead,” etc.; no lack of arrogance there, you see. Then the great tragedy writer, Æschylus, who, in 456 B. C., came to his end by the blundering, so tradition informs us, of an eagle, which mistook the top of his bald head for a rock, and so dashed its prey, a turtle, upon it in order to break its hard

encasement so that it could be eaten. It is needless to say what the result was to the man, and the undoubted surprise to the eagle. Then there was the noted sculptor, Phidias (480 B. C.), who was prohibited from putting his name upon his master-piece, the Athenian Minerva, and so sculptured himself upon this and other statues as an old, bald-headed man. Time has taken care of both his handiwork, his name, and his likeness, so that all have come down to us; the latter would probably have been unknown were it not for this foolish edict of the Greeks. Then the Salenites, a college of priests at Rome, instituted in honor of the god Mars, 709 B. C., thought baldness was a type of beauty, and so sought in various ways to obtain it; and the Roman Catholic clergy seem to have continued it to this day. Another good soul, in later times, probably a bald head, took occasion to write a book proving that baldness was a virtue; the title of the book ran thus: "A Parodoxe; Proving by Reason and Example that Baldnesse is much better than Bushie Haire." This was in 1759. The gentleman's name was Abraham Fleming; he claimed it was but a translation ("Englished") from Syresius, Bishop of Thebes. This is quite possible, as the clergy have, in by-gone years, fulminated and canonaded long hair, till it would seem that there would be little left but baldness anywhere. But of this in another chapter. Then there is the great Roman general, M. Aurelius Carus (A. D. 282), who was so bald that when the Persians sent ambassadors to his camp, seeking favorable treaty, he replied to them, doffing his head-covering at the time, that if they did not submit at once, he would make their country as bare of trees and corn as his own head was of hair.

But probably the best plea ever uttered in behalf of baldness was made by the stoic philosopher, Zeno (B. C., 363), when he

prevailed upon his brother Carthaginian philosopher, Herillus, to shave his pate, in order that by so doing he might disgust his followers, and so save himself from being like a comet,—with a tail of admirers.

A BALD-HEADED RACE.

The *Sidney Empire*, February 9th, 1862, of Australia, gives this account of a race of bald men discovered in the interior of the continent, one of whom, from beyond the Balonne river, in company with the explorer, Mr. M'Kay, visited the *Empire's* office. The individual was a young man of some seventeen years, although he looked older; there was not a hair upon his head, neither was there a trace of hirsutic growth upon his body. There was a black, ingrained look to the scalp, as if the roots of the hair remained; but Mr. M'Kay averred this was merely the result of a dirty cloth he was used to wearing on his head, as, when washed, it was as smooth as a billiard ball. The whole contour of the face, form of the head, expression, color of the skin, and listless, almost sullen attitude proclaimed him plainly enough as one of a Mongolian race. He was wanting the thick lips, large and rapid eyes, broad-spread nose and deep brown skin of the native Australian. His skin was a yellow-brown, as if a mixture of the Mongolian and Australian element. Mr. M'Kay had seen over a half dozen of the tribe, one of which was a woman, and all bore the same characteristics, save a little greater height in stature. It had long been a common report in Sidney, that an aboriginal race of bald-headed individuals existed in the western interior; but this was the first that any had been seen of them in the city. It is supposed that his race are the result of the union of Mongolian fishermen or sailors, who got shipwrecked upon the Australian coast many years before, with the aborigi-

nal Australians; hence the beardless, hairless progeny now seen.

Description. The subject proper is divisible into three general heads:

I. *ALOPECIA VULGARIS*, or the ordinary progressive and general thinning of the hair.

II. *ALOPECIA CIRCUMSCRIPTA*, or circumscribed baldness.

III. *ALOPECIA SENILIS*, or senile baldness (calvities, as it is generally called).

Besides these three general classes there are the following subheads, useful only for classification or description, and have been in use for centuries:

Madesis, or *Maderosis*, from the Greek verb *μαδάω*, secondary meaning, "I am bald;" it is used to denote a transient loss of hair, speedily followed by a new growth of downy hairs.

Anaphalacrosis, from the Greek *ἀνὰ*, having the adverbial meaning of backwards; and *φαλάκρωσις*, baldness; it is used to denote baldness beginning at the forehead and extending back to the crown.

Phalacrosis, from the Greek *φαλάκρωσις* meaning baldness, and derived from *φάλος*, the upper portion of the helmet. The term is used to denote baldness beginning at the crown.

Hemiphalacrosis, from the Greek *φαλάκρωσις* meaning as above; and *ἡμίνα* meaning the half, or the half of the head; and the term is used to denote baldness of one side of the head.

Opisthophalacrosis from the Greek words *ὀπισθε* and *φαλάκρωσις* meaning, respectively, behind or back, and baldness; and the whole used to denote baldness beginning at the occiput, or back of the head.

Ophiasis, from the Greek *οφίασις*, meaning a bald place, of serpentine form, at the back of the head; it is used to denote

baldness extending in serpentine lines from the occiput to the ears.

Atrichia, from the Greek α primitive, meaning without, and $\theta\rho\iota\chi\iota$ hair, is a term used to denote the absence or deficiency of hair from the whole body, or from parts of it. In man this is not a usual condition of affairs; though the author has seen one case where there was entire absence of hair from the whole body; it was in a middle-aged man. The party had had a full head of hair until six or seven years of age, when he was taken with a severe fever, remaining out of his head for a long period of time. When he recovered, his hair began to come out in patches all over his scalp. Remedies were tried in vain to induce a new growth, and before he reached the age of sixteen his scalp was completely bald. When eighteen years of age, being then in India, he was again taken with fever; when he recovered from this his eyebrows, and the hair upon his arms, legs and body began to come out, and to this day (he is now about forty-five years of age) there has not since been a vestige of hair-growth. There has been nothing of the kind in his family, and his children (three in number) have as fine heads of hair as is usually seen upon persons of their age.

Cottle gives a case of a family of four sons and five daughters, that were otherwise healthy and well developed, where, hereditarily, they were arranged thus: The 1st, a boy, had normal hair and in abundance; the 2d, a boy with woolly hair; the 3d, a boy with woolly hair; the 4th, a *girl, completely hairless*; the 5th, a girl with woolly hair; the 6th, a girl with normal hair development; the 7th, a girl with woolly hair; the 8th, a boy with normal hair in normal quantity; the 9th, a girl with *scant* woolly hair. The woolly hair in all these cases was short and extremely fine. The parents had normal hair, and the

children, having reached middle age and married, have not transmitted their peculiarities to their offspring.

In some instances, from disease, there will be a total loss of hair, but these cases will be spoken of under another head in this chapter. The term *Atrichia* should be limited to the congenital want of hair, in its application. Some races of animals are particularly noted for the wanting of hair upon their bodies, as the Mexican dogs, also the African dogs and hogs, and a species of horse found in Little Thibet. This last is quite remarkable, as, usually, hairless animals are dwellers in tropical regions. No hair follicles are found in the skins of these animals.

Sometimes, after a few years of this absence of hair, the follicles will produce a few fine, stunted hairs over the bald places; the condition of affairs is then known as *Oligotrichia*, from the Greek words ὀλίγος and θρίξ, genitive form τριχός, meaning, respectively, "fewness," and "of the hair."

It is said that this congenital lacking of hair occurs conjointly with a lacking of proper dental development. This, contrasted with the fact that the teeth are either poorly or latently developed in the cases of polytrichia, or individuals covered with hair, would also seem a little singular. There is, no doubt, an intimate connection between the growth of the hair and the teeth; but why the result should be exactly the same under such opposite conditions, as regards the teeth, is yet unknown to physiologists.

I. ALOPECIA VULGARIS.

Description. This is the form of hair-loss seen, usually, in young adults, or those just reaching middle age; if in the aged, it may occur in those whose hair has not previously turned

gray; if turned gray the loss of hair would come under another head, that of Senile Alopecia, which is described further on.

As a rule, the light-haired individuals, from the fact that their hairs are finer, and hence more numerous to the square inch of surface, are more prone to the loss of their head-covering than dark-haired persons.

The hair usually begins to come out on the combing or brushing of it; finally, it will be found on the clothing in quite free quantities, showing there is pretty free involvement of the follicles of the scalp. It is generally of the phalacrosis variety; it is usually seen in our busy, young business-men, or in an overtaxed mother, or in a young lady of delicate constitution. The reason that ladies are not more generally subject to this annoyance is, undoubtedly, owing to the physiological fact that their bodies are less freely supplied with hair, and hence there is more hair-forming material furnished the scalp than in men. Another reason is that they are less subject to business worry, and do not heat their heads up continually with hats devoid of ventilation; the air gets more freely about the scalp and the roots of a woman's hair than man's, from the fact that they less frequently cover their heads.

As a rule, a bald-headed father transmits his peculiarity only to his *male* offspring; whereas women, so afflicted, rarely transmit hairless tendencies, though they do other bodily malformations, to their offspring. It is also a noteworthy fact, too, that the tendency to baldness develops earlier in the life of each succeeding generation than the one preceding; thus, if the father was bald at thirty-six, the son will be pretty sure to be so at thirty-four, and so on.

Pinkus, in Virchow's *Archives*, has paid this subject minute attention. He divides hair into two groups; 1st, the *Spitz-haare*, or that which is *pointed*, and *has not been cut*; this does

not exceed two inches in length. Such hairs are of slow growth, and remain from four to nine months, and are usually found at the scalp-borders. 2d, The *Scheeren-haare*, or that which *has been cut* (represented by the long hair of women), and which usually remains in the follicles from two to four years, that being the average life-time. Now, a ratio of daily loss of the *Spitzhaare*, compared with the *Scheeren-haare*, of from one to eight, is abnormal when the average length of the head hair is five inches; hence, by counting the hairs combed or brushed out daily, and separating the *Spitzhaare* from the *Scheeren-haare* you can get the amount of capillary defluvium present, in a given case, and can, by comparing the two kinds of hair, know whether the defluvium is in excess of normal. In a case where the fallen hairs were counted for eight days, it was found that from the *healthy* side of the head 108 were lost; on the diseased portion, 227 came out in the same time; on the healthy side the portion of *Spitzhaare* was one to four; on the diseased side, as one to one. Furthermore, it will be found in Alopecia Vulgaris, that the hairs, as regards their diameters, decrease in size; also that the skin becomes paler, and apparently of less thickness.

Causes. These are multitudinous. Sometimes it may be owing to abuse in dressing the hair, as crimping it too tightly, burning it with curling irons, or the use of irritating coloring matters, and the like; or it may be due to the "old age" of the hair itself; for hair, as well as man, has its time of ripening, age, and death. When it becomes fully developed, and its life matured, it becomes contracted just above the bulb, and falls out; the life germ, of course, remaining to fill the emptied follicle with a new hair at no distant time. Among the more usual exciting causes can be mentioned disease, enervating habits, mental worry, and loss of normal nerve nutrition. The worry of

the accountant over his books, the merchant over his sales, the lawyer over his cases, the physician over his practice, the minister over his charge, all these are prominent factors in the cause of Alopecia Vulgaris. The reason is that there is not sufficient blood brought to the papilla of the hair-shaft, and hence the cell formation, at the root of the hair, is not rapid enough to keep the hair follicle properly distended, so as it can perform its proper office of moulding the cells to the formation of a proper shaft; hence, at this interval, whether marked by ill-health or not, the follicle, through its circularly compressing fibres, strangles, or cuts in two, the mass of soft hair-cells, just forming into a hair-shaft, and the hair falls out as the result. Often there is a little bulb seen at the end of the hair, after it has been subjected to this choking off process; this has led some observers to say that the root has been thrown out; but this is not the case; were it so, then there would be no regrowth of the hair, for when the root is once destroyed, hair-life can never be regenerated in that follicle. (See page 25.)

The loss of hair following fevers, and other debilitating diseases, takes place in much the same manner; and as the result of the weakened state of the forming papillæ, the regrowth is apt to be of different color or shape; after a time, though, when the hair-forming organs regain their usual vigor, the normal color is usually wont to return.

Loss of hair, through head neuralgias, as is common to many of our ladies, is in the same manner. The proper amount of blood is not carried to the new cell-forming papilla, it is also vitiated, and the nervous excitement, indicated by pain, causes a reflex contraction of the skin about the follicle, and hence the hair is girdled, and so falls out. Doubtless the change in color of the hair, through excitement, occurs from the same cause. When the excitement is calmed a normal blood circulation and

nerve action ensues, hence the normal color-cells are secreted in their normal abundance, and, as a result, the color is restored. I believe the physiological action of the two to be similar, differing only in degree; if continued long enough, loss of hair would be the result. I have a patient under care now, a young married lady, with uterine disease, where the hair becomes very gray on the second morning following an attack of this head pain—at the top of the head—but in a day or two returns to its normal color (brown). If the pain were continued long enough I doubt not that the final result would be local baldness, through the malnutrition of the follicles. In proof of this I cite the following case:

Nayler gives an instance of a lady, in middle age, suffering from headaches, radiating from the temple to the crown, who had a total loss of hair over the seat of pain. In six months, after the neuralgia was cured, the hair grew rapidly again, though it was white in color; this gradually changed, however, to its normal hue.

Syphilis is also a well-known cause for the loss of hair, though it is not the common cause, as is often asserted. For centuries the loss of hair following this disease was not noticed; thus, Brassa (1533) writes that "venereal symptoms have been observed which render it doubtful whether the disease is declining, or whether it has changed its character. The first of these symptoms is *the falling off of the hair*. One cannot help laughing at seeing men without beards, eyebrows or eyelashes."

Francastor (Venice, 1546) writes this concerning the loss of hair in syphilis: "A circumstance which has astonished everybody is *the falling off of the hair* of the head and of the body," and yet syphilis had been known over a thousand years before Francastor's time.

The great anatomist, Fallopius (after whom the Fallopian tubes are named), writing in 1574 says: "During the last forty years there was no falling out of the hair; but it commenced about thirty years ago," that is about the year 1544.

In syphilitic alopecia the hair begins to come out over the temporal regions, afterwards upon other parts of the body, if the system is pretty thoroughly under the constitutional influence of the poison. The condition of the hair bulbs, if examined, will be similar to that previously given in this chapter; sometimes you will find, in addition to the narrowing of the intra-follicular portion of the shaft, a deposit of fatty, granular matter about the bulbous portion; this is mostly fatty detritus, from the broken down epithelium of the follicle, and the new-forming, but unhealthy, hair-cells. Of course the use of a microscope is needed to make such a minute examination, for to the unaided eye nothing abnormal may be detected.

Parturient women are another class prone to attacks of alopecia; and I have very frequently seen such losses of hair occur concomitantly with an ulcerated or inflamed uterus. The headaches, of neuralgic character, probably have much to do with the loss of hair in these subjects, for headache, especially that of a heavy burning weight, though sometimes of a throbbing character, at the top of the head, or at the back of the head and neck, is almost a constant accompaniment of an irritated uterus; in fact, a pain here, of the character indicated, is a pathognomonic sign of uterine disease. After the uterine irritation was cured, the headaches have ceased, and, consequently, the hair has returned. The hair is apt to be dry in these cases, the ends to split up, and the scalp to be scurvy, all owing to the faulty nervous action in the parts; for with perverted nervous action you can never expect a proper blood supply to any part of the body. The hairs, then, are literally

starved, by a slow process to be sure, and hence drop out, or become stunted, rough and brittle in their growth.

Dr. Douglass, of this city, gives me this brief history of two such cases: "The first, Mrs. D., aged 28; mother of four children; usually healthy; has always menstruated regularly and easily; she also has short and easy labors. From childhood she was subject to itching spots upon the head, followed by complete loss of hair in these places. It grew in again, sometimes lighter in color, but returned to its original color subsequently. When her first child was born she had a full head of hair, but three months afterwards lost it all; and it has never returned, now seven years, except in small tufts of dark-colored hair upon the top of her head. The balance of the scalp is entirely bare.

"The other case is that of Mrs. F., married, aged 34; mother of one child, aged seven months. Previous to marriage, which took place seven months before her child was born, she held a good position, in a very wealthy family, as cook. He attended her in an easy, short labor, but was much struck at the great mental distress she evinced from her child being born two months sooner than the *neighbors expected*. She felt her position acutely, and expressed to him, though a stranger to her, her extreme anguish. She continued to fret about her shame, and, in three months from her labor, she lost every hair from her head. When he examined her at six months from labor, she had a fine crop of snow-white hair, about half an inch long, upon the scalp. Previously her hair was very thick, long and dark-colored. Her eyebrows and lashes have also nearly disappeared, and, where returning, are pure white and very fine. She is a large, healthy woman, and has always enjoyed the best of health." This is somewhat similar to the case given at the bottom of page 119.

Heart disease, or aortic disease, is another cause of this

variety of alopecia. The physiological reason is clear enough, as the proper blood supply is interfered with; in fact, the whole system suffers. It has also been noticed that the nails, organs in every way similar to the hair, have been shed after the plugging of the brachial artery by an embolus; it is also reasonable to suppose the hair would have been similarly lost, had any of the scalp arteries been similarly stopped, unless collateral circulation had been quite thoroughly established. This would have resulted in local or circumscribed baldness, and which will be more thoroughly treated of in the following section.

Violent grief, fear, or other nervous excitement, may also produce a loss of hair. The change of color to gray is undoubtedly the first step in this process.

Nerve injuries, as by gunshot or sabre wounds, are also other causes for the loss of hair from the parts to which the nerves are distributed. Indeed, Von Barenprung regards alopecia as a nervous lesion.

In a case reported of concussion of the brain, following a railroad injury, where there were some hemiplegic convulsions and delirium for some six weeks, and for a year or so thereafter a persistent headache, the patient suddenly, one morning when shaving, had his beard fall out; this was soon afterward followed by the total loss of hair from his head, chest and body. Voigt has also shown that the loss of hair in old persons follows a general order or route, keeping closely upon the track of the distribution of certain of the cutaneous nerves. Steinrück has also shown, by experiments upon rabbits, that when the ischiatic nerve is severed, no growth of hair takes place upon that limb. Ravaton gives a case of amaurosis of one eye, from concussion of the head, followed by a total loss of hair upon that side of the head.

A curious case of complete alopecia is reported in the *Gazette*

des Hopitaux. A girl, aged seventeen, who had always enjoyed good health, had one day a narrow escape from being crushed, by a floor giving way beneath her. She was very much frightened, and the same night began to complain of headache and chills. The next morning she felt restless, and had irritation of the scalp. During the following day she steadily improved, with the exception of the irritation. Afterwards, when combing her hair, she noticed that it came out in great quantities. Five days later she had lost all her hair. Her general health was good. The patient remained bald, and was still so when seen, two years later, by the reporter.

An English officer, aged thirty-six, healthy in other ways, fell a victim to sunstroke in India, and shortly after an attack of slight cold, he lost his beard, eyebrows, eyelashes and hair; the skin of the body becoming almost transparent.

After lightning-stroke the hair is apt to be shed. Bouden relates an instance where a vessel was struck, and the captain, M. Rihouet, was severely injured therefrom at the time. The next day, when he went to shave, his beard all came out, instead of being cut off by the razor, and never returned. Soon the hair of the scalp followed, then the eyebrows, eyelashes, and the hair from the rest of the body; the following year the nails from the fingers were shed, though those on the toes were not affected. Sir Benj. Brodie gives an instance of two bullocks, spotted white and red, that were struck by lightning, in different storms; and it is remarkable that in *both* cases the red haired spots escaped injury whilst the white hairs were all consumed (see page 114). Possibly, to this same fact, as recorded on pages 113 and 114, this old jangle owes its origin:

If a horse have

“ One white foot, buy him;
Two white feet, try him;
Three white feet, deny him;
Four white feet, and a white nose,
Take off his hide, and throw him to the crows.”

Treatment. This is as varied as the causes are various. Yet, as the thinning of the hair follows a more or less vitiated constitution, the first thing to be done is to build that up by tonics, the most important of which are the ferruginous preparations. The circulation in the scalp has become sluggish, hence this is to be stimulated; and the hair, what is left, must be put under strict hygienic relations, for which see chapter upon that subject. When the tendency to early baldness is found to be inherited, it will be less amenable to treatment than any of the other forms of this variety of alopecia, and our prognosis should be rendered accordingly.

If it is found that the loss is dependent upon syphilis, this should at once be treated constitutionally, and the treatment be kept up for six months or a year. This should only be attempted under the supervision of a competent physician. Proper local stimulants should also be applied to the scalp, using some one of those given further on, or something similar to them; this done, a full return of hair can be expected in a few months.

If alopecia follows a fever, proper local treatment will generally, with tonics internally, prove successful in inducing a new growth, as the hair papillæ, except in ulcerative skin troubles, are not destroyed. So, too, as regards a loss of hair from uterine troubles; if these are relieved, then the hair will soon fill the follicles with a new, and oftentimes, a more vigorous growth.

As regards a loss following nerve injuries, or shock, as those cases detailed on page 145, not much hope can be entertained for a new growth. Still, treatment might be attempted.

Coming now to the more general class, as those who have no special disease, or lesion, except a gradual failing of the systemic powers, and where the hair comes out freely on brush-

ing or combing, I would offer the following as a proper line of treatment: If you are an accountant, take fewer hours at your desk, more in the open air; the hair makes a good barometer (in truth, aneroid barometers are made from hair) for the state of health, as well as of the atmosphere, and when you thus find it being progressively shed, look carefully to your occupation, to see if that is not the cause. If you are indoors a great deal, get in warmer friendship with your gun, rod and line, and horse, or even take a relaxation trip. Don't wear your hat in the counting-room, or store; go bare-headed as much as you can, and have your hat a ventilated one. If you are using tobacco excessively, put the breaks on there; be temperate in all things, and above all secure a good night's rest; court sleep,

"Tired nature's sweet restorer
That knits up the unraveled sleeve of care."

* There is nothing like good, sound sleep to recuperate the nervous system, for this is the system that is first out of order when the hair begins to fall. Leave your figures in your office; don't take them to bed with you to dream over; or if you are an inventor, or writer, don't make your bed-room your study-room, or your meal-time a convenient time for straightening out that kink, plot, or ledger discrepancy. Take three full hours *every* day to eat your breakfast, dinner and supper in, and a mile walk after each, if possible. All this done, and if yet you feel tired and exhausted, go to some physician who will look your case over for you, and see what organs are still at fault. The bowels should be kept regular, and for this purpose there is no remedy less harmless, or more to be depended on, than one of the Rhamni, thus:

- R. Fl. ext. rhamni Purshianæ (cascara sagrada), vel (or)
Fl. ext. rhamni frangulæ (buckthorn bark), \mathfrak{z} ij (2 ounces).
Syrupi simp. (simple syrup),
Aq. cinnamomi (cinnamon water), aa. (of each) \mathfrak{z} j (1 ounce).
M. S. Dessertspoonful before breakfast, or three times a day if necessary.

Instead of this, oil, epsom salts, rhubarb, seltzer or Hunyadi water might be employed. As tonics, Peruvian bark and iron are among the best. The following is a very common prescription with me:

- R. Tr. cinchonæ comp. (compound tr. cinchona), ℥ ij (2 ounces).
 Ferri citratis (citrate of iron), ℥ iij (3 drachms).
 Tr. nucis vomicæ (tr. nux vomica), ℥ iss (1½ drachms).
 Vini Xerici (sherry wine), ℥ iij (3 ounces).
- M. Teaspoonful one-half an hour after meals.

Besides, the head should be kept in as cleanly and hygienic condition as possible; for this read the chapters upon Dandruff, Seborrhœa and Hygiene of the hair.

Among the many local applications that could be given, the following I have found to prove of great value:

- R. Tr. cantharidis (tr. Spanish fly), ℥ ij (2 drachms).
 Tr. nucis vomicæ (tr. nux vomica), ℥ ss (½ ounce).
 Tr. capsici (tr. capsicum), ℥ j (1 drachm).
 Ol. ricini (castor oil), ℥ iss (1½ ounces).
 Aq. cologniensis (cologne water), ℥ ij (2 ounces).
- M. S. Liniment. To be applied with a piece of sponge, night and morning, after brushing the hair.

If the oil is an objectionable feature, as it is with some, bay rum (spr. myrciæ) may be substituted. Cocoa oil and coco-oleine also make good substitutes.

A preparation of arsenic, given internally, is also of great benefit in most of these cases. It should not, however, be prescribed indiscriminately. The following makes a very eligible mixture, combining all other tonics with it:

- R. Liq. potassii arsenitis (Fowler's solution), ℥ iss (1½ drachms).
 Ferri citratis (citrate of iron), ℥ ij (2 drachms).
 Tr. nucis vomicæ (tr. nux vomica), ℥ j (1 drachm).
 Tr. cinchonæ comp., q. s. ad ℥ iv (enough to make 4 ounces).
- M. S. Teaspoonful three times a day, after meals.

The following, recommended by Tilbury Fox, is an excellent application for the scalp, though a little strong:

- R. Tr. cantharidis (tr. Spanish fly), ℥ j (1 ounce).
 Aceti destil. (distilled vinegar), ℥ iss (1½ ounces).
 Glycerini (glycerine), ℥ iss (1½ ounces).
 Spr. rosmarini (spirits rosemary), ℥ iss (1½ ounces).
 Aquæ rosæ (rose water), q. s. ad ℥ viij (enough to make 8 ounces).
- M. S. Lotion. To be well rubbed into the scalp, night and morning.

Prof. Erasmus Wilson recommends the following:

- R. Lq. ammoniæ (spr. hartshorn),
 Chloroformi,
 Ol. amygdalæ dulcis (sweet almond oil), aa. (of each) ℥ j (1 ounce).
 Spr. rosmarini (spr. rosemary), ℥ v (5 ounces).

This is to be rubbed into the roots of the hair, after brushing the scalp. Undoubtedly it is too strong for most scalps, and it will need to be diluted about one-half, before applying. Cologne water, or rose water, may be used for this purpose.

Dr. Pincus suggests the following treatment in the first stage of premature baldness. (This stage is recognized by a daily loss of under fifty hairs, by diminished sensibility to pressure, and, after a time, by commencing hardness and immobility of the scalp): a solution of caustic potash, one part to five hundred of water, or fifteen grains of the bicarbonate of potash to an ounce of water. Two or three drachms of this solution is to be rubbed into the scalp from three to five minutes daily. After a time this may be done every other day, and then only once a week. If this is continued for a year or more, he avers, the baldness is arrested, and, in some cases, the lost hair is fully restored.

Or the following is also a useful lotion:

- R. Liq. ammonii acetatis (spr. Mindererus), ℥ ij (2 ounces).
 Ammonii carb. (carbonate of ammonia), ʒ ss (½ drachm).
 Glycerini (glycerine), ʒ ss (½ ounce).
 Ol. ricini (castor oil), ʒ ss (½ ounce).
 Spr. myrciæ (bay rum), ℥ v (5 ounces).
- M. S. Lotion. Apply to roots of the hair, night and morning, with sponge, after brushing thoroughly.

The following is also another very good lotion:

- R. Tr. iodinii comp. (compound tr. iodine), ʒ ij (2 drachms).
 Tr. cantharidis (tr. Spanish fly), ʒ ij (2 drachms).
 Spir. myrciæ (bay rum), ʒ iss (1½ ounces).
 Aq. cologniensis (cologne water), ʒ ij (2 ounces).
- M. S. Apply to the bald portion of the scalp twice a day.

Pomades are sometimes ordered, but I do not like these, as a rule, as they mat the hair together more than lotions, and make it too greasy for the comfort of the user. Still, the following, when these features are not objectionable, will be very useful:

- R. Tr. iodinii (tr. iodine), ʒ ij (2 drachms).
 Pulv. cantharidis (powdered Spanish fly), ʒ ss (½ drachm).
 Acidi tannici (tannic acid), ʒ j (1 drachm).
 Ol. bergami (oil bergamont), gtts. xx (20 drops).
 Vaselini (vaseline), ʒ ij (2 ounces).
- M. S. Apply to the head night and morning

In oriental countries falling out of hair is prevented by the use of an ointment consisting of the bruised fresh bulbs of *Asphodelus bulbosus*, or of garlic, mixed with gunpowder. An infusion of the small leaves of the lemon or orange tree, in red wine, has likewise proved serviceable, about twenty grains of tannin having been added to the quart of this aromatic wine.

What has been said regarding the medical treatment of alopecia in men, is equally applicable to the cases occurring in the opposite sex. Ladies, however, must forego the use of the crimping pins and curling iron, as well the use of bleaching or coloring agents. The hair should be done up loosely or suffered to hang down undressed. As the Manillians have the longest, blackest and most glossy hair of any nationality, and do not bind or curl it tightly to the head, but allow it to fall back behind, in its own natural looseness, it follows, then, if our ladies would wish to preserve their hair as long as possible, that they should imitate the Manillians in this

custom. The tonic systemic treatment is just as necessary in their cases as in the cases of men, and the preceding formulæ are as good as any. Out-door exercise should also be regularly taken; if family cares are crowding too closely upon them, a trip to the sea-side will be beneficial. Worrying or fretting over any matter only makes the fall of the hair worse, hence all this should be avoided as much as possible. Good, healthy, *plain* food only should be taken; eating of sweet-meats, late hours at the ball-room, and kindred enervating practices, should be abandoned, and a stay of eight hours in bed be taken each night, till the system becomes recuperated. In cleansing the head and hair, as it should be done every week or ten days, in summer time, less often in winter, there is nothing better than the yolk of an egg, beaten up in a little water, and rubbed thoroughly over the scalp and through the hair on a bit of sponge, and then the whole rinsed with warm water, and dried by pressing between cotton or linen towels. The ends of the hairs, if they split, should be trimmed off an inch or so and thus kept back until this tendency is overcome. In brushing the hair, only a soft brush should be used; but this used carefully will be found to bring a warm glow to the scalp, and thus materially aid recovery; for it is the aim of the whole treatment for alopecia to quicken the sluggish circulation in the scalp.

Electricity applied, with proper care, to the scalp by means of a wet sponge, one of the poles of the battery being placed at the nape of the neck, will also be found of service in stimulating the nervous action, and thus increase the amount of blood sent to each hair follicle, and its papilla.

The loss of the hair through any of the parasitic or inflammatory diseases, or dandruff, will be treated of in the chapters specially devoted to these subjects, as this does not properly come under the head of Alopecia Vulgaris.

II. ALOPECIA CIRCUMSCRIPTA (circumscribed baldness).

Description. This form of hair-loss is denoted by bald (more or less circular) patches seen in the hair or beard. It should not be confounded with the disease known as tinea alopecia, described in a following chapter, as this is a very different disease. The tinea alopecia is a parasitic disease; the loss of hair being due to a vegetable growth, and is contagious; whereas, in alopecia circumscripta the loss is due to a nervous lesion, in most cases, and is not contagious. In this class should be placed the Ophiasis (from the Greek *ὀφίασις* meaning serpentine or snake-shaped) of the ancients, and which is so graphically described by Celsus (B. C. 30) thus: "That which, from its likeness to a serpent, is called ophiasis, begins at the back part of the head, and with a width of not over two fingers' breadth; from here it creeps up behind the ears, and, sometimes, even up to the forehead, where the two heads are joined together." "Oftentimes," he says, "this form disappears without any treatment, though some gently scarify them with a knife; others anoint them with an escharotic, mixed with oil; especially that of burnt paper. Others apply turpentine or resin with thapsia." Celsus recommends close shaving of the scalp, as he thinks this bares the roots of the hair, and then he rubs sulphate of copper over them.

This disease is more often seen in women, especially the ophiasic variety, than in men; the probable cause being that they are more susceptible to perverted nervous influences. Headaches are more common with them, and, in the majority of cases, these are but symptoms of other nervous derangements.

It is frequently seen in children of from five to ten years of age; from a record of the cases kept at the hospital for diseases of the skin, in London, it was found that out of every sixteen

cases presented, thirteen cases were females, even at this early age; of the cases from ten to fifteen years of age, two cases in females were met with to one in males. It is quite frequently seen to succeed some of the eruptive diseases of childhood, and sometimes accompanies ascarides in the rectum.

The appearance of the bald spots is that of an atrophy, or shrinkage, of the skin; it appears thinner than normal, and of a shining white color; the follicles are so shrunken as to appear absent; *sensibility is also diminished*; no special pain attends the course of the disease, and local anæmia is so marked that only quite severe friction, or strong irritants, will induce a healthy glow in the diseased parts.

If the bulbous portion of the hair is examined microscopically, it will be found attenuated, instead of rounded out full with an abundance of newly formed hair-cells; the hair itself will be harsh and dry, and easily knotted and broken.

Treatment. Constitutional treatment will often be found necessary; if the menstrual functions be not properly performed, they must be at once set right; if uterine irritation is the cause, or a prime factor, in the head neuralgias, this must receive its proper local and constitutional treatment. If in children worms, or choreic symptoms, are present, these must be gotten rid of; if constipation is present, the prescription given on page 148 will prove of great value. Proper hygienic rules should be adopted; in fact, everything tending to build up the general health is of service. The bark and iron tonic mentioned on page 149 will also prove of service here. Some of the emulsions of cod-liver oil, especially that combined with the hypophosphites of lime and soda, will be useful.

As a local treatment, painting the bare patches with the pure tincture of iodine (*iodinii tinctura*) twice a day, till irritation

is set up, will be of good service; tincture of Spanish fly (*tinctura cantharidis*), applied in the same way, only washed off a half an hour after each application, will also prove a useful stimulant to the bare portion of the scalp, and so invite more blood to the hair follicles; or, if the trouble prove quite rebellious, a blister of the officinal *cantharidis emplastrum* (Spanish fly plaster), to cover the bald spot, will prove of estimable service.

In these cases electricity proves of special value; keep one pole of the battery, usually the positive, at the nape of the neck, and the other, surmounted with a dampened sponge, over the bald spots for two or three minutes at a time; then change the positive pole to the back of each ear, alternately under it and in front of it, and also over the eyebrows, keeping it at each point for two or three minutes; by so doing you cover the origin of most of the external cutaneous nerves of the scalp. Of course but a mild current can be used, as it will else give too much pain; still, the sensation should savor somewhat of the painful in order to get the full effect of the battery. Either the Faradic or constant current can be employed; a change from one to the other will also be beneficial.

Acetic acid is sometimes of value, if painted on the bare places and kept there till stinging is produced, when it can be washed off with a bit of sponge and warm water. This should be applied every day or two. Carbolic acid, similarly applied, though no washing off is necessary, unless the extent of surface be large, will also be useful. A superficial exfoliation of the cuticle will follow this, if used undiluted, though this will only be beneficial. The officinal *unguentum hydrargyri oxidi rubri* (red precipitate ointment) is also a good stimulating application.

Prof. Wilson has also recommended friction of the following liniment, to the bare places, daily:

R. Linimenti aconiti (aconite liniment),
" ammoniæ,
" camphoræ,
" chloroformi, aa. ʒj (of each 1 ounce).

M. S. External use.

After the downy hair begins to grow out from the follicles of the bare places (usually in from four to six weeks), it should be kept clipped short for a time, and less severe irritants then used locally to the patches. Any of the lotions spoken of on pages 91, 125, 126, will then be in order. The phenomenon of seeing the bald patches being covered with a new growth of hair, while new bald places are forming, is sometimes seen in this disease.

III. ALOPECIA SENILIS.

Description. This is the name of the form of baldness seen in aged individuals. It is sometimes termed *calvities*, and is due to the general wasting of all the vital functions; it is especially marked by a shrinking, or atrophy of the scalp. The hair first becomes gray, before a loss of this kind occurs, the commencing point being at the top of the head. In old people the fat cells are lessened in size and number, especially those that are placed subcutaneously; the shrinking of these accounts, in great part, for the atrophy of the skin in such individuals; as a result of this the circulation is lessened, the scalp becomes dry and the hair follicles shrunken, or even entirely obliterated.

Treatment. Little, I am sorry to say, can be done to *cure* this complaint. Preventative measures, however, when the hair begins to fall out, may be of a good deal of service in delaying the final loss of the comate covering. As the chief

direct cause of the complaint is a diminution of blood supply to the hair papillæ, and follicles, its free circulation about the hair roots should be encouraged in all ways possible by the use of stimulating embrocations and frictions to the scalp. A soft brush should be used, night and morning, upon the scalp, before it is applied. As a continuous dressing the lotion given on page 149, without perhaps quite so much oil, should follow the use of the brush. The stronger lotion, mentioned on page 140, could occasionally be employed with benefit.

As the loss of fatty tissue is another common accompaniment of old age, the adoption of a diet suitable for the production of fat should be encouraged. Good roast beef, the fat to it, soups made with the marrow left in the bones, and even pork-fat are all good fat makers when eaten; so, too, the starchy grains and vegetables. Healthy, out-door, exercise should also be regularly taken.

Yet, it must be remembered that in spite of all treatment and hygienic measures, the hair will come out sometime, since it is as natural for it to grow old and pass away as for the human body to grow wrinkled and aged, and ripe for the tomb. For

"Age comes like snow,
As still, and carves each careworn line;
Its wrinkles on the brow *will* grow,—
The hair with silvery threads *will* shine;
The eyes their brightness lose,—the hand
Grow dry and tremulous and thin;
For Life, alas, is quickly spanned,
And Death its gates soon closes in."

CHAPTER XIII.

COLORING, OR DYEING, THE HAIR.

General Remarks. When it is found that the measures recommended in the preceding chapters are of no avail in checking the appearance of gray hairs, the aid of dyes is sought, by many, to hide this tell-tale story of

“How long with Time we’ve been.”

From time immemorial hair-dyeing has been practiced (though some have ascribed its origin to Medea), not only to cover up the whitening, tell-tale hairs of Age, but even to give a new cast of color to the head-covering that Nature has given us. The ancient Greeks and Romans sanctioned it; for the saintly Tertullian, of Carthage, had occasion to reprimand his flock because “they were continually engaged in giving their hair a lighter color.” St. Jerome, living a couple of centuries later, wrote that “the people dye their hair red.” Ælian incidentally refers to the same coloring process, when he speaks of the beauteous blonde tresses of Atalanta, in saying that they were “yellow, *not produced by any womanly art*, but altogether natural.” Solomon, so Josephus says, was the first to bring into notice golden hair, for he had the hair of his pages powdered with gold. And the Musselman, likewise, deems it almost a sacred duty to dye his hair and beard a reddish-yellow color.

The satirical Martial (A. D. 40) writes thus to his friend Latinus: “You ape youth with your dyed hair; and you who were but recently a swan, have suddenly become a crow! But

you cannot deceive every one; Proserpina knows the hoary head you are, and will snatch the mask from you." To a lady friend the same satirist once wrote, sending a true golden lock with it:

"Your hair, Lesbia, indeed the golden hue hath taken;
But I send a *genuine* lock, to prove your *dye* mistaken."

It is also reported that when the gray-haired sculptor, Miron, sued for the hand of the beautiful Lais, and was refused, he supposed his white locks were the ground for his unacceptable pleading; so next day he appeared with them dyed to a raven black, and pressed his suit anew, only to be laughed at for his silliness with, "How can I grant *you* to-day what I refused *your father* yesterday."

Venice, especially mediæval Venice, has done more towards dyeing the hair than any other nationality. It was nothing unusual to see a black-eyed beauty on the balcony, with a crownless hat, letting the sun bleach out her hair as it lay disheveled over the brim.

To Dye Hair Black. It must not be supposed that any of the dyes given on the following pages can be used indiscriminately, or with little or no caution. Most of them are poisonous, and have to be used with great care.

Daniel Turner, writing over a century ago, says: "In the use of coloring, staining and dyeing of the hairs, and indeed in all the other administrations about them, great care is to be had of the brain, lest while we are busy about adorning those excrementitious parts (as reckoned by some) of the body, we bring some inconvenience or detriment to the more noble residence of the soul placed underneath."

Referring to the phrase "excrementitious parts," as just used, we find that it was a common view among our earlier ancestors to deem the hairs really an excrement from the body; this is

the view that one of the characters of Shakspeare took of it, for in "Love's Labor Lost," act v, we find this: "For I must tell thee it will please his grace, by the world, sometimes to lean on my shoulder and, with his royal finger, thus dally with my excrement, my moustache."

I do not really recommend the use of these various dyes, even in the many cases of early blanching of the hair; as, to me, the sight of gray hair is not unpleasant. I rather like gray hairs; they are, in the aged, the emblems of wisdom; they remind us of hearts that have been steadfast amid all external changes and friendships, and which time and circumstances have not changed or weakened.

Almost all the so-called hair-dyes, which should more properly be called *paints*, depend upon the action of minerals for their blackening process. All of the patent right ones, with hardly an exception, contain lead in some form. A few varieties are made up of iron alone; these are absolutely harmless; those containing sulphur, or nitrate of silver, can be used so excessively as to be productive of hurt; yet, I think their dangerousness has been overrated, when they have been used in moderate quantities.

Bazin, in speaking of hair-dyes, says they are of two kinds; one, as galls, infusion of nux vomica or pomegranate, is almost inoffensive, though uncertain and unstable in results; the other, whose base is lime, silver, lead, iron or sulphur, is successful in results, though dangerous for employment. I think the author has somewhat overstrained the point in considering the iron and sulphur ones as dangerous; the other ones may be, if used imprudently.

Browne has said that "soot mixed with grease will make hair as black and full of dust as any collier's sack," and this was one of the dyes the earlier Greeks made use of, to change

their blonde locks to those of darker hue; afterwards a solution of galls, iron or other metallic bases was employed. The Romans made use of putrefied leeches, boiled in wine, for the same purpose.

The Mussulmans of India use the black sulphurets of lead and antimony, and the oxide of iron occasionally, for producing a black color of the hair, but more commonly the far-famed henna, a preparation from the *Lawsonia inermis*. The henna-paste is applied thoroughly to the hair, from the tips to the roots, left on for an hour or so, and then it is washed off. The hair is then seen to be of a dark red. Another preparation, or paste, made from the indigo plant and water, is applied, and is then washed off after remaining on for three or four hours. After this the hair is well oiled; and it is said that the jetty blackness resulting from this procedure is difficult to be surpassed. This is really one of the best and least dangerous of the hair dyes that could be used. Dr. Tholozan, the physician to the Shah of Persia, in describing this operation, says: the coarse powder of the leaves of the henna (*Lawsonia*) is mixed to a paste with hot water, and this is applied, assisted by hot air, thoroughly to the hair and beard, the same previously having been cleansed, with soap and water, from all oily or greasy material. This is allowed to remain on from one and a half to two hours, when it is washed off. The resulting color is a fine orange red, which is particularly handsome when white hair has been so treated. This reddish tint is changed into a black by the means of a preparation called *reng* or *rang* (from the *Indigofera argentea*); this is also a sort of a paste, and must remain a couple of hours on the hair; when washed off the hair is found to be of a rich, lustrous jet black. Perfectly white hair is not quite so dark colored as darker hair so treated. The skin, which has been colored by the operation, as well as the hair, can be washed

clean by the use of soap and friction; this, however, does not injure the color of the hair, and it retains its dark color for a long period of time.

The old preparation recommended by Paulus Ægineta, and venerable because of its age, is the expressed juice of the green shell of walnuts. As this is liable to spoil, unless some preservative is mixed with it, a few drops of the oil of cloves, and an ounce or two of alcohol might be added to a pint of the juice. It is to be used by freely sponging upon the hair. It is more of a "restorer" of the color of the hair than a dye proper.

The following *iron* preparation will be found useful to darken the hair, and it has also the advantage of being non-poisonous:

- R. Ferri sulphatis (sulphate of iron), ʒj (1 drachm).
 Alcoholis (alcohol), ʒj (1 ounce).
 Rosmarini ol. (oil rosemary), gtts. xij (12 drops).
 Aquæ puræ (pure water), O ss ($\frac{1}{2}$ pint).
 M. and apply frequently to the hair and scalp.

This preparation has another advantage, that of being of use when dandruff is present upon the scalp. By leaving out the oil of rosemary and alcohol, and putting in equal parts of water and cologne-water, a very eligible preparation is formed. A wash very similar to this is a great favorite among the fashionable Parisians.

The following is said to give a good and natural-looking dye, free from the caustic action of silver salts and the poisonous effects of lead compounds. Two preparations are needed:

No. 1.

- R. Bismuthi citratis (citrate of bismuth), ʒj (1 ounce).
 Aquæ rosæ (rose water), ʒij (2 ounces).
 Aquæ destil. (distilled water), ʒij (2 ounces).
 Alcoholis (alcohol), ʒv (5 drachms).
 Ammonia (ammonia), q. s. (sufficient).
 M. S. Apply in the morning thoroughly to the hair.

No. 2.

R. Sodii hyposulphitis (hyposulphite of soda), ʒ xij (12 drachms).
Aquæ destillatæ (distilled water), ʒ iv (4 ounces).

M. S. Apply in the evening thoroughly to the hair.

Instead of waiting so long as this, the preparations could be applied, if necessary, an hour or so apart; but the morning and evening alternate application is usually found the best. This dye is based on the chemical action of the reduction of the hydrosulphate of soda by bringing it in contact with the citrate of bismuth, the result being a formation of the sulphate of bismuth. As red and blonde hair contain sulphur in excess of the other colors, we know why such hair retains its color longer and better than hair of other hue.

Nitrate of silver (lunar caustic) is probably as generally used as any of the salts of the metals (unless it be the acetate of lead) for producing a change in the coloring of the hair. Usually the strength of the solution is from five to ten grains of the silver to the ounce of water, as in the following:

R. Argenti nitratis (nitrate of silver), grs. x to lx (10 to 60 grains).
Aquæ destillatæ (distilled water), ʒ ij (2 ounces).

M. S. Apply to the hair, wetting it thoroughly. Then let dry slowly by evaporating in the sunshine, or heated room exposed to the light.

If time is of importance, the darkening of the silver solution can be hastened by applying the following solution a few moments after the nitrate of silver is used:

R. Potassii sulphureti, ʒ i to vj (1 to 6 scruples).
Aquæ destillatæ (distilled water), ʒ ij (2 ounces).

M.

This will make almost an instantaneous change to a black hue, if the silver solution has been first used. Where there are only streaks of gray here and there upon the scalp, a single application will be all that is required, till the hair is grown out quite a distance, so that the portion nearest the follicles

will need color-dressing again. The objection to this dye is that it stains the scalp and hands as thoroughly as it does the hair. To avoid this, great care should be used to protect the scalp, and gloves should be worn upon the hands during the application. A brush will probably be found the most convenient applicator.

The ordinary *lead preparations* are made up of the sugar of lead, ten to twenty grains to the ounce of water, as follows:

- R. Plumbi acetatis (sugar of lead), grs. xl (40 grains).
Aque destillatæ (distilled water), ℥ ij (2 ounces).
- M. Apply this to the hair thoroughly, and when about dry apply a solution of the sulphide of ammonium, about one-fourth the strength of the British Pharmacopœia solution.

The objection to the last compound is its very unpleasant odor. It gives, though, an excellent brown or black color to the hair, according to the strength of the solutions employed, and does not stain the scalp.

The *mercuric dyes* are best represented by the following:

- R. Hydrargyri chlor. cor. (corrosive sublimate), grs. xij (12 grains).
Aque rosæ (rose water), ℥ iv (4 ounces).
- M. S. POISON. To be used with great caution and externally.

If there are any abrasions on the scalp this solution should not be employed, as enough of it might be absorbed to produce deleterious results. It is best applied to the hair by means of a brush dipped in the solution, and then thoroughly brushed through and over the hair. When it has become dry the following should then be employed:

- R. Sodii hyposulphitis, ℥ j (1 ounce).
Aque (water), ℥ ij (2 ounces).
- M. S. Apply externally.

The same brush should not be used for making both applications. The solutions can be applied, one at night, and the other

in the morning, for a few days, then once or twice a week, until the desired result is obtained. This is quite a slow acting dye.

In the use of any of the above dyes, or indeed any of the following, the hair should be thoroughly cleansed from all oleaginous material; this may be done by washing in toilet-soap suds, or by the free use of bay rum and cologne water, and then drying. After the dye is once "set," oil, cocoa-nut is the best, should be applied as a dressing to help bring out the color and gloss; also to prevent too much drying of the hair.

Brown Hair Dye. Sometimes plumbic acetate and sulphur are combined together in one and the same solution, of the strength of the following:

- R. Plumbi acetatis (acetate of lead), 3 ss ($\frac{1}{2}$ drachm).
Sulphur sublimati (flowers of sulphur), 3 j (1 drachm).
Aquæ, 3 iv.
- M. S. Shake well and apply night and morning for a week or so, then decrease the frequency of the application, gradually, to once a week, or once in two weeks.

This is a slow dye, yet one that answers fairly when there is not much grayness to the hair. It also is a very mild preparation. The deposit left upon the skin can be easily brushed off when it becomes dry. Like all of the lead dyes it acts best upon hair of a reddish tinge, though gray hair is turned to a brownish color by it. Its effect upon light hair is to give more of a dark brown tint to it.

The following also makes a very good brown, and the tint can be darkened, as the fancy may desire, by a continued application of the two preparations:

- R. Cupri sulphatis (sulphate of copper), grs. xvj (16 grains).
Aquæ destil. (distilled water), 3 iv (4 ounces).
- M. Apply thoroughly to the hair, and when dry or nearly dry use the following:
- R. Potassi ferrocyanidi, grs. xvj (16 grains).
Aquæ destillatæ (distilled water), 3 iv (4 ounces).
- M. Apply by means of sponge or brush.

This last solution is poisonous, if swallowed in any quantity, and hence should be kept out of the reach of children; indeed so should *all* dyes. It does not stain the skin, and simulates, very closely, the normal brown coloring given by nature, when applied to gray hair.

The following will also give a very good dark brown, and even black, if applied frequently enough:

- R. Argenti ammonio-nitratis (ammonio-nitrate of silver), ʒ j (1 drachm).
Aque destillatæ (distilled water), ʒ iv (4 ounces).

M.

Care should be had not to bring this into contact with the skin any more than possible, as it will stain it. Its application should be followed, when the hair becomes dry, with the following:

- R. Acidi pyrogallici (pyrogallic acid), ʒ ij (2 drachms).
Aque destillatæ (distilled water), ʒ iv (4 ounces).

M. Apply by means of sponge or brush.

The permanganate of potash may be used to give a light brown color to the hair; it should be used of the strength of from ten to forty grains to the ounce of distilled water. It makes but little discoloration of the skin, and is perfectly harmless. The brown color can be deepened, and even changed to a black, by using, alternately with the permanganate solution, the solution of pyrogallic acid just mentioned.

To dye the hair red. This is usually on the plan of bleaching a darker colored hair down to this color; though sometimes a true coloring principle is desired, as when gray, or light blonde hair is sought to be darkened to this color. The least harmful of all the dyes is the Persian *henna* before described (see under the heading of black hair dyes).

It is said that red hair was not known to the old inhabitants of England, until the country was invaded by the Saxons and

the Danes. The Danish soldiers, prior to the Norman conquest, who were quartered in England during the reign of Ethelred II. (968), had red hair. The second son of William, Duke of Normandy, who conquered England at the battle of Hastings, and who succeeded to the crown, was called Rufus on account of his red hair. Ossian, in his poems, scarcely mentions any beautiful man or woman without clothing them with a cranial covering of reddish hue. The ancient Gauls also manifested this predilection for red hair. The Turks, it is said, like red-haired women, and the Tripolitan ladies aid in this coloration with vermilion. Some of the central African tribes manifest a similar fondness. The ancient Teutons also prized this same coloring for the comate material, and the great historian Pliny has given us one of their favorite receipts for pomatum; it is composed of tallow and ashes, similar to that the Roman ladies used to bleach their hair to a blonde color, the difference being only in the degree of blanching. Martial, in speaking of the same, says it was made from goat's tallow and the ashes of beechwood, and was used to "change the color of German wigs in order to give them instead a color of flame." In later times the same locality has been noted for its hair or Hessian (from the county, Hesse) soap. The ancient Britons increased the brightness of their red locks by bathing them in water in which lime had been dissolved.

Auburn hair is hair having a tinge of red, and this stage is sometimes reached in bleaching dark brown hair down to that of a yellow, or blonde hue.

A strong infusion of saffron, to which has been added some carbonate of soda, if followed by an application of lemon juice or vinegar, will give a reddish yellow hue to dark-colored hair.

Bronzonette, whatever that may be, it is said, will, with the

aid of spirits of wine, give a crimson coloring to the hair. Thirty drops of the bronzonette to a couple of drachms of alcohol, is the usual amount taken. As the color begins to pale, a new application of the alcohol will revive it considerably.

Some of the salts of antimony are also made use of, as the ordinary tartar emetic, in hair dyeing. Thus:

- R. Antimonii et potassii tart. (tartar emetic), 3 j (1 drachm).
Aque puræ (pure water), ʒ ij (2 ounces).
Acidi tartarici (tartaric acid), grs. v (5 grains).

M. Apply with sponge to the hair.

Care must be taken that the scalp is not much wetted with this solution, lest enough become absorbed to vomit the individual. Its application is to be followed with a solution of ammoniac sulphide, one part to four parts water. This works the best upon light-brown hair.

Yellow or "blonde" dyes. The action of all compounds to produce this color are on the bleaching principle; it is some dark-haired beauty that sighs for the light, golden hair of the blonde, in the vain hope that she may even yet outrival the lovely Ariadne, the Homeric Helen, or the Horacian Pyrrha, that usually makes use of these blanching agents. Blonde hair was the hair that Roman and Grecian heroes wore, that Roman and Grecian poets sang of; and ancient warriors loved to behold upon the heads of their fair mistresses. Poppæa, the second wife of Nero, and one of the most profligate women the world ever knew, was eminent for the unrivaled beauty of her hair, which was of the color of amber, and the emperor celebrated it in song; she first introduced the toilet mask to the Roman ladies, and bathed only in asses' milk (of which a train of 500 always followed her in her travels for this purpose), so that the fairness and softness of her skin might be preserved.

Milton sang also of Eve as one whose "loose tresses were of flowing gold." Virgil, in

Nam, quia nec fato, merita nec morte peribat.
 * * * * *
 Nondum illi *flavum* Proserpina vertice *crinem*
 Abstulerat,

tells of the golden (yellow) hair that Dido wore, and which Proserpine had not yet clipped from her head. Sometimes, when the brunette belles, of ancient Rome, could not get a satisfactory golden hue to their cranial covering, the aid of the wigmaker was invoked, as the caustic Martial pithily hints at in one of his satires:

"The golden hair that Gallas wears
 Is hers—who would have thought it?
 She swears 'tis hers! and true she swears,
 For I know where she bought it."

Ovid also relates that the wig-makers at Rome were accustomed to buy up the spoils from the heads of the Germans taken in battle, and make them into perukes for the fashionable dames of ancient Rome to wear, in order to hide their darker-hued tresses.

The Emperor Verus, who lived about 175 after the time of Christ, had such a fondness for this colored hair that he used to, after the manner that Solomon treated his pages, sprinkle his own hair with gold dust, so as to still further increase its yellow brilliancy.

The Roman ladies used a very impure kind of soap, that made from ashes and goat's fat mixed, for blanching their locks. A town in Germany—for the Germans are by nature blondes, or a light-haired race—called Mattium, used to furnish this substance in balls to the Roman cosmetic-vendor, and hence the common name for the article was "mattic balls." Akin to this is the "potash treatment" so much in vogue with us to-day,

when maidens will persist in washing their dark-colored tresses with strong soap suds, or a weak solution of caustic potash, and then expose themselves to the sun. The blanching of the hair is obtained by this method, and is perhaps the least harmful of any, though more slow in its action than some. However, it is some form of chlorine or sulphurous acid, or nitric acid that is now most made use of for bleaching the hair. These agents work more rapidly than the alkalies (potash or soda) and are not so apt to injure the texture of the hair; they are used by our wig-makers to blanch the locks they are making up for sale.

A weak solution of the nitro-muriatic acid, as it combines both nitrogen and chlorine, is the better agent to employ. The strength of this will need to vary as the occasion may require; but starting with the weaker solution, whose strength can be increased after a time, frequently applied, will be the safer way; you must remember that in one sense you are *killing* the hair, that is its color, and hence caution is needed. A solution, somewhat as follows, would be well enough to start with:

R. Acidi nitro-muriatici diluti, ʒ iv (4 drachms).
Aquæ, ʒ iv (4 ounces).

M. Apply by means of a sponge, and dry in sunshine, or by the aid of hot irons.
It will not injure the skin.

The officinal *aqua chlorinii*, chlorine water, might also be used in the same manner as the lotion just given to fulfill the same purposes.

As harmless, though perhaps not quite so effectual as some of the other dyes spoken of, is the following wash: After washing the hair thoroughly with a solution of alum, the strength not important, bathe it with a tea made of the annotta (the ordinary cheese-coloring product), in which a little common baking soda has been dissolved. This application has to be made a number of times before much change is noted in the

color, as it is very mild. If each application, when dry, is followed by a washing with vinegar, or water soured with lemon juice, the color will be deepened somewhat. It is only applicable for very light hair, as it contains no "bleaching" agent.

Stannic chloride, with a mordant of ammoniac sulphide, will also turn the hair a yellow color, through the bleaching agency of the chlorine and sulphurous acid that is present in the two lotions. So also will the application of a solution of plumbic acetate, followed up with a mordant of potassic chromate.

All of these bleaching agents, if used excessively, are apt to leave the hair crisp and dry, or even to extend their ravages farther and so destroy the existing growth entirely. The ancients well knew this, for Ovid, in an elegy upon his mistress, who had suffered the loss of a beautiful head of hair, through this vanity, says:

"I have always said 'Do leave off doctoring your hair'; but now you have no hair left that you *can* dye. It used to reach down to your ankles; and was it not so fine, like the slender thread that the spider weaves, or the gauzy veils the Seres wear, that you hardly dared to dress it? Its color was not black, nor yet golden, but a mixture of them both, like the tall cedars of Ida when stripped of their bark. Your own hand has been the cause of the loss you now mourn, for you poured the poison upon your own head."

And this is about the fate that our modern ladies may expect to overtake *their* heads of hair if too much dyeing or bleaching be attempted.

CHAPTER XIV.

PITYRIASIS.

DANDRUFF, DANDRIFF, DANDRIFFE, DANDER.

Derivation. Pityriasis is derived from the Greek word *πίτυρα*, meaning bran.

Dandruff, from the Anglo-Saxon words *tan* and *drof*, meaning *itch-dirt*.

Hippocrates, the "father of medicine," was the first to give this troublesome complaint a name, selecting the Greek term just given; this was done from the close resemblance of the scales to wheaten bran. He, however, did not recognize the various diseases producing this symptom, as seborrhœa, psoriasis, eczema and tinea, which are referred to in separate chapters farther on.

Cause. The causes of dandruff are various; it is most commonly produced, when not dependent upon inflammatory or parasitical scalp trouble, by systematic negligence of the scalp. It may also arise from the use of rancid or irritating pomades, hair-dyes, and the too frequent and too severe use of the fine-comb. As a rule, this article of the toilet, the fine comb, should be used only for the same purpose that a hunter uses his traps—to catch game; for the fine teeth scratch off the epithelial covering of the scalp, thus leaving the corium, or true skin, exposed, and subject to irritation. The comb also irritates the hair follicles and the sebaceous glands, thus causing them to throw out more oleaginous material than the hair or scalp needs; this results, finally, in a disease of both the skin and

follicles, the former producing a rapid exfoliation of the scarf-skin, and the latter, an over-abundance of sebaceous material.

As a rule when dandruff is first noticed, there is no disease proper of either follicle or skin; but through the inattention of the patient the head may become dirty, not being properly brushed or washed, and as a result the dried-down sebaceous material will unite with the exfoliating epidermal scales, dust from the room or street, the linen, cotton or woolen fibres loosened from the clothing, and the whole will then be thrown off in these branny scales that give rise to the name dandruff. In nomenclature the Anglo-Saxons were about right in giving the complaint the name of "itch-dirt." When this is allowed to go too far, a positive disease may be induced, and a loss of hair will be the result.

It is pretty hard to draw the exact dividing line between dandruff, as I have considered it in this chapter, and the disease of the follicles, known as *seborrhœa* or *steorrhœa*, which is treated of in the following chapter, and which is due to an inflammatory condition of these little glands. In most scalp diseases dandruff is a *symptom*; hence it may be hard for the sufferer with this cosmetic trouble to tell if it be due to his self-negligence, or to a disease; still, if the scalp has been neglected for any length of time, and the following hygienic treatment does not speedily arrest the falling of the scales upon the clothing, he may be pretty well assured that something more than mere uncleanness of the scalp is the cause of his complaint.

Treatment. This is, as above intimated, rather hygienic than medical, and for which the reader is referred to the chapter upon this special subject.

Sometimes, though, a dressing of bay rum applied to the scalp and hair, will be found grateful. If moderately used it

will be beneficial rather than harmful, and will assist in keeping the scalp clean. You had better avoid oily dressings, relying mainly upon the hair follicles to furnish this material for keeping the skin soft and the hair pliant.

The following extract I take from an old book, published in 1634, whose title is given on page 106. It shows how our earlier ancestors regarded the trouble. This extract was printed in the old style black letter, though the body of the work was printed in roman type:

OF THE CAUSES AND REMEDIES OF DANDRUFFE OF THE HEAD.

"I will briefly declare the filthinesse of the head called in Latin *Perrigo*, in English the dandruffe of the head, the which is, when that at the kemming and scratching of the head, certaine white scales, as it were branne, falleth off from the head, and lyeth very thick among and under the hayre.

"The cause of this Dandruffe cometh by abundance of flegmaticke humors, commixt with the blood, the which daily and hourly by incessable sweating, evaporateth and issueth out of the pores in the skin that covereth the panbone, and as fast as it issueth forth, dryeth on the outter superfacie of the skin, and there remaining and gathering together, becometh every day more and more, thereto greatly keeping the forrest of hayre which covereth, harboureth, and retayneth such superfluities, more in those places than in any other, where no hayre groweth (most commonly they that have blacke hayre have more store of Dandruffe than others). This humor suffered overlong to reigne on the head, destroyeth and corrupteth the rootes of the haire, making them to fall off in great plenty, and specially in kemming. And although this superfluity be not cleanly, yet notwithstanding it shall be no wisdom for me to teach, ne any other herewith encumbered to learne how to stop it, for feare

of further inconveniences: but only I counsell you once in ten dayes, at the least, to wash and scoure the head cleane with good lye wherein let be steeped in a linnen bag, of Annis seed, Commin, dried Rosemary, Fenegreke, and rinds of Pomegranates, of each like much: and beware that after washing of your head yee take no cold, before the head be perfectly dried.

“And whereas some say, that they which use oft washing of their heads shall be very prone to headache: that is not true but onely in such, that after they have beene washed, rolled up their haire (being yet wet) about their heads, the cold whereof is dangerous to bring them to Catarrhes and poses, with other inconveniences. Whereof all diligence must be had, that the head may be exactly well dried with warme cloathes, whilst the head is yet hot of the washing, and then never feare any inconveniences, but rather convenience and commodity: and let this be done also fasting in the morning, or else one hour before supper, or five hours after supper. This oft washing shall purify the skin of the head, and steadfast the haire from falling, leviante and lighten the head, with all the senses therein contained, and greatly comfort the braines.”

CHAPTER XV.

SEBORRHŒA CAPILLITII.

OVERSECRETION OF THE SEBACEOUS GLANDS.

Synonyms. Pityriasis, Acne sebacea, Tinea furfuracea, Stearrhœa, Dandruff.

Derivation. From the Latin word *sebum*, meaning fat, or suet, and the Greek verb *ρέω*, meaning to flow. So called because the fat flows out of the sebaceous follicle where the disease has been produced; also the Latin *capillitium*, meaning the hair.

It will be noticed among the synonyms that the word that entitles our previous chapter has been retained here. This is owing to the fact that many authorities fail to make the distinction between the two complaints. But I think I have made myself clear to you on what I consider the essential difference between the two complaints, viz., that the former, dandruff proper, I have considered to be *not* a disease, but the result of improper attention to the scalp; whereas the latter, or the complaint under consideration, though it has as its effect an exaggerated case of dandruff, is a positive disease, an irritation, or inflammation, if you please, of the hair follicles.

Cause. The cause or causes are, primarily, similar to those which may cause the simpler complaint, dandruff. In fact, when the irritating causes there named, page 172, are at work, the result is, undoubtedly, either seborrhœa, or an eczema of the scalp (see a following chapter).

The morbid secretion of a seborrhœa may occur on other portions of the body than the scalp; or it may exist as a general disease; that is, one affecting all the sebaceous glands of the body, wherever found. As a rule it is oftenest seen in

children, or in the aged, though it is not at all uncommon in adult life. The reason that infants are more subject to it than adults is that the sebaceous glands are more active in early life. In old age it is due to the changes in the glands themselves, for they then produce a larger amount of the sebaceous material than in early life. In females, suffering from menstrual derangements, it is also quite a common accompaniment of their other troubles, the head being the chief sufferer in the reflex ailments from the irritated uterus. Syphilis also produces its quota of seborrhœous patients; the force of the virus being evidently spent on the sebaceous glands in this class of sufferers. When occurring in middle life, or as the effects of syphilis, a loss (*effluvium capillitii*) of the hair is pretty sure to follow.

Diagnosis. From the general symptom, dandruff, common to most scalp diseases, it is easy to mistake this trouble for *eczema impetiginosum* and *lupus erythematosus*. As the former is a frequent result of a long standing and illy treated Seborrhœa, you frequently have the two diseases, Seborrhœa and eczema, combined in the same person; for the retained masses of sebaceous material undergo decomposition, and a red, moist, eczematous irritation of the scalp ensues. Still, as a rule, the two can be easily differentiated by remembering that in Seborrhœa the skin, beneath the scales of dried sebaceous matter, is pale and shows no, or but little, irritation; also that itching is not a very prominent symptom; further, that the disease does not extend beyond the hairy parts, and that the neighboring lymphatic glands of the neck remain unaffected, and that the skin is not swollen.

From *lupus e.*, it can be known by remembering that Seborrhœa does not have its masses, or scales, firmly clinging to the sebum in the follicle; that there is no loss of substance about the follicular mouth; that there is no swelling or infiltration, of the adjacent skin.

From *psoriasis* it can be distinguished as follows: in infants psoriasis is not seen; in adults, psoriasis preserves the *circular form of its masses of scales*, so that the borders of such patches are markedly semi-circular; furthermore, psoriasis attacks the scalp secondarily; that is, it is first seen on the legs and arms, their extensor surfaces.

From *pemphigus foliaceus* it can be distinguished by remembering that in Seborrhœa there is no excoriation; that there is no hanging of large lamellæ of detached epidermis, and that there is never any raising of any little blisters upon the skin (*bullæ*), which afterwards become purulent and then dry down into yellow crusts.

Treatment. As a rule you can pretty confidently expect to cure this disease, especially in children, and in cases connected with menstrual derangements. The syphilitic and aged cases, are less amenable to treatment, though all these rebellious cases can be materially benefited.

The first step in the treatment of a case is to have the scales and crusts of sebum completely removed, and with as little irritation to the scalp as possible. This can be best done by soaking the diseased portion in free applications of sweet, or cod liver oil. When the crusts have been sufficiently softened by this process—it usually takes some twelve hours in inveterate cases—the whole can be washed off with ablutions of warm water and Castile soap. In the milder cases this treatment, combined with some mild astringent wash to the scalp, as cold green tea, or four or five grains of tannic acid to the ounce of water, will be all that is required. Should, however, the crusts return pretty freely, after this treatment, then something stronger may be needed in the line of treatment. Probably an alkaline wash stronger than the one of Castile soap may be beneficially applied at times, as for instance that made from

potash soap (*sapo viridis*) or green soap. Ordinary "soft soap," when made from clean fat, might be substituted for the "green soap," which is the potash soap of the pharmacy. A more elegant preparation of the "green soap" can be made by combining it with cologne water, as, for instance, the following formula:

- R. Saponis viridis (green soap), ℥ij (two ounces).
Aquæ cologniensis (Cologne water), ℥ij (two ounces).
Misce et cola (mix and strain).

This preparation can be applied to the diseased surface of the scalp, rubbing it in briskly for a few moments, then washing it out thoroughly with warm water, following with a douche of cold water, to constrict the over-distended sebaceous follicles. The officinal unguentum zinci oxidi (oxide of zinc ointment) or unguentum acidi tannici (tannic acid ointment) of the pharmacy may then be applied, to farther control the infiltration of the skin and follicles. If there should be much infiltration, then the officinal unguentum iodinii compositi (compound iodine ointment), or the unguentum hydrargyri iodidi rubri (red iodide of mercury ointment), might be advantageously employed; or, if preferred to be used in the liquid form, the following wash of mercury might be ordered to be used once or twice a day:

- R. Hydrargyri chlo. cor. (corrosive sublimate), grs. ij (two grains).
Aquæ destillatæ (distilled water), ℥ij (two ounces).
Misce (mix) S. POISON.

A wash might also be employed of the persulphate of iron, for a strong astringent, using a drachm of Monsel's solution to the ounce or two ounces of water.

As the constitution may be at fault in many cases of Seborrhœa, it is well to look to that, and in strumous cases cod liver oil, combined with iron, the hypophosphites, arsenic, etc., should be ordered; the first two, oil and iron, in some form being indicated in most cases. The oil can be obtained at the shops

pleasantly emulsified; that with the extract of malt being one of the most useful combinations, especially if any dyspepsia be lurking about the individual.

CORNUA HUMANA—(Human Horns).

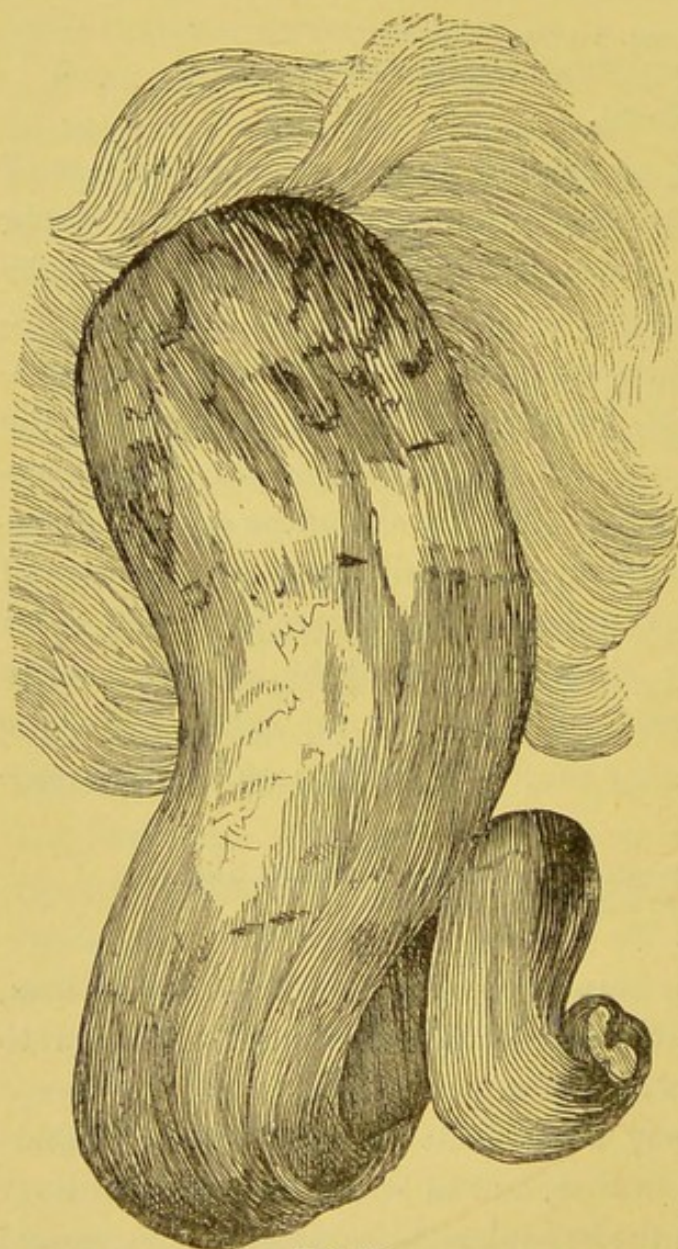


Fig. 25.

Description. Closely allied to the subject-matter that we have been considering, is the growth of horn-shaped substances from the hairy and mucous portions of the body.

I have seen these horn-like excrescences several inches in length. One old lady that I now recall, had one projecting from above her left eye to the length of three inches. In the British museum there is one preserved that is two and one-half inches in circumference and eleven inches in length.

Figure 25 gives the representation of one that was six and one-

half inches in length, and which grew from the side of the head.

In an old book, by Increase Mather, the following paragraph is found:

“A man has an horn growing out of one corner of his mouth, just like that of a sheep, from which he has cut seventeen inches, and is forced to keep it tied by a string to his ear, to prevent it growing up to his eye.”

An old French lady is reported (1776) as having had a pair of horns, and when broken off, by accident, gave one to the king of France—surely a royal gift! This one was two inches in circumference and nine inches in length! She had shed hers three different times, the same as do deers theirs in their moulting season.

In the *New York Repository*, for 1820, a case is given of one that was fourteen inches in circumference at its base and had three branches to it. This is, without doubt, the largest ever recorded.

In 1844 Erasmus Wilson succeeded in making a collection of ninety cases of these excrescences (*vide Med.-Chir. Trans.*, vol. xxvii), and found that forty-four occurred in females and thirty-nine in males; the other seven were not sexually stated. Out of this number forty-eight were found on the head, four on face, four on the nose, eleven on the thigh, three on the leg and foot, six on the back, five on the glans penis, and nine on the trunk of the body.

Old age seems to be a predisposing cause, all the cases I have seen have been in individuals passed middle life. Of the forty-eight cases above recorded as occurring on the scalp, thirty-eight were above middle life, several were over seventy, and one was ninety-seven. Out of the lot of ninety, three were on young persons and three were on infants.

Causes. The predisposing cause I have just given, viz., old age. If there be any other special cause it must be in a

perverse and increased secretion from the sebaceous follicles and glands. Any continued irritation or injury seems also to be an exciting cause for their growth; suppressed menstruation has also been looked upon as another exciting cause.

On examination it has been found that the horns closely resemble, chemically, as well as in their looks, the horns of animals, and the spurs of fowls. Their roots consist of a vascular, lardaceous tissue, similar to the matrix of the nails; sometimes, however, they seem to be the growth of the papillæ. A great number of epithelial elements, similar to those of the scarf-skin, are found in them; the cells, however, are somewhat larger and possess nuclei. Their growth is quite slow; from three to eight years is usually the time they are in process of cellular construction.

Treatment. There is but one measure that should be commended, and that is the knife. The diseased gland and follicles should be thoroughly dissected out and then there will be no return of the excrescence. Sometimes it is necessary to paint the cyst wall, or matrix, thoroughly with tincture of iodine, in order to be sure of destroying all perverted cell-action of the formative membrane, or hypertrophied papillæ.

CHAPTER XVI.

ASTEATODES AND ALLOSTEATODES.

SCANTY, AND ABNORMAL FOLLICULAR SECRETION.

Synonyms. Morbus pilaris; Xerosis; Xeroderma.

Derivation. From the Greek α primitive, that has the influence of a negative, and the Greek $\sigmaτέαρ$ meaning fat; altogether, *no fat*, or a deficiency of the sebaceous secretion. See page 185 for Allosteatodes.

Cause. It is impossible to assign just the influences that will produce this trouble, the effect of which is to render the skin harsh and dry, liable to crack, as well as to prevent the issuing of the hair shaft from its follicle. From the fact that the secretion is scanty, it is extremely liable to crust over the mouth of the hair follicle, and thus prevent the hair's exit. The result of this is to make a bending of the point upon its shaft, and, as the hair continues to grow, a redoubling of the shaft occurs again and again, until quite a lengthy hair may be coiled up in the little follicle, thus causing a slight swelling, or pimple, just beneath the scarf skin where this occurs. More or less itching, if not positive localized inflammation, is sure to follow this imprisoning of the hair within its follicle.

As a rule it is seen in badly nourished people, the aged, and in children affected with hereditary syphilis. You can frequently see it upon the hands of washerwomen, cooks, and the like, who have their hands much in soapy water, which neutralizes, at once, the softening influence of the sebaceous matter secreted on them. On the head, of course, these causes cannot exist.

The more severe disease xeroderma, of Fox and Wilson,

hardly belongs to this treatise, though the complaint here considered seems only to differ from it in degree. There is the same dryness of the skin, only it is more marked in xeroderma, and a positive thickening of the epithelial elements takes place; then too, the disease xeroderma is more general over the body, and is much more rebellious to treatment.

Treatment. Usually this is very simple. Nature suggests her own remedy at once—the finger nail. As soon as the cap is removed from the follicular mouth, the imprisoned hair at once escapes, and hence the irritation is removed. A free use of soap, occasionally with the brush mornings, will more easily overcome the obstruction. See the chapter devoted to the hygienic treatment of the hair. If, however, preternatural dryness should still remain, a few drops of cocoa oil, coco-oleine, rectified beef's marrow, or bear's oil, may be used as a scalp-dressing till the glands are brought into a more healthy state. An ointment, as follows, may prove of much service :

R. Ung. hydrargyri nit. (citrine ointment), 3 iij (three drachms).
Ung. benzoini (benzoated lard) 3 v (five drachms.)

M. S. Apply twice daily.

The dryness of the skin can be best overcome by the use of some oily dressing. The camphor ice, cold cream, etc., of the shops, answering the purpose very well for the hands and body. For the scalp, the dressing mentioned on page 125 might be employed.

The disease

NARCOSIS FOLLICULORUM

is a chronic inflammation of the hair follicle, and is so intimately connected with Asteatodes that it may be as well considered here, as an asteatodic result certainly follows the course of the complaint.

Diagnosis. Frequently the presence of gray hairs, in circumscribed spots, will be the first thing that calls your attention to

the complaint; this may or may not be followed by the falling out of the hairs at these points. The hair always has a floury or powdered look. It is impossible to keep the hair cleansed of these little whitening particles; if the brush is used too vigorously, then the hair comes out in handfuls. The dried sebaceous material can be seen around the follicular mouths, the scalp and skin also partaking of a common harshness and dryness. From the inflammatory process going on within the follicle, the normal secretion of the sebaceous glands is interfered with, and hence the oleaginous material is not thrown out in proper quantities to lubricate the shaft and scalp. It is most frequently seen in women and children. In the former it is undoubtedly induced by the unhygienic dressings that the hair is subjected to, such as close crimping, curling, etc.

Treatment. If any of these "close crimpings" have been indulged in, a more rational method of dressing should be at once adopted. All other treatment necessary will be found under the head of Asteatodes.

ALLOSTEATODES.

Derivation. From the Greek ἄλλος, meaning other, and στέαρ, fat; altogether, *other fat*, or an altered condition of the sebaceous secretion.

Diagnosis. This is very easy, as it depends upon the altered color of the normal secretion of the hair follicles. When *yellow*, it is called *seborrhœa flavescens*; when *black*, *seborrhœa nigricans*. When the secretion is altered in quantity, it may be either a case of Asteatodes, when it is less than normal, or Seborrhœa when it is secreted more profusely than is normal.

Treatment. This is similar to that already detailed for Seborrhœa, or for Asteatodes, according to which of these diseases it may most resemble.

CHAPTER XVII.

ECZEMA.

MILK CRUST.

Synonyms. Scall; Tetter; Dandruff.

Derivation. From the Greek *εκ-ζεῖν*, meaning to boil out, to effervesce; is an eruption of small vesicles upon the skin.

It will be noticed that dandruff is again spoken of because it is one of the most prominent symptoms of the complaint, though dandruff proper is far from being similar to the rebellious disease under consideration.

Causes. Similar to that of dandruff and seborrhœa. Usually the Eczema follows a prolonged attack of dandruff or seborrhœa; the two former, through personal negligence, almost surely lead to the latter. The *Plica Polonica* of the Poles is an exaggerated form of this personal negligence of an Eczema of the scalp. Formerly it was considered a disease *per se*; but it is not so; the knotted, matted and filthy condition of the hair being due to the fact that the scalp and hair are not cleansed of the discharge from the Eczema, or seborrhœa, or both combined; this accumulates in quantity, retaining with it the dust, filaments, etc., from the air and clothing of the patient, and so gradually hardens down into a mass of decomposing, gluey-like, foully-smelling material, imprisoning the hairs with it. Of course combing then is out of the question; and so this state of affairs goes on from bad to worse, the mass furnishing harboring place for lice and spores of fungi, until a loathsomeness is developed that one would hardly believe possible among civilized races.

Though the Poles have furnished the generic name for the disease, it is by no means confined to them. All the nations of northern Europe, whose habits are not overcleanly, are frequent subjects of the complaint. I have also seen it in our American families, where the charge of uncleanness could hardly be brought upon the parents. The family physician, not understanding the nature of the trouble, had forbidden the proper use of those means calculated to keep the scalp and hair cleansed, and the result was a condition of affairs that would astonish one. Of course hair in this matted condition only keeps up and intensifies the irritation of the skin, and finally induces, from this irritation, the death of the hair itself.

Diagnosis. Eczema is a vesicular disease, accompanied by more or less infiltration or swelling of the diseased integument; gradually the vesicles or papules become hardened, and crusts or scales of a yellowish hue are thereby formed. When these crusts are removed a red (inflamed) base is seen, which may be either dry or moist; the former giving us our "dry tetter," the latter our "wet tetter." The disease, in all its stages and forms, is accompanied by almost intolerable itching, or burning, or both combined. Attempting to ameliorate this symptom by scratching is only to enhance the trouble.

To contra-distinguish this complaint from pityriasis or seborrhœa, see the chapters upon these topics. As a rule, however, the three diseases are united in the one individual at the same time, hence the symptoms of the three will be hopelessly commingled. The plica Polinica is but an advanced and neglected stage of Eczema, and is sufficiently easy to be diagnosed by the description of it just given.

Treatment. Usually the complaint is a curable one, though the relapses are frequent, and it is oftentimes rebellious against the usual line of remedies used in these cases. As a rule, how-

ever, it occurs in weakly, strumous children, hence a constitutional treatment of cod liver oil, iron, iodine and arsenic is demanded; the two former especially being indicated, and they can be pleasantly combined in the form of an emulsion, so that the young will make but little objection to taking them. If the bowels are not regular, attention should be paid thereto, giving oil, or epsom salts, as a cathartic, and the solution of citrate of magnesia, mornings, as a laxative, till the tendency to constipation be overcome. Oftentimes the torpor is due to a lack of proper nervous stimulus to the coats of the intestines; in these cases the following will be found of benefit:

- R. Tr. nucis vomicæ (tinct. nux vomica), ʒj (one drachm).
Tr. belladonnæ (tinct. belladonna) ʒss, (half drachm).
Fl. ext. ergotæ (fluid ext. ergot), ʒj (one ounce).
Fl. ext. glycyrrhizæ (fluid ext. licorice), ʒiv (four ounces).

M. S. Give of this a teaspoonful after meals to a child ten years of age; one-half teaspoonful to a child of five years of age.

If the digestion is not good, this should also receive attention. If acidity prevails, it should be corrected by some of the alkalies; as harmless as any is the ordinary baking soda, giving as much as you can hold on the point of a knife (two or three grains), to a child of five years, after meals. If dyspepsia, or non-digestion of food is present, a three-grain powder of lactopeptine, or five grains of saccharated pepsine, combined with the soda, will be all that is usually required for a child of five years.

Local Treatment. Here there is also quite a diversity of plans to be followed; but I have usually found a mild treatment superior to a harsh one. The following is what I have usually adopted, and, from experience, I have had no reason to change it very materially.

Night and morning, after cleansing the scalp thoroughly with Castile soap-suds, and rinsing with warm water, I apply

some mild ointment, the ceratum simplicis (simple cerate), or even oleum olivæ (olive oil), for the first few days, till much of the severe inflammatory action is relieved; then, after this, I make use of the following unguent, applying it pretty freely, after each morning and evening scalp-washing:

- R. Picis liquidæ (tar), ʒj (1 ounce).
Ol. betulæ albæ (oil white birch), ʒj (1 drachm).
Adipis (lard), ʒj (1 ounce).
Cerati simplicis (simple cerate), ʒj (1 ounce).

M. Ft. unguent.

The amount of tar is variable; in some very severe cases I do not use as much; in milder cases I use more in the same prescription. Constitutions seem to be differently affected by the tar and white birch oil, hence you have to watch it pretty closely, for a day or two, and if it occasions too much irritation, then the amount used in the prescription must be materially lessened. But usually the cases will bear it well in the proportion given. It smarts, if the skin be much broken, for the first few applications, hence, in young children, you have to take this into consideration; but this soon passes away. The relief from that severe, almost intolerable itching is so marked, on the first application, that it goes far to assuage the little patient's resistance to subsequent applications. You need not be afraid to put it well over large tracts of the inflamed scalp, indeed over the whole head, if the skin be not much broken, fissured or cracked, in cases that will bear the tar, so far as fearing any poisonous effect from the tar is concerned. I have frequently applied it over nearly the *whole body* in children afflicted with a general eczema, and with no deleterious consequences, save that of momentary pain at the instant of application.

In the great majority of cases this treatment for a few

weeks, ending up with a milder ointment of the tar and white birch oil, and finally with the simple cerate or oil again, will be all that will be required; especially when it has been accompanied with the proper internal use of tonics and blood-building remedies. It should be borne in mind that the ointment will stain the clothing; hence I always advise cloth caps to be worn over the head, day and night, and a piece of oil silk to be used to protect the pillow. In some severe cases an oil silk cap will be found of service in depleting the infiltrated corium, by the continual sweating it keeps up; this is especially useful at the beginning of the treatment, especially if the crusts are hard, and firmly attached to the hair and scalp. Soaking them in oil, as recommended in the chapter on seborrhœa, combined with the oil-silk cap, will be found oftentimes useful.

You should use only the gentlest force, at first, in detaching the *débris* that gathers in the form of crusts and scales upon the head in this disease; let the oil and soap rather dissolve it down, then rinse it all away with effusions of water. The scalp should know now experimentally of the "milk of human kindness," if it never knew of it before.

PLICA POLINICA.

In case Plica Polinica should be a complication, the best way is to clip all the hair involved off close to the scalp, so as to remove the whole mass of decomposing sebum, etc., at once. By using sharp scissors this can be done nearly as closely to the scalp as by razor. But by no means have this shaving attempted, as it only afflicts needless pain upon the patient, and you gain nothing over the close and careful scissoring. Bear in mind you have an intensely inflamed surface to deal with. Of course, if the microscope shows the hairs and their follicles to have become parasitically infected, then, for a time, harsh

measures, as epilation, and the application of parasitocides is indicated, and your treatment must be varied accordingly. But these, so extreme, cases are rarely met with in our country, hence the more conservative treatment is usually indicated.

Sometimes, if the case is quite rebellious, an alternative treatment is called for. It is well known that medicines, given internally, will, when long continued, apparently lose their customary efficacy; in the local application of them the same phenomenon is noticed, hence by alternating the above tar and white birch oil ointment, with one of astringent properties, much time may be saved. Thus the officinal ointment of tannic acid, or one of gallic acid, of the strength of a drachm of the acid to the ounce of simple cerate, combined with the glandular alterative, iodine, in the amount of ten or twenty grains to the ounce, may be employed. The officinal white precipitate ointment (*unguentum hydargyri ammoniati*), or the citrine ointment (*ung. hydarg. nitratis*)—this last diluted with simple cerate, if much surface is to be covered—will also be found of use to stimulate the cutaneous glands. Red precipitate ointment (*ung. hydarg. oxidi rubri*) also diluted, say with seven parts of lard, will be found of service if there is but little abrasion of the cuticular surface. After employing these various “resolving” ointments for a while, then return to the tar and white birch oil ointment, and it will seem to work with new efficacy.

Cases may be found where, from some idiosyncrasy, this treatment may even prove too irritating, and so defeat the result sought. These cases are, however, rare. When such are found, after the crusts are thoroughly removed by the oil inunctions, a hot water treatment (being careful to always use soft water, as hard water contains substances irritating to an eczematous surface), may be for a time instituted; that is,

keep the parts well fomented for a few days, till the more acute symptoms are abated. To these hot (100° to 112° Fahr.) water dressings, a few grains of alum, sulphate of zinc or copper, or acetate of lead may be added; say, not to exceed the strength of from ten to fifteen grains to the pint. Sometimes a little bicarbonate of soda, added to the water, will be found a grateful application. Then an ointment of oxide of zinc (the officinal ung. zinci oxidi) may be applied, or the common linimentum calcis, made of equal parts of lime water and linseed, or sweet oil. After a time stronger astringents may be used in the ointment base. If the pain is, at any time, very severe, the sulphate of morphia may be incorporated in the body of the ointment or wash.

Powders will sometimes be found of service in these cases; though they are open to the objection of aiding in the formation of crusts. These are the simple lycopodium powder, oxide of zinc, starch, etc.; or these various powders may be combined with camphor and some astringent, as:

- R. Camphoræ (camphor), ʒ ss (half drachm).
 Alcoholis (alcohol), q. s. (sufficient quantity).
 Zinci oxidi (oxide of zinc), ʒ j (1 drachm).
 Amyli (pure starch), ʒ j (1 ounce).

Misce (mix) S. (label). Dusting powder.

When glycerine is not irritating to an individual's skin, the following lotion will be found an eligible preparation:

- R. Acid hydrocyanici dil. (dilute Prussic acid), ʒ j (1 drachm).
 Bismuthi subnit., ʒ ij (2 drachms).
 Aquæ rosæ (rose water).
 Glycerinæ (glycerine), aa. (of each) ʒ ij (2 ounces).

Misce (mix.)

The green soap lotion spoken of in the chapter on Seborrhœa will also be found of benefit in certain rebellious cases; especially those of long standing, where there is much cellular infil-

tration of the skin. Sometimes a blister of cantharides plaster, applied to a thickened and indolent eczematous scalp-surface, will be found to increase its healing wonderfully; of course the hair must be closely shaven in these cases, and the blister must not be left on long enough to destroy the papillæ of the hair. Carbolic acid, the strength of one drachm to the ounce of simple unguent, will also be found an efficacious application. I have sometimes combined it with the tar ointment, in place of the white birch oil spoken of previously in this chapter.

All of these cases of Eczema of the hairy surfaces will be found to tax the patience of both the patient and physician, from the frequent relapses to which they are liable, unless the time of treatment is prolonged beyond the time of absolute healing; hence it is well to keep pretty close watch of the patient for several weeks, or months even, after the disease has, to all appearances, been successfully overcome.

CHAPTER XVIII.

SYCOSIS MENTI, ACNE AND RUPIA SYPHILITICA.

FALSE BARBER'S ITCH.

Synonyms. Mentagra, Sycosis barbæ, Acne mentagra.

Derivation. *Σύνωσις* meaning a fig-like excrescence, and *menti* "of the chin;" a fig-like excrescence of the chin.

Cause. This, at present, is not definitely known. Hebra thinks it may be due to a premature development of a new hair in the follicle before the old one has fallen out. Other dermatologists look upon it as caused by a disproportion in the diameter of the hair-shaft and the follicle, which, by its over-distention, causes inflammation of the follicle. There is no doubt that prolonged exposure to heat or cold, combined with the irritation from shaving with dull razors, has much to do with the development of this disease. A dull razor is, perhaps, the commonest cause of all, for, drawing inordinately upon a hair of the beard, it will partially loosen the hold of the root from the papilla, thus allowing a minute extravasation of blood, and inducing, consequently, a circumscribed inflammatory action at the base of the follicle; this repeated frequently, as the shaving is demanded, finally leads to the inflammation of the whole follicle and the contiguous integument.

Diagnosis. A pustular inflammation of the hairy portion of the face, of the eyebrows, and of the hairy mucous membrane of the nose, with a hair piercing each pustule, are its anatomical characteristics. It begins with a feeling of fullness and of heat in the parts, soon followed by pain. The root of a hair, from an

affected follicle, when drawn out, is found swollen from the amount of pus-cells infiltrated in its fibrous and medullary portion, and also from over-supply of hair cells, formed by the irritated papilla through excess of blood supply. At first this condition is confined to small and sharply circumscribed portions of the face producing hair; but as the disease advances, instead of single pustules here and there, with reddened and infiltrated bases, the nearest ones coalesce so that you may have three or four follicles partaking in the formation of a common abscess. The discharge at this time is apt to be profuse and somewhat watery, the pus being quite thin, in this respect resembling an eczematous discharge, although never so abundant as seen in this last-mentioned disease. From this discharge crusts are formed, the watery element being evaporated, which give a loathsome look to the party afflicted.

It will be necessary to distinguish this complaint from the parasitical one, which it quite closely resembles; this, of course, can only be done by the use of the microscope. If the fungoid growth is found, it settles the diagnosis at once. For farther points of difference between the *parasitical* and non-parasitical sycosis, or mentagra, the reader is referred to Chapter XXIII.

Eczema is another disease with which this complaint might be confounded. But in eczema you have that profuse watery discharge, with intolerable itching, to help in a differential diagnosis. When, however, the patient is seen only in the "crusty" stage of Sycosis these symptoms are not so prominent; you have to rely on the history of the case somewhat, also remembering that eczema extends to hairless portions of the face or neck, whereas Sycosis does not. Still, there are stages of the complaint when the two diseases are so closely commingled that it is impossible to make a distinction between

them, the eczema following closely upon the Sycosis, as a result of its ravages. The treatment, however, would be almost the same in these aggravated cases, hence an error in diagnosis here, so far as benefit to the patient is concerned, would be of no special moment.

Acne is another one of the diseases with which this trouble may be confounded, in its earlier stages; but when it is remembered that acne is a much milder disease, is seen mostly in patients at the age of puberty, and that there is much less discharge, and much less skin infiltration, it can be readily distinguished.

Impetigo is another so-called disease that is apt to be mistaken for Sycosis. Impetigo does not produce baldness as does Sycosis, and then, too, it is rarely seen on the face, then the crusts are thin, soft and readily loosened from their base, which has not that "eaten" appearance of Sycosis. The pustular stage of eczema is really what has been denominated impetigo by most authorities.

Rupia syphilitica is another disease to be differentiated; a history of previous exposure to the specific contagion, with secondary symptoms arising therefrom, will be sufficient to put one on his guard in making a distinction between the two. The crusts in rupia are much thicker, conical in fact, and when removed have a specific ulcer at the base. There is not so much general irritation of the skin, swelling and engorgement, as in the complaint in question.

Treatment. The old doctors, Aëtius, Paulus Ægineta and Celsus, recognized this disease, but their method of treatment was not one to be generally commended.

The first thing to be done is to remove the crusts. This is best accomplished by macerating them in olive oil, and then remove by washing with soap. This done, the hairs should be

pulled out from the diseased follicles, for when diseased the hairs themselves become sources of irritation, from their increased size, and so but "add fuel to the flame." It is usually not a very painful operation to remove the diseased hairs from their follicles, as nature has already, through a process of suppuration partially, if not entirely, detached them from their papillæ and inner follicular membrane. A pair of tweezers is the handiest thing to use in this little surgical procedure.

Sometimes patients may object to this, on the ground of fear that the hair will not be renewed. But they can safely assure themselves that this is the only way to preserve the growth of their hair, for in this operation you remove, as in parasitically diseased hairs, only diseased tissue; the papillæ, or hair-building portion, remaining alive and intact, unless the inflammatory process has been of so long standing as to destroy both the hair and papillæ.

After removal of the crusts and diseased hairs, and much swelling or infiltration is noticed in the skin, a short period of poulticing will be in order, the cataplasma lini (ordinary linseed meal poultice) being as good as any. The ordinary applications to be made afterwards being some sulphur, iodine or mercuric ointment; thus:

- R. Sulphur precip. (flowers of sulphur), ʒj (1 scruple).
Iodinii (iodine), grs. x (10 grains).
Ung. zinci oxidi (oxide of zinc ointment), ʒ iss (1½ ounces).

M. S. Apply twice daily to the affected parts.

Or—

- R. Hydrargyri ox. rub. (red precipitate), grs. viij (8 grains).
Cerati simp. (simple cerate), ʒj (1 ounce).

M. S. Apply twice daily.

Should the parts not readily respond to this treatment, it would do no hurt to try the parasitical one, for fear that the

disease really might have the cryptogam as its cause. In this case the sulphurous acid application, described in the chapter devoted to Tinea, or parasitical, Sycosis, would be the best to use.

As the disease advances toward cure milder ointments might be used, as the unguentum diachyli albi, or unguentum zinci oxidi (oxide of zinc ointment), spread to the thickness of a knife blade on a piece of old linen, and then applied.

Should the general health suffer, then this should be attended to as the symptoms may demand.

ACNE.

There has undoubtedly been a stereotyped error in the spelling of the name of this disease, as it comes plainly from the Greek *ἀκμή* (acme); the old Greeks thought the disease occurred only at the *acme* of the system, hence its name.

Diagnosis. This disease is an inflammation of the sebaceous and hair follicles, caused by the retained sebum, or proper excrementary material of the follicle. We can have *three* stages of this complaint:

1st. That of simply retained secretion with no inflammatory action, a *comedo* or little plug then being formed. It is then known as *acne punctata*.

2d. That of inflammatory action in the follicle, but with no infiltration or swelling of the integument. It is known as *acne vulgaris*, or *acne simplex*.

3d. That of inflammatory action in the follicle, *with* infiltration and swelling of the integumentary structures. It is known as *acne indurata*.

These three stages of acne may be seen upon the face of the young adults of either sex. It commences about the time of puberty, and may be quite rebellious to treatment. It is seen

more frequently upon the breast and back than upon the face, and is rarely upon the latter without having previously been upon the former. The reason that it attacks those just reaching puberty is that at this time of life the hair and sebaceous follicles are in their most active condition. The young man, who is most frequently afflicted with this cosmetic trouble, is then just "growing his beard," one full of promises, may be, so it is kept continually encouraged by the irritating razor. Irritating cosmetics, as face-powders, face-washes, etc., are also equally common causes. So, too, sudden changes from a high to a low temperature, or *vice versa*. The hyperæmia induced by this irritation only helps on the active state of the already over-active glands, and soon the sebaceous material loses its proper consistency and it is retained. Meanwhile the sebum-forming glands are still throwing out an abundance of excretory material, through the increased afflux of blood to the parts, and so a bad matter is constantly made worse, until, finally, a small point ulcerates, and this allows a free discharge of the retained, and often decomposed, fluid. When the disease becomes quite general over one portion of the body, the points of inflammation coalesce, and you get the *indurated* condition—*acne indurata*.

In these last two stages the disease much resembles Sycosis Menti, just described, and impetigo. For discussion further upon this you are referred to page 196. It may be well to mention again that acne is very rarely seen in those wearing beards; it is before the beard begins to be of much growth that it is chiefly witnessed.

Treatment. For the treatment of the second and third stages the reader is referred to that given for eczema, and to that recommended for Sycosis Menti. For the first stage to that given for seborrhœa, which the disease greatly resembles, and

is so classed by some authors. It may be well to add that when these hard pimples form they should be opened with a fine cambric needle at the top, so as to allow the escape of the imprisoned sebum; after this is done, washing with soap, with a shampooing process, followed by brisk rubbings with a coarse towel, will be found to favor a free discharge of the obnoxious contents of the follicular cyst, thus saving an ulcerative process (one leaving little pits or scars) upon the face. As a lotion some slightly astringent one, as the following, may be recommended:

- R. Acidi tannici (tannic acid), ʒ iv (four drachms).
Glycerinæ (glycerine), ʒ j (ounce).
Aquæ rosæ (rose water), ʒ j (one ounce).
Spr. myrciæ (bay rum), ʒ j (one ounce).

M. S. Use freely.

As a dressing at night, the officinal oxide of zinc ointment (unguentum zinci oxidi) might be smeared over the face, or this ointment combined with some astringent, as the following:

- R. Unguenti zinci oxidi, ʒ ij (two ounces).
Acidi gallici (gallic acid), ʒ ij (two drachms).
Potassii iodidi (iodide of potash), ʒ ij (two drachms).

The diet should be seen to in most of these cases; an abstemious one being generally followed. Cathartics, among the best being the Hunyadi water, or the ordinary epsom salts, taking a dessertspoonful in a half teacup of cold water before breakfast, and diuretics are also required in a certain class of plethoric cases.

IMPETIGO.

Diagnosis. What is ordinarily known as impetigo is really, in most cases, but a pustular form of eczema; yet as most authorities upon skin diseases have retained the name, I have also done so. As to the diagnosis and treatment of the trouble

sufficient information has been given in the chapters upon Eczema and Tinea Sycosis.

RUPIA SYPHILITICA.

Diagnosis. This complaint, when fully developed, can hardly be confounded with Sycosis. The scales, or crusts, are too isolated, and are, also, so prominently conical; then, too, they are found on other portions of the face than where the beard is found; neither are they confined to the hair follicles, when found among the eyebrows or beard. The history of the patient will plainly point to an infection months before. The treatment of this complaint is not in place in this treatise, and should be undertaken, as indeed all the severer forms of the diseases of the hairy portion of the head, only by a competent practitioner.

CHAPTER XIX.

DERMATOPHYTIC DISEASES IN GENERAL.

VEGETABLE PARASITIC DISEASES.

Derivation. The term dermatophytic, as used to denote vegetable parasitical skin diseases, is derived from the two Greek words, δέρμα, *skin*, and φυτόν, *plant*; meaning *skin-plant*, in its noun-adjective use.

Description. Chemically we find that these fungi contain no starch or chlorophyll, but that they abound in nitrogenous elements. This is characteristic of all mycological growths. The algæ, their allied vegetable forms, contain a substance that changes to blue on the addition of a soluble iodide, thus showing the presence of a substance similar to starch.

They are all microscopical growths, some of them needing the highest powers to bring them out well. They are found to consist of:

1st. The *mycelium*; these are fine, hair-like filaments that form, as it were, the roots of the fungus, as represented in the cut. Sometimes these are pointed, resembling more a long, narrow-linked chain. The contents of these mycelial threads are generally granules and cells, though usually these are not very abundant. The threads interlace each other frequently, so much so that it is hard to follow a single one, for any great distance, without getting it confused with its fellows. They are usually about

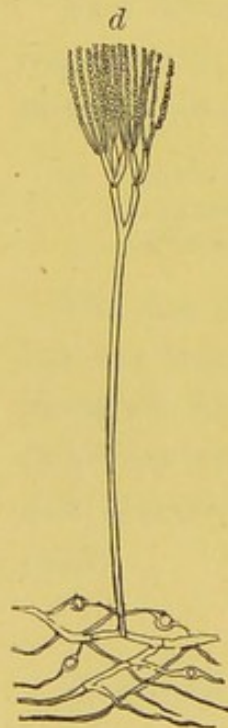


Fig. 26.

the diameter of a red blood-corpusele. They are also fre-

quently subject to quite prominent enlargements, as is seen in figure 26. These bulb-like growths on the mycelial threads are known as *macro-conidia*.

2d. The *hyphen*; this is an upwardly-shooting growth from the mycelium, which it resembles in size, and every way, save that the jointings are, at times, more prominently marked. It serves the purpose of a stem on which the conidia may ripen.

3d. The *conidia*; these are the bodies that are generally called spores; they are usually seen united together in chains (*sporidia*), as at *d* in the cut; though when fully "ripe," each becomes detached from the other. They are very small, usually not over the one-four-thousandth or the one-five-thousandth of an inch in diameter. Each spore has a composite structure, having outer and inner coats inclosing a fluid body. Frequently they may show a nucleus and granular matter; sometimes they may be constricted at the middle. Though these may be popularly called seeds, yet they are not such in a strictly scientific sense; they are more properly *bulbs*, as they are not produced by any sexual function, there being no sexuality, apparently, in the plants. Being so small, they are very light and float easily in the atmosphere. This is the chief form of contagion for these cryptogamic growths. Air from a room where many favus patients have congregated will yield these sporules in abundance; hold a piece of cold glass — so moisture will condense upon it—for a short time above the head of a patient afflicted with these parasitic diseases, and, on microscopical examination, it will be found to have been frequently visited by these cryptogamic bulbs.

4th. *Stroma*; these consist of a large number of very small cells, much smaller than the conidia, with which the ripened conidia and macro-conidia seem to be filled. Leastwise, I look upon them as being the fruit of a ripened conidium, and

being discharged from the same through bursting of the parental coatings.

Growth. These plants are produced by the mycelial threads, or conidia, getting upon fertile ground; by this I mean upon persons living in dark, damp dwellings (for heat and moisture are the two prime factors favoring mold-growths of all kinds), and whose habits are not over-cleanly; also by getting upon the bodies of persons whose health is broken down, the skin thereby being impaired, and hence more easily penetrated by the mycelial threads sprouting from the conidia, or from the transplantation of the threads themselves. The plants also thrive upon abraded surfaces of persons in good health, the heat of the body, moisture from the serum poured out, and the easy access to a hair follicle, through the denudation of the scaly layer of the epithelium, favoring the cryptogam's speedy growth.

The reason why more people are not afflicted with these parasitical diseases, as myriads of spores capable of fruiting are constantly in the air of the affected regions, is that soap and frictions, from clothing and towels, and the like, are destructive to their growth, through the *mechanical* process of constantly brushing them from our bodies, and breaking off the hyphens when ready to send out their conidia and sporidia.

The disease is, then, propagated by actual contact with an afflicted individual, which results in the transplantation of the mycelial threads, conidia or stroma; or by means of the spores (conidia or stroma) in the atmosphere; or the spores being conveyed to the individual by means of the clothing.

There is another source, other than our fellow men, and our domestic animals, from which we may take these vegetable parasitical diseases, and that is from the conidia from the common mould of decaying vegetables. The *penicilium glaucum*,

or the common white mould, which is figured upon page 202, seems fairly to be the progenitor of most of our other moulds, and, when favorably transplanted to our skins and hair follicles, will develop into some one of the cryptogams which we find infesting these localities. Leastwise, the different varieties of vegetable moulds are interchangeable; the resulting variety, after transplantation, being due more to the conditions of the soil to which it is transferred than to the fungi from which it was derived. So, too, the parasites from our hair follicles, if transferred to decaying vegetable matter, will take on a form of growth characteristic of the mould fungus of the plant on which it thrives. Halliere and several others have found the parasite from favus (the *achorion Schönleini*), when transplanted to slices of apples, lemons and other succulent plants, as well as to albumen and blood, to produce the veritable *penicilium* just described. Then, too, it is well understood that several of our skin vegetable-parasites are interchangeable among themselves; hence it is no more than fair to suppose the near kinship of all animal and vegetable fungi.

Effects. The effects of these different cryptogamic growths on our bodies are specifically given in the several following chapters. In general, though, we find them producing great irritation of the skin, drying up and splitting of the hairs, or the total uprooting of them, with, finally, permanent baldness and shrinking or cicatricial hardening of the skin. Accompanying these various stages are constitutional disturbances calling, frequently, for a prolonged use of sedatives or tonics, or both combined.

Diagnosis. This, excepting in a general way, can be made only by a careful microscopical examination of some of the *débris* from the affected locality. In making this examination,

care should be used lest we be misled by some of the physiological elements to be found in the same locality.

The crust, or hair, should be placed under as favorable a condition as possible for examination. If a *crust*, a small portion should be soaked in a little ether, so as remove all the fatty particles, and then to this, after drying, add a small quantity of water, so as to soften it well down; then remove to the glass slide, and cover with the thin glass. Be as chary of manipulation as possible, for you are otherwise apt to break the mycelium and chains of conidia.

If a *hair*, it should be plucked from a diseased follicle, and soaked in ether, to remove all fat cells, then receive a washing, and then be covered with diluted liquor potassæ, so as to render the hair-cylinder transparent. It should be handled carefully, and as little pressure as possible should be used in getting it ready for the microscope.

In making the examination you have to remember,

1st. That the *conidia* may be mistaken, when seen singly, for blood discs, fat cells, the granular matter of pus, or the free nuclei of epithelial cells and the granular matter from the same. You make your differentiation by the use of *reagents*, which *have no effect upon the conidia*. Chloroform, ether, or alcohol dissolves fat cells, and render epithelium transparent. Ammonia will dissolve pus cells, and will but slightly affect the conidia, the only effect being to render them a little more transparent. Crusts, hair, fat, pus and epithelium are dissolved in a hot potash solution. Then, too, conidia are constant as to size, being smaller than a blood-disc, whereas fat cells vary a good deal in their size. The most common error will be to diagnose an epithelial cell, in a state of fatty degeneration, as a cell invaded by stray sporules.

2d. The *mycelium* may sometimes be mistaken for filaments

from the clothing, though this would be hardly possible if it were well developed. Then, too, a hair may become roughened so that one of the slivers might be, at first, taken for a mycelial thread, or a broken hyphen; then the imbrications of the hair scales, as seen on page 34, have much the appearance of mycelial threads running in a zigzag course across the diameter of the hair-cylinder. This can be differentiated by the use of liquor potassæ, which has no action on the cryptogamic growth.

3d. The *stroma*, or breeding cells from the conidia, may be present and overlooked, from the fact that a high enough power is not employed. Still, an eighth objective, with ordinary handling, will show them nicely. Then, too, they may be mistaken for fat granules; but the action of ether upon fat will be sufficient to diagnose them from the fatty particles.

Again, these, or the conidia, may be present in so small a quantity as to render the examination unsatisfactory. In this case, give the plant a little growing season, as a few days sojourn in a little glycerine and water, and then examine again. Ordinarily, it will be found to have increased rapidly in size and in the number of its elements.

Treatment. In general, we have to aim to kill the parasite, and the quickest way to do this is by the aid, in the severer cases, of strong parasitocides, preceded by epilation of the diseased hairs. This last process, the plucking out of the diseased hairs, may be objected to on the part of the patient, fearing lest they will not come in again. You can assure him, though, that all fear on this score is groundless, unless the *disease* has gone so far as to destroy the hair papillæ; in this case the hair will have already been shed.

A Russian physician, Stroganor, has paid special attention to the rejuvenation of hair, after its epilation, and these are his conclusions: 1. Hairs epilated usually break off before the

bulb is reached, and very rarely at the junction of the bulb with the papillæ. 2. When the hairs are broken off at the papillæ, that is with the bulb completely extracted, young pigment cells are found at the surface of the papillæ on the third to the fifth day after epilation, and by the end of the third to the fifth week have filled the follicle completely, but it is some time thereafter before the hair is completely formed. On the contrary, when hairs are removed, the bulb remaining, the rejuvenation is much more rapid, and if the bulb, not a portion of the shaft, is left, the process of renewal is still more rapid.

CHAPTER XX.

TINEA TONSURANS (RINGWORM OF THE SCALP).

Synonym. Herpes tonsurans.

Derivation. From the Latin *tinea*, meaning a moth or wood-worm; and, *tonsurans*, from the verb *tondeo*, meaning to clip, shave, or cut.

Description. This contagious scalp disease belongs, ordinarily, to the period of childhood. It is a local, and not a constitutional disease; hence, the health of the patient is not usually affected. As it is a vegetable parasitical disease, it must, of course, find more fertile ground for its development in those of vitiated constitution, and those dwelling in damp and not over-cleanly apartments, and whose personal habits are not of the neatest.

It is a contagious disease, spreading by contact, as well as by the means of sporules conveyed through the air. Hence, when in asylums and retreats, and boarding-schools, all the inmates are apt to be affected.

Cause. This disease is produced by the *trichophyton* ($\theta\rho\acute{\iota}\xi$, hair, and $\phi\upsilon\tau\acute{o}\nu$, a plant, "a hair plant") *tonsurans*, meaning as above given. The name was first given it by Malmsten. The filaments (mycelia) of the fungus are made up of a concatenated series of elongated cells, holding granular matter; these are very limited in number, the great bulk of the fungus consisting of spores. These exist in great numbers, and permeate the hair shaft, hair bulb, hair follicle and epidermis. The mycelial threads run lengthwise of the shaft,

displacing the fibres of the fibrous portion, and are especially prolific at the root, as more moisture is there. Conidia and spores are, then, given off profusely, and this gives the swell-

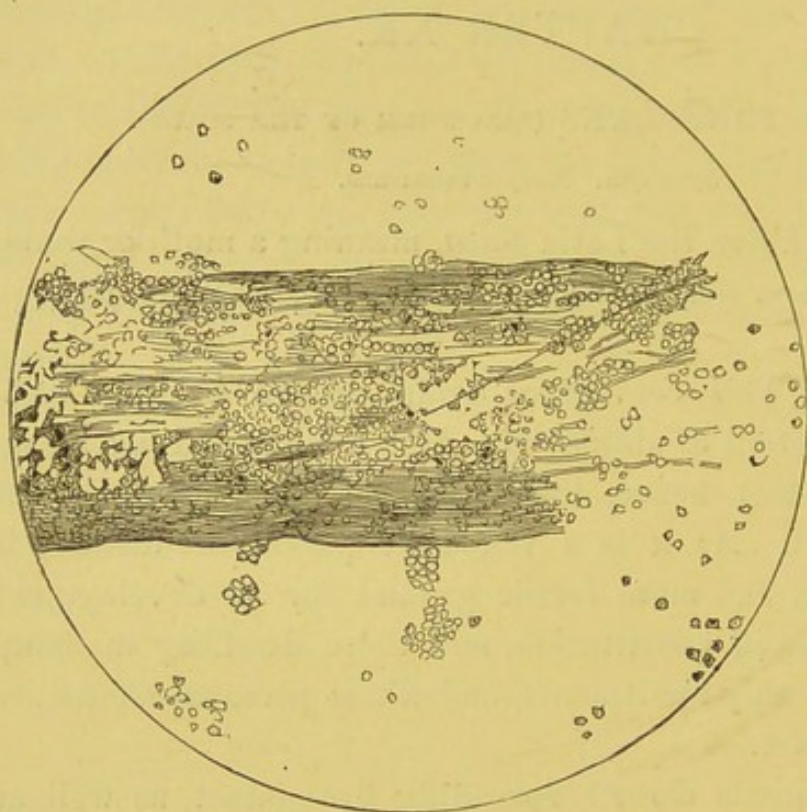


Fig. 27.

ing seen in the hair shaft of a diseased specimen.

Figure 27 gives a good microscopic view of a hair-shaft permeated with this fungus. The spores, which are seen in such vast numbers, are very minute, being but the $\frac{1}{80000}$ to the $\frac{1}{60000}$ of

an inch in diameter, and are frequently nucleated. Sometimes, when a suspected hair is placed under a microscope, the fungus is not discovered; in these cases some reagent, as a weak solution of liquor potassæ, should be dropped upon the specimen, when the sporules will become quite visible.

Figure 28 shows a hair just beginning to become affected with the disease. A mycelial thread is seen standing off from the hair bulb, surmounted by the conidia and fruiting spores, with groups of fruitful spores upon the hair cylinder itself. The "seeds" of the fungus are these little spores, which may be conveyed by the wind or clothing from one head to another;

they, the spores, lodging upon the scalp of their new victim, find means of sustenance between the loose epithelial scales of the scarf-skin, or in the hair follicles, and hence soon take root and grow.

Persons afflicted with *Tinea Tonsurans*, usually have other "ringworms" (*herpes circinatus*) on the body. The two diseases spring from the same parasite, but the conditions of its growth being different

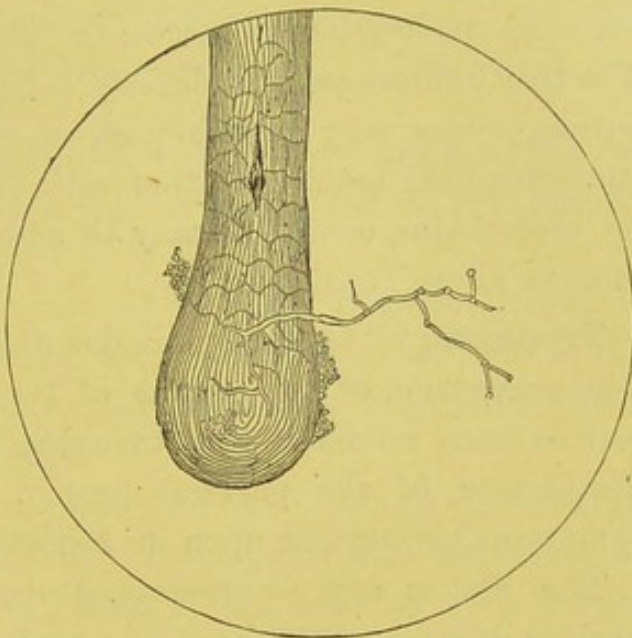


Fig. 28.

on the body, there finding a poor supply of hair follicles, etc., it does not reach so perfect, or mature, if you please, development as when on the scalp. The two diseases, though, are quite readily interchangeable.

Diagnosis. The hair, in spots varying in size from a half-inch to two inches in diameter, becomes dry and harsh, and lusterless, and finally either breaks off or falls out. On examining the skin of these bald places, a fine, branny, scaly dandruff is noticed, that is easily removed. Sometimes a slight vesicular eruption is noticed during the first stages. There is a certain amount of itching present, owing to the irritation of the continually-growing fungus in the hair follicle. Whenever, therefore, upon the scalp this "stubby" condition of the hairs, in spots, with a furfuraceous desquamation, is seen, some of the diseased hairs and epithelial scales should be at once subjected to a microscopic examination, in order to determine

positively if it be not a parasitical disease that is affecting the scalp. The stumps of the hairs left in the follicles, if bent, show no inclination to return to their ordinary erect position. The hair follicles are also slightly enlarged and pointed, and the cuticle proper may be reddened, or of an ashy gray color. If there has been much irritation with the nails, or other irritants, an eczematous condition may be added to the symptoms common to *Tinea Tonsurans*.

Treatment. This really divides itself into three heads: 1st, The prevention of the growth of the parasite, by altering the soil so as to render it less favorable for production. 2d, The destruction of the parasite proper. 3d, The relief of the symptoms consequent upon its visitation.

The *first* is met by removing the child afflicted to more healthy quarters, if his present ones be damp and musty, a condition favorable for the development of all fungi. Then give him good, nourishing food, in which fatty substances may predominate, for, as a rule, children subject to this disorder shun fatty articles of food; if need be, order cod-liver oil, sweet cream, beef marrow, and the like, for it is the pale-faced, lymphatic child that is most often subject to this parasite. Appetite is apt to be impaired, and the bowels somewhat torpid in these cases, hence these should be attended to by the administration of proper tonics. As good as any is the following:

R. Tr. cinchonæ comp. (compound tincture of cinchona), ℥ ij (2 ounces).
Syr. rhei (rhubarb syrup), ℥ j (1 ounce).
Ferri citratis (citrate of iron), ℥ ij (2 drachms).
Syr. limonis (syrup of lemons), ℥ vj (6 drachms).

M. S. Teaspoonful, in a little water, just before meals.

If digestion is impaired, a formula like the following would be indicated:

R. Elixiris pepsinæ, strych. et bismuthi (elixir pepsine, strychnia and bismuth),
 ℥ ij (2 ounces).

Extracti malti (extract of malt), ℥ ij (2 ounces).

M. S. Teaspoonful one-half hour after meals.

As the disease is communicated by "mangy" animals, if a cat or dog be about the premises that is thus afflicted, it is best to make way with it at once.

The *second* indication is met by the use of parasiticides of various kinds. But, first of all, do not trust the cure to the application of domestic remedies; more hurt, than good, arises from this treatment, as a rule.

The hair should be closely cut over the diseased portions of the scalp, and for some distance around; it is not necessary to have the scalp shaved. Epilation, if the case be very severe, should then be made of all the diseased hair stumps and hairs. If this should be so very painful, the scalp, unless badly irritated, might be lightly blistered (of course, not covering a large extent of the scalp surface at any one sitting), which will render the process more easily to be borne. It is really essential that this epilation shall be thoroughly done, in rebellious cases, as each diseased hair, or stump, is fertile breeding-ground for the spores (seeds) of the parasite. In milder, and more recent, cases this epilatory process is not so urgently indicated. Of course, from the brittleness of the diseased hairs, this will be a somewhat tedious process, as many of them will break off close to the scalp. In such cases, wait a week or so until the hair has grown out again, when renew your efforts. Even though you do not remove all the diseased hair, you need not be discouraged, for although you remove but a portion of a shaft each time, the aggregate amount of all the shafts removed lessens, vastly, the amount of diseased breeding surface left. After this process of epilation has been gone

through with, the application of the parasiticide is in order. This may be the "potash soap," previously spoken of, which may be allowed to dry on and left for a while, or vigorous frictions of the alkaline spirit of soap (page 179), might be employed, if the case be not a severe one. The mercuric bichloride wash is also another favorite with many practitioners; this may vary from four to twenty grains of the bichloride of mercury to the ounce of water, or ointment, in strength. As it is very poisonous, care must be had that it is not applied too freely to abraded surfaces.

My favorite remedy is carbolic acid, combined or not with tr. iodinii, as the case may demand, as the following:

R. Acidi carbolici (carbolic acid), ℥ss (½ ounce).
Glycerinæ (glycerine), ℥j (1 ounce).

M. S. Local.

Apply this daily with thorough friction, if need be, for a few days. If iodine is to be used, then add to the above:

Tr. iodinii, ℥ij (2 drachms).

By Tilbury Fox, the following has been highly recommended; it is known as "Caster's salve" in England:

R. Iodinii (iodine), ℥j to ij (1 or 2 drachms).
Ol. picis liquidæ (oil of tar, colorless), ℥j (1 ounce).

M. S. External.

Six applications are said to be sufficient.

As a dressing for the patient to use daily, the following might be recommended:

R. Sodii hyposulph. (hyposulphite of soda), ℥j (1 ounce).
Liq. potassæ (liquor potassa), ℥ij (2 drachms).
Olei olivæ (sweet oil), ℥ij (2 ounces).
Aquæ (water), ℥iv (4 ounces).

The soda to be dissolved in the water first, then the oil, to which the potash has been added, to be slowly added to the

water, the whole being well shaken together at the time of mixing and at each time of using. If a few drops of oil of rose, or oil of sandal wood, be added to the olive oil, it makes quite a nicely perfumed dressing. This is to be applied once or twice a day.

A weak carbolic acid solution, with a little oil added, is also a good daily dressing. The oil is quite an important ingredient, as it prevents, in a certain measure, the free distribution of the spores about the apartment in which the patient lives, thus lessening the chance of giving the disease to others.

After the fungus has been destroyed, which can only be told by the *continued* use of the microscope during the treatment (for oftentimes it occurs that a hair may outwardly be as pliant and robust as ever, yet the microscope will detect the trichophyton seeds in its roots or shafts), then you can turn your attention, if you have not already done so, to the building up of the hair-formative powers of the scalp. If there is yet much infiltration of the scalp, then the oil of birch and tar ointment (page 189) is to be applied for a while. *Friction* is an important element of cure in ringworm cases, since an infiltrated condition of the skin is often left as a result of the long continued irritation of the disease. For tonics to stimulate hair-growth you need but follow the directions given on pages 91 and 149, supplementing the cold water douche with the cantharidal dressing there recommended.

NOTE. *Tinea Kerion*, of some authorities, I take to be but a state of *Tinea Tonsurans* where the hair follicles have been inflamed, through uncleanness, over-use of domestic remedies, or even by the over-officiousness of an incompetent physician. In these cases the diseased places on the scalp become tumefied, through the local infiltration of the integument, a glutinous fluid exudes from the follicle, and the neighboring lymphatic

glands of the neck may, or may not, be swollen. The treatment is to let the parts rest for a time, if they have been over-treated, then apply the remedies as indicated previously. Epilation is necessary in this stage of the complaint; as, by removing the hair bulb, you take off the pressure from the sensitive and inflamed follicle.

CHAPTER XXI.

TINEA FAVOSA.

HONEYCOMB RINGWORM OF THE SCALP.

Synonyms. Favus, Scall.

Derivation. From the two Latin words, *tinea*, meaning a moth or wood-worm, and *favus*, a honeycomb; so called because it was at first believed to be an animal parasite; and secondly, because the crusts somewhat resemble honeycomb.

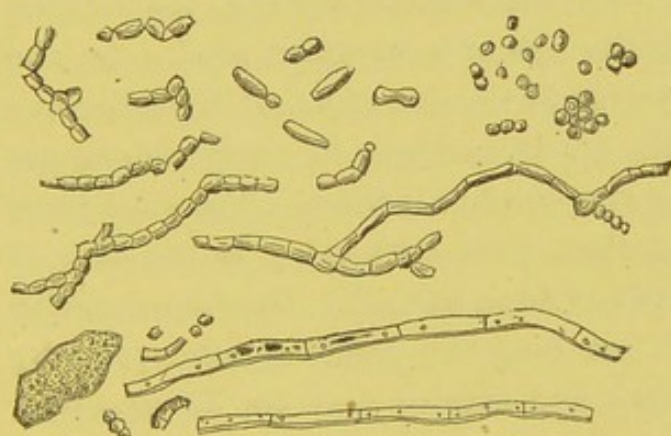


Fig. 29.

apartments. It occurs mostly in children, chiefly those of a strumous habit.

The parasite was first discovered in the Favus crusts by Schönlein in 1839; later in the hairs by Gruby and Wedl. It consists of the spores, figure 29, and mycelia usually found in all of these parasitic fungi; the spores being about the size of the red blood-globules, or $\frac{1}{3500}$ of an inch in diameter. Sometimes the spores are united together in concatenated chains, more or less

Cause. A vegetable parasite known to microscopists as *Achorion Schönleini*. As conducive causes, there may be mentioned, bodily filthiness, and damp, dark



Fig. 30.

branched. Oftentimes there is a stroma of very small sporules present—much smaller than the spores just described. Probably these are the “fruiting sporules” sown by the bursting of a spore ripe with seeds. Figure 30 is a microscopical view of a split hair shaft, showing the formation of these concatenated spores and mycelia in the fibrous and cellular stroma of the body of the hair.

Diagnosis. The peculiar shape of the crusts is almost pathognomonic, and hence the microscope is only needed, in the majority of cases, to confirm an opinion formed by an ocular inspection of the diseased surface. The crusts form about the mouth of a hair duct, the hair-shaft piercing the centre, and are, at first, about the size of a mustard seed. As the disease advances, they enlarge to the size of a half dime, become hollowed out, upon their upper surface; in other words, are *cup-shaped*. Their color is a sulphur yellow. The odor from them has been likened to that from cat's urine, or the odor of mice. When a crust is raised from its bed a cup-shaped cavity is left in the skin, which has been the result of absorption by the constant pressure above, and may or may not be ulcerated. If of long standing, cicatricial structure seems to fasten the little pits to the aponeurosis (fibrous covering) of the cranial muscles. On turning the crust over, it will be found to present a convex surface on its under side. The crusts, usually, are placed singly upon the scalp, though sometimes two or more may coalesce. Though usually found upon the scalp, they may be found on various hairy portions of the body. There is always more or less of an itching accompanying the disease.

To distinguish it from impetigo (a crusted tetter of pustular origin), you have to remember that Favus has no discharge, and that impetigo has no *cup-shaped* crusts.

The hair that penetrates a Favus crust is always stunted in

growth, is harsh, brittle, dull in color, easily broken or extracted from the follicle. This is very reasonable, from the fact that a vegetable parasite feeds upon the follicle and papilla that should furnish the hair its supply of nutriment, and then the parasite also invades the body of the hair itself, there producing disease and decay.

When the crusts are to be examined microscopically, they are to be softened in a little water, or glycerine, and then a portion of this pulp put under the object glass. Care should be used to put the covering glass lightly over the specimen, so as not to break down the spores, or to hopelessly entangle them in the sebaceous matter of the crust. When the hairs are to be examined, they are first to be macerated in a weak solution of caustic potash—say one part to ten or fifteen of water—then washed with pure water, and mounted for examination with the same care that is used in mounting the crusts, when, with a good glass, the fungus can, if present in the specimen, be quite readily detected. (See page 206 for differentiation of the parasite from normal tissue.)

Treatment. This is a disease that should be seen to early, as when it is of long standing a total loss of the hair is the result. The first thing is to remove the crusts, and this is done by means of oil macerations, followed with soap, as described in previous chapters, especially on *Seborrhœa*. When this has been done thoroughly, and the scalp has been cleansed from the oil and soap, the whole diseased surface is to be epilated. Every diseased hair left in its follicle is a source of contagion for all the rest of the head, hence the sooner the fungating mass is gotten rid of the better. Usually this is not a very painful operation. It is done by the use of tweezers, pulling out a single hair at a time. As the hairs are quite brittle, from the ravages of the fungus within their shafts, it follows that they

frequently break off near the skin; hence seize them with the tweezers as near the scalp as possible. If the pain induced by their extraction is too severe, it can be allayed, somewhat, by the application of the ether spray. If the disease is not of too long standing, you can safely promise a return of the hirsute growth.

After the hair has been thoroughly epilated, then the application of some parasiticide will be necessary. Probably carbolic acid is as harmless to the general system as anything, and is usually pretty successful, hence should be tried first. The following will make a very eligible preparation in case the acid is not used clear:

- R. *Acidi carbolici* (carbolic acid),
 Glycerinæ (glycerine),
 Aquæ puræ (pure water), aa. (of each) 3 iij (three drachms).
- M. S. Apply thoroughly over the diseased surface once a day for a few times.

To be used by the physician. As a dressing to be used by the patient, with which compresses may be kept wet and applied to the part, is

- R. *Acidi carbolici* (carbolic acid), 3 ij (two drachms).
 Glycerinæ (glycerine), 3 j (one ounce).
 Aquæ rosæ (rose water), 3 viij (eight ounces).

The potash soap, either pure or in the form of an embrocation, as spoken of in the chapter on *Seborrhœa*, is also an excellent application. If used pure, it is to be used twice daily, then, after drying, to be rubbed off, and the dressing above given is to be applied.

Another valuable parasiticide is corrosive sublimate. It may be used in an ointment, as the following:

- R. *Hydrargyri chlo. cor.* (corrosive sublimate), grs. x to xx (10 to 20 grains).
 Cerati simplicis (simple cerate), 3 j (one ounce).
- M. S. POISON.

This is to be applied only in the early treatment of the disease and under a physician's advice. If the mercuric bichloride is preferred in solution, the following, a somewhat stronger form than the one just given, might be used:

- R. Hydrargyri chlo. cor. (corrosive sublimate), grs. xx (20 grains).
Acidi muriatici (muriatic acid), 3 ss (half drachm).
Alcoholis (alcohol), 3 vij (seven drachms).
- M. S. POISON. Apply with camel's hair brush. (Should be used only by the physician.)

After these measures have been used sufficiently long to insure the death of the fungi, the milder tar and white birch oil ointment, spoken of in the chapter upon Eczema, might be employed for a time, especially if there be any infiltration of the corium. Gradually milder ointments may be employed, until, finally, cocoa oil may finish off the case; the point being, in the latter part of the treatment, to merely protect the sensitive skin from the atmosphere, by a coating of oil. Dr. Sawicki recommends the following:

- R. Cretæ pulv. (pulv. chalk), ʒj (one ounce).
Acidi carbolici (carbolic acid), grs. xlvij (48 grains).
Ol. olivæ, q. s. (enough) to make a pliant mass.

Apply over the surface of the scalp, after cutting the hair short and washing the head thoroughly. On the third day following remove the crust, formed from the application, with oil and soapy water, then re-apply. Usually, he asserts, three or four applications effect a cure.

Generally there is some constitutional treatment demanded; not that the disease is one of constitutional diathesis, but that it most frequently makes its appearance, as do most parasitical diseases, upon those living in squalid quarters, and who have not been properly fed or nourished. Iron and cod-liver oil will be found the most useful of these constitutional remedies to administer. A change of air will often be found beneficial, and this with cream, when it can be had, or beef marrow, will be found favorable adjuncts to the medical treatment, whether

local or constitutional. That the disease is a local one should constantly be remembered, so that the constitutional treatment may always be secondary to the local.

As a stimulating lotion to the surface made bald by epilation, or the casting of the hair by the natural effects of the disease, the following can, for a while, be employed:

- R. Tr. cantharidis (tr. Spanish flies), ʒj (one drachm).
Tr. nucis vomicæ (tr. nux vomica), ʒiij (three drachms).
Olei cocois (cocoa oil), ʒss (half ounce),
Aquæ cologniensis (cologne water), vel (or)
Spiritus myrciæ (bay rum), ʒiij (three ounces).

Apply this morning and night to the scalp, after a thorough brushing with a soft bristle brush.

CHAPTER XXII.

TINEA DECALVANS.

PATCHY BALDNESS.

Synonyms. Alopecia areata; Local alopecia.

Derivation. From the Latin *tinea*, a moth or woodworm, and the verb *decalveo*, to be or to make bald.

Discussion. It is a question of dispute among our dermatologists whether this disease should be classed among the parasitical ones or not. I am strongly inclined to the parasitical nature of the complaint, judging from my own experience with it, and that of others. Gruby was the first who described a fungus in the hairs of the portion of the scalp so diseased. Küchenmeister, Malmstein, Robin, Wedl, Bazin, Hardy, Hebra, Hillier, Squire, Godfrey and Fox, also look upon it as of parasitical origin. All admit, though, that there is a form of local baldness without the presence of the parasite, which has been treated of; see page 153. The dermatologists who favor the *non*-parasitical form of the complaint are Neumann, Cazenave, Devergie, Bärensprung, Hutchinson, Veiel, Böck and Bulkley. So far as the weight of authority goes, it is plainly in favor of the parasitical origin of the trouble. In the law of experimental evidence, an affirmative goes further than a negative. However, as the treatment of most local alopecias as if of parasitical origin is most successful, it must follow, as a matter of course, that a vegetable growth was then hindering the proper development of the hair. Then, too, the extension of the disease shows plainly its parasitical nature. It begins as a small patch of baldness, not larger than a three-cent piece,

the place having previously been subject to itchings and a slight dandruffy exfoliation of the epidermis. From a spot of this size its borders are gradually extended until, as in some cases, the whole cranium has been laid bare. Now, clearly, no nervous trouble, for this is what the authorities that do not favor the parasitical origin of the disease hold it to be, would be so regular in its ravages; neither would the portion of the scalp affected with this nervous malnutrition be so clearly marked out, leaving the closely adjoining hairs as healthy and luxuriant as if no trouble were present in the scalp at all. Then, too, the disease is contagious, as Hillier has clearly proven, from the fact that at Hanwell, in a school where it first broke out, some *forty* children, occupying the same portion of the building, were affected, and in these cases the fungus was detected on a careful microscopic examination.

Causes. This disease is caused by the vegetable parasite, *microsporon* (*μικρός*, *small*, and *σπόρος*, *a seed*) *Audouini* (a man's name). This is one of the smallest vegetable parasites that affect man. It is probably owing to the very minuteness

of the fungus that it has so often escaped detection. The spores vary from the $\frac{1}{25000}$ to the $\frac{1}{5000}$ of an inch in diameter. The mycelial threads are very small also, and are few in number, another element in the way of easily detecting the parasitical nature of the trouble. Figure 31 represents a hair from a spot affected with this fungoid

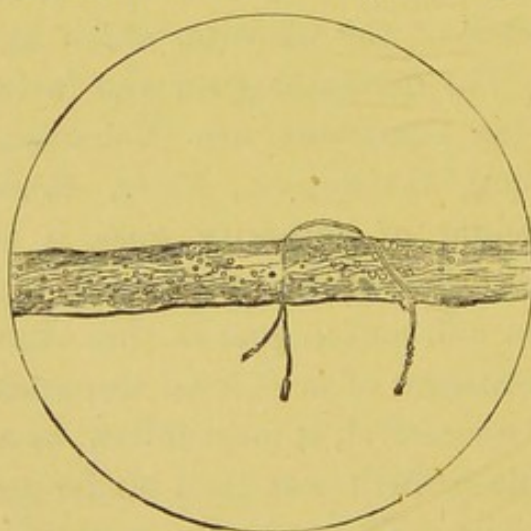


Fig. 31.

growth with the spores scattered upon the shaft, and a branch-

ing mycelium. If on first examination, you do not detect the fungus, an artificial feeding of it, as described in the general chapter upon these hyphomycetes, for a few days, will bring it more fully forward, when, with the use of a weak solution of liquor potassæ, it may be discovered if present.

Diagnosis. Circular bald patches upon the head or face (beard), varying in size from a three-cent piece to complete friar baldness, preceded by a stage of itching and furfuraceous desquamation. These spots, usually, are upon one side of the head, though sometimes may be seen equally upon both sides, if there are several bald patches. If the scalp be examined closely a degree of redness, at first, will be seen with the normal number of hair follicles, but with soft downy hairs, and the scalp will not have lost its ordinary sensation. This is contrary to what we find in cases of local baldness from nervous malfunction, for in these the scalp has lost its ordinary sensibility; it is white and atrophied, and the hair follicles are almost entirely absent; besides this, there is almost always a history of neuralgia in the neighborhood of the spots of baldness. Authorities say that the disease is more often seen in girls, and young people. This has not been my experience with it, however.

When first affected, besides the itching and dandruff, it will be noticed that the hairs will lose their natural pliability and glossy look, and their normal dark color; they will be quite easily plucked out, and when so removed will show no evidence of the bulb or root; on the contrary, they will be found to be quite pointed; after a time the hairs fall out of their own accord. If examined microscopically, besides the fungus *microsporon*, the shaft will be seen to be irregular in its outline, having a bulging look; owing, probably, to an undue amount of adventitious or fatty cellular structure, and the developed fungus.

Treatment. As in these cases the skin is unbroken, an application of our stronger parasitocides is in order. After the parts have been well cleansed from grease, etc., and allowed to dry, then make an application of either the pure acidum carbolicum (carbolic acid), or the acidum sulphuricum (sulphuric acid). This is best done with a glass rod, applying the acid thoroughly over the entire bald surface, quickly sponging it off, if it be the sulphuric acid used, with a solution of bicarbonate of sodium, or other alkali. At once, by this treatment, the parasite coming in contact with the acid is destroyed, and, if it is quite quickly done, is not painful to the patient. It may be necessary to apply this weekly, for several weeks, in old and inveterate cases. Meanwhile, let the patient apply to his head daily the stimulating lotion of cantharis, nux vomica, etc., spoken of on page 222. Tilbury Fox's usual treatment of this form of disease is to daily apply to the affected parts, for a couple of weeks, an ointment made as follows:

R. Hydrarg. chlo. cor. (corrosive sublimate), grs. ij (2 grains).
Cerati simp. (simple cerate), ℥ ij (2 ounces).

M. S. POISON.

Afterwards some stimulating lotion or ointment, as the following, might be used:

R. Tr. cantharidis (tr. Spanish fly).
Tr. capsici (tr. capsicum), aa. (of each) ℥ iij (3 drachms).
Ol. ricini (castor oil), ℥ ss (½ ounce).
Aq. cologniensis (cologne water), q. s. ad ℥ iv (to make 4 ounces).

M. S. Shake well and apply to the parts twice daily.

Or,

R. Ol. amygdalæ dulcis (oil of sweet almonds), ℥ ss (½ ounce).
Lq. ammoniæ fort. (strong water of ammonia), ℥ ss (½ ounce).
Spts. rosmarini (spirits rosemary), vel (or)
Spts. myrciæ (bay rum), ℥ ij (2 ounces).
Aquæ mollis (soft water), ℥ j.

M. S. Used daily on the scalp or beard.

Also the following might be employed:

- R. Ext. nucis vomicæ (ext. nux vomica), grs. xxx (30 grains).
Cantharidis (cantharides), grs. xx (20 grains).
Ol. lavandulæ (oil lavender), ℥ xij (12 minims).
Adipis (lard), ℥ ij (2 ounces).
- M. S. Anoint head twice daily where the hair is out.

Frictions, with a tooth brush dipped in strong vinegar, to the bald places are also useful. Tincture of iodine is also a useful parasiticide, when used undiluted, and might be employed in this trouble. If diluted somewhat, it makes a good stimulant and resolvent to the scalp. A little tincture of capsicum might be added to increase its efficacy as a stimulant. One noted dermatologist, Prof. Erlach, of Bern, relies entirely upon the frequent application of turpentine to all of these parasitic growths, and in a couple of months has the satisfaction of seeing his cases recover.

With the medicinal (local) treatment of this complaint should be coupled the proper hygienic one, that of keeping the head clean, and as free from rancid oil-dressings as possible. A twice daily douche of cold water to the head (and beard, if it be affected), then rubbing briskly dry with a coarse towel, following with a good thorough brushing, so as to execute a glow and warmth, will aid in the restoration of the hairs. If, at first, they come in unhealthy and puny-looking, have them cut off, and keep on with the daily shampooings and brush-frictions, with, also, the use of some of the stimulating lotions, and shortly, unless the disease has gone so far as to destroy the hair bulbs, your patient will be blessed with his normal suit of hirsute covering.

CHAPTER XXIII.

TINEA SYCOSIS.

BARBER'S ITCH.

Synonyms. Mentagra; Sycosis menti.

Derivation. *Tinea*, a moth or wood worm, and *συνήσις*, a fig. The medical term of this complaint has, as you see, no reference to the real meaning of the words employed, as it is *not* a fig-shaped worm, or parasite, *at all*. In fact, none of the parasites of the parasitic diseases I have been describing have *any* resemblance, in their physical characters, to a "wood worm," or a moth, as their classic names might lead you to think. They are none of them animals, but small vegetable growths, cryptogamic plants. Possibly the serpiginous tracts of the *tineæ*, as seen in their workings upon the body, may have some fancied resemblance to a "moth," or more likely to a "wood worm." As to the term Sycosis, why that is one given to the disease by the ancient physicians long before its real parasitical nature was ever thought of. The pulp, squeezed from a long standing case of non-parasitical sycosis (see Chapter XVIII) may have some fancied resemblance to a fig's pulp, but farther than that there is certainly *no* resemblance.

The younger Pliny, A. D. 61, spoke of the disease as being epidemic among the nobility in certain portions of the old Roman empire; and he graphically describes its symptoms and the ravaging effects of the disease, when unchecked, upon the hair, and the many ulcers and disfigurative cicatrices resulting therefrom.

The parasite *microsporon* (*μικρός*, small, and *σπόρος*, seed) *mentagraphytes* (*mentum*, chin, *ἄγρα*, catching and *φυτόν*, a plant) is the cause of this unsightly trouble that affects only the sterner sex. Being a parasitical disease, it is, of course, readily communicable; the commonest means for contagion being, as its common name would indicate, the hands and implements of the tonsorial artist.

It is a very small parasite, the spores or seeding parts being small nucleated spheres, from the $\frac{1}{8000}$ to the $\frac{1}{4000}$ of an inch in diameter. Figure 32 shows the spores of the fungus and a peculiar condition of the hairs of the beard when invaded. These slight bulgings or knots are frequently noticeable with a hand-lens; the hair is found to easily break off at these places. When subjected to the higher powers the conditions are as above shown, simulating strongly two paint brushes thrust together at the brush ends. The nutrition of the hair at these points has been interfered with, hence the fibres of the fibrous portion of the hair become separated, and finally break through the equally impoverished imbricating scale-layer. The growth of the fungus also has some mechanical influence in inducing this separation of fibres.



Fig. 32.

Many have thought the parasite of this disease to be similar to the fungoid growth found in *tinea circinata*, the ordinary body ring-worm. It is, microscopically, very similar; and usually when the disease commences it has all the appearances of an ordinary ring-worm, only located on the hairy portion of the face. Finally, the spores begin to take fertile root

down in the hair-follicles of the beard, gradually penetrate the soft cells of the root of the hair, and at last sprout, and take mycelial growth in the shaft itself, as this portion of the hair is being gradually pushed out from the follicle by the ceaseless formative action of the hair papillæ at the bottom. Of course, as the follicle is invaded, it becomes inflamed, finally suppurates, and, in time, throws out the hair itself. Its chief place of growth is between the hair-bulb and its follicular sheath, and one reason why the fungus is not more readily detected in old cases is the fact that pus is a parasiticide; hence one of its mischief-making results becomes, in a measure, an agent for its destruction. From all these circumstances it would seem fair to suppose this disease to be but a more fully developed state of the parasite *trichophyton tonsurans* of the body ring-worm, the same that is also found in the ring-worm of the scalp. Still, as it is a debatable question whether this is really so or not, I have thought best to give a separate chapter to its consideration.

Diagnosis. It is necessarily a disease limited to the male sex, and to adult life. There is a spot of itchiness in the beard, followed, perhaps, by a slight crusting or scabbing. A hair-follicle is seen to be enlarged and swollen, shortly afterwards the hair from the diseased follicle will become lusterless, harsh, and can be easily plucked from its follicle. The integument adjacent soon becomes reddened, infiltrated, and consequently swollen and painful. It is not rare to find the neighboring lymphatic glands involved, especially if the disease be situated upon the under surface of the lower jaw. Sometimes, though rarely, the disease extends so as to involve the eyebrows and the hair-follicles in the nasal septum, but this only in neglected and long-standing cases.

Unless great care is taken, when the disease has existed for a

time, the discharge mats together the beard or moustache into a condition resembling the uncleanly plica Polinica described on page 190; otherwise unsightly scabs form over the ulcerated and inflamed patches, from the continual oozing from the inflamed follicles and the sebaceous glands emptying into them. When one of these crusts is removed, we find underneath a moist, red surface, uneven or nodulated, much resembling our ordinary red raspberry, only darker in color. The microscope is, of course, to be called into aid in making a positive diagnosis, for there are several non-parasitical diseases that in many particulars strikingly resemble the disease in question.

On withdrawing a hair from a follicle invaded with this disease, and submitting it to an eight-inch objective, the sporules will be seen upon and around the shaft, as shown in Fig. 33. If the disease is in a more advanced stage, then the paint-brush condition shown in Fig. 32 will be observed. Often reagents will be needed before the sporules will show up plainly.

The most prominent of the diseases simulating Tinea Sycosis are mentagra, acne, impetigo and syphilitic rupia.

Mentagra. From mentagra, or the non-parasitical sycosis, this disease is distinguished by the fact that the trouble is more localized; that is, it does not spread so rapidly; the tissues adjacent are more slowly involved. From the fact that the disease under consideration depends upon the growth of a fungus, each follicle must wait its turn for infection; whilst in mentagra, as the disease is extended over more surface, there is greater tendency to extensive crusting. Then, too, the hairs

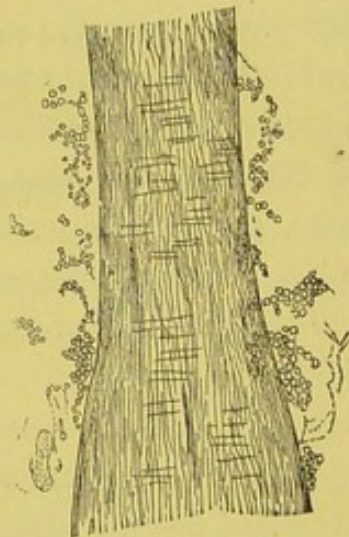


Fig. 33.

are more easily extracted, from their greater looseness in the follicle, in Tinea Sycosis than in mentagra. The factor of contagion is also another important point to remember in differential diagnosis; the parasitical disease is contagious, and almost always the source from which it was contracted, oftentimes a "mangy" dog or cat, is quite definitely known. A person subject to the body ring-worm, or *tinea circinata*, can quite certainly trace his beard infection to this prior trouble. Lastly, the appearance of the mucedinous growth under the microscope is, of course, positive proof of the parasitic disease, or of Tinea Sycosis.

Acne. Here the microscope is also of great importance, as there is no parasite in acne. Then, too, acne is non-contagious, and exists on other parts of the body at the same time; whereas Tinea Sycosis is a *beard* disease. Acne is a common complaint of females and males just reaching puberty. Then, too, in acne, the sores do not seem to be so much "run together," are not so painful, and, as a rule, the hair is less loosened.

Impetigo. In this trouble there is much less infiltration of the integument, fewer and smaller crusts; when these are removed there is not the raw, *granular* surface that is usually seen in the parasitic Sycosis. Impetigo is not a contagious disease, and has no parasite. The hairs are less loosened in impetigo, and hence give greater pain on epilation. In impetigo the crusts are thinner and lighter; it is a disease that oftener attacks vitiated constitutions.

Rupia. The syphilitic form of this trouble has a previous history of venereal contagion; then, too, it is only in rare cases that Sycosis and rupia could be mistaken, one for the other, and these are when Sycosis occurs on the mucous surface of the nasal septum, or upon the lips; rare spots upon which the parasite develops. In *S. rupia* the crusts are found to cover

unhealthy and illy-smelling ulcers, giving out a dark-colored and offensive secretion. *Rupia* has no parasite. It is an infectious disease, not, in its limited sense, a contagious one.

Treatment. This is, essentially, an anti-parasitical one. If there should be crusts, these should be at once removed by macerating them in sweet oil or fresh lard, then washing them off with soap. All of the diseased hairs should be plucked out. This should be rigorously enforced; for as long as a single diseased member remains it is a source of contagion for all the others. This will not be so painful an operation as it appears to be at the first look, for the suppuration in the follicle has already partially detached the bulb from its papilla, and a quick jerk will remove the infected hair, inflicting upon the patient but a momentary twinge of pain. This done, some parasiticide is to be thoroughly applied to the mouths of the diseased follicles. Any of the formulæ given for the destruction of the other fungoid growths are applicable for the destruction of this variety of tinea. Sir William Jenner's favorite parasiticide, and a very good one it is, too, was:

R. *Acidi sulphurosi* (sulphurous acid), ʒj (1 ounce).
Aquæ (water), ʒvj (6 ounces). M.

This is to be applied over the whole of the diseased surface after epilation. Some prefer a stronger solution than this; as, equal parts of the acid with glycerine and water.

As a daily wash for the patient to use, the following makes a good one:

R. *Potassii sulphatis* (sulphate of potassium), ʒj (1 drachm).
Aquæ (water), Oj (1 pint). Mix.

Another very good parasiticide is the common corrosive sublimate wash, of the strength of from two to ten grains to the ounce of water. Should there be much abrasion of the skin,

these poisonous solutions should be used with very great caution.

Boracic acid has been highly recommended, of late, in these diseases; it should be used of the strength of one drachm of the acid to one ounce of pure water, bathing the parts well with this two or three times a day, using some little friction to work the solution down into the follicles as far as possible. In fact, the application of all parasitocides should be supplemented with friction, so as to bring the medicine into as direct contact with the germs as the condition of the parts will allow.

Another very good dressing, though a little too irritating for long use, is an ointment made as follows:

- ℞. Sulphur precip. (flowers of sulphur), grs. x (10 grains).
Iodini bisulph. (iodide of sulphur), grs. x (10 grains).
Cerati simp. (simple cerate), ℥j (1 ounce).
Misce (mix).

Probably the best agent for the destruction of these cryptogamic growths that infest the hair follicles and skin is carbolic acid. In any reasonable amounts it is non-poisonous; and if you should see fit to use it in its virgin strength, you need not be afraid of its doing a great injury to your patient. Then, too, it is miscible, in almost any proportion, with water, glycerine and cerates, hence you can always easily regulate the quantity to the severity of the symptoms presented. As applicable a dressing as any, for ordinary cases, is the following:

- ℞. Acidi carbolici (carbolic acid), ʒj (1 drachm).
Unguenti zinci oxidi (oxide of zinc ointment), ℥ij (2 ounces).
Misce well. (Mix well).

This can be applied two or three times a day, or less often, as the symptoms improve.

As the disease frequently attacks those poor in general health, it follows that all such should receive constitutional

tonics. The best of these are cod liver oil and steel, in some of their multitudinous forms. The emulsion of the oil with dialyzed iron is a good form in which to give them both combined. The emulsion of the oil with extract of malt, or the extract of malt combined with the hypophosphites, are also good "food tonics." A very fine stomachic, as well as blood tonic, for these cases with vitiated general health, is the following:

- R. Tr. cinchonæ comp. (compound tr. of cinchonæ), ℥j (1 ounce).
Ferri citratis (citrate of iron), ℥ss (½ ounce).
Vini Xerici (sherry wine), ℥v (5 ounces).
M. S. Teaspoonful before meals.

CHAPTER XXIV.

DERMATOZOA.

ANIMAL PARASITES, GENERAL CHAPTER UPON.

"So, naturalists observe, a flea
Has smaller fleas that on him prey;
And these have smaller still to bite 'em;
And so proceed *ad infinitum*."—*Jonathan Swift*.

Derivation. From the two Greek words δέρμα, meaning skin, and ζῷον an animal. The plural form of the word stands at the chapter head, and hence means, literally, "skin animals."

Causes. It is not our purpose to include in this treatise *all* the animal parasites that infest the skin of man; but only those that infest more especially the hairy parts. This reduces the number to be described to six, viz.: *Pediculus capitis*, or head-louse; *Pediculus pubis*, or crab-louse; *Pediculus corporis*, or body louse; *Sarcoptes scabiei*, the itch insect; *Steatazoön folliculorum*, the follicular parasite; *Pulex canis* (or *felis*), the flea.

The skin irritation produced by the presence of either of the first three parasites is known as

PHITHEIRIASIS.

This term then would, when applied to the *prima causa*, mean, simply, *lousiness*.

For a great many years dermatologists have been in the habit of classifying this form of skin trouble with the other inflammatory troubles of the same parts; thus it has been made a variety of prurigo by Anderson. This, however, is a

faulty nomenclature, as whatever pruriginous eruption ensues is due, not so much to the mere presence of the parasite, as to the irritation caused by scratching the parts with the nails. An eczema is also frequently induced through the same process of rubbing and scratching the previously irritated portions of the skin.

By the ancients it was firmly believed that these body parasites sprang into being through some subtile exhalation or humors from the body itself, and that death was possible to result from this degenerative process. The Emperor Arnulf, and the Danish king Snyo, were believed to have met death from this cause. Some coloring is given to this from the classics, for do we not read of the Athenian philosopher Speusippus longing to be freed from such a miserable progeny (who can blame him)? Of Calisthenes, because he had used that unruly member, the tongue, too freely, being confined in a close iron cage and covered with these miserable vermin? Of Pharecydes, who flourished in Thales' time, and who longed to be free from such tormenters? His letter of complaint to Thales testifies to this in these words: "I'm covered with lice, so that I do not longer admit my physician or friends. But when they stand at the door and ask me how I am, I put my finger through the opening and show them how I am eaten up with the evil things, and desire them to come to-morrow to my funeral." It is said that Pythagoras once went to visit him, but this miserable man, who wrote the first books upon natural philosophy for the Greeks, only put his bitten finger through the door and replied laconically to his friend's inquiry of how he was, "You may see by my skin." At later times the reply passed into a proverb among them, for when affairs were going illy with them, they replied to their friends' inquiries by

thrusting out their forefinger and saying, "You may see by my skin."

The Jews also preserve in historic writings the devastating ravages of these parasites in the destruction of Pharaoh's hosts, in Egypt, by the visitation of the lice-plague; and in the Talmud it is recorded that "as is a man who kills a camel on the Sabbath, so is he who kills a louse on the Sabbath;" thus clearly showing the exactions of the old Mosaic decalogue, that no work should be done on the day of rest, even so slight as the destruction of this, to the cleanly Jews, most odious insect.

Still further back in antiquity do we find allusions to these parasites in terms of no less hatred than those Pharecydes used, for in the oracle of the mythical fire worshipers, older than historic Egypt herself, the Avesta Vendidad, we find the following: "When they dress their *hair* on the corporeal world, *cut the hair*, pare the nails; when they *shear their locks or their beards*, then come together the Daevas (devils) to this polluted spot of earth. Then come together to this polluted spot of the earth the *Khrafetras*, which men call *lice*; which destroy man's corn in the corn, the *clothes in the clothes*." The free rendering of the last portion is clearly that of "if the lice fall (after the shearing, probably) into the corn, the corn will be good for nothing, as people will not eat it; if upon the clothing, people will not wear the clothing." It will now be noticed that the soldiers of our late war, afflicted with these parasites, were not the first to call their unwelcome visitors "devils."

Returning to later times we find that Alibert believed in a truly "lousy distemper;" that Fuchs asserted there was a spontaneous production of lice in cachectic and debilitated persons afflicted with boils, the breeding point being within the tumors. Devergie also asserted that a poorly nourished body would spontaneously produce lice.

Then there was the man Hahnemann (who died about 1850), the father of the modern school of Homœopathy, who asserted that nearly all diseases were different phases of lousiness, or itchiness, and from this there sprang into being the present homœopathic plan of treatment for the diseases below named.

These are his words; they are the eightieth Aphorism of his *Organon* (page 122), given *verbatim*:

"This psora (itch) is the sole, true and fundamental cause that produces all the other countless forms of disease, which, under the names of nervous debility, hysteria, hemicrania, hypochondriasis, insanity, melancholy, idiocy, madness, epilepsy, and spasms of all kinds, softening of the bones, or rickets, scoliosis and cyphosis, caries, cancer, fungus hematodes, pseudo-morphæ of all kinds, gravel, gout, hæmorrhoids, jaundice and cyanosis, dropsy, amenorrhœa, gastrorrhagia, epistaxis, hæmoptysis, hæmaturia, metrorrhagia, asthma, and phthisis ulcerosa, impotency and sterility, deafness, cataract and amaurosis, loss of sense, pains of every kind, etc., appear in our pathology as so many peculiar, distinct and independent diseases."

There, if any of our ailing homœopathic friends have the "itch," it certainly is none of our fault. The author of their system of practice asserts it, not I. All I ask of you is that you will give it a second careful reading.

These statements are, of course, unreliable; still, they show to what extent men are sometimes driven in trying to assign a cause to certain phenomena that they have only imperfectly investigated.

The furunculi and excoriations seen in these cases are only the result of the scratching and other irritation that the patient inflicts upon himself, for a skin puncture from the proboscis of any one of the species of lice above named, leaves only a small dark-centered elevation (papule) to mark the so-called "bite."

None of the parasites have a mouth proper, hence they are incapable of "biting," as we usually understand the term. The proboscis is (when seen magnified) a long, lance-shaped organ that is thrust into some pore of the skin—sweat pore

usually—and then, by means of suction, blood is raised from the nearest superficial capillary. Figure 34, representing the

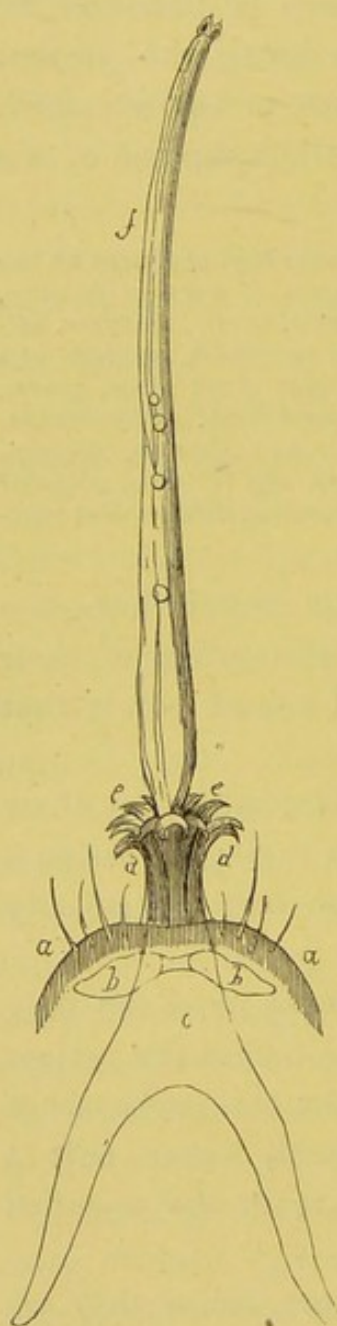


Fig. 34.

proboscis of a body-louse magnified 160 diameters, will answer well enough for a description of the proboscides of the three species of lice that infest man. *a a* represents the summit of the head, with four hair-bristles upon each side of the lance-organ; *b b* is the head-plate of chitine, and *c* the back part of the lower lip; *d d* is the foremost part of the lower lip protruded for suction, and *e e* a row of hooks, turned outwards, for seizing hold of the mouth of the follicle into which the proboscis, *f*, is plunged; the lines on each side of *f* are hard membranous (chitine) mandibles, which support the suction tube; the globules within represent the blood cells ascending the proboscis after suction is applied by the insect.

The peculiar stinging, itching sensation is undoubtedly owing, in great part, to the contact of the excrementitious matter of the sweat pore with the minute punctured surface of the skin below. The first twinge of pain is due to the penetration of the lance-like proboscis into the flesh.

BREEDING.

Each of the species of lice is monosexual; that is, each individual is either a male or female, and procreation is possible only by a union of

the two sexes. As a rule, the female is much the larger of the two. She does not bring forth her young alive, but, after impregnation, lays her eggs, or "nits" as they are popularly called, gluing them to a hair shaft, usually, and waits for the heat of the harbinger's body to hatch them out. The body-louse proper more frequently lays her eggs upon the fibers of the clothing, in the vicinity of the seams.

They are all very prolific breeders, many thousand being produced in a few months from the parentage of a single couple. Indeed, the German naturalist Leuwenhœck, who became so enthusiastic in watching their marvelous increase that he went so far as to experimentally breed them upon himself, found that two impregnated females, which he had placed in his silk hose, had, in a week or ten days, awarded their host with a deposit of one hundred eggs, "with more to follow." In twenty-four days from their deposit the new progeny were laying eggs for themselves, in order to bring forth grandchildren to their parents; and at the end of a couple of months the practical investigator figured up that the original two had become the parents of some *eighteen thousand* individuals.

CHAPTER XXV.

THE DERMATOZOA (*concluded*).

PEDICULUS CAPITIS (HEAD LOUSE).

Derivation. The term is from the Latin *pediculus*, the original meaning being "a little foot;" the root of the word is *pes*, which means a "foot." *Capitis* is from the Latin word *caput*, which means "head;" hence, the double term is as stands at the heading.

Causes. To those given, in the preceding chapter, may be added uncleanly habits, and association with uncleanly persons, or sleeping in apartments which they have occupied, wearing their clothing, or using their comb and brush.

Diagnosis. This is superfluous, almost, to treat of, as nearly every mother has found them on the head of her "darling boy," through his association with untidy school fellows.

The animal itself may be recognized quickly running over the scalp, as soon as the hair is parted, or sometimes even on the clothing, as Burns has rendered an instance famous in song from his "Ode to a Louse Seen on a Lady's Bonnet."

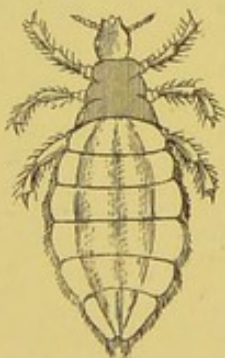


Fig. 35.

The *Pediculus Capitis* is a little fellow, about the color of the fair skin of the child, see figure 35, which represents a female quite highly magnified; they have a somewhat elongated body, distinct from the thorax, and upon both sides of the body are three legs, which terminate in claws, which enable it to grasp the hairs so as to aid it in locomotion. The anterior pair are usually the

stronger. The abdomen shows six distinct segmentations, and there is an opening in each, at the side, for the entrance of air to the respiratory organs, the tracheæ of which inosculate quite freely with one another. Each individual has two eyes, one on each side of the head, and two antennæ, or feelers. Recently naturalists have come to regard the antennæ of all insects as the organs of hearing. It is supposed that they are so keyed or tuned, if you will permit such use of the terms for want of others better, to vibrate consonantly with sounds of a certain number of vibrations, too rapid or too slow, perhaps, for the human ear to notice, but which the insect is able appreciate.

The ova, eggs, or "nits" as generally called, are deposited upon a hair-shaft near the roots, and are of the size of the eye of the finest cambric needle. The female has the power of emitting a gluey substance with them, which surrounds the shaft, and so the ova are held in place. The eggs are of an elongated oval shape, and have several conical prominences at the larger end, whilst the smaller end has, as it seems, a clump of bristles. When the young are hatched the ova-cases still cling to the hair, owing to the adhesiveness of the cementing material before spoken of.

When the irritation, through scratching of the scalp, is severe, you get a matting together of the hair from the eczematous discharge and condition of the scalp. The head, in this case, smells badly, and the adjacent glands become involved. Such cases are, of course, attributable only to personal neglect.

Treatment. This will be fully considered on page 246 of this chapter.

PEDICULUS PUBIS (CRAB-LOUSE).

Derivation. From the Latin *pediculus*, as before noted, and the Latin *pubis*, meaning the front part of the pelvis, because

it is here that it is generally found, except in cases of notorious personal negligence, when it may be found, as we have once seen it, in the arm-pits, eyebrows, and hair of both the head and chest.

Diagnosis. From the fact that its haunts are chiefly confined to the hairs about the pubic region, the irritation, from scratching, will be mostly about these parts. In the cases I have seen, the arm-pits have in each instance been equal sufferers, the natural heat there, the sweating, and irritation from the clothing, soon rendering the situation to the patient, from these causes, very distressing.



Fig. 36.

The animal, a female, which is shown in the cut, figure 36, and quite highly magnified, is considerably different from the head-louse previously described. Its thorax is not distinct from the abdomen, and is flat; it is composed of eight segments, the two forward ones being united at the median line. It also has three pairs of legs, each one terminating in claws, a lobster's in miniature; the claws of the two posterior pairs of legs are much the stronger, and these enable the little animals to cling so tightly to the surface of the body, by seizing hold of the hairs, that it is almost impossible to dislodge them; I have seen the hairs themselves loosen from their roots before the little fellows would let go. It is for this reason that chloroform vapor is confined over the infected parts so as to stupefy them, and thus aid in their removal. The females are always much the larger of the two sexes. Upon both sides of the abdomen are four small prominences, which contain, at the summit, a respiratory orifice; these prominences are surrounded by numerous small and finely pointed hairs. The tracheæ inosculate freely, one with the other, as in the species just described.

Two ova ducts, arising each from a single ovary, lead into the vagina, which is placed near the last abdominal segment. The head is quite prominent, and contains two quite prominent eyes. The antennæ consist, each, of four or five segments, armed at their bases with two short hairs. These organs are easily moved in any direction.

The color of the crab-louse is much darker than its companion found commonly on the head; indeed it resembles a flake of *bran*, as much as anything, when seen hugging itself tightly down to the skin.

Treatment. This will be considered on page 246 of the present chapter.

PEDICULUS CORPORIS (BODY-LOUSE).

Derivation. *Pediculus*, see beginning of the chapter. *Corporis*, from the Latin word *corpus*, meaning body; hence, body-louse.

Diagnosis. Accurately speaking, this variety of the anopluræ, or louse family, is not a denizen of the hair; for it makes its home in the clothing. Its "nits," though, are frequently attached to the hairs of the body, and sometimes to those of the head.

It quite closely resembles the head-louse, as the accompanying cut, figure 37, will show. The body is a little more elongated, and the head is larger. It varies from one-half to two lines in length. The thorax is distinct from the body, and the hinder pair of legs have their origin upon it; it is also somewhat narrower than the thorax of the head-louse. Its anatomy otherwise is very similar.

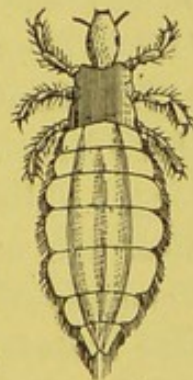


Fig. 37.

This is the little animal that worries the life out of closely confined prisoners. It also marches with an army as constantly

as the supply train, and feeds upon the blood of its victims that it draws out from their skin through its proboscis that is plunged into them. The ancient Greek and Roman troops rebelled against its ravages, but all to no purpose; it was with Leonidas at Thermopylæ, and with the Persians under Xerxes; with Napoleon, in Egypt, and with the armies of the Republic at Shiloh and Gettysburgh, and was found in myriads at the prison-pens of Andersonville and Richmond.

In civil life the parasite usually attacks the aged, and persons of careless personal habits of middle age. They first attack the neck and shoulders, then, successively, the adjacent parts of the body. The animals may be most frequently found about the seams of the clothing, in company with their ova of a shining white color. There is more irritation following the "bite" of this species (though there is no bite proper), than of the others, and hence more rubbing, or irritation, is inflicted by the patient upon himself; the result being a more speedy follicular congestion, urticarious, impetiginous or eczematous condition. The pathognomonic lesion, as it is called, is but a hemorrhagic spec, due to the extravasation of blood into the follicle from the punctured capillary.

Treatment. Under this heading we shall give that of the three forms of phtheiriasis, or louse disease, for what is adapted for the killing of one parasite is good to destroy the other; since after the destruction of the parasite and its ova, you have the *cause* of the disease removed, and then the accompanying skin irritation can be successfully treated.

Water will, of course, drown them out, if the parts could be kept constantly immersed; and a bath of salt water or strong soap-suds, night and morning, will also aid materially in their destruction, as well as in soothing the scratched and otherwise irritated skin. Sometimes, as in the case of the body-louse,

a general bath, holding in solution some parasiticide, might be employed, though it is of more use to treat the *clothes* than the patient in this case. A temperature of 200° Fah. to 220° Fah., dry or wet, suffices to destroy the insect; not only the clothing worn upon the body, but also the bed-clothing should be thoroughly disinfected with heat. With regard to the other two varieties, the head and crab louse, a fine comb will tend to dislodge many, and a weak acetic acid solution, as one part of the acid to ten or twenty of water, bathed upon the "nitty" hairs will tend to dissolve the ova cases, and hence destroy the maturing parasite within; this application should be shortly followed by free washing.

In regard to ointments and lotions, we notice that since the times of Paulus Ægineta and Celsus (and the use of the same remedy has been known in the Arabic school of medicine for centuries, its virtues being especially extolled by Alsaharavius and Rhases), *stavesacre seeds* have been recommended for the destruction of these pests; so popular a remedy has this become that, in Germany, they are familiarly called "louse seeds." Paulus recommended one part of the bruised seeds, in ointment, and two parts of alum should be used frequently after the body has been well washed. A more elegant way would be, perhaps, to take the bruised seeds, of the proportion of two drachms to an ounce of oil, and boil them, and then strain; the oil could then be perfumed with a few drops of oil of bergamot or sassafras, and then quite freely apply to the affected locality, repeating in twenty-four hours or so. Where discoloration of the skin, from the presence of a colored unguent, is of no moment, the officinal unguentum hydrargyri, the ordinary mercurial ointment, in bits of the size of a pea, rubbed well into each groin or into each arm-pit, or a bit the size of a hazelnut, when applied to the head, makes a very

effectual parasiticide. After once applying, wait a few days, when the same amount may be again used.

A more elegant preparation would be the unguentum hydrargyri ammoniati (white precipitate ointment); the strength of this varies. The English make theirs with 62 grains of the mercury to the ounce of simple ointment, whereas the Americans make theirs with 40 grains to the ounce of the ointment. A few drops of some sweet-scented oil could be added to each ounce of the medicated ointment, and it would then make a very fine preparation. This is used in the same manner as the ordinary blue, or mercurial ointment just spoken of. Either of these ointments should be allowed to remain on a day or two before washing off.

Sometimes, for certain reasons, a lotion is a more agreeable form of prescribing a parasiticide; in this case one of the following might be used, after the parts are cleansed as thoroughly as possible.

R. Hydrarg. bichloridi (corrosive sublimate), grs. ij (2 grains).
Aquæ (water),
Alcoholis (alcohol, dilute), aa. (of each) ʒ ss (½ ounce).

M. S. POISON. For external use only.

As this is a poisonous solution it should not be applied to excoriated surfaces. It is more suited for the crab-louse, and may be quite freely applied upon the infected regions if the skin be not broken.

R. Hydrarg. bichloridi (corrosive sublimate), grs. ij (2 grains).
Aquæ cologniensis (cologne water), ʒ ij (2 ounces).

M. S. POISON. For external use only.

This makes a nice solution to be applied to the head or body, when afflicted with the head or body-louse. It should also be kept out of the reach of children. Usually a few applications is all that is required.

It should be remembered that in ten or twelve days a new progeny puts in their appearance, hence another series of applications should be made in order to rid the patient of their marauderings. These are from the ova that the applications may not have reached, and so not have killed.

The eczema, impetigo or other skin irritation will need treatment in the worst class of cases; this need be no different than that recommended in the previous chapters devoted to these complaints. While these diseases may favor the production of lice, by affording a secure place for the deposition and hatching out of the ova (nits), they are by no manner of means to be considered as generating, *de novo*, the parasites, as ancient authors affirmed.

It may be interesting to note that there is an opinion extant among the laity that these vermin may cure bodily diseases, if taken internally. Thus, sailors believe that if a sufficient quantity of the body-lice be eaten in jam, or otherwise, that they will cure liver disease. Some of the North American Indian tribes think there is no greater delicacy than the head-louse, and oftentimes they are seen hunting each others heads through in pursuit of game too small for the use of the bow and arrow, though no less dainty, in taste, to them.

STEATOZOÖN, OR ACARUS FOLLICULORUM.

Derivation. Steatozoön, from the Greek words *στέαρ*, meaning fat, and *ζῷον*, meaning animal; folliculorum is the genitive plural form of the Latin word *folliculus*, meaning a little sac or follicle; the whole then would be "the fat-animal of the follicles."

Causes. These are unknown. The insect is found only in the sebaceous follicles of the face and head, and in the ears, and is not necessarily a parasite of the hair; but being so closely

connected with the subject, I have thought best to treat of it briefly.

Diagnosis. They are found plentifully, as two out of every ten individuals can furnish specimens for examination. They are met with in greasy and oily-skinned individuals, in the so-called "grubs," or little rolls of sebaceous matter that are squeezed out of the skin upon the nose, cheeks, forehead, or behind the ears. Not all persons having these little roulettes of sebaceous matter are subject to the parasites though. The steatozoön delights most to inhabit the follicles of brunettes, or those of soft, oily skins. As many as ten or fifteen have been discovered in a single follicle, though the usual number is from two to four.



Fig. 38.

In the plate there are two varieties of the parasite shown, though both are found in the same individual. One is much the shorter and thicker than the others; reasoning from the analogy of the other parasites, the different sizes must be the characteristic difference of the sexes, or the different ages of the specimens.

The head has, near its base, two palpi, corresponding to the antennæ of insects, jointed and short; the proboscis is cylindrical, and is surmounted by a small, three-cornered, bristly organ. The head and thorax are united, the whole being about one-fifth, in the long specimens, of the length of the body. The entozoön has four pairs of triple-jointed legs and feet, which terminate in three fine, hair-like claws.

Treatment. Nothing is specially necessary, as it is not yet known that its presence is in any way deleterious to health, although, when mentally considered, it is not a very agreeable

companion. As the retained sebaceous matter, comedones, is really acne, a skin disease proper, anything useful in curing this would also be useful in ridding one's self of these parasites. As a hygienic preventative, probably frequent ablutions with pretty strong soap-suds, followed by brisk rubbing with a hemp towel, would be as good a plan of treatment as any to be followed.

SARCOPTES HOMINIS (ITCH INSECT).

Derivation. From the Greek words *σάρξ*, meaning flesh (genitive form, *σαρκός*), and *κόπτω*, I tease; also the Latin word *homo*, meaning man, genitive form *hominis*; the whole name would then mean "I tease the flesh of man;" certainly a very applicable name for this vexatious parasite.

Description. Though this parasite is not often the cause of many hair-troubles, yet it is so closely connected with the subject that a

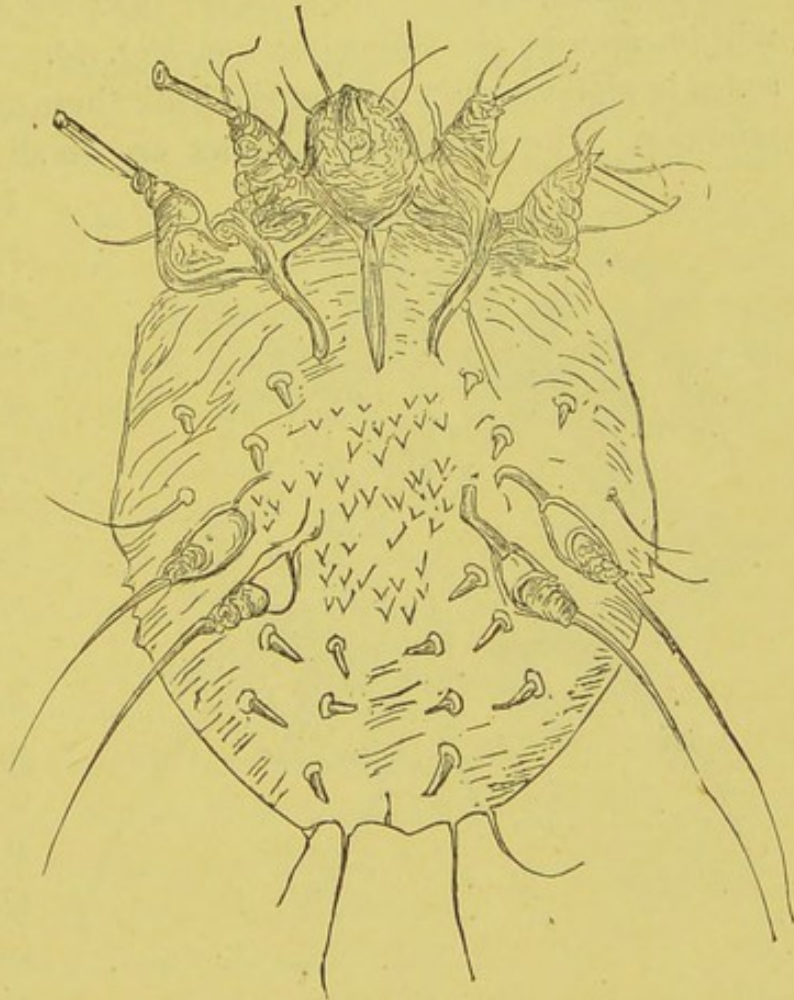


Fig. 39.

somewhat extended notice of the matter will not be out of place in this treatise. Sometimes, however, it does become the cause of hair troubles, and may lead, indirectly, through the excoriations produced by scratching, to the establishment of a breeding-ground for some of the tineæ before described.

Figure 39 is the plate of an eight-legged female *Sarcoptes hominis* as seen under a glass magnifying 130 diameters, or nearly 13,000 times; the natural length of the insect is about the $\frac{1}{15}$ of an inch.

The female insect is much larger than her mate, the male, as will be seen in the following cut, Fig. 40. The body of both sexes is globose, soft, and on the back there are numerous little pustules. The mandibles or jaws, are small and scissors-like.

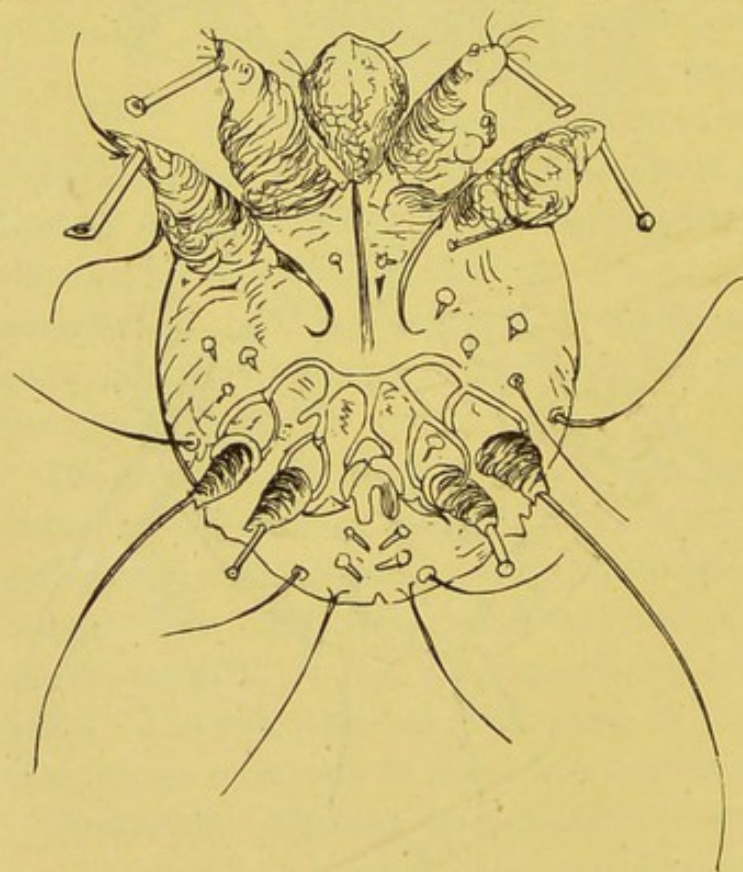


Fig. 40.

In the figures of the insects here shown, the ventral surface only is plated. The female, it will be noticed, figure 39, has a few short spines standing out from the abdominal surface, more than has the male (see Fig. 40). It will be noticed, also, that the hind pair of legs of the female are imperfectly developed, as they end only

in quite long bristly hairs; whereas the male has his, the inner

and posterior pair, ending in a globular, sucker-like expansion, the same as is seen upon the front legs. The female, also, has a pair of three-jointed palpi projecting out from the head, which the male does not have. Figure 40 shows a male magnified some 300 diameters, or nearly *seventy thousand times*.

The number of ova laid by the female varies considerably, though usually from twenty to fifty eggs are deposited. The deposition is made after a mining, or boring, is made through the skin, and a sort of a gallery, more or less irregular in form, has been excavated. These galleries may vary from the one-fourth of an inch to five inches in length. The female insect is alone the burrower, the male contenting himself with hiding, or living, beneath the scales of the scarf-skin. As fast as the female deposits her eggs she enlarges her domains, by mining still deeper or further along in her victim's skin, blocking her road of entrance up by a fresh deposition of her ova until her life-time has been lived, varying from two to four months, if left to nature. Fig. 41 shows a portion of such a gallery highly magnified, and with the eggs in different stages of incubation, deposited along its centre. The entrance to these galleries is perpendicular to the surface of the skin, but after the skin is penetrated a short distance, the gallery runs along it obliquely, or even horizontally as regards the skin-surface. It is these mining operations that causes the intense itching that patients, so afflicted, feel, especially at night, when the heat of the bed has warmed the little fellows up to their work.

The pustules on the skin usually mark the place of entrance to the gallery, and in these the insects are not found; their home, in this respect, is very like a rabbit's, in that they live further



Fig. 41.

along their burrows; hence, to obtain specimens of the insects for examination, you must go a little distance from the pustule with your needle or narrow-bladed knife. The ova are about fourteen days in hatching, the process of incubation being maintained by the heat of the victim's body. Sometimes the

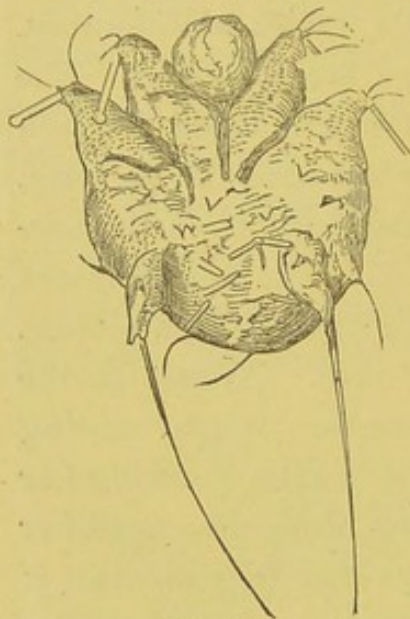


Fig. 42.

insects will be found *six-legged*, as in Fig. 42. Some authorities have supposed these to be a new genus of the *Sarcoptes*, but in this they have been mistaken. They are the immatured insect, or those which have not moulted. In this country they are not usually seen, as the disease is not allowed to go on so far as to furnish the insects in sufficient quantities for them to be readily found at this stage of the growth. In Norway they are quite commonly met with, and from this fact some have also been led to

believe them a peculiar variety of *Sarcoptes* matured only in that country. Mr. Anderson, though, has found them on a case at Wurzburg, Europe; he says that on a crust not $\frac{1}{4}$ of an inch square he found eight of these six-legged *Sarcoptes*, with two eight-legged matured females. On a Norway crust, $\frac{1}{4}$ of an inch square, Mr. Richardson, of Dublin, found *one hundred* of these six-legged specimens.

This parasite was known some 4,000 years ago to the Chinese, according to Captain Darby, who has looked the matter up in their early medical records. They then named it *tchong kiai*. In the twelfth century Avenzoar described the parasite, and gave a crude figure of it. All record, however, seems then to have been lost, and as late as 1821 Lugol offered a prize of 300

frances to any one that would demonstrate an insect as a cause of this complaint. In 1834 Francois Renucci demonstrated its presence, and so stopped the controversy. Yet, before the time of either of these two men, Galés, in 1812, issued a monograph on the subject, and plated the animalcule, though his illustration resembled much a cheese mite. Still, in spite of all this, our homœopathic brethren to this day are throwing Lugol's gauntlet in the face of all scientific research by continually asserting, in the publication and adoption of the precepts of Hahnemann's Organon (see page 239), that nearly one-third of the "ills flesh is heir to" are owing to the pernicious influences of this self-same flesh-teasing insect.

Treatment. From our great-grandmother's days sulphur has stood at the head of the domestic remedies; a bolus of it is given, mixed with molasses, and the child is smeared with the sulphur incorporated with lard, say one-half or one drachm of the sulphur to one ounce of the lard. This is, really, a very excellent remedy, though many a youngster rebels against it.

Another very cheap and sure remedy, although somewhat objectionable on account of its odor, is the sulphuret of potassium. This, in the amount of one or two ounces to a couple of quarts of water, makes an excellent parasiticide for any of the insects that infest the body of man. It should be used as a wash, bathing the parts thoroughly three or four times at intervals of every day or two. In ten or twelve days another course of bathing must be undertaken, so as to secure the destruction of the newly-hatched *Sarcoptes*.

Tilbury Fox's favorite prescription is :

- R. Sulphuris (sulphur), 3 ss ($\frac{1}{2}$ drachm).
Hydrargyri ammonio-chlo. (white precipitate), grs. iv (4 grains).
Creasoti (creasote), gtts. iv (4 drops).
Anthemidis ol. (oil chamomile), gtts. x (10 drops).
Adipis (lard), 3 j (1 ounce).
- M. Apply night and morning for three days, rubbing it in well over the seat of eruption upon the wrists and between the fingers, etc.

After the sixth application the body should be washed thoroughly, and the clothes and bedding entirely changed. In eight or ten days the same process should be repeated.

Neumann's favorite prescription is one drachm of the flowers of sulphur to one ounce of lard, rubbing it well on the affected parts morning and evening for three days. Then a soap and water bath, and clean clothes for eight or ten days, when you repeat the process again. The mercuric bichloride solution, given on page 248 will also prove effectual, though it is more dangerous to use.

PULEX IRRITANS, FELIS, OR CANIS (FLEAS).

Derivation. From the Latin words *pulex*, meaning a flea, and *irritans*, irritating; *felis*, "of a cat," or *canis*, "of a dog;" in other words, irritating flea, cat flea, and dog flea; these are the three varieties usually found on man.

Description. The accompanying illustration, figure 43, is a

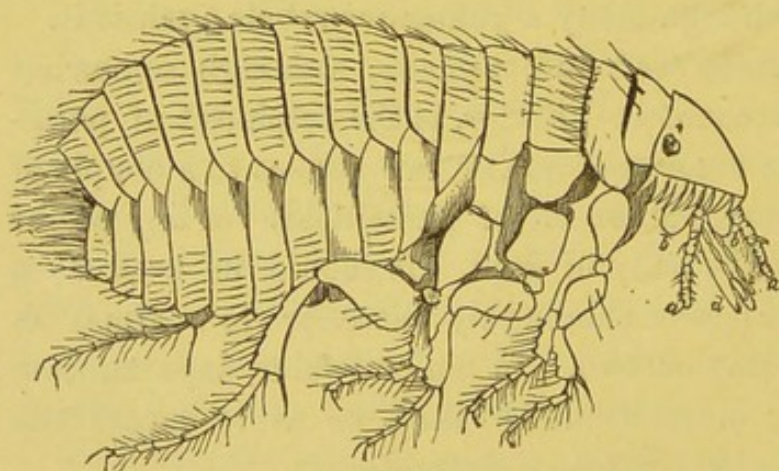


Fig. 43.

cut of the cat flea as seen when highly magnified. This is the variety most generally found on our persons, for the reason, probably, that cats are com-

monest in the house. The *P. irritans*, or the variety of the human flea, resembles this one very closely; the only essential difference being that it is smaller than the *P. felis*. The *P. canis* is about the same size and color of the *P. felis*. Many natur-

alists regard the three fleas given as but varieties of one and the same species.

Fleas are usually of a chestnut, or brown color, and have the unpleasant habit of biting as they run, giving one a nip each time they jump. In this respect they are much worse than the louse, or mosquito, for these are satisfied with one bite at a meal. Sometimes you will find constitutions that are very susceptible to the poisoning of the bites of fleas, and the skin grows quite swollen and angry-looking around each little wound. There is even one case on record of death from a flea-bite, erysipelas having set in in the wound, and so carried off the patient.

The females here are also larger and plumper than the males, and they deposit their ova among the hairs, slightly sticking them to a shaft. The eggs are quite small, are of an elongated, oval shape, and are nearly white. In about two weeks they hatch out into larvæ, as shown in figure 44. These larvæ are, at first, but the one-sixteenth of an inch in length, the head being of a pale yellow color, and the body covered with bristly hairs, as seen through the microscope. They have no feet, but move by wriggling themselves about by the aid of the hairs and the two spines at the posterior end of the body. If the weather is warm they mature and grow quite rapidly, so that by the end of ten days, or two weeks, they spin for themselves a silky cocoon, and pass to the stage of pupa life. In about two weeks more the further change in life is completed, and they emerge from their pupa-cases ready to jump upon and bite the first animal or human being that comes within their leap. Several broods are reared each season from a mated couple.



Fig. 44.

Treatment. Of course all suspected dogs and cats must be

at once forbidden the premises, and their kennels thoroughly cleansed and disinfected, and their bedding renewed. Sulphur smoke, confined in these places for a few hours, will destroy the parasites lurking therein. A wash, of sulphuret of potassium similar to that described on page 255, can be applied thoroughly to the fur and hair of the infected animals, and to our own bodies for that matter, in order to rid these parts from the parasites. Or a wash of ordinary naphtha or benzine, of the strength of ten parts to one hundred of water, might be substituted for this; carbolic acid, used in the same strength, makes another excellent parasiticide. Dusting the animals, and their sleeping places, with the Persian insect powder, which is made from the leaves of the *pyrethrum carneum*, will also be found to be an agreeable and sure way of freeing ourselves, and our household pets, from these unfriendly visitors.

PLEUROCOCOCCUS BEIGELII (CHIGNON FUNGUS).

A few years ago the feminine fashionable world was very much startled by the promulgation of the finding of living animal organisms upon and within the hairs that formed their artificial coiffures. They hardly knew which to do, whether to throw off their tresses not their own, and so fly in the face of fashion, or to run the risk of being devoured by these minute intruders upon their privacy, by continuing the use of this fashionable article of head attire. The matter finally came to the attention of microscopists and dermatologists, and scientific investigation was given the matter. The question was speedily settled that the troublesome intruder into the fashionable circles was a little fungoid plant that attached itself to the hairs, and so grew. There was danger, however, of positive skin and hair disease resulting, but the danger was overestimated. As I never have yet had a chance

for investigating the subject, I give you Dr. Tilbury Fox's description of the parasite:

"If we take a hair on which these parasitic fungi are found, we notice little dark spots, the size of pin-points, surrounding the shaft, especially towards the point; they are difficult to detach, and surround the hair equally in all directions. They may be scraped off with a little trouble. If placed under the microscope, with a quarter-inch objective, there will be observed fungi made up of two forms: one in the center, composed of cells, undergoing the transformation to a mycelial condition (see page 202); the second consisting of large round and oval spores, the size of the smaller achorion spores, and with distinct nuclei (see page 217). The whole of the mass is outside the hair, the structure of which remains healthy; its cuticle, however, is intimately connected with the cellular aggregation, and it is easily torn away from the fibrous portion of the hair, leaving the shaft somewhat roughened. The original source of the germs of the fungus in question is quite uncertain; it may be the water used for washing, or it may be from the rectum of the louse, as has been suggested.

"These cell-structures found on the hair can be made to develop, for they seem to be in that condition which is most favorable for rapid and free growth, and the entire aspect of that development is that of a fungus. Placed in water, the cells enlarge and subdivide, get filled with granules that move about within the cell-wall, and assume a greenish tint. Mr. Lankester has grown them in soup, and I have watched them germinating in water, sugar-and-water, and liquor potassæ.

"The power of the fungus to produce disease depends upon the implantation of the early phase of the fungus upon the scalp or surface of an illy-nourished person. I have no hesitation in saying, under these circumstances, that a parasitic

pityriasis, or a severe form of tinea, would result. Of the nature of the parasite, I entertain not the least doubt; and whatever may be said to the contrary, the illustrations I have given attest the fact that it belongs to the same class as the achorion and the oidium."

CHAPTER XXVI.

DIFFERENT MODES OF DRESSING THE HAIR.

The Bible, although the church has often fulminated its dogmas against the wearing of the hair long, has wisely left it an open matter to each individual as to how he may best dress this natural covering that Nature gives him. Isadore Hispalensus asserts that the clerical tonsure is of apostolic origin. Certainly there is no evidence of this in the New Testament, save the one passage from St. Paul's writings wherein he says that "if a man has long hair, it is a shame unto him; but if a woman have long hair, it is a glory unto her." But this must be understood as a historical narrative; one descriptive of the then existing custom of the nation he was writing to and of; not that it was a commandment designed for religious observance. The context shows this clearly. The Catholic church has the credit for making this innovation upon the manners of Christendom, for their Pope, Anicetus, was the first to cry out against the clergy's wearing long hair.

In the eighth century people were accustomed to have the first cutting of their children's hair made by persons whom they held in special esteem or honor. By so doing these persons became, in a measure, a sort of a spiritual god-father to the child. When this cutting could not be done in person, a lock of the hair that was first cut, was sent to the individual, out of similar regard and for a similar purpose. This is what led Constantine to send the Pope a lock of the hair of his son Heraclius.

Besides the canon of A. D. 1096, referred to on a previous page, we have Luitprand's famous declamation against the Emperor Phocas, because he persisted in wearing his hair long, after the manner of the Eastern emperors. Then there was Theopilas, who was bald himself, who encouraged all his subjects to shave their heads, possibly after the reasoning of the fox who lost his tail in the ice and so tried to persuade all of his companions to let their tails freeze up in an ice cake also, as the tail was but a useless member. Anyhow, the clergy were obliged to wear shaven crowns for centuries, and many laws were enacted to prevent their wearing their hair, long or concealing their bare pates with any wearing apparel, for many thought to be shaven a great mortification. At a council held in Toledo, A. D. 633, the shaving of the crown was formally prescribed, and it was called the *corona clericalis*.

Then there has been a great fight, these later years, between the several schools of clergy upon the shape that the shaven patch upon their heads should take; the English clergy insisted that it should be circular, but the Scots and Picts insisted that the semi-circle was the correct thing.

The famous bishop of Worcester, St. Wulstan, declaimed vehemently against all luxuries, but most especially against long hair; and so he used to carry a long knife about with him, and when any one with long hair bowed before him for his blessing he would first clip the hair with his knife before pronouncing it. In case the suppliant refused to have his hair so cut, the strongest anathemas were hurled at him. The Archbishop of Canterbury, Anselm, also went so far as to excommunicate all wearers of long hair. Serlo, the great Norman bishop, preached, in 1104 A. D., a memorable sermon before Henry I. and his courtiers against the long hair which they wore, and it so worked upon their minds that he prevailed

upon them to let him cut the flowing locks from their heads. It is also related that one magnate, in his enthusiasm to find a text against long hair, took this as one: "Let him that is upon the house top not come down," and made the assertion, when decrying the manner of dressing of the hair by the ladies, that of being piled high upon the head, that this text referred specially to this form of wearing the hair, and changed the text to read "top-knot come down."

Under Hugh Capet custom allowed the law to grow lax, and long hair again made its appearance. This soon incensed the bishops, and the thunders of excommunication again began to be heard, and Peter Lombard so pressed home the matter upon Charles the Young that he cropped his hair; and his successors, for several generations, kept up the custom. A very learned professor at Utrecht, 1650, wrote a dissertation "whether it be lawful for men to wear long hair," and decided in the negative. However, another divine, equally learned, Reeves, by name, replied to this in the affirmative.

The *ancient Hebrews* esteemed long hair an element of beauty, and baldness was spoken of against them as a punishment (Isaiah, iii, 24), see also page 132. The Hebrew women took great pains in plaiting their hair, and kept it confined with gold and silver pins, and they also adorned it with precious stones (Isaiah, iii, 17, 22.) Josephus says the body guard of Solomon had long, flowing hair, and they dressed it daily with gold dust, so that its glittering effect would be increased when in the sunshine. The priests, though, cut their hair every two weeks, when serving in the temple. Scissors were used for this purpose. Black hair was most highly esteemed by this nation.

The customs of the Assyrians, Egyptians and Peruvian Incas will be spoken of in a following chapter.

The *Greeks* wore their hair, as a rule, short; the ladies, on the contrary, allowed theirs to grow as long as possible. Both sexes cut their hair just before their marriage and consecrated it to some deity. Up to puberty, both the Greeks and Romans allowed the hair to grow long; it was then cut off, with a good deal of ceremony, and dedicated to some river or deity; the youths, so treated, then adopted the *toga virilis*, or the dress emblematical of manhood. In the later times of the Roman Empire the youths' hair received three cuttings; the first when at seven years of age, the second when at fourteen, and the third when at twenty-one; at this later period the beard was also cut. Cutting the hair close was held in great dishonor; hence, prisoners, and slaves who had committed offenses, were subjected to this form of punishment; this is now performed on the heads of our penitentiary subjects.

Adulteresses were also punished by having their hair cut from their heads, and it was not allowed to grow out again for a year. The women considered this loss of the head-covering one of the worst calamities that could befall them. Hence this from Martial, when anathematizing a woman:

" May the salamander, whose detested oil
Will from the human head the hair despoil,
Upon thy skull his poison leave,
That it may to thee ever cleave.
May the razor shave it off,
That thou may'st become a scoff."

Hence, too, the assertion of Lucius Apuleius (A. D. 200), in the second book of the "*Milesiaks*," that "Even Venus herself, if she were destitute of hair, though surrounded by the Graces and Loves, would have no charms to please her own husband—Vulcan."

The Lombards also cropped the hair as a means of punish-

ment for petty thefts; and among the Saxons, thefts in daylight, to the amount of three shillings (*sachsenspiegel*), were punished in a similar way. Hence the old judicial expression, in Germany, of "jurisdiction of the skin and hair;" that is, jurisdiction over minor offenses, the highest punishment of which was flogging (as relative to the skin) and cutting the hair.

Fair hair was much esteemed by both the Greeks and Romans, and so they not only dyed and gold-dusted theirs (see chapter on Hair Dyes), but also went so far as to gild the hair of their statues, as notably those of Venus de Medici and Apollo. In the time of Ovid (A. U. C. 711) much fair hair was imported from Germany, by the Romans, as it was considered quite the fashionable color. Those Roman ladies who did not choose to wear wigs of this hue, were accustomed to powder theirs freely with gold dust, so as to give it the fashionable yellow tint.

Both nations made use of pins to fasten up their heads of hair, inserting them in rows, oftentimes, about the crown of the head. In the earlier Grecian and Roman days the manner of wearing the hair, either with or without pins, was exceedingly simple, on the part of the ladies; but as the Empire grew in age and riches, a more rich and profuse style of head-dressing came into vogue. In figure 45 is given a representation of the different kinds of these pins, hair pins they can be properly called, though the Romans called them needles, *acicula*, because they originally had eyes, though, after a time a knob took the place of the eye. The pins varied from one

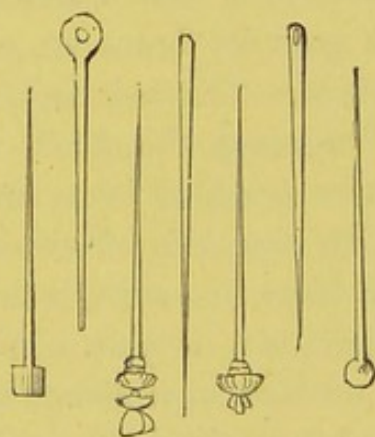


Fig. 45.

and a half inches to eight inches in length, and were made either of wood, bone, ivory or metal. The engraving is a copy of those in bronze. The principal use of the shorter ones was in fastening the clothing, the longer for fastening the hair.

A peculiar though quite common way of doing up the hair is seen in figure 46, which represents the hair as being in braids, and then fastened by having the braids transfixed by a single one of these ornamental bronze hair-pins.

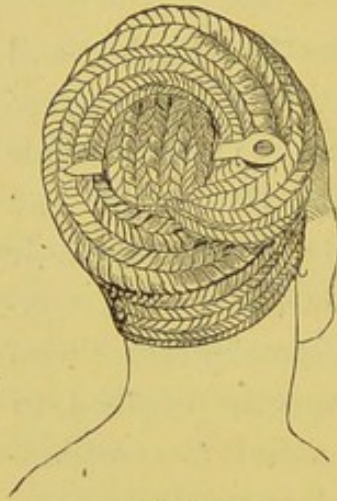


Fig. 46.

A more usual way of dressing the hair is seen in figure 47, which shows a lady in royal robes, with her hair drawn up into the form known among the Greeks as corymbus, which more literally signifies the hair at the top of the head. Sometimes the hair is not so elaborately

dressed, or drawn up so high, though known by the same name, as seen in figure 49, which is the head of the great goddess Diana. The hair is here drawn up from all around the head, to the crown, and there fastened in a simple bow, or knot, with the aid of either ribbon (for the ancients frequently made use of ribbons in their hair) or pins. Men frequently wore their hair in a somewhat similar manner, and it received the similar name. You see this in the head of Apollo Belvidere, figure 48. Instead of a simple band or bow at the top of the head to bind these loops of hair, a pin was some-



Fig. 47.

times made use of to assist in fastening the hair. This was usually, in the case of the Athenian ladies, in the shape of a grasshopper, so as to indicate that they were aborigines.

The Greeks had nine different names for the hair, according to the style in which it was worn; the Romans had five names to answer the same purpose.



Fig. 48.

Fig. 49.

(1) The Greek word *ἑθείρα* stood for a head of hair when carefully dressed.

(2) *Χαίτη* meant long flowing hair, though properly the mane of a horse or lion. This is typical of the locks of Jove as



Fig. 50.



Fig. 51.

seen in Figure 51, where the lion's face, Figure 50, is contrasted with his. The hair, the attribute of strength in this case (as also in Samson's), rises up from the forehead, and rolls back in loose curls down the cheeks, until the beard is reached and finally

included in the curling mass. This same rolling condition of the hair is presented as a type in the descendants of Jupiter, as on Æsculapius, Alexander, etc. All the heads of Jupiter bear this same peculiarity of cranial covering. Indeed, all the divinities of the Greeks have a cranial covering peculiar to themselves, and it is seen constantly in their portraits or statues;

and so marked is this that one can, by the dressing of the hair alone, tell which one of the gods is intended to be portrayed.

In the matter of the color of the hair, Apollo received the golden-colored locks; Mars had red hair and beard; Venus, yellow, golden tresses; Minerva, flaxen braids concealed beneath her helmet. As a rule, in their poems, their warriors were men of reddish hair, their women with the golden tresses of Venus.

(3) *Φόβη*, the state of the hair as seen in one under the influence of fear.

(4) *Ποκάς*, the hair when combed, or dressed.

(5) *Θρίξ*, the general term for hair, and from the plural of which, *τρίχες*, the Romans derived their general term *tricæ*.

(6) *Κόρση*, meaning simply the hair on the top of the head, and from which the term *κόρυμβος* (corymbus, just described) was derived. When men wore the hair in this style, as seen in the picture of Apollo, Figure 48, it was called *κρωβύλος*. This last form was used also to denote a net worn upon the hair as that seen in Figure 52, which is from a painting discovered on the



Fig. 52.

walls of Pompeii. The woman is shown as dressed in the far-famed Coan robe, an article made from almost transparent material. The Grecian ladies were in the habit of wearing these nets at night, as well as in the day time, so as to prevent the snarling and tangling of their locks. These nets are of very

ancient date as Homer makes mention of them in his *Iliad*, xxii, 469; they were then in common use.

(7) *Μαλλός*, which literally means wool, refers to the short curly hair that is seen on the human species. This variety of hair is seen upon the head of Hercules, Figure 53, whose bust is in the British Museum.

(8) *Κέρας*, which has reference to the combing of the hair

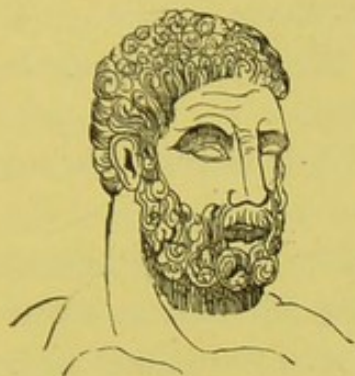


Fig. 53.

up from the temples so as to represent two horns; this is seen in all representations of satyrs and fauns, and also in the lion's head, Figure 50. Some of the present tribes of Africa have a somewhat similar way of combing the hair, as for instance that represented in Figure 54. This, instead of imitating the contour of a faun's head and ears, in dressing the hair, imitates the Buffalo's

horns. They take a piece of buffalo-hide, bent and hardened to the curve of the animal's horns, and on this they tie their hair in braids.

Sometimes, instead of the two horns, a single horn will come down over the forehead and nose. The African tribes so dressing the hair were found by Livingstone on the banks of the Congo.



Fig. 54.

(9) *Κίνιννος* was used to denote the hair that fell in ringlets, natural or artificial, about the head.

The Romans had the following five terms for expressing hair in its various form of dressings.

(1) *Capillus*, referring to hair in the abstract; agreeing with the fifth variety of the Greeks just given.

(2) *Crinus*, referring to the hair when nicely dressed, agreeing with the Greek term *πονός* above given.

(3) *Cæsarius*, referring specially to the hair of the male sex, as they wore it short.

(4) *Cincinnus*, referring to the hair when carefully braided and encircled about the head, as seen in Fig. 46. These encircling braids were sometimes termed *annuli*, and sometimes *orbes*.

(5) *Cirrus*, meaning a lock of curly hair, and *capronæ*, referring to the locks of hair that fell down over the forehead; *antiæ* was also used to designate the locks that fell down over the ears. These three varieties can be seen in the head of Cupid, Figure 55, as now preserved in the British Museum.



Fig. 55.

As illustrative of the way some of the noble Roman ladies dressed their hair, I will now give you the portraits of four well-known persons; they also illustrate four different periods of history in the Roman Empire. In the earlier days very little pretension was made to dressing or ornamenting the hair, on the part of the ladies; it was suffered to fall in rolls about the head and shoulders, or else was gathered loosely up into a knot behind, as that seen in the statue of Venus, Figure



Fig. 56.



Fig. 57.

70. The earlier Romans also allowed their hair to grow to quite a length; but at the period of the third century before

Christ, this custom must have gradually been done away with, as the works of art of that period show that short hair was common among the males. Then, too, the Romans of the Augustan age were accustomed to denominate their ancestors as *intonsi* (unshorn), and *capillati* (hairy). The word barbarian has a similar meaning, denoting, primarily, a race of men leaving their beards unshorn, and was so used by the Romans to contradistinguish themselves, who were latterly shaven, from their contemporaries.

Referring now to the illustrations, Figures 56 and 57, the first represents the head of Octavia, who lived about the time of the birth of Christ, and who was the niece of Augustus. Figure 57, is the head of Messalina (about 60 A. D.), the fifth wife of Claudius, probably one of the most profligate and licentious women who ever lived. In Figure 58, we have the head of Julia Sabina (about A. D.

100), the wife of Hadrian. She lived unhappily with her husband, partly through her own asperity of temper, and partly through the gross immoralities of her spouse; she finally died from his misuse. Figure 59, is the head of Plautilla, daughter of Fulvius Plautianus, of Africa, and wife of Caracalla, eldest son of the

Emperor Severus. She was banished by him to the island of Lipara, where, seven years later (A. D. 211), she was, by his orders, put to death. It will be noticed that the style of dressing the hair, as is shown in the portraits just given, is not so very unlike that seen at the present day.



Fig. 58.

Fig. 59.



Fig. 60.

A few pages back I spoke of the appearance of a certain style of *coiffure* constantly upon the heads of the Greek divinities; that it was possible, from the arrangement of the hair alone, to determine which deity, of the major ones, was intended to be represented. I have just given the heads of Apollo, Diana, Jupiter, Hercules and Cupid, showing this peculiarity of the hair. In other of the deities this factor is equally constant. Pluto, for instance, has the hair longer and straighter than Jupiter, and his locks fall down over his forehead; this tends to give him the severe aspect due to the god of the infernal regions. This cut also shows the "modius" on his head, with a representation of the olive tree, as the oil of olives, rather than wine, was used in sacrifices to this deity.



Fig. 61.

Neptune, the god of the sea, had hair somewhat similar to Pluto's, though it was not so long, lank and weird; it is also finer and straighter than Jupiter's. It seems to rise up and fall down in plaques, as if wet, a fitting character for the god of waters.

While Apollo is usually represented with the *κροβύλος* (*crobylos*), as seen in Figure 48, yet in early Greek sculpture he is represented with his hair long, uncut and flowing down over the back of his neck, as representative of youth, as is seen in Figure 62, the original of which is in the British museum. Bacchus,



Fig. 62.

who also with Apollo, is emblematical of youth, wears his hair uncut.

Mercury wears his beard curly and quite pointed, as is shown in Figure 64, and his hair is braided, as in the Etruscan style; it is also confined about his head with a fillet, the same as Apollo (Figure 62) wears. In a later era the Greeks represented him with wavy locks, as seen in Figure 63.



Fig. 63.



Fig. 64.

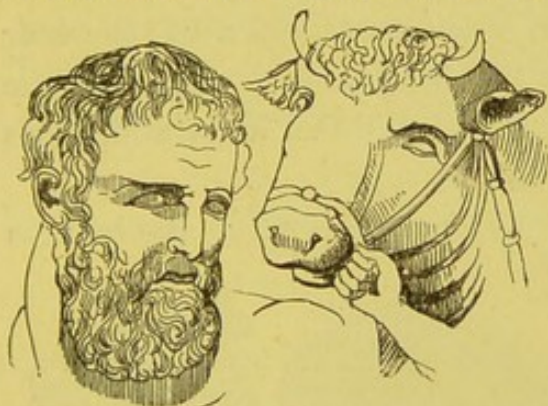


Fig. 65.



Fig. 66.

Hercules, I have already given a picture of him, see Figure 53, has short, curly hair, like that between the horns of the bull; his neck is also shaped somewhat after the same model, short,

thick and muscular, thus denoting great strength. The beard is also indicative of strength, in that it is short, curly and wiry.

Juno has her hair parted in the middle of the head, and then combed up backwards from the forehead, where it is held confined by a diadem, or *corona*, whilst the free ends fall gracefully down the back of the head over the shoulders, Figure 67.



Fig. 67.

Petronius, who wrote upon the customs of the Romans, in his time, thus spoke of Circe: *Crines ingenio suo flexi, per totos se humeros essuderant*. "Her hair, negligently flowing where it pleased, diffused itself over her shoulders." This, undoubtedly, was the manner in which the Roman ladies were then accustomed to wear their hair.



Fig. 68.

The accompanying picture, which is the head of Queen Victoria in her younger days, shows a style of hair-dressing not so very unlike that of the more modest Grecian dames, or that given to the arrangement of the hair on some of the statues of Juno.

Pallas (Minerva) is rarely seen unhelmeted; but when so represented, the hair is gathered up into a knot at the back, and at some distance from the head, whilst the free ends fall down in parallel rows of curls.

Venus and Diana usually are dressed, as regards the hair, in the more simple style of the young Greek maidens; that is, with the hair parted in front, and then rolled backwards from the forehead and tied in a simple knot, at the nape of the neck; the fore part being bound by a fillet running from back of the ears up over the temples,



Fig. 69.



Fig. 70.

as is seen in Fig. 69, which is the head of one of Niobe's daughters. It is also frequently seen tied up at the back of the head, as in Fig. 70, which is a head of Venus herself.

The head of Diana is given in Fig. 49, showing the usual style in which her hair was dressed; the hair of Venus is also, at times, similarly represented.

Vestal virgins always cut their hair short on taking their vows; much the same custom is seen now among the Sisters of the Papal Church, before taking the veil.

Wigs were also in common use among both the Greeks and Romans, as has been before alluded to in the chapter on Coloring the Hair. When their hair turned gray they also used dyes to give it a darker color.

The Carthaginians also made frequent use of the wig-maker's skill in the adjustment of false locks upon their own heads, and also sought the dyer's art. Those that were bald, and did not care to wear wigs, would content themselves in painting their bare crowns with a representation of hair. Martial, in his epigram to Phœbus, satirizing the custom, says:

Unto thy secret thy false hair gives the lie;
Upon thy skull I *painted locks* espy.
Disgracefully bald! To shave hast thou no need;
Use but a sponge, and from thy hair thou'rt freed.

Ovid says that the peruke-makers "bought up all the spoils of the German heads to gratify the caprice of the *petites maitresses*, who were determined to conceal their fine black hair under a light wig."

The Spartans, who were commanded by Lycurgus to wear their hair long, were accustomed to carefully comb and dress their hair just before going into battle. Leonidas and his followers, at Thermopylæ, were seen to be combing their long hair on the eve of the battle, by the spies of Xerxes, and when they reported this to the king, he was greatly incensed at their insolence, as he regarded it. However, Xerxes was mistaken in the motive that led the Spartans to do this; it was a part

of their religious custom, and, in one sense, a funereal rite. The Greek and Roman sailors were also accustomed to cut their hair in times of extreme peril, and offer it to the gods in propitiation of their sins, thereby hoping to appease their anger and thus quell the storm.

When Ptolemy the Third (B. C. 245), was about to make an expedition into Syria, to avenge some unkindness against his wife, Berenice, the sister of the Egyptian king, she cut off her locks of long, beauteous hair, and placed them in the temple of Venus, thereby hoping to insure of the gods a propitious journey to her husband when on the seas. But, from their beauty, they tempted some sacrilegious scoundrel, who stole them from the temple just when her husband was in the midst of his wars. At this she became frantic with grief—she had no more cranial covering to offer up—so Canon, the astronomer, invented a lie to assuage her grief, and said that Jupiter, pleased with their beauty, had snatched the golden locks away and had hung them up among the stars; there her tresses can be seen at this day as the constellation *Coma Berenice*. To finish the story, her husband returned safely and victoriously, and Time, undoubtedly, gave her back her hair.

Both sexes of both races were accustomed to cut their hair short when mourning for some near and dear friend; sometimes they even went so far as to shave their scalps, or to tear the hair out by the roots. The hair was then laid upon the corpse, or it was thrown into the flames of the funeral pile, there to be consumed with the body.

In Homer's *Iliad*, Book xxxiii, it is stated that Achilles and his followers cut their hair and cast it upon the corse of Patroclus:

O'er all the corse their scattered locks they throw.—COWPER.

Sappho also states that when death had seized the young and blooming Temas,

Her loved companions pay the rites of woe;
All, all, alas! the living can bestow.
From their fair heads the graceful curls they shear,
Place on the tomb and drop the tender tear.—SHERBURN.

Alexander the Great, on the death of his intimate friend Hephæstion (B. C. 324), not only cut off his own hair, but also ordered that the tails and manes of all his horses and mules should be sheared. Herodotus also says that Mardonius (B. C. 475), one of the generals under Xerxes, after suffering defeat, felt so grieved that he cut off his hair.

On the death of Adonis, Bion says, the little cupids

Shear their locks, excess of grief to show.—FAWKES.

And Fawkes, in a note to this epigram, remarks:

"It was practiced, perhaps not only in token of sorrow, but might have also a concealed meaning, that as the hair was cut from the head, and was never more to be joined to it, so was the dead forever cut off from the living, never more to return."

Ezekiel (588 B. C.) alluding to the same custom says, concerning the mourning for the fall of Tyrus (Ezekiel, xxvii, 31), "and they shall make themselves utterly bald for thee, and gird them with sackcloth, and they shall weep for thee with bitterness of heart, and bitter wailing." In Micah (750 B. C.), chapter i, verse 16, a similar expression is found. In Jeremiah (600 B. C.) xvi, 6, occurs the following: "Both the great and the small shall die in this land; they shall not be buried, neither shall men lament for them, nor cut themselves, nor make themselves bald for them."

They were also accustomed to hang the hair of a deceased friend, instead of our accustomed crape (perhaps this is where our custom had its origin), upon the doors of their houses pre-

vious to their interment. This custom probably arose from the fact that they believed no one could die until Proserpina had cut off a lock of their hair. This, they looked upon as a sort of consecration of the person to the deities of the lower world. Virgil alludes to this in

Nam, quia nec fato, merita nec morte peribat.
 * * * * *
 Nondum illi *flavum* Porserpina vertice *crinem*
 Abstulerat.

“For she fell neither by fate, nor by a meritorious death. Proserpina had not yet clipped a lock of yellow hair from the crown of her [Dido’s] head.” Horace, in alluding to the same thought, says:

* * * * * Nullum
 Sæva caput Porserpina fugit.

“Not a head (no person) does the cruel Proserpina pass by.”

The ancient *Gauls* esteemed it an honor to have the hair long, and hence Cæsar, when he had conquered them, not only made them “pass under the yoke,” but deprived them of their long tresses also; then those that vowed perpetual submission retired to the cloisters, and shaved their heads. This feeling of humiliation, at the cropping of the hair, descended for generations among the French people, and hence, under the first *régime*, to cut the hair of the heir to the crown was deemed an exclusion of his rights to the succession, and reduced him to the position of an ordinary subject. The kings and princes, during this period, wore their hair long; though the subjects were made to have their hair cut short, as emblematic of their inferior state. They were also great admirers of red hair, although their descendants, at a period later, held it in abomination.

The ancient *Britons*, also, were proud of their long hair, and

took great pride in the dressing of it. As to their beards, they shaved all but the upper lip; but the hair thereon they suffered to grow to its full length; thus also did the Gauls. To this extreme degree was this veneration for long hair carried, by this people, that it was deemed a great disgrace for a slave to touch it; if a warrior was ever condemned to death, his dying request would be that no slave might pollute his hair, with his touch, or that it should be dabbled in blood.

In later years the *Danes* and *Anglo-Saxons* had an equal veneration for their hair—probably inheriting this feeling from their early ancestors. Young ladies, before marriage, wore their hair uncovered and unconfined; but as soon as married, they, in common with the other married women, cut it shorter, did it up, and wore head-dresses and other articles to confine it. To cut it short was deemed one of the greatest punishments that could be inflicted upon a lady.

As the Roman freedmen were in the habit of shaving their foreheads, so that they might be distinguished from the slaves, so the early knights were in the habit of shaving theirs to distinguish themselves from others, and also that no hold might be furnished an opponent, whereby he might drag them from their horses, should their helmet become lost, in the heat of the battle.

To pull a hair from the head, and present it to a person, in some countries, was considered an act showing esteem. For this reason Clovis presented to Bishop St. Germier one which he had just pulled from his head, and in this action he was followed by his courtiers, thus, it is said, deeply impressing the bishop with their respect and regard.

Coming now to our own times, we learn that the Indians of Tancuyabo (Hakluyt's "Voyages," Vol. III, N. 459) "wear their hair long, reaching down to their knees, and tied as women used to do, with their hair laces."

Among the Indian tribes of the Indian Archipelago, according to Captain Keppel, are found those that wear a large quantity of hair; some have it frizzed out, others have it colored white, others black or red. He says: "A man having his hair carefully divided down the middle, would present one side covered with a jet black pigment, while the other half would be bright red, or perhaps white. The men, five or six in number, belonging to the same boat-crew were generally colored uniformly; that is, the same crew were black on the port and white on the starboard side. Others would paint a white ring around the head, just above the eyes and ears, which made it difficult to believe that the head was not confined in a close-fitting skull-cap."

Quite similar to this, in point of fantasticalness, is the manner of dressing the hair among the Fijians. They usually prefer black hair, though some aspire to white, flaxen, or even bright red, using sundry dyes and paints to accomplish this change of color. These heads of hair are often two or three feet in



Fig. 71.

circumference, see Figure 71, and Mr. Williams (Fiji and Fijians, Vol. I) says he has seen heads of hair, in this style, that measured nearly *five feet in circumference*. Of course, being of such enormous size, the owner is unable to sleep, except by means of a neck-rest; and for this



Fig. 72.

purpose they use small blocks of wood placed under their necks for their pillows.

Some one, of a more fantastic turn will cut his smeared and

sticky locks down through the center, see Figure 72, much as a farmer will cut down his hay-stack when he winter-feeds his cattle. Others will keep the hair all cropped pretty closely to the head, excepting that springing from the crown; this they will braid into strands, and, after stiffening them, will stand these strands straight up from the head. Another will have a fiery knot upon his crown, the rest of the scalp being absolutely bald. Another, Figure 73, will cut his hair close, saving twelve or fifteen little round bunches which he will suffer to grow up to quite a length,



Fig. 73.



Fig. 75.



Fig. 74.

and will color them a bright red, or black, whilst the hair that is shorter he will paint a white color. Another one will let all of his hair grow out to the full length and will then color it, that on the top

and back part of his head, a jet black, whilst that which is

more forward upon the scalp, will be, for marked contrast, painted a glaring white, thus making it resemble a thick worsted hood that he is wearing upon his head; see Figure 74. Again, there will be others that will have their hair done up into many cones, the base being outwards, thus completely covering the hairy portion of the head. This last is very similar to one of the ways that one of the tribes of the interior of Africa have of wearing their hair, see Figure 75. This is a portrait, taken by Livingstone, of a Londa lady. This race is not that usually seen in Africa, since it approaches the Caucasian in form of face and feature. Their complexions are of a light olive cast. The hair of the females is frequently seen as here represented; often a second and smaller hoop, similarly connected with the hair, will be back of this forward one.

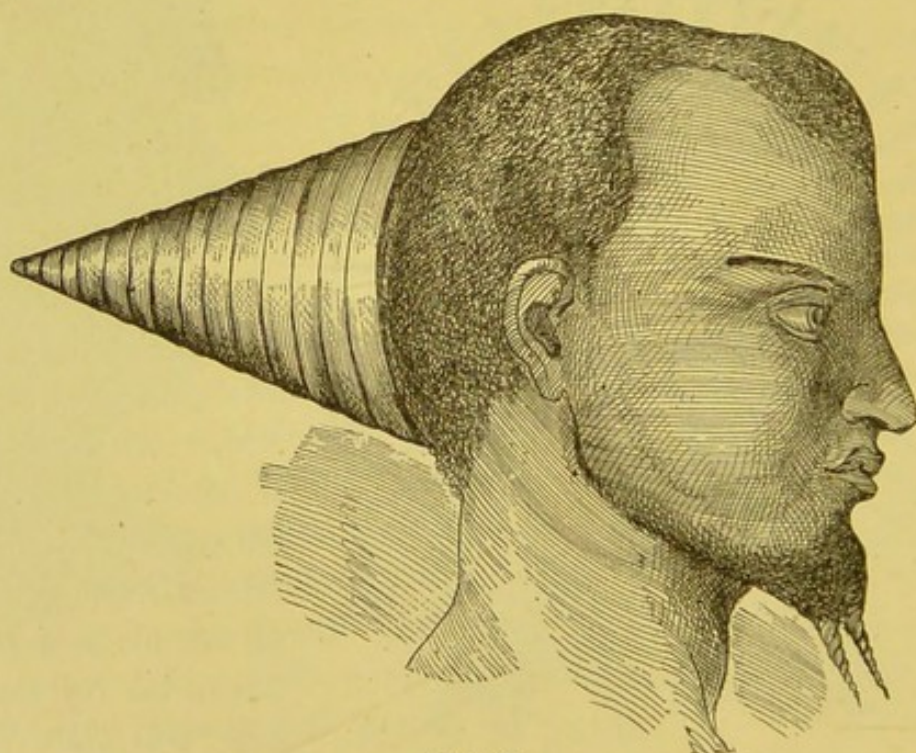


Fig. 76.

This cut, Figure 76, is the way one of the tribes on the

Quango were seen by Livingstone to wear their hair. It was, however, confined to the chiefs. The head here represented is that of a Bashinje chief. It will be here noticed that the chief has quite a lengthy beard growth. This is something very unusual for the African tribes.

Fig. 77, represents one of the inhabitants of New Guinea, a Papuan. They are a mixed race, being a cross between the Malay and the Negro. The hair gives evidence of this; the Malays being a race noted for long, straight hair, and the Negro for short curly hair; in the union of the two we get this immense head of frizzled hair. The hair, in this race, seems to grow in



Fig. 77.

tufts, and forms spiral twists, each in a degree separate from the others. These frizzled heads are so immense that they are rarely less than three feet in circumference.

Figure 78, represents the head of a Cafuso woman. As for bushiness of hair, it will be seen to resemble, somewhat, that seen upon the Papuan, though it is hair of entirely different texture. The race is a cross between the South American Indian, of Brazil, and the African Negro, and more clearly furnishes

the midway ground between the crisp, curly hair of the Negro, and the lank, straight hair of the Indian or Malay. The Cafuso hair grows straight out from the head, and to the height or extent of a foot, or even eighteen inches, thus furnishing, sometimes, heads of hair nearly five feet in circumference.

Still another peculiar



Fig. 78.



Fig. 79.

and striking form of hair-growth is seen in the Solomon Islander, Fig. 79. He is in pretty close communion with the Papuan described in Fig. 77, as his native land is but a few hundred miles to the east of New Guinea, lying right under the equator. The texture of his hair, however, is entirely different. The beard growth is also quite exuberant.

Why the hair near the head should be so lank and straight, and yet so crinkly, if not curly, at the ends, admits

of no easy solution. The race furnishes, however, a near approach to the native of North Australia, whose portrait is given in Fig. 80. Here the excessive growth of head hair in

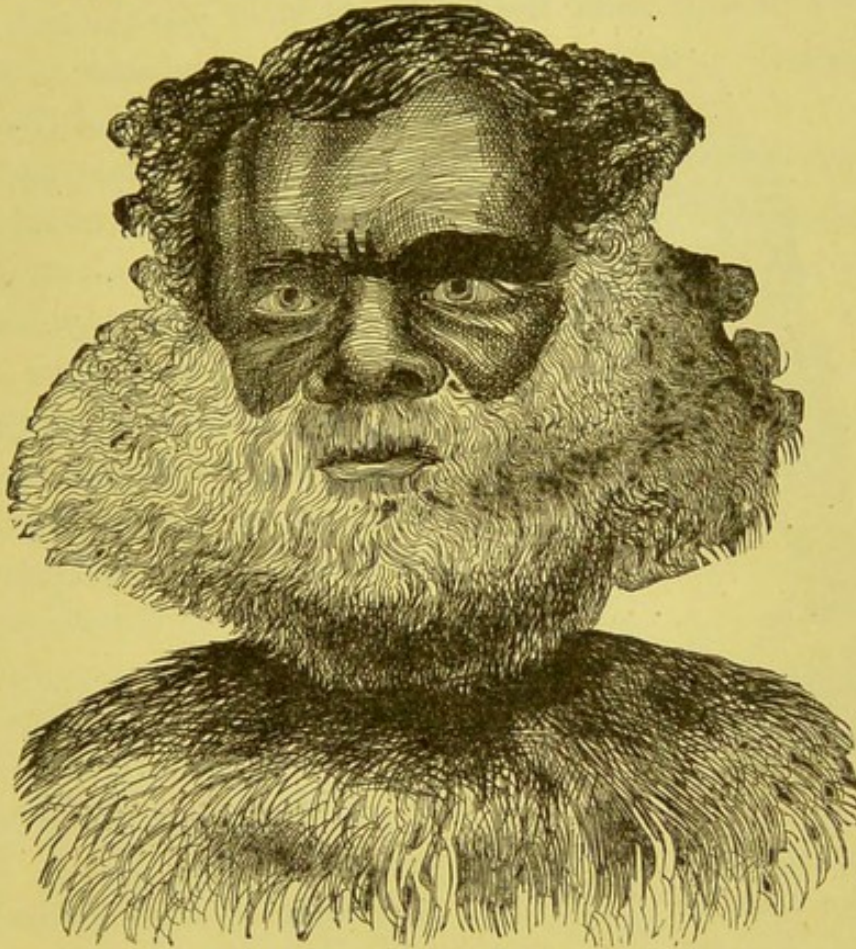


Fig. 80.

the Papuan, and Solomon Islander, has given place to a more exuberant beard-growth, and growth of body hair. The face is one between the African and Malay. It was taken from a photograph.

Coming, now, more closely home in the consideration of the absurdities of style in coiffures, we find that, not so very long ago, it was endeavored to imitate butterflies, ships, birds, castles, flowers, mammoth snail shells, etc., in the arrangement of

our ladies' tresses. Wire frames were used to do this, much as the florist uses wire frames on which to model his wares of cut flowers and mosses. A still later style was to put large cushions or rolls upon the head, and then pile the hair up on



Fig. 81.

top of them, as seen in Fig. 81, which is a portrait of Georgiana Cavendish. No less backward, in the employment of false hair, chignons, perukes, etc., were the males, a few years ago. Just what should have led to this absurd custom, the assuming of long hair by the male when in court dress, is not very clear; possibly it originated as a reaction from the effect of the absurd laws that were formerly enacted against long hair. Men are very like pendulums in their ideas and customs, rapidly swing-

ing from one extreme to the other.

In the time of Francis I., of France, it was customary to wear long hair at court; but the king, having received a wound upon the head, was so proud of it, that he had his hair cut, in order that he might show the scar to a better advantage. Short hair then became general; but in the time of Louis XIII., the old-time fashion of wearing the hair long became fully restored, to be given up again shortly after the revolution. About this time, also, the long, white courtwigs, of England, began to go out of fashion, and are now worn only by the Chancellors, Peers, etc., on state or official occasions.

CHAPTER XXVII.

THE HAIR OF THE ANCIENT ASSYRIANS, EGYPTIANS AND PERUVIAN INCAS.

The ancient Assyrians were preëminently a race of elliptical-haired people. Their monuments attest this in the portraiture of their finely curling locks and beards. Though no locks have come down to us, yet their sculptured marbles are so truthful in their delineation, even to the fine lace upon their garments, that one can as easily form a correct judgment of the general shape of the hair-cylinder, on transverse section, as though he had a segment of a veritable hair beneath his microscope. None but the ovoid or elliptical variety of hair will assume the regular curling form of hair and beard that this nation wore.



Fig. 82.



Fig. 83.

Fig. 82 and Fig. 83 represent the heads of an Assyrian king and queen. Undoubtedly the climate of their country had much to do with the development of the curling qualities of their hair and beard, in that it permitted its

state of curliness to be continually preserved.

Their beards they allowed to grow to full length, and they were especially cared for. Usually they were dressed with three transverse rows of curls, as seen in Fig. 83, though sometimes but two, if the beard was short, were worn. The mustache also received a great deal of attention, and it was carefully curled outwards from the median line, and ended in a curl artificially produced, or natural. Their hair was combed back from the

head and suffered to coil itself into a mass of ringlets about the neck; both sexes dressing the head hair in much the same way.



Fig. 84.

This is quite clearly shown in Fig. 84, which is a portraiture of the great king, Sennacherib, as carved upon one of the Nineveh marbles, who was slain by his sons when worshiping in the temple dedicated to the Assyrian god Nisroch.

Sometimes they would dye the hair and beard, as the moderns now do, and the eyebrows, too, received the dye, much as the occupants of the Eastern harems dye theirs to-day. The ancient Assyrian belles made use of cosmetics for their cheeks and lips, and the modern, fashionable, Anglo-American belle is but following out a custom inaugurated by the reigning belles of thousands of years ago,

when she so attires herself with "lily white" and "ruby ball."

Even the gods of the Assyrians are represented, when having hair, with their comate covering as richly curled as any of their hirsute kings or warriors. When portraying other nationalities, captive or contemporary, they were equally careful to represent them as lacking the Assyrian curls of hair and beard, as they were careful to give each portrait of themselves the abundance of them.

THE HAIR OF THE ANCIENT EGYPTIANS.

I have in my possession a good many hairs of the head, beard and eyebrows from a citizen of ancient Thebes, whose

comate covering has thus been preserved these three thousand years from the ravages of time. Though of a decided reddish tint now, it undoubtedly was black when its owner was alive. This I am positive of, for the hair is nearly cylindrical, on transverse section, and cylindrical hairs are almost universally of this color. In diameter the hairs vary from $\frac{1}{400}$ to the $\frac{1}{350}$ of an inch. The medulla shows as plainly in it (see page 28) as you can make any hair show it when you have tried to bring it out with the use of reagents, and, in some specimens, constitutes one-third of the shaft. Being of the cylindrical type of hair, it must necessarily have been long and straight, if permitted to grow to any length. The males did not do this, however, but kept their scalp, during the times of the Pharaohs, closely shaven, except in the time of mourning. This had been the case of the young man whose mummified head fell into my possession. He had evidently been sick three or four weeks, as the services of the tonsorial artist had not been sought, judging from the growth of the head hair and beard, since both were of the same length, in that length of time. The face, when unwrapped from its bituminous casings, did not look much emaciated; hence it must have been some acute disease that carried him off.

No one but a slovenly person, or one in mourning, would allow his beard to be seen. The artists have taken advantage of this and have employed it in caricature. Thus, Rameses is represented with a beard of three or four days' growth in one of his portraits in the tombs at Thebes. Slovenly people were also so represented, at times. However, in time of war, when a barber was hard to be obtained, the beard reached a certain length; and in some of their pictures the king is so represented, when returning from his wars; this feature testifying to the hardships he had undergone.

Herodotus says that the Egyptians "only let the hair of the beard and head grow when in mourning, being at all other times shaven." The Bible has an incidental reference to the same fact, for in Genesis, xli, 14, it is said that Joseph (B. C. 1718), when in prison and sent for by the king "*shaved himself*, and changed his raiment and came in unto Pharaoh."

So far did the Egyptians carry the idea of cleanliness, as demanding frequent shaving of the head and face, that their slaves and captured prisoners were subjected to the same tonsorial process. Frequently a skull cap was worn by them; and Martial, in later times, refers to a bladder as being worn by the servants of his time, for he says:

"Fortior intortos servat vesica capillos."

"A stronger bladder guards the twisted hairs."

The priests carried the matter still farther, for they shaved the whole body every three days, and bathed twice a day and twice during the night. Here, then, is the foundation of the excrementitious idea referred to on a previous page, for they, with the Persian fire worshipers, regarded the hair as an uncleanly element.

In the Theban sculptures and paintings we frequently find the men represented with long, plaited locks; these are not their natural hairs, but are wigs that they were accustomed to



Fig. 85.

Fig. 86.

Fig. 87.

Fig. 88.

wear. Figs. 85, 86, 87, 88, show various styles of these curled and braided head-

dresses. It would seem strange, at first thought, that the dwellers in this hot climate should shave their heads to keep themselves cool, as well as clean, and yet would burden them-

selves with wigs. Still, when we take into consideration the open net work on which the strands are fastened, see Fig. 89, which is one seen from the front, and is preserved in the museum at Berlin, it becomes evident that they had in them an effectual screen against the direct and scorching rays of the sun. At the same time that they played the part of a shade, they afforded free ventilation to the scalp beneath. In the original of this figure the braids measure two and one-half feet in length. It was, undoubtedly, a wig for the female sex. The upper parts of these wigs were usually made of curled, or closely-braided hair; in the case of the poorer classes some woolly substance was substituted for the genuine hair, and they were then known as "false wigs." These wigs were worn in the house, as well as out in the open air, serving the same purpose that the turban

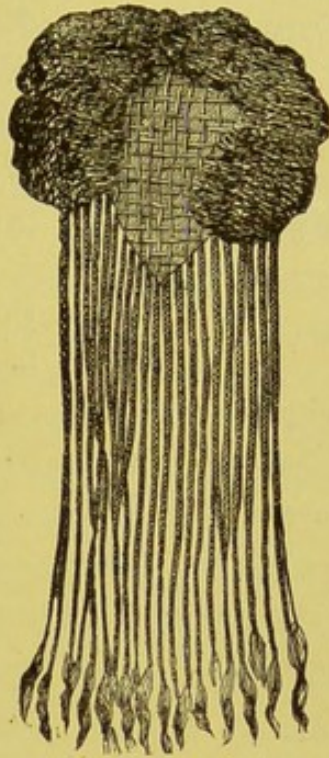


Fig. 89.

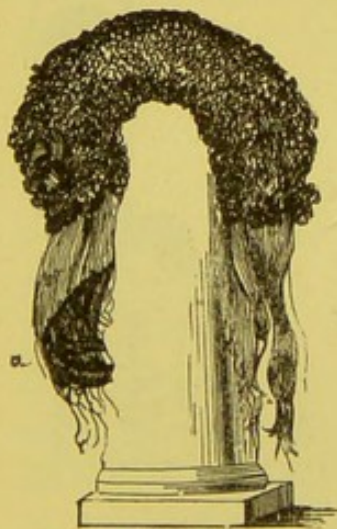


Fig. 90.



Fig. 91.

does with the modern Egyptians. Sometimes the hair was suffered to hang loosely braided from the crown of the wig, as is represented in Figs. 90, 91, which represent the front and back of a wig now preserved in the British Museum.

The longer plaits only are braided in this specimen.

Another common form of head-dress, worn by members of the royal family, is that depicted in Fig. 92. This was evidently made of some manufactured cloth, and would hardly be as serviceable as the wigs for shielding the wearer from the heat of the sun, as ventilation seems to be illy prepared for.



Fig. 92.

The Egyptians carried this wig-wearing to the extreme, for they not only shaved their heads, and then covered their baldness with wigs, but they also shaved their chins and then attached thereto false beards of plaited hair. These false beards were of various forms, differing according to the man's station in life, much as we see the different ways in which the natural beard is trimmed to-day, corresponding with a man's avocation. Private individuals had a short beard, barely two inches in length, that they



Fig. 93. Fig. 94. Fig. 95.

tied upon their chins; a king wore one of considerable length, which was cut square across the tips of the hairs; the figures of the gods have theirs turned up at the end.

These three varieties are well represented in the accompanying figures, where Fig. 93 represents a king with his false beard attached; Fig. 95 a private individual; Fig. 94 the head of a god, with his curling beard. After death, however, a king was permitted to have affixed to his statue the beard of the gods, but in life, never. Other persons, who were deemed worthy of entering into Elysium immediately after death, were also



Fig. 96.

privileged to have the same god-like characteristic affixed to their effigies. Fig. 96 represents the mummy case, or statue, of some king, or high-rank Egyptian, who has been deemed worthy to share the Elysium of Osiris, and his faithful spouse, who is on her knees, weeping before it. This privilege of wearing the beard of the gods was granted the worthy dead because the Egyptians believed that the souls of the upright dead assumed the character of the great god Osiris, hence, being like him, were worthy the bearded honors of the god himself.

The hair of the male children was also shaven, though not completely from the scalp; portions of it were left at the sides of the head, and these locks, according to their shape, served to distinguish the children of different castes. Thus, for instance, the princes wore a braided lock, the shape of the letter **J**, only with the hook on the reverse side, hanging down from behind their ears. When man's estate was reached, the same lock was kept up in their head-dress, though the hair was shaven from the head, as long as the father reigned. This was the same lock of hair the youthful god Horus, the son of Isis and Osiris, wore, the god all the king's children were supposed to emulate in all royal virtues.

The female children wore their hair very long, as the accompanying cut illustrates.

The Egyptian women wore their hair long, and did not shave the head at any time. It was dressed in long plaits, or braids, as shown in Figure 98. On this individual, a lady of influence, as her clothing would indicate, the hair is held confined at the sides with a sort of high-backed comb, similar to those worn by our ladies now-a-days, whilst a fillet surrounds the fronto-occipital regions. The short hair lies on the cheek in a couple of small braids. Figure 99 shows a different form of dressing the hair, although it is braided, and



Fig. 97.

a sort of cap, or head-dress, worn. The figure also shows the peculiar way of wearing the scarf about the waist, being passed



Fig. 98.



Fig. 99.



Fig. 100.

twice about it, then tied in front. It looks as though tied at the side, but this is a peculiarity of all the ancient Egyptian drawings. Sometimes, the hair was confined to the head with nets, as is shown in Figure 100.



Fig. 101.

Fig. 102.

Fig. 103.

Other peculiarities in the style of dressing the hair are shown

in the three heads just plated. The figure on the right, Figure 103, shows the more usual way of wearing the hair, that in long braids reaching nearly down to the waist, and left flowing down the back and over the shoulders upon the breast, with a single fillet about the head. Frequently the fillet was replaced by the winged ornament shown in Figure 101, which separated the forward, or shoulder, plaits, from those that fell down the back. A round stud, or large pin, also was frequently thrust into these plaits, at the top of the head, as an item of ornament.

Figure 104 represents a lady of rank in full dress, and with her sash passed twice about the waist, and tied in front. Another peculiarity of Egyptian drawing is that the form of the person is shown through the clothes.

The shorter locks, springing from the temples, the Theban ladies were accustomed to braid into small strands, by the aid of a few of the longer hairs, and these they tied with a string, and allowed them to fall down over the cheek in front of the ear and ear-ring, frequently hiding both. Mummies of females, with their hair so dressed, are quite frequently met with; the braids of hair and their arrangement being perfectly preserved. The locks, however, are changed to a red hue, owing to the effect of the embalming material upon them.



Fig. 104.

THE HAIR OF THE ANCIENT PERUVIANS.

Quite recently I received from Prof. Steele, of Michigan University, specimens of hair from the skulls of the mummies he exhumed, from the burial places of the Incas, in Peru. The specimens are well preserved from the ravages of the many centuries that have rolled over them, and show that their possessors belonged, hirsutically, to a race of ovoidal-haired people; for, on transverse section, the shafts resemble, markedly, the transverse sections seen of hairs from our straighter, though ovoid, haired people of to-day, as the French and Spanish. Hence, while the hair was inclined to straightness, yet a curling of it, in a minor degree, was not only possible, but probable. Socially, then, even as their monuments indicate, the hair would mark them as a race in advance, so far as the arts of civilization are concerned, of the cylindrical-haired Indian of the present time. It is considerably coarser than the Anglo-European hair, measuring, on the average, $\frac{1}{3\frac{1}{3}}$ of an inch in diameter. One specimen, from an old gray-haired individual (apparently a male), shows the imbrications of the outer scale-layer, covering the cylinder, very plainly. Another specimen, from a middle-aged individual, shows the medullary portion of the shaft as plainly as reagents could bring it out.

The Incas were accustomed to dress their hair in some simple manner, the ladies permitting theirs to grow quite long, confining it either in loose braids, or in loose rolls, about their heads, much as is the custom of the remnants of their race to-day.

CHAPTER XXVIII.

THE BEARD.

Special Description. The beard furnishes us with some of the coarsest hairs to be found upon the human body; probably, with the exception of the eyelashes, the coarsest that may be thereon found. The thickness of the growth runs from 150 to 200 hairs to the square inch of surface. In size the beard-hairs are double, or even quadruple, that of the head-hairs. They are also decidedly elliptical, or even triangular, when

seen on cross-section. This is very nicely shown in Figure 105, which is a cross-section of a beard-hair of a white adult, and is magnified 370 times. This one shows the pith, or medulla, very distinctly, and is of the elliptical type, the one more usually found on the American.

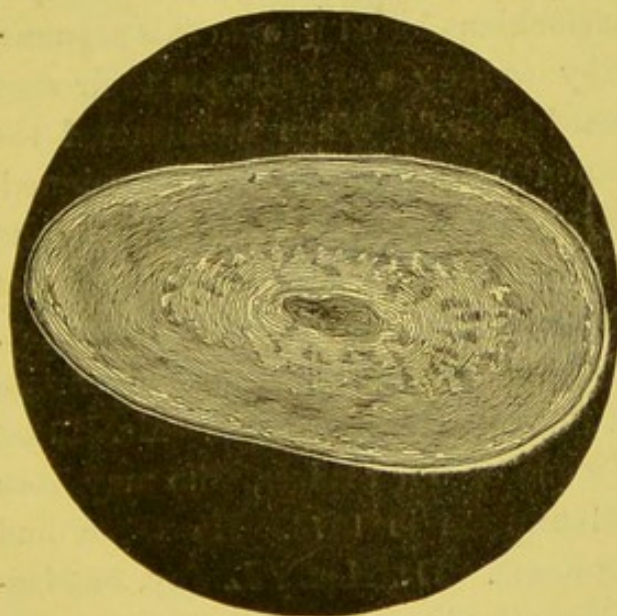


Fig. 105.

The growth of the beard is quite rapid, when care is taken to keep it

closely trimmed, or the face shaved. Some eighty feet are supposed to be thus cut off in the life-time of a man that has come to his four score years. The average growth is some six or six and one-half inches annually. Still, in exceptional cases, the growth is even more rapid. Notably so is that of the case

of Mr. Edwin Smith, whose portrait is given on page 98. In his case the average growth must have been at the rate of nearly eight inches per annum. This beard, although seven feet, six and one-half inches in length, is not, however, the longest beard on record, as the one belonging to the carpenter, whose portrait hangs in the prince's court at Eidam, measured *nine* feet in length. (See page 99).

The Lombards (Longobards) were a race of long-bearded men, as their name indicates. They rarely, or never, used a razor upon it. It is said that Alcides' beard would reach to the ground. King Robert, of France, also possessed a very long white beard. Julian also wore so long a beard that he was forced to tuck it into his girdle, when walking, to keep it from the ground. The Antiochians hated him on this account; but he revenged himself by writing a satire upon their city, named "Misopagon, or Beard-hater." When he assumed the throne, however, silence upon the beard-subject also reigned. A German artist, John Mayo, by name, though called John the Bearded, from his exuberant beard-growth, sported one that would with, Hüber's, reach the ground when standing upright.

Another very long beard, of modern times, is that belonging to Mr. Ignatz Hüber, of St. Pöltsen, North Austria. Mr. Hüber possibly is remembered by some of our readers, who may have seen him at the Vienna Exhibition in 1873. He there had charge of one of the departments. Dr. Henry L. Joy, of Marshall, whose brother saw him at that time, vouches for the correctness of the portrait as here given, Figure 106, but says he knows nothing further concerning him.

Mr. Hüber is now some 56 years of age, and his beard is quite gray. It comes down to the floor, when standing erect, and is surely a marvelous beard for one so old, although it does not measure so long as Mr. Smith's, previously described. This

beard was *four feet six inches* at the time the portrait was



Fig. 106.

taken, 1873. The back of card bears this brief autobiography: "Ignatz Hüber von Wilhelmsburg, bei St. Pöltsen in N. O., fünfzig jahre alt. Bart, länge vier schu sechs zoll."

As a rule, the lighter skinned races are those only which grow beards to any length. Just why this should be so, it is impossible to give any satisfactory reason. Climate may have much to do with it, as light-skinned people usually live in the temperate zones, where all animals, even, are hairy; whereas the dark-skinned

live, as a rule, in the torrid zone, where the animals, too, are, comparatively, hairless. Still there are many important exceptions to this rule, as, for instance, the North and South American Indians, though of dark-colored skin, live in the same zones as the lighter-faced and bearded Europeans and Anglo-Americans. The Laplanders and Esquimaux are dark-skinned and almost beardless races, though living in the frigid zone. Some of the torrid zone people, as, notably, the Solomon Islanders, Figure 107, grow quite luxuriant beards. The Sandwich Islanders also furnish us with an example of the inhabitant of the torrid zone growing quite a respectable beard, see Figure 108. The complexion of this race of people is also

much lighter than that of the Malay race, in general, to which they have been referred. Their hair is black, often curly and bushy, though it is sometimes straight.

The men of North Australia, as Figure 109 shows an excellent portrait of one of the better developed (physically and intellectually) members of this race, have also a very exuberant beard-growth; in



Fig. 107.

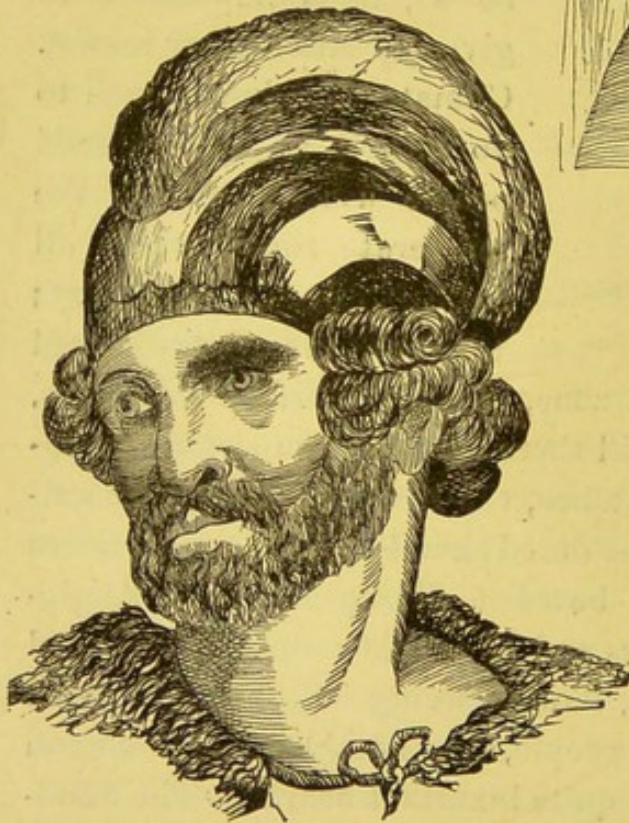


Fig. 108.

this respect, and the form of the growth of head-hair, they quite closely approach the light-skinned and bearded races of the north temperate zone.

In the chapter upon Polytichia, or Excessive Hair-growth, several instances are given of the growth of the beard upon women, as well as the painting of the faces of the women, by themselves, to imitate beard-growth. To these cases can be

added that of the Swedish grenadier, whom the Russians took prisoner, in 1724, and who turned out to be a woman with a beard a foot and one-half in length. Then there was the titled lady, Margaret, the Duchess of Parma, who, during the time of Philip II., sported a long mustache. Travelers also say

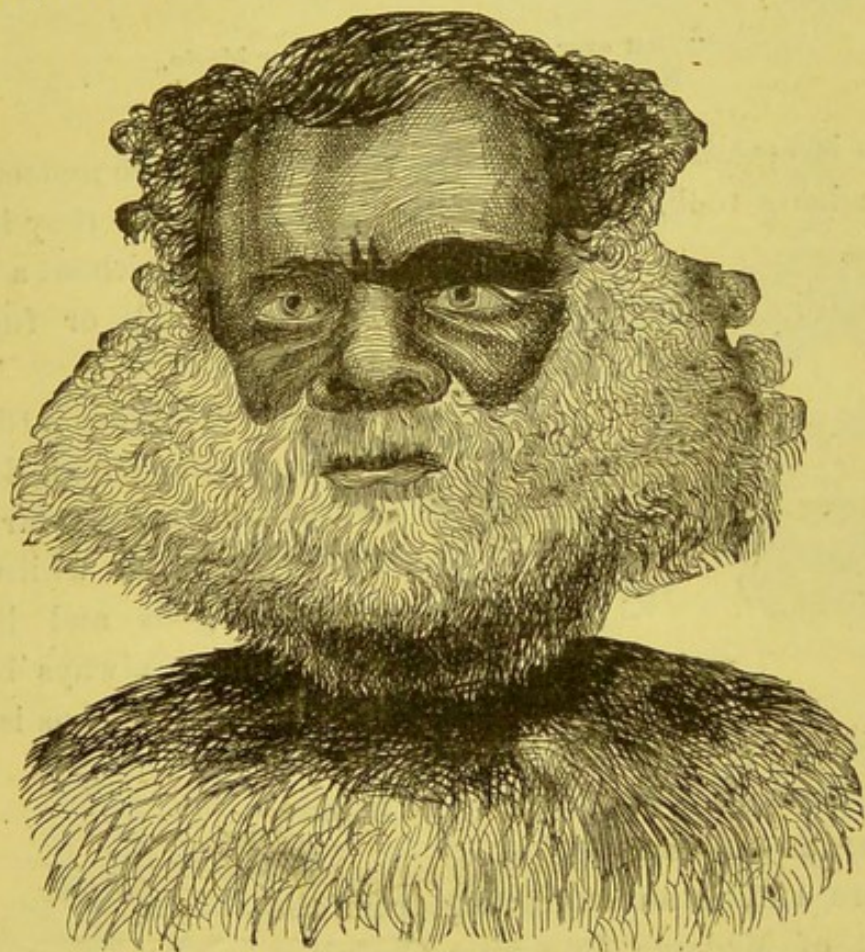


Fig. 109.

there is a race in central Ethiopia where both the males and females grow beards and mustaches.

The Cyprian Venus was represented with a beard, and Suidas, who lived in the Tenth century, asserts that the Athenian ladies tried to raise what Nature denied them, and so were accustomed, at times, to clothe themselves with false beards.

The ancients also asserted that Jupiter denied this growth to women lest, if they had beards, they might draw to themselves the adoration which should only be given to the gods. Byron, however, puts a very different interpretation upon this matter, though one equally wanting the elements for scientific credence, for he says :

"That ever since the fall, man, for his sin,
Has had a beard entailed upon his chin."

This is certainly just the opposite view of the matter that the ancients took, as we shall see further on, for they looked upon a man without a beard as a criminal, or fugitive from justice.



Fig. 110.

Jupiter, Figure 110, and other of the major deities, were permitted to wear long, flowing beards, whilst the younger gods and heroes were almost always beardless, though Bacchus is represented in one of his statues, in the British museum, with a beard; he is here, however, an old man.

Figure 111, is an engraving from the portrait of Madame Josephine Clofullia, the bearded woman, who was on exhibition in New York city in 1853. She, as is usual with this class of females, was decidedly masculine in her physical mould and tastes.

The beard worn by St. Paul is probably as good a representation of the type of the modern full-length

upon a man without a beard as a criminal, or fugitive from justice.



Fig. 111.

beard as any that could be given; for it is very unusual to have the beard-hair of a longer growth than is here represented. The cut, too, can be relied upon as giving a good picture of this learned and revered man, since it is copied from a medallion found at Herculaneum, that buried city which was once Rome's fashionable watering-place. There is every reason to believe the medallion genuine, and that it must have

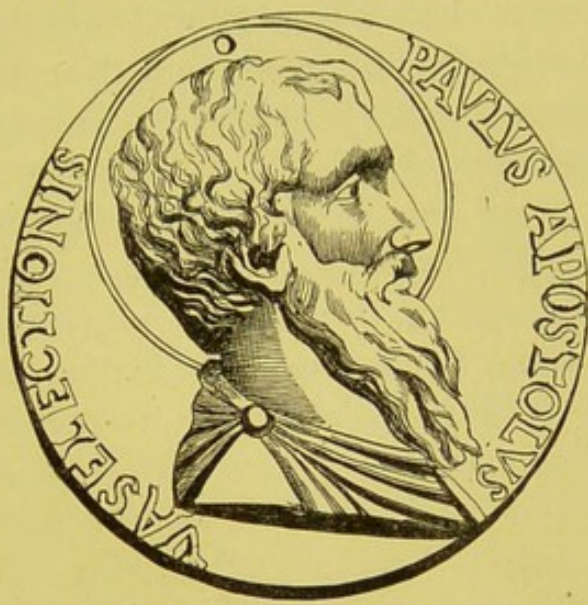


Fig. 112.

been struck during, or near, the time of the Apostle, whom it commemorates, for Herculaneum was buried in the ashes of Vesuvius, A. D. 79, and Paul's death was but a short time prior to that date. The Latin inscription, PAVLVS APOSTOLVS VAS ELECTIONIS, about the head, when translated reads, "Paul, the Apostle, a chosen vessel," which compare with the fifteenth verse of the ninth chapter of the Acts of the Apostles. On the reverse side of the medal is the Latin transcription of the 26th, and a portion of the 27th verses of Psalm lxviii, which reads, "Praise ye God in your assemblies, even the Lord, ye that are of the fountain of Israel; Here is Benjamin, the younger, their leader." Paul was of the tribe of Benjamin, as he himself says in his brief autobiography given in the third chapter of Philippians.

The earliest reference to the beard found in the literature of the Hebrew nation, which was proverbially a long-bearded race, is found in the thirteenth chapter of Leviticus, and was

written some 1,490 years before the Christian era. In the fourteenth chapter it is ordered that the leper shall shave off all his head-hair, his beard, and his eyebrows, before he can be cleansed. In the nineteenth chapter of the same book occurs this passage, "Neither shalt thou mar the corners of thy beard," leaving one to infer that long, flowing beards, with square corners (or rather beards untrimmed), was the prevailing custom among this ancient people; and also that the heathen nations about Israel were in the habit of trimming, or cutting their beards. From this, undoubtedly, as a starting point, has arisen that beard-veneration now so commonly seen in Eastern nations. Many a war has been waged at the insult offered the beard by shaving it off, striking it, or spitting upon it. Thus, in Samuel, chap. ii, is recorded the fact that David waged war against the children of Ammon for shaving off half of the beards of the messengers he sent to king Hanun. This was 1040, B. C. As late as 1764, Kerim Khan waged a destructive war against Mir Mahenna for similarly insulting his tribute-collectors. Even now the Mohammedans hardly tolerate a smooth-faced foreigner. They look upon him as some criminal driven out from his own country, since they punish their criminals by depriving them of this much prized article. David (1062, B. C.) when he wished to feign madness before Achish, king of Gath, for no one but a mad man would suffer saliva to rest upon this comate covering, "let his spittle fall down upon his beard;" 1 Samuel, xxi, 13. In great sorrow, also, the beard was neglected and left undressed.

Something of the same respect for the beard is occasionally seen among the European nations, for we read that when Sir Thomas More was at the block, and seeing that his beard was so placed that the axe would cut it when it did his neck, drew

it aside, saying, "My beard has not been guilty of treason; it would be an injustice to punish it."

The church, in later days, has also tried to govern the style of beard that should be worn, or whether it should be worn at all. Thus, Godefroi of the Twelfth century, and bishop of Amiens, refused the offerings of any one who wore a beard; the custom originated with Leo III., who was the first to present the world with a shaven Pope. Thirty years after this, Gregory IV. promulgated another bull, thus making still more beardless priests, and finally, in the Seventh century, it was little else than the lack of beards that distinguished the clergy from the sinning laity, as a caustic writer of that period avers. In the Twelfth century the beards of the laity began to get a fierce canonading, and this was what led Godefroi to take the stand he did in the matter. However, a century later, the personal pride of Pope Honorius III., for in order to hide a scar upon his lip he suffered his beard to grow, rather ameliorated the former curses the beard had sustained, and beards again became fashionable.

Then the pendulum soon swayed to the other extreme, as regards the bearded arc, for beards soon took on fantastic cuts and shapes in the fashionable world. The bishop had his peculiar cut, the judge his, the lawyer his, and the soldier his, and so on down to the common laborer. This led to these caustic lines, which were written in Queen Elizabeth's time:

"The barbers thus, like tailors, still must be,
Acquainted with each cut's variety."

In France, during the time of Henry IV., the following styles of cutting the beard were in vogue: 1st, the pointed beard; 2d, the round beard; 3d, the square beard; 4th, the aureole beard; 5th, the fan-shaped beard; 6th, the swallow-tailed beard; and 7th the artichoke-leaf beard.

One of the latest bulls against beard growing was quite recently promulgated to the Roman Catholic Clergy of Bavaria, through the Nuncio at Munich. It reads as follows: "It has come to the ears of the Pope that there are clergymen in some of the dioceses in Bavaria who, led by the spirit of innovation, or rather thoughtlessness, wish to introduce again the antiquated custom of growing the beard, and who, by their custom, wish to induce others to do likewise. * * * * The authorities of the dioceses are commanded not only to see that these beards are forthwith removed, but also that the unity of rule and the complete identity within the Roman church, with respect to dress and shaving, are not broken again." Hence, you see, we are not so very far behind our forefathers after all. It would have been well could there have been a second Guillaume

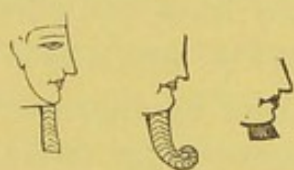


Fig. 113.

Duprat, who would rather have given up his surplice and bishopric than submit to such a demand upon his indubitable right of growing a beard if he wished one.

The Assyrians and Egyptians, though contemporaneous people, differed radically in their treatment of the beard; the former suffered theirs to grow to full length, as depicted upon their monuments, whilst the Egyptians kept theirs quite closely shaven, only the titled men or gods being permitted to wear any beard at all, and even then it was only a small braided bunch beneath the chin, or a short bristly stub, and very frequently a false one at that, see Fig. 113. See also page 292.



Fig. 114.

Some of the modern Papuans have an equally singular manner of dressing the beard, as witness this plate, Fig. 114,

which represents one with his beard braided into two long, narrow strands, then both strands tied together, with hair, in three different places. The mustache is also braided.

In the Syrio-Egyptian there seems to be a compromise between the two nations; as a short beard-growth covers the chin of each Syrio-Egyptian depicted upon the Egyptian monuments. This is well seen in the accompanying cut, Fig. 115, which is taken from one of their paintings in the tombs near Thebes. For the further discussion of the hair of these ancient races the reader is referred to the preceding chapter.

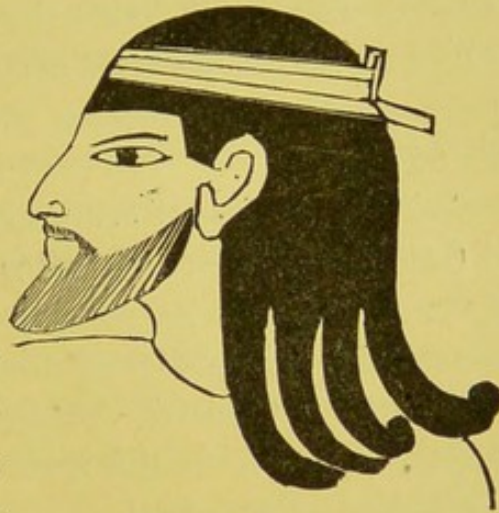


Fig. 115.

This brings us now to a brief consideration of the

BARBER AND HIS CALLING.

The earliest mention that we have of the barber's favorite instrument, the razor, is found in the sixth chapter of Numbers, fifth verse; this was written some 3,370 years ago, and reads as follows: "All the days of the vow of his separation there shall no razor come upon his head." The Hebrew term for razor, as here used, is *taär* from the verb *arah*, meaning to make naked, or bare. "Penknife," it is once translated in the Bible, see Jeremiah, xxxvi, 23. I should prefer the translation "razor," even in this case. *Morah*, from the same root, is the general term used in the Old Testament to denote a razor.

The Latin term is *rasorium*, and is derived from the verb *rado*, meaning "to scrape, scratch or shave off," referring to the hair. In several different places of the Old Testament a

phrase, similar to the above, is used. In Ezekiel, v, 1, a more descriptive use of the word is made, for it here says: "Take thee a sharp knife, take thee a barber's razor, and cause it to pass upon thine head, and upon thy beard, then take the balances to weigh and divide the hair." This was written nearly 600 years before the time of Christ, thus plainly showing that the barber's was a calling practiced in the earlier ages of the life of man.

Among the ancient sculptures upon the tombs and pyramids of Egypt, the barber's office is preserved; and Herodotus, B. C. 484, gives us considerable insight into the care the ancient Egyptians took of their hair and beards, through the help of their barbers. This has been fully spoken of in the chapter devoted to the special consideration of this subject.

The barber, too, in the earlier days, had charge of more than the comate covering of man. The red stripes upon their poles are memorial of that ancient time when they were knights of the thumb-lancet as well as the razor. The red stripe is supposed to refer to the arterial blood, or the arteries themselves; the blue, to venous blood, or to the veins; and the white, to the blanching condition of the patient when sufficient blood had been drawn. Barbers, also, used to cut for stone in the bladder, in ancient times, and this is referred to by Hippocrates, in his celebrated oath. Undoubtedly our modern school of surgery owes its origin to the earlier school kept by the tonsorial artists.

In the ancient Roman and Grecian days, the barber was also held in great estimation. The people were accustomed to spend their time, in the days of their luxuriousness, between the forum, amphitheatre and bath, and were in the habit of taking good care that the bath and barber got the principle share of their waking time. They would anoint, not only their

heads and beards, after a bath, but also their whole bodies with the choicest perfumes; and a loquacious barber, who knew all the news, was an acquisition the effeminate bather anxiously sought. How different the times now; *tempora mutantur et nos in illis mutamur*, and so we anxiously seek the barber that has *not* inherited the loquacious characteristic of his earlier ancestors.

The Romans wore lengthy beards and hair till about 300 years B. C., when one of the emperors imported a barber from Sicily, and began shaving. The custom became contagious, and in a short time the cohorts and citizens became a race of smooth-faced men. It is said that Scipio Africanus (230 B. C.) shaved every day, when at rest from his wars, and the countries the Roman Eagles visited, under his command, were as mowed of their inhabitants as his chin was of its hairs by his barber. He wore, however, his hair long. It was supposed that this beard-shaving custom was adopted for the same reason that the more modern knights shaved the hair from the front of their foreheads, in order that they might offer no chance for their enemies to unhorse them, or drag them to the earth, by seizing upon their hair, when in hand-to-hand conflict.

The Romans made offerings, or consecrations, of their first beard-shavings to some deity. This act became, in other ways, an important one to the young Roman, for he then became a man, and was allowed to assume a man's apparel—the *toga virilis*. Even the slaves looked upon it as an act worthy of religious observance, and so consecrated their hair to some of the gods. The wealthier, and more influential Romans, offered theirs, in some very costly boxes, to their chosen god; thus, Nero put his in a golden one, inlaid and set with pearls, and dedicated it to the Capitoline Jupiter. Another magnate sent his to the god of medicine, Æsculapius, and requested the

poet Statius, A. D. 61, to write some dedicatory verses upon the hairs that would be worthy the offering and the occasion. The emperor, seeking this favor, was undoubtedly the sensual Domitian, as he made many valuable presents to this poet in his after life.

The statement that Scipio shaved every day reminds us of the wise advice given by Don Quixote to his squire Sancho, and that was that "he should shave every day, if he desired to look like a gentleman."

The ancient Greeks had much the same customs, respecting their beards, as had the Romans. It is, however, solemnly asserted that the hideous monster, Polyphemus, used an ordinary grain-sickle to cut the stiff, straw-like hairs from his chin. During the time of Alexander the Great (356 B. C.),

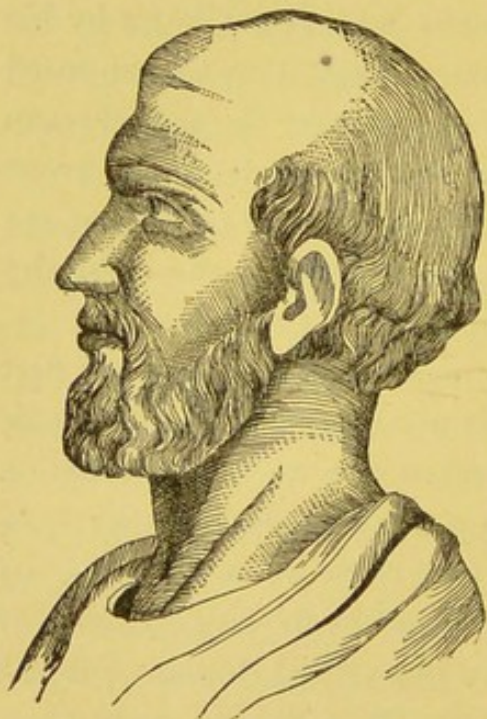


Fig. 116.

shaving became quite general among the soldiers, as well as among the aristocratic Athenians. The philosophers, however, wore their beards long, and the cynical Diogenes was accustomed to satirize his smooth-faced contemporaries by asking them if they were ashamed of their manhood. Alciphron gives a description of the beards of several of the Greek philosophers of his time. Thus, Archibius, the Pythagorean, had a pale face, long locks hanging down to his breast, and a long, pointed beard. Zenocrates,

the Epicurean, wore a venerable beard. Themistagoras, the

Peripatetic, had a gray and curling beard. Eteocles, the Stoic, had a long beard and wrinkled brow.

Demosthenes, the orator, had a long flowing beard, much as is worn at the present day. Hippocrates had a short beard, though he was bald-headed, Figure 116. Homer also had quite a full beard which resembled that of Demosthenes. Æschines, and the great Roman orator, Cicero, were both smooth-faced. Aristotle was also equally devoid of hirsute covering on his face, while Socrates and Plato were both possessors of quite lengthy and heavy beards, though the Greeks had a common saying that it took more than a beard to make a philosopher.

No doubt there is much sense in the custom of that old Grecian, Zoilus, for, as Aelian tells us, he was accustomed to shave his head that his beard might grow. It is a notorious fact that men of luxuriant beard-growth are deficient in their cranial covering, and *vice versa*. Too, when the beard begins to grow thrifty, then the comate covering of the head begins to decline.

The *mustache*, it is said, was specially legislated against by the Spartans, the decree issuing from the Ephori commanding all the people to "shave their mustachios, and so obey the laws." Coming from this body, which was even more powerful than the king himself, the edict must have been obeyed. This, so far as my knowledge goes, is the only time that this part of the hirsute covering has been specially legislated against.

Kossuth is accredited with the introduction of mustache-wearing, the rest of the face being shaven, to the American public; this was on his first visit. It was so well liked that the custom speedily came to be quite universal, remaining with us to the present time.

Uses. It is a principle, well recognized in Nature, that

nothing is created in vain; hence, hair, as all things else, must have its office or some duty to perform. In this light how noble, then, the answer of the Duc de Sully to the barber-courtiers of the beardless Louis XIII., when demanding of him his beard: "God gave the beard, and He only shall grasp it off."

The hair that man wears upon his face is intended, without doubt, for some sort of protection; that upon the upper lip, is evidently to protect the nostrils from the coarser dust that floats in a dusty atmosphere, where many men must needs spend the greater portion of the waking part of their lives. That, in a measure, the beard protects one from the catching of colds, the writer, from his own individual experience, can abundantly testify. Before stopping the practice of shaving, each fall and spring, he was attacked with suppurative tonsilitis; since stopping the practice, now some six years, he has escaped anything of the kind. He has also known of, at least, a dozen other individuals who have been equally benefited by giving up the use of the razor; and his advice, to a man afflicted with sore throat, is to at once, and forever, give up this habit of the toilet. In no case, where the advice has been taken, has the heeding of it been regretted.

The reason of this cold-taking is that at each shaving the scarf-skin of the face and neck, over which the razor passes, is mostly scraped from the corium, or true skin, beneath; hence, this sensitive portion of the skin is left unprotected from the inclemency of the weather, and, in these individuals specially susceptible, colds will be as apt to follow as though a portion of the underclothing had been removed from the body.

The several diseases to which the beard is subject are specifically treated of in some of the former chapters, and to which the reader is now referred.

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