HE CARE OF THE SKIN AND HAIR

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THE CARE OF THE SKIN AND HAIR

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TO

MY WIFE

WITHOUT WHOSE PATIENCE AND INDULGENCE
SUCH EXCURSIONS AS THIS
WERE IMPOSSIBLE

PREFACE

In the following pages I have undertaken to consider the skin and its commoner disorders from the standpoint of what everyone of intelligence should know of these subjects, both because of their practical personal importance and as a part of one's general knowledge. My aim has been to write a book chiefly on the hygiene of the skin, not a book on the self-treatment of skin diseases, and certainly not one to foster the mischievous habit of self-medication.

It does not require a special experience to realize how widespread and keen is the desire for a healthy skin. With the hope that the book may be of service in answering some of the anxious questions that arise from this desire, I have had pleasure in writing it.

Wm. Allen Pusey.

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THE CARE OF THE SKIN AND HAIR

CHAPTER I

THE STRUCTURE OF THE SKIN

The skin serves various purposes. Its most obvious use is as a covering for the body; in addition it performs various important vital functions. As a covering it is, like nature's products in general, almost ideal for its purpose. Man has not found any other covering material as strong, as pliable and soft, as durable and as useful in all respects as leather; and leather is simply animal skin,—which is in its essentials the same as human skin—so prepared as to preserve it.

MINUTE STRUCTURE OF THE SKIN

The skin is composed of two layers. The upper layer, called the *epidermis,* is a layer whose surface is composed of horn. This horny surface, called the

cuticle, is dense, insensitive, and very resistant; so that, although it is remarkably thin, it serves perfectly to protect the living, highly sensitive underlying tissues against all ordinary injury. In the Caucasian race it is translucent—of about the translucence of heavily ground glass—and the red color of the blood and the white of the connective tissues show through in pink tints.

The epidermis rests upon the body of the skin, called the *corium* or *derma.* This is a tissue, like "flesh" in general, containing blood vessels, nerves, and all the other structures that go to make up the tissues of the body. From this layer the epidermis gets its nourishment. It is composed of a very tough network of fibres, in which the blood vessels, nerves, and other structures are enmeshed, and it is the layer which gives the skin its strength. The surface of contact between the two layers of the skin is not a smooth or plane surface, but is undulating or in most parts studded by abrupt conical elevations, called papillæ. These project upward from the upper surface of the corium, and are inserted, like fingers in a glove, into corresponding cavities in the under surface of the epidermis. This arrangement serves several valuable purposes, among which the most obvious

is that it allows of the firmest adhesion between the two layers.

Underneath the corium is a layer of fat of greater or less thickness. It is not separated sharply, like the epidermis from the corium; it is, in fact, a continuation of the corium containing the same tissues in, however, a very loose network. This layer of fat acts as a cushion to take up the effects of violence upon the surface of the body. It also gives the smooth even contour to the body. As it is composed of a very loose network of tough fibres, whose spaces are filled with roundish masses of fat, it provides for the relatively great mobility of the skin over the underlying structures. It is in this layer that fat accumulates in stout persons. This layer of fat is really the connection between the skin and the underlying body; it is at this layer, for example, that the skin separates from the body beneath in "skinning" an animal.

As already indicated the fat layer and the corium contain all the structures found in connective tissues, or "flesh" in general. The epidermis, on the other hand, consists of one form of tissue known as epithelium. This is a specialized tissue which covers, not only the skin, but the surface of all cavities and

tubes having direct connection, even remote, with the exterior. In addition to serving as a covering, for which it is especially suited by virtue of the fact that it produces horn substance, epithelium is also the most important secreting agent of the body. It is, for example, the active secretory tissue of such important organs as the liver and kidneys. It has a like function in the skin. It forms the fat glands and the sweat glands through which all of the secretory functions of the skin are performed. It forms, also, the hairs and the nails, which are simply masses of horn, similar to the horny surface of the epidermis, that by an ingenious modification of the ordinary plan of horn formation are thrown out in horny spines in the case of the hair, and in horny plates in the case of the nails.

Sweat and Fat Glands.—The sweat and fat, or sebaceous, glands form a very important part of the skin. They are its secretory organs and are formed from the epidermis. A sweat gland is a minute tubule, lined by a single layer of cells, which dips down from the epidermis into the corium. Through the epidermis it has a spiral channel, as sharp as the spirals of a cork screw; below, it has a winding course and at the bottom it is rolled up into a tight

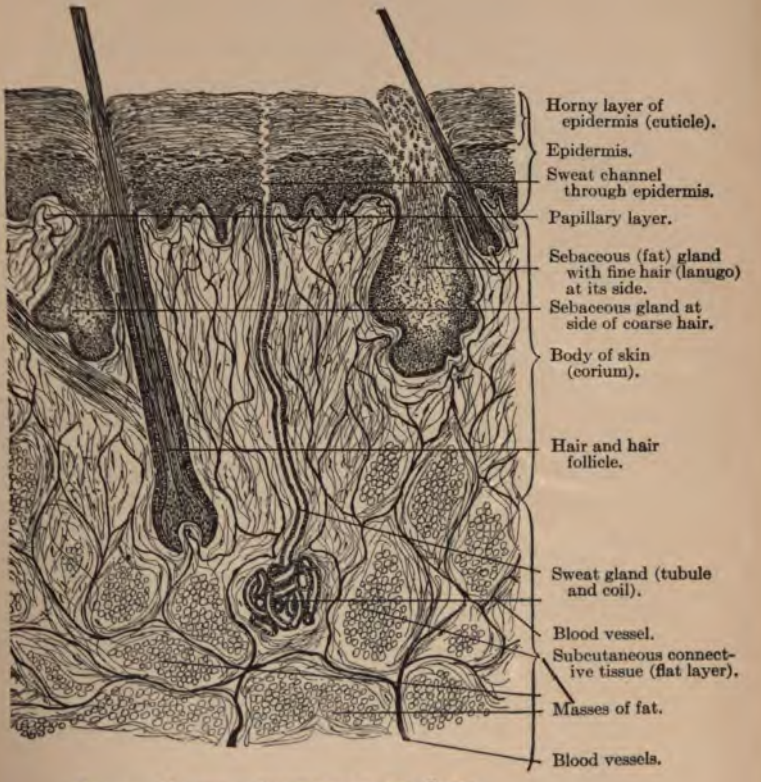

FIG. 1.—VERTICAL SECTION OF THE SKIN (DIAGRAMMATIC).

coil. The sweat secretion takes place in the coil, and the part above acts simply as a channel. A fat gland consists of a group of minute pear-shaped pouches, or lobules, placed somewhat like a small bunch of grapes around a central opening, which is much larger than the opening of a sweat duct. Each lobule consists of a mass of epithelial cells which undergo degeneration at the center of the lobule into a semi-fluid fat. This fat is emptied through the central opening of the gland upon the surface of the skin. The sweat and fat glands occur in about equal number and in great abundance over almost the entire surface of the body. The total number of each sort of glands is estimated at two or three million —an estimate which gives some idea of the enormous capacity of the skin as a secretory organ. On the palms there are about 2,700 sweat glands to the square inch; on other surfaces about 900.

The details of the different structures in the skin are given with more minute elaboration in the accompanying illustration.

GROSS CHARACTER OF THE SKIN

Strength and Elasticity.—The skin is stretched over the surface of the body under distinct tension;

this is evident in the gaping which immediately occurs when it is cut or torn. It follows that the skin is somewhat elastic, but this elasticity is only slight, so that the skin only partly accommodates itself to variation in tension. Thus when a person who has been plump becomes very thin, the skin does not retract completely and remain smooth and tense, but it shows a tendency to bagginess or to the development of deep wrinkles or folds. This is likely to be particularly manifest about the chin and neck. On the other hand, when the skin is greatly distended, as from large accumulations of fat, a tumor, or pregnancy, tears may occur in the meshwork of fibres in the body of the skin (not the epidermis), resulting in the production of permanent white scar-like lines. These white lines are seen especially on the thighs after pregnancies or in fat persons. While tears beneath the epidermis in the fibres of the corium may occur, the skin is so tough and strong that complete rupture with the formation of open wounds never occurs in the normal skin from any tension produced from within.

Texture and Feel.—The smooth, velvety feel of the skin is due, primarily, to its fine texture and, secondarily, to its slight greasiness and the abundant

growth of delicate hairs which covers it. The individual scales of which the surface of the body is made are of microscopic size, so that the skin texture is finer and softer than that of almost any other familiar material.

Fat.—The greasiness of the skin is due chiefly to the secretion of fat by the innumerable fat, or sebaceous, glands which are in it. It is also in considerable part due to fat secreted by the sweat glands and to fat formed by the cells of the epidermis. There is thus a very abundant provision for the formation of fat in the skin, a fact which indicates the importance of the presence of fat for its health. This lubrication of the epidermis is necessary to keep it supple and resistant. When the natural fat is abstracted the horny scales of the surface become brittle and dry; they drop off, cracks occur, and the skin loses a large part of its resistant quality.

Color.—The color of the skin is chiefly influenced by the epidermis. The skin beneath the epidermis is bright red in life, due to the abundant presence of blood. This is true in the darkest, as well as in the fairest, races; strip off the epidermis, as by blistering it, and the color is the same in Caucasian and Negro. In the dark races, particularly in the Ne-

gro, there is an abundance of pigment in the lower part of the epidermis and some in the upper part of the corium. This pigment is in the form of fine reddish-brown or black granules, and the varying amounts of it cause all the shades of brown and black that are seen in the normal skin. The only other brown coloration of the skin that occurs is from the disintegration of red blood corpuscles when blood has extravasated into the skin, as after a contusion. This pigment is situated at the bottom of the epidermis, completely below the horny layer. There is even in the Caucasian race a small amount of pigment in the skin, and according to its abundance or scarcity individuals are dark or fair.

The presence of pigment is a response of the organism to the necessity for protection against the irritating effect of light. Sunlight stimulates the formation of pigment, as is seen in the familiar tanning or the development of freckles that follows exposure. In Southern latitudes this excessive production of pigment as a protection against the rays of the sun has made the dark skinned races. The color of the hair is produced by the presence of the same pigment, as are also all permanent natural brown or black blemishes, as moles and freckles.

In the Caucasian race the epidermis is a whitish or very faintly brownish translucent layer, which allows the red color of the body of the skin to filter through, producing the pink and white tints of "flesh color." Everywhere there is just below the epidermis a network of minute blood vessels, and it is this superficial network of blood vessels that furnishes the red tints. Where they are very abundant, as on the centers of the cheeks, the red tints are most pronounced. When they contain little blood, as during a fainting spell, or when the blood in them is of fainter red color, as in anæmia, there is a greater or less degree of pallor.

Markings of the Skin (*Furrows, Lines, Wrinkles, Dimples*).—The surface of the skin is diversified by innumerable fine lines and furrows and by numerous coarse furrows. The coarse furrows occur about movable parts—especially the joints. They are caused partly by the attachment of the skin to fixed underlying structures, such as bones, but the most important factor in producing them is motion: just as a garment is thrown into folds and becomes creased at the elbows and knees by their motions, so over the joints transverse folds in the skin are produced. Certain deep folds like those in the groins or under

pendulous breasts are chiefly determined by the firm attachment of the skin to a fixed structure beneath. The coarse lines of the hands and feet are produced in the same way. They represent, in part, creases due to motion, but in larger part, their course and distribution are determined by the attachments of the skin to the very heavy fibrous sheaths which give the feet and hands their great strength.

Of the same character as these furrows are the evanescent wrinkles which appear on the face in the expression of the emotions. The skin of the face is peculiar in having attached to it many small muscles, whose movements, along with the movements of the eyes, cause the play of the expressions. It is the contraction of these facial muscles that causes wrinkling of the skin of the face in the expression of emotions. Dimples are of the same character. A dimple is produced by the attachment of a facial muscle in such a way that it pulls in the skin at the point of attachment when the muscle contracts. The wrinkles incident to advancing years, illnesses, and loss of flesh are of different origin. These result from the fact that there is more skin, under these conditions, than is necessary to cover the part, and wrinkles occur, just as a glove will wrinkle if the hand in it is

not big enough to distend it. In later life wrinkles are in part due to natural loss of the subcutaneous fat and in part to the fact that the skin in later life tends naturally to become somewhat relaxed so that it does not maintain the tension of youth. In part, too, the wrinkles of the face in later life come from changes in the disposition of the subcutaneous fat.

Fine Furrows.—Fine furrows, that represent largely furrows of motion, mark the entire surface of the body into small lozenge-shaped figures. A good example of this pavement-like marking of the skin is seen on the flexor surfaces of the wrists.

Papillary Ridges and Furrows.—The finest markings of the skin are the minute ridges that are seen upon the palms and soles. These fine lines owe their existence to the fact that the *papillæ,* which project from the upper surface of the corium, are largest in these locations and are arranged in parallel rows. These minute markings are most distinct upon the under surfaces of the tips of the fingers and toes, where they form peculiar whorls. Their arrange-

FIG. 2. — PAPILLARY RIDGES FROM THE FINGER-TIP, SHOWING OPENINGS OF SWEAT DUCTS.

ment is peculiar for each individual and therefore their imprint may be made to serve for identification.

Pores.—The pores are the mouths of the sweat and fat glands. The sweat pores are microscopic in size; but upon the palms and soles they can be seen with a magnifying lens as minute openings along the papillary ridges. The fat glands usually open upon the surface at the point of exit of a hair, and these pores are visible as very minute pittings over the entire body, except upon the palms and soles, where there are no fat glands. The largest pores are those of the fat glands of the face. The size of the fat glands and their pores varies very much in different individuals just as different individuals vary very much in the coarseness and abundance of hair. The texture of the skin of the face depends very considerably upon the size of these pores. In skins of fine texture they may be visible only upon close examination, while in others they form distinct conical depressions, particularly upon the wings of the nose.

Skin at Different Ages.—On parts that are habitually covered the skin changes very little, until old age approaches; it is only on the face and hands that its deterioration is manifest. The infantile quality of skin persists through childhood, although in boys,

largely as a result of harder usage and exposure, the skin of the face becomes rougher and less delicately colored as puberty approaches. In manhood it becomes coarser. It is likely to become ruddy, to show some pigmented spots, and to be dryer and not so smooth. As old age comes on these qualities are all exaggerated. In addition the skin becomes thinner (atrophic, as we say), the earlier pigmented spots become darker, the subcutaneous fat partly disappears, and, chiefly as a result of the disappearance of the skin fat, wrinkling occurs. In women the skin of the face fortunately tends to preserve its childhood characteristics, and, except when there is the same hard usage and exposure that men give it, it preserves its freshness and delicate color and texture well along in adult life. In later life its changes are of the same character as those that occur in men, but much less in degree.

CHAPTER II

THE NUTRITION AND FUNCTIONS OF THE SKIN

NUTRITION OF THE SKIN

The nutrition of the skin, like that of all other tissues of the body, is supplied by the arterial blood. In the corium there is a very abundant network of blood vessels which furnishes a copious supply of blood. In the epidermis, however, there are no blood vessels; it gets its nutrition from the fluid part of the blood which circulates between the cells of the lower part of the epidermis. The outermost layer of the epidermis, which consists of structureless horny scales, has passed beyond the stage where it needs or can assimilate nutrition. The blood supply of the skin is directly under the control of a nervous mechanism which can either dilate the blood vessels, and so increase the quantity of blood in the skin, or constrict them and diminish the amount of blood.

This nervous control is influenced by many factors, but is not under voluntary control. Pallor caused

by shock, and blushing are illustrations of disturbance of the blood supply produced by emotional factors. Poisonous substances in the blood may produce similar disturbances; the most familiar illustration of this is the flushing of the face from alcohol, or, in some individuals, from improper eating. Many disease processes may produce similar disturbances of this blood supply. The control of the nerves over the blood supply exists throughout the skin, but it is most sensitive in the skin of the face, as is readily seen in the restriction of blushing to the face; and this accounts for the occurrence of many diseased conditions chiefly, or only, on the face. In addition to the influence which the nervous system has over the nutrition of the skin by regulating its blood supply, it also has a very important direct control over the nutrition of the skin, as of other tissues, quite independent of its influence on the blood supply. This factor is important in maintaining what is popularly known as the tone of the general health, or of the skin, and disturbances of it are the cause of serious skin diseases.

THE FUNCTIONS OF THE SKIN

The skin is: (1) The protective covering of the body; (2) an organ of secretion; (3) the organ of the sense of touch; and (4) a very important part of the mechanism for the regulation of the temperature of the body.

PROTECTIVE FUNCTION

The skin as a covering has been considered briefly in the description of its structure. The lowest part of the skin, filled with fat on parts most exposed, furnishes the pad which acts as a buffer against the effects of external violence. The horny surface of the epidermis furnishes the insensitive resistant structure capable of bearing contact with the external world. This horny layer is not only capable of bearing all physical contacts, short of violence, but it is remarkably resistant to the most active chemicals, and is able to prevent the invasion of bacteria. The resistant qualities of the skin are greatly influenced by its lubrication with the fat produced by it. Abstract this in large part, and the epidermis becomes both much less pliable, so that it cracks, and also much less resistant.

The weakest points in the skin as a protective cov-

ering are the pores, the openings of the sebaceous glands and hair follicles, and it is at these points that most substances, including bacteria, gain entrance. It follows, therefore, that infections and most other diseases of the skin produced by external causes are likely to begin in the follicles. The uninjured horny layer furnishes perfect protection against infection from without, except when, after long contact with resulting friction, the organisms gain entrance into the follicles of the skin.

ABSORPTION BY THE SKIN

The skin is in no sense an active absorptive membrane. On the contrary, under normal conditions there is no absorption whatever by it of substances in contact with it. The undamaged skin is impervious to water and to substances in solution in water. For example, the body may be immersed for days in a continuous bath, as is done for some diseases, without any effect upon the thirst or any diminution in the amount of water drunk or increase in the quantity excreted and without any evidence of absorption of substances dissolved in the bath. Alcohol and alcoholic solutions are likewise not absorbed by the skin.

There is also practically no absorption of fats which are simply placed in contact with the skin, but with friction fats may be made to penetrate the skin through the sebaceous glands. This fact is made use of in the administration of certain medicines, but it is of no significance in connection with the vain attempts to fill out the skin by rubbing fats into it. Such fat when rubbed in does not take its place beside the skin fat and remain there, but is absorbed by the blood and passes off to be assimilated by the proper organs, just as though it had been eaten and passed into the blood from the intestines.

SWEAT AND FAT SECRETIONS

Sweat.—The secretion of sweat is constant. Unless stimulated to increased production, it evaporates as rapidly as formed and is spoken of as insensible perspiration; under conditions of active production it is formed more rapidly than it evaporates, and collects on the surface as sensible perspiration. Sweat is 99 per cent. water; the other 1 per cent. is salt (sodium chloride) and other mineral salts, fat and fatty acids, and nitrogenous products. Its odor is chiefly due to fatty acids, which are formed from changes in the fats. Certain unusual body products,

like indican, may be excreted in the sweat, and certain drugs are excreted in part by the sweat. The sweat secretion, however, is in almost entirely water, and it is not, under ordinary conditions, an important means of excretion of noxious substances from the blood.

The chief purpose of the production of sweat is the elimination of water. This is of great importance in two directions: first, for the regulation of the body temperature; second, to soften and keep pliable the horny epidermis. In its passage through the epidermis the sweat percolates through the spaces between the cells and keeps them moist. Upon the surface it spreads out in an imperceptible film, and the evaporation over this large surface furnishes a means for the rapid abstraction of heat. The secretion of sweat is under sensitive nervous control and is susceptible to various influences. It is most readily stimulated by external heat and muscular exercise, and may also be excited by mental causes, as seen in the influence of embarrassment or nervous shock in causing sweating. Certain poisonous substances in the blood, either drugs or the products of disease, excite the production of sweat, and a few, as belladonna, restrain it.

Sebaceous or Fat Secretion.—The production of fat is constantly going on in the sebaceous glands. This secretion is semi-fluid, but tends to harden in the duct into a cheesy mass, which forms the familiar blackhead, or comedo. Its production is most abundant during the period of adolescence and it may be stimulated by disease conditions which cause persistent flushing of the skin, particularly of the face. But the sebaceous secretion is very slightly, if at all, subject to nervous control.

HEAT-REGULATING FUNCTION OF THE SKIN

The source of heat in the body is the constant oxidation of the tissues; the body is in fact a slow furnace. The heat production is closely adapted to the maintenance of the normal temperature. To keep the temperature at a fixed degree requires a delicate heat regulating mechanism. This is furnished chiefly by the skin. The surface of the body has just beneath it a very abundant network of blood vessels; it may be very accurately compared to the radiator of an automobile engine. There is a constant flow of blood through these vessels, and a continuous radiation of heat from the surface. In addition there is an even more rapid dissipation of heat from the

evaporation of the sweat when sweating is free. These two factors act in unison. When the surface is cold and the body needs to retain its heat, minute muscles in the skin contract and pucker it, producing the condition of *cutis anserina,* or goose-flesh. With this the blood vessels are emptied and perspiration stopped and the amount of heat given off becomes much less. On the other hand, in the presence of excessive heat, or when the body is generating heat rapidly by muscular exercise, the cutaneous blood vessels dilate, the skin becomes congested, and at the same time there is sensible sweating. This increased supply of blood at the surface rapidly gives off heat by radiation and the body is still more rapidly cooled by the evaporation of the sweat.

This heat-regulating function is the most important vital function of the skin. It is a commonly known fact that the coating of the whole body with an impervious varnish like paraffin rapidly causes serious symptoms, and may cause death. These phenomena are popularly interpreted as due to interference of the coating with excretions by the skin; as a matter of fact, they are rather the result of interference with the heat-regulating functions of the skin.

The foregoing brief consideration of the structure and functions of the skin indicates, I trust, how essentially the skin is an organ of the body, and not merely a cover for it. Persons are, I think, inclined to go to two extremes in their ideas of the skin and its diseases. In their conceptions of the proper methods for its care in health and its treatment when diseased they tend unconsciously to regard it as a mechanical cover, for which local treatment is of chief importance. In their conceptions, on the other hand, of the causes for diseases of it they are likely to attach undue importance to disturbances of the general health, particularly to the vague popular idea of impurities in the blood. Constitutional diseases often show manifestations in the skin; but the skin is also exposed more than any other part of the body to local causes of disease, and very many of its disturbances are of purely local origin.

CHAPTER III

THE CARE OF THE GENERAL HEALTH AS IT ESPECIALLY RELATES TO THE SKIN

HYGIENE OF THE SKIN

THE hygiene of the skin embraces all of those factors which are important in maintaining the bodily health in general. Proper sleep, exercise, fresh air, sunlight, diet, clothing, bathing are all concerned in preserving the health of the skin as in preserving the health of other tissues. Some of these factors, having especial regard to cleanliness, have particularly to do with the health of the skin, while most of them influence the health of the skin only as they affect the general health. Very fortunately many of the canons of right living may be broken without affecting the skin. For the human skin, under ordinary conditions, is a very tolerant tissue. As in other structures of the body, the factor of safety in the skin is very large, and it will, as a rule, endure with little damage insults and stress well beyond proper demands

upon it. It upholds in this respect its excellence as a protective structure; and it vastly more frequently presents a pleasing exterior in the presence of bodily disease than it discloses the existence of disease in some deeper part by failing to preserve its normal appearance. Indeed, it is only in relatively few conditions that it is unable to remain faithful to its purpose of protecting, not only the deep tissues of the body, but its secrets as well. It is, nevertheless, of course, true that the skin is greatly influenced by its treatment and by the condition of the body, and that, while it may maintain itself fairly well under ill-usage or unfavorable conditions of health, the preservation of its freshness and attractiveness is dependent upon proper care and sound health.

Exercise, sleep and fresh air are factors in the health of the skin because of their great importance in the maintenance of the general health. They have no peculiar aspects in relation to the health of the skin, and the same rules that apply to them in relation to personal hygiene in general also apply in the hygiene of the skin. The importance of exercise, sleep, and fresh air in the preservation of health are recognized by people of intelligence, and they need no particular emphasis or elaboration here.

Exercise.—A moderate amount of physical exercise is essential to vigorous health. Physical exercise is of great importance in promoting the chemical processes in the body. In the absence of a proper amount of exercise the chemical, or as we say technically, the metabolic, processes are incompletely carried out and there are stored up in the body harmful products that normally are disposed of. Exercise is important in stimulating the functions of various organs, especially those having to do with digestion.

As to what constitutes a proper amount of physical exercise, that is largely a matter of individual requirement, especially of personal habit. Some persons are able to continue for long years in apparently perfect health on a minimum expenditure of physical exertion. But the individuals of this sort are very few and fortunate, who do not pay a penalty in digestive disturbances, in a general mental and physical lassitude, in muscular rheumatism or some gouty manifestation, or in some of the other metabolic disturbances of health. Persons who have become inured to severe or prolonged exertion need a relatively great amount of exercise in order to maintain good health, and suffer most from lack of exercise. We see this in the breaking down of athletes when in

business they lack the opportunities for the former exercise, and of retired farmers who suddenly exchange a life of abundant exercise for one of leisure.

For the average person of sedentary life about one hour a day of exercise in the open air would be a good average allowance. He is a lucky person who can take this in some agreeable form in addition to the exercise involved in his indoor occupation; if that is impracticable, the next best thing is to take it in connection with his occupation, as in walking to and from work. The average Englishman probably overdoes, or at least is inclined to overdo, physical exercise. The average urban German or Frenchman certainly underdoes, and we see the results in their frequently plethoric figures, and, it may be, red faces. The town-dwelling American, who has become aroused to the value of exercise, probably comes nearer striking a happy mean.

Sleep.—Sleep is the period of quiescence which is necessary for the reparation of living animal tissues. It is apparently especially necessary for the recuperation of nervous tissues. The amount of sleep necessary to the best condition of health is that which provides for complete recovery from previous fatigue. In the sensitive period of childhood, in con-

ditions of lowered nervous tone, or when it is desirable especially to protect the nervous system, it is well to sleep as much as one can—nine to eleven or twelve hours, if possible, is not too much. For the normal healthy adult no such time for sleep is required. Eight hours, the conventional time almost universally allowed, is probably a reasonably full allowance for the average adult. Less than eight hours in bed and seven and a half or seven in sleep proves wearing in most cases and shows, among other ways, in a haggard face. An occasional individual, especially after establishing a habit, does very well on considerably less. Lord Chesterfield, for example, thought that most people sleep too much, and practiced his belief. It is, I believe, certainly true that many persons, who think they require longer hours than the usual eight in bed, are simply indulging themselves in a luxury that does them no good and some harm. As a rule, the healthy person who feels stupid and wants an unusual amount of sleep is not suffering from mental exhaustion, but from lack of exercise and torpid digestion. There is another popular tradition that is a pleasant illusion—that late morning sleep is "beauty sleep." Any quiet, dreamless sleep is beauty sleep; it may be had in the morn-

ing if it has been missed in the early hours of the night, but experience shows that, on the whole, night is the best time for sleep.

Fresh Air and Sunlight.—In very recent years fresh air has become the fashion, and it is hard to imagine any fashion that is less possible of abuse from over-indulgence. An abundance of fresh air is not only one of the best possible influences in maintaining health, but it is one of the most powerful measures in regaining it. Cool air is more refreshing than warm because it has an added stimulating quality from its lower temperature. The only reason for paying particular attention to the ample supply of fresh air in winter is because it is likely to be sacrificed in order to provide a comfortable temperature indoors. Fresh air in unlimited supply is hygienic at all seasons, and, provided the body heat is protected, cannot be indulged in to excess.

With sunlight the case as regards extreme indulgence is different. Exposure to light is necessary to the best bodily vigor, and a well lighted room is of hygienic importance comparable with that of a well ventilated one. But the direct rays of the sun are very distinctly irritating to human tissues. In the dark races protection from this irritation is provided

by opacity of the skin. In the Caucasian, however, there is no such provision. We will see in considering the changes in the skin of old age that some of the most important senile changes are the results of the action of light. In earlier years the results of repeated summers of severe tanning of the skin show in distinct damage to its texture and its color. The familiar effects of exposure to direct sunlight are sunburn and tanning. These are not the results of the sun's heat, but of the light; they will occur to intense degree from bright light on an arctic snow field and in freezing temperature on a mountain top. They may be produced also by rays of sunlight from which the heat has been artificially abstracted.

The effects of light on the skin are due to stimulation of the individual living cells; it is an action strikingly analagous to that upon the molecules of silver salts that takes place in the making of a photograph. The first result of this action is to produce an inflammation and at the same time there is started a purposeful rapid production of pigment which result in the formation of enough pigment in the skin to protect it from further injury. This is the ordinary tanning of the skin from sunlight; in persons

in whose skins the cells capable of making pigment are not evenly distributed, but are most abundant in spots, freckling occurs. As a result of long continued repetition of these processes very positive deterioration in the skin occurs. Its texture becomes coarser, the surface less smooth and velvety, the pigmentation shows irregularities in distribution, and in skins very sensitive to light the complexion becomes florid. It is due very largely to the effects of light that the skin of the hands and face show the changes which we recognize as those of increasing years, while that of the covered parts of the body retains its youthful qualities.

We see these changes in the skin earliest and most intensely in those whose vocations involve continual exposure, as farmers and seamen. They are not likely to become apparent before early adult life, but after the first years of adult life the effects of exaggerated exposure to light quickly manifest themselves. In the ordinary man of tolerant skin these ill-effects of light are not of sufficient importance to be of any consideration against the numerous advantages and joys of outdoor life, but as nothing is added to these by unnecessary exposure of the bare face to the sun, it is at least worth while not to court damage by neg-

lecting such easy protection as a hat affords. In the case of women it is undoubtedly true that their complexions are much marred by the prevailing fashion of acquiring a rich summer tan.

CHAPTER IV

THE CARE OF THE GENERAL HEALTH: DIET AND DIGESTION

DIET

Diet is also a factor in the hygiene of the skin whose influence is indirect and dependent on its effect upon the general health, but it is probable that no other group of causes are more frequently effective in producing diseases of the skin than improper diet, bad habits of eating and living, and the series of digestive disturbances that go with these. For the skin is peculiarly responsive to disturbances of digestion. These act for the most part by allowing the introduction into the blood of substances which either cause flushing of the skin, particularly of the face, or directly irritate it. These substances act like certain poisons, such as alcohol, which flush the face, or some drugs which produce itching and hives and other inflammations of the skin. In addition to its direct effects upon the skin, bad digestion indirectly in-

fluences greatly the health of the skin through that train of troubles which follow it, as anæmia, auto-intoxication, and lowered physical resistance, which are themselves important causes of skin diseases. Upon the whole, disturbances of digestion are among the most important internal causes of cutaneous disorders.

The proper diet for the hygiene of the skin is a simple, wholesome, mixed diet, a diet that is varied enough to be appetizing, but that avoids the plainly indigestible—the sort of diet that is good for the general health. There are no secrets in a proper diet for the skin, and no particular articles of food which have a peculiar beneficial or ill effect upon the skin. Occasional persons have peculiar susceptibilities, or idiosyncrasies, to certain articles of food, such as strawberries, shell-fish, eggs,—and there are more frequent idiosyncrasies to drugs; but, aside from these, there are probably no articles of food having a direct effect upon the skin. For the skin, as for the general health, one should have the mixed diet that omnivorous man craves and can assimilate—meats and fish, eggs, milk, breads, vegetables, fruits, sugar and sweets in moderation, salt and a moderate allowance of condiments.

that if a large quantity of liquid is taken in, a large quantity will be excreted, and so there is in a sense a washing out of the tissues by drinking a liberal quantity of water. The normal quantity of liquid to drink is sixty to eighty ounces daily—four to five pints. In estimating this liquid, other forms than plain water are to be included, for water is the chief part, the essential, of all our drinks. Milk is a food suspended in water; soup may be the same, but is oftener simply water containing extractives from meat that are stimulating to the appetite, but without food value. The other drinks are water containing sugar and various flavors and a few stimulants, usually caffeine or alcohol. There is no doubt of the hygienic value of a habit of free water drinking. Water should be taken partly between meals and partly at meals. The popular impression that water interferes with digestion by diluting the digestive agents—particularly the gastric juice—is based on a false chemical analogy and is not true. If taken in moderation with the meals, water increases the activity of digestion. Indeed, the objection to drinking water with one's food is that it stimulates digestion and tends to make one eat more than he otherwise would. The best temperature for drinking water is

pleasantly cool—not ice-cold. Very cold water is a shock to the stomach and, contrary to a common idea, very hot water is also.

The propriety of coffee and tea drinking is a moot question. Undoubtedly in large quantities tea and coffee are bad—especially tea. At the same time, their moderate use is agreeable and not harmful to a large number. The harmful effects from them arise not so much from the caffeine, but from the extractives and the tannin and the mixture with sugar and cream. For alcoholic drinks for the healthy person there is nothing to be said on the hygienic side. Their excessive use is an active cause of disorders of the skin. Alcohol acts unfavorably on the skin in at least two ways: it directly irritates the skin and it also produces disturbances of digestion that irritate it.

DISTURBANCES OF DIGESTION

Overeating.—Two of the commonest factors in the causation of skin diseases of internal origin are overeating and constipation. In the plan of nature man was apparently intended to get his subsistence by physical exertion, and "the man with the hoe" still suffers little from overeating. Hard physical exercise consumes a large amount of energy, and to sup-

ply this there must be a large consumption of body material, for the renewal of which a liberal supply of food is in turn required. The laborer, therefore, who eats freely only meets his daily food requirements. His organs, stimulated by hard exercise, can digest an abundance of food; it is promptly consumed in work and does not accumulate to trouble him. But with those of us who have contrived to get away from physical work the situation is quite different. We have appetites and digestive abilities designed for conditions of hard work, and yet we do none of it. The result is that unless most of us curb our appetites we are very likely to fill the body furnace with a quantity of fuel entirely beyond that necessary to furnish the energy that we expend. And so the results of overfeeding are among the commonest physical troubles of those who have reached a degree of prosperity where they can obtain without physical effort all the food they want. This does not apply to children and to persons whose appetites are impaired for any reason. In the latter case the necessary food may be greater than the promptings of appetite, so that underfeeding is likely to exist. In the case of children the amount of energy expended in growth and in their instinctive activities

is commensurate with that used up in hard physical labor; children accordingly require a relatively larger amount of food than adults, and, except during infancy, when digestion is weak, are little likely to suffer from generous feeding.

Overeating leads directly to disturbances of health; it throws an abnormal strain upon the tissues in disposing of an unnecessary amount of nutritive material, and this tends to the production of various diseases. But more common than the direct effect of overeating is the train of digestive disturbances that arise from it. In these especially are found a common source of cutaneous disorders.

The keynote of proper eating is moderation, and this applies with especial force to the quantity of food. It is impossible to say precisely what is a proper daily allowance of food. It varies with a number of conditions—particularly with the kinds of food and with the habits of life of individuals. It hardly satisfies the situation to say that one needs daily the equivalent of 2,000 or 2,400 calories. Average men do not measure their food in that way. Generally speaking, a proper allowance of food is one that fully provides for the daily expenditure of energy, and that does not overtax the digestive organs

in its assimilation. One should take enough food to maintain a feeling of vigor, and to hold at a normal weight; but not enough to oppress him after eating, to overload his digestive organs, or to cause the gradual accumulation of an immoderate amount of fat.

The one among these indications hardest to estimate correctly is that relating to the maintenance of a feeling of vigor. Most of us overeat with the direct purpose of overcoming lassitude. For when one is suffering from overeating he is likely to feel stupid and to be indisposed for exertion. He will be stimulated out of this lassitude for a time by eating, and so he is greatly tempted to make his permanent condition worse for the sake of this temporary relief. The only way to guard against that difficulty is to remember that the average healthy person of sedentary habits, "who is tired all the time," who, after a day in a chair in an office or after a day at ease at home or in social diversions, finds himself (or herself) feeling wornout at night, is, as a rule, not a victim of overwork or nervous fatigue, but of too much food and too little exercise. In such situations what is usually needed is a good cleaning out of the digestive tract, and a lighter diet.

The body weight, too, is only a relatively accurate

index of the amount of food eaten, for breeds of men differ just as much in their tendencies to take on flesh as breeds of pigs. The fact that a healthy person is sparely built is no evidence that he is not eating enough or even too much. Such a person may have an inordinate appetite, for some healthy persons cannot be fattened. On the other hand, in others the assimilation of food is so complete and the tendency to flesh so marked that a very moderate appetite may go with corpulence. But a large amount of fat is at least an evidence that the person is taking in more food than he needs. The accumulation of fat is nature's way of providing a reserve supply of fuel to be drawn on in emergencies and it takes place in times of plenty. So that the individual who finds that he is taking on flesh and getting unusually heavy may be sure that he is getting more food than he needs for his daily use, and he should govern his eating accordingly. As a matter of fact, the average person of sedentary habits and good appetite is safe in assuming that he eats too much, and would do well to adopt Franklin's rule to leave the table feeling that he has not eaten quite as much as he wants.

The easiest way to avoid overeating is not to have

an excess of food served. Even without variety in a meal, one is apt to overeat when he has an excessive quantity of a good dish served to him, and this likelihood is greatly increased when the meal consists of a toothsome variety. A variety of foods at a meal is the greatest temptation to appetite. For that reason simple meals, particularly simple dinners, are best and far more agreeable in the long run. A soup, a meat course with vegetables, a vegetable salad if you please, and a simple dessert with coffee is a fair example of such a dinner, and, if well selected and served, cannot be improved upon. It will be a happy day for middle-age complexions and figures when custom decrees that a good dinner of three courses is proper, instead of the present triumphs of artistic temptation, at which the willing victim first whips up his appetite with a drink and a hors d'œuvre, then, after a sufficient meal of oysters, stimulates his appetite with soup for the grand attack on fish, roast and game, then dallies with a salad, and, after he has eaten beyond all reason, is tempted by his taste for sweets—the only taste he has left—with a dessert. The objections to a variety of foods at a single meal do not hold at all against variety in diet from day to day. That gives no more than a proper zest to

appetite. It is the attempt to nibble at many dishes at one meal that is sure to end in overeating.

In the same way frequent eating leads to gluttony. The European customs of having four to six meals a day are responsible for a vast deal of fat, and gout, and bad arteries—and these mean premature senility. With our three meals in the United States the habit of eating between meals is simply bad for the digestion and is not so likely to lead to overeating, because the intervals between our meals are so short that eating between them simply interferes with the appetite. After the evening meal—not later than eight or nine o'clock—it is very desirable that nothing further be eaten until breakfast. The long interval at night is the only opportunity in the twenty-four hours that the stomach has to empty itself and the digestive apparatus to get a rest. The late rich supper—lobster and a bird and a bottle of wine—is "sorrow's crown of sorrow." Not the most vigorous digestion will protect even the youthful complexion from its ravages.

While the frequent fault on account of healthy man's very natural taste for the fleshpots, is overeating, so much has been said and written about the sins of overeating, that an occasional person is seen

who has voluntarily reduced his diet below the natural requirements of energy. There is no valid reason why one should not enjoy the pleasures of the table in moderation and there is every reason why he should eat enough to supply fully his daily requirements of fuel. Even a thin layer of fat is no crime. The well known experiments of Chittenden have demonstrated that men can live and work with a supply of food far below the accepted requirements, but they have not proved that such a minimum of food is the best amount for the preservation of health and vigor. On the contrary there are strong reasons for the belief that one should have habitually a good deal more food than the minimum amount on which he can live and do full work. As Meltzer has shown in his delightful lecture on the factors of safety in the body, it is highly probable that a diet liberal enough to assure a well nourished body, even a small accumulation of fat, provides the factors of safety for emergencies in nutrition.

And there is further no reason why one should make of his eating a solemn and austere business. One should take plenty of time to eat—gulping one's food is a wretched habit; he should eat in moderation, and at regular intervals; and he should be care-

ful of his food. But it is not necessary to chew each morsel a hundred counted times; to figure out scrupulously the number of units of energy in each meal; to be unhappy if he does not get his food precisely at 8, and 1, and 6:30; or to estimate at every meal the proportion of proteids, carbohydrates, and fats. And unless he is sick in a peculiar way he does not need predigested foods or foods prepared, beyond proper cooking, for assimilation. The digestive organs need proper exercise as fully as the muscles generally, and the adult human stomach was not intended to confine its energies to pap. The proper course is rather to acquire a habit of moderation and reasonableness in eating, so that one will eat properly without giving constant conscious attention to the subject.

Constipation.—There are few functions of the body more important for the well-being of the individual than regular action of the bowels. A disturbance of this regularity means a disturbance of the digestive apparatus and when it becomes chronic it is a cause of many minor and some serious ills. The effects of constipation are likely to show directly on the skin in a greasy, muddy complexion, and in a flushed face; indirectly constipation and the disorders of di-

gestion which accompany it affect the skin in many ways through the disturbance of the general health which they cause.

Occasionally constipation is a family characteristic and in such cases it may be really an inherited tendency, just as so many individual characteristics are inherited; but for the most part such family groups of cases are the result of a common family disregard of the causes of constipation. For constipation in the large proportion of cases is the result of neglect of a few of the simple rules of health. The common causes of constipation are sedentary habits, carelessness in regard to the bowels, improper food, and drug-taking. The reasons for sedentary habits being a cause of constipation are not far to seek. In the absence of regular exercise the muscular coat of the intestines shares in the general lowering of the tone of the tissues and tends to become torpid; in addition there is lacking the direct stimulation of the muscles of the intestines which exercise gives.

When there is combined with sedentary habits carelessness or neglect of a regular habit of bowel movements, one has the explanation of most of the cases of habitual constipation. Neglect is so effective in producing habitual constipation because failure to

observe the calls of the bowels soon result in the calls not being given; the impulse can readily be resisted, and its sensitiveness is very easily blunted. It is for this reason that it is so important to give careful regard to the inclination to bowel movements, which normally recur daily at about the same time. As a result of habit—or perhaps of a natural tendency —this time is usually within half an hour after breakfast, and there is no more essential matter in maintaining a vigorous feeling of health than careful observance of this habit.

Improper food is also, of course, a cause of constipation. Foods that are almost completely absorbed leave little residue; such foods as meats without much fibrous material—tender meats—eggs, and milk. Vegetables and fruits on the other hand consist largely, in addition to water, of indigestible fibrous material; many of the fruits, also, contain laxative principles that act independently of their bulk.

Finally the habit of drug-taking to relieve constipation is one of the surest ways to make the condition worse. The abnormal stimulations produced by cathartics lead to increased tolerance so that greater and greater stimulation is required. In the confirmed cases the condition may become so pronounced that

it is with the greatest difficulty that the bowels can be gotten back into a condition where they respond to the normal stimulation of food.

The prevention and treatment of constipation consist largely in attention to the causes of it briefly considered above. Of the utmost importance is the establishment of a regular morning habit. An abundance of time should be allowed, and an effort made to move the bowels daily at the regular time whether there is a desire or not. In children the effort should be made early to establish the morning habit. In addition to the morning habit, the calls for movements of the bowels should be answered as promptly as possible at all times.

Outdoor exercise is of course indicated. For constipation horseback riding is particularly beneficial Lord Brougham's statement that the best thing for the inside of a man is the outside of a horse is still true. Special forms of exercise may be of distinct service, as abdominal massage, or the rolling of a ball over the abdomen. To do the latter one uses a metal ball weighing four to six pounds, or a heavy wooden ball —a small tenpin ball is good—and rolls it over the abdomen. In order to follow the direction of the lower bowel—the colon—he should begin at the lower

right hand side of the abdomen roll upward, then across and down the left side, then across below to the starting point, and repeat in this way. Useful abdominal exercise may also be gotten by standing erect and bending over repeatedly until the finger tips touch the floor, or by lying on the back with the feet braced and raising the body repeatedly to sitting position. These exercises are worth while in strengthening the abdominal walls and stimulating the bowels.

A very great deal can be done by diet in relieving constipation. The abundant eating of fruit and green vegetables if persisted in is the most efficient means of overcoming constipation. Ripe raw fruits and cooked fruits are particularly efficient; baked apples, stewed figs, and prunes, are especially to be mentioned. Ripe fruit at the beginning of breakfast, or an apple, pear or orange in the evening often act as aperients. Bread made from whole wheat flour is useful, because of the bulk and the stimulation produced by the fibrous material from the husk.

When an insufficient quantity of water is drunk constipation is a natural sequence; and free water drinking is one of the efficient measures against the condition. A large glass of water before breakfast—

not necessarily hot—is a familiar and very useful aperient measure. The usual breakfast cup of weak coffee with cream and sugar is also aperient in its effect. Tea, on the contrary, on account of its tannin is constipating if drunk habitually. In recommending free water drinking, cathartic waters are not included in the recommendation. Aperient and cathartic waters are solutions of drugs—saline cathartics—and their vigorous action is dependent entirely on these salts. The saline cathartics especially tend to make constipation worse, if they are frequently used, and like other laxative drugs, should be avoided. Indeed, self drugging in constipation is one of the worst practices; if drugs must be used they should be taken under a physician's directions.

CHAPTER V

THE LOCAL CARE OF THE SKIN: WATER AND BATHING

Water.—Water for bathing should, of course, be clean—at least free from disease-breeding germs—although it must be said that, for bathing, water muddy from clean earth contained in it may be free from hygienic objections. The best water for the bath is "soft" water, i. e., water free from dissolved mineral salts. Such water is found in distilled, boiled and rain water, and usually in the water of rivers and lakes and free running streams.

Water is made 'hard" by the solution in it of calcium carbonate, or rarely, of magnesium carbonate, which gives it a peculiar feel and curdles soaps. Hard water always flows through deposits of these minerals and is usually from springs or wells. Hard water is somewhat more irritating than soft, but the chief objection to it is that the calcium carbonate combines with the soaps to produce a calcium soap

the effect upon the body in general of the application of heat or cold in the form of water. The effects of water depend upon its temperature, and baths are, therefore usually classified as cold (below 65 degrees F.), cool (65 degrees to 80 degrees F.), tepid (80 degrees to 90 degrees F.), warm (90 degrees to 98 degrees F.), and hot (above 98 degrees F.). The only essentially different baths, however, are the cool and the warm bath, i. e., the bath which is sufficiently below the body temperature to give a chill upon contact, say 80 degree F. or below, and the bath which causes a sensation of warmth upon entering it, say 90 degrees to 98 degrees F.

The Warm Bath.—The warm bath is the cleansing bath. The cleansing action of water depends, of course, upon the fact that water is a solvent for most of the material which accumulates upon the skin; and warm water is a very much better solvent than cool. This is particularly true of it when combined with soap. With even the blandest soaps, warm water dissolves or loosens all of the ordinary matter that adheres to the surface of the body. Soap and water also soften the horny scales of the skin, as is seen in the softening of the nails by them. They remove not only the dirt adherent to the skin, but the

fat and other substances that come to the surface with the sweat and sebum, and also the horny scales which are constantly loosening upon the surface. It will readily be seen, therefore, that an excess of bathing with warm or hot water may temporarily damage the skin. It will do this in part by thinning unduly the horny layer of the skin, but chiefly by removing the fat which is necessary to the preservation of a supple, resistant skin. It is for this reason that a naturally oily skin will bear an amount of scrubbing that may be impossible for a dry skin.

The effects of an exeess of bathing are shown by an undue dryness and irritation of the skin; carried further they show as chapping or inflammation of the skin. These effects are most likely to occur from excessive warm bathing but may be produced by the use of cold water. For several reasons they are most apt to be seen in winter. The chief reason is that the diminution in the production of sweat and sebum in winter results in poor lubrication and dryness of the skin. In addition the lowered humidity of the air in winter causes increased evaporation and intensifies the dryness of the skin. Finally, cold dry air is itself irritating to the skin.

Of course the effects of excessive bathing are tem-

porary, and can readily be controlled in healthy skins, yet the fact remains that irritability of the skin produced by bathing, particularly in winter time, often is long persistent without its cause being recognized. The obvious way of avoiding the ill-effects of bathing is not to bathe overmuch. When the skin is sensitive and is irritated by the reasonable use of soap and water, the ill-effect can be minimized or prevented by using tepid water and very bland soaps, and powdering the skin with a toilet powder or greasing it lightly after bathing with olive oil or some other simple fat.

The frequency of warm bathing is determined by the necessity for keeping the skin clean. The face and hands require frequent bathing. The hands especially must be washed often, and when this tends to cause chapping it can be prevented in normal skin by drying the hands thoroughly and then softening them occasionally with olive oil, or cold cream, or vaseline. To keep it clean the face needs at least one good washing daily with soap and water and a wash cloth or soft flesh brush. A crash washcloth is best for washing the face, but a camel's hair flesh brush is satisfactory. Coarser brushes are apt to be irritating and they do not clean the face better than

can be done by a vigorous scrubbing with a wash-cloth and soap and water. The thorough washing of the face is best done at night. Unless one has tough and greasy skin or is unusually exposed to dirt, the face does not need a second scrubbing with soap and water in the morning, but should be bathed first in tepid water, and then in cool, in order to freshen it and to make it less sensitive.

It is a sad fact, but true, that many persons who think they are clean never cleanse their faces. They will scrub their bodies, but imagine that a perfunctory ablution is best for the face or all it needs. Of course no part of the body, except the hands, is so much exposed to extraneous dirt as the face, and because of its abundant fat secretion no part of the body bears vigorous washing better than the face. One sometimes encounters the superstition that washing the face is bad for the complexion, and meets individuals who because of that misbelief try to get along with oils and creams as a substitute for soap and water. The layer of dirt and fat that such persons accumulate on the face is a poor makeshift for a clean clear skin and is a constant invitation to various disorders of the skin. If such persons really cannot wash their faces, what they need is not to

try to get along without washing, but to have proper treatment for the disorders of the skin from which they are suffering. Occasionally a person with a thin dry skin must be careful not to wash the face too much, but fortunately such a face needs little washing to keep it clean; the usual face is bettered by the amount of washing necessary to keep it clean.

The warm full bath as a cleansing bath is governed by the same considerations that apply to the warm bath for the face. Its frequency depends upon the demands of cleanliness. As a rule the normal skin will bear a daily bath with warm water and bland soap, but if vigorous scrubbing with soap is indulged in daily it is likely to produce undue dryness and irritability, except in persons with unusually oily tough skins. It is not unusual to see persons with sensitive skins who are suffering from excessive vigorous bathing. In old age the skin normally becomes dryer and thinner and at that time of life ill-effects from excessive bathing are more easily produced, so that a daily warm bath with soap is frequently the cause of an irritated, itchy skin. The dryness of the skin produced by excessive bathing, which is the cause of almost all of the ill-effects upon the skin from the bath, can be in great part overcome by light anoint-

ing after the bath with a neutral fat such as olive oil. Sufficient relief may often be gotten by dusting with a toilet powder after drying the skin.

The full warm bath has a soothing and somewhat depressing systematic effect which must be reckoned with in considering it. It causes an increased flow of blood to the skin which in turn results in a diminished blood supply to the internal organs. Presumably because of the diminished blood supply to the stomach produced by it, the warm bath interferes with digestion and should not be taken within two hours after a hearty meal. The increased flow of blood to the skin shows in a reddening of the skin and this, with the stimulation of the sweat apparatus by the heat of the bath, tends to produce perspiration. Advantage is taken of this action to produce sweating by hot baths in various systematic disturbances, but this measure is not one for the ordinary person to use freely without advice. Probably the increased flow of blood to the skin and its corresponding diminution in the nervous centres (the brain and spinal cord) are the chief factors in the distinctly soothing effect of the warm bath. Because of its sedative effect the warm bath invites sleep. Therefore the ideal time for it is before retiring. If taken

plunge in cold water and immediately react. The reaction after the cold bath should be promoted by vigorous rubbing with dry towels. The time for the cold bath, is the morning when one wants to be alert and active and stimulated; it should not be taken at night.

In the vigorous, who are accustomed to it, the cold morning bath is undoubtedly one of the most invigorating tonics. It is nevertheless true that it is not an equal joy and benefit for all mankind. In those who are not vigorous and in the elderly the cold bath is likely to tax strength without compensating reaction.

The cold bath has the same effects upon the skin as the warm bath, although to a less degree. It makes the skin dry, and because of its temperature it is somewhat irritating. The tolerant skin, however, can very well endure its daily use. Persons with naturally dry, delicate skins and the elderly are sometimes irritated by it, particularly in cold weather. In such persons powdering the skin with a toilet powder, such as talcum, after the bath and the occasional light greasing with olive oil usually overcomes the difficulty. Aside from the irritation it may produce, the effects of the cool bath are bene-

ficial to the skin. The warm bath relaxes the skin and too much of it tends to make it flabby and loose. Cool bathing, on the contrary, stimulates its tone, and keeps it firm and tense. In these beneficial effects the rubbing and gentle massage effected in drying the skin play some part.

The Turkish Bath.—The Turkish bath and similar steam baths are in their effects a combination of warm and cold baths. The profuse sweating of the hot room of a Turkish bath, followed by a warm sponge bath with soaping and friction is a very thorough way of cleansing the skin; hardly any other bath will so thoroughly free the skin from accumulated dirt and excretory products. This is followed after an interval of rest by a cool shower or plunge which is intended to counteract the effects of the preceding warm bath.

The Turkish bath is a refreshing and soothing experience, but it is to a considerable degree depressing and if repeated too often tends like other warm baths to relax the skin. The "boiling out" of unhealthy material from the body which is a popular conception of the action of the Turkish and other hot baths is largely imaginary. The profuse sweating does loosen up and, with the aid of the friction and

soap, causes to be thrown off the accumulated débris upon the surface of the skin. But the sweat itself is 99 per cent. water and in these baths there is thrown off from the body in the sweat little except water, which is immediately replaced by the abundant draught of water usually taken at the time. As far as the effects on the skin are concerned, there is nothing to be gained from a Turkish bath oftener than once a week. It should not be taken in the place of the usual baths.

The Turkish bath is not a toilet measure, like the hot and the cold bath, to be indulged in indiscriminately. It produces temporarily violent fluctuations in the pressure in the blood vessels and in the load upon the heart and for that reason should be taken without competent advice only by the vigorous.

Essentials of Bathing.—In 1845 Sir Erasmus Wilson of London, one of the great early students of skin diseases, wrote a book for popular use on the care of the skin, which ran through many editions. The bath had not then become the solemn rite that the Englishman has since made of it, and in his seventh edition Wilson, in commenting on the success of the book, expressed the hope that its popularity had "in some degree, contributed to the popularity

of *soap* and *water* among our countrymen." A consideration of the bath can hardly be better concluded than by quoting a few of the rules which Wilson prepared for a free bath presented by a friend of his to one of the poor districts of London. The rules are for a swimming bath and require slight obvious modifications for the ordinary tub bath.

"Wilson's Essentials of Bathing.

"1. Rub the skin and limbs gently with the hands while in the bath; and, in the swimming bath, swim; that you may combine moderate muscular exercise with the action of the water on the skin.

"2. Try to feel when you have had enough:—some can bear immersion in water longer than others.

"3. Never abuse the bath by bathing too long; your own sensations are a better test than time. . .

"4. Dry the body leisurely, with moderate friction, beginning with the head; then take the arms and body, then the legs and feet.

"5. Rough friction to the skin is never necessary; neither in the bath, nor out of it.

"6. Friction has three purposes; namely, to move

the circulation in the skin; to exercise the muscles; and to rub off dirt and loose skin.

"7. The cleasing of the skin is very much assisted by soap; soap is tonic to the skin and very wholesome; it removes the old face of the skin and the varnish of dirt that is apt to form upon it. . . .

"8. Never dress until the body is perfectly dry; then the clothing should be resumed leisurely, to give the skin time to feel and breathe the air. A great authority on the bath, Mr. George Witt, F. R. S., finishes a code of rules for the bath with these memorable words: 'Finally, the bather should dress deliberately, walk away slowly, and reflect on the blessing that he has enjoyed.'

"9. If the bather turn faint or sick, it is the consequence of some indiscretion; he should lie flat upon the ground, upon his side; and dry and dress himself slowly as soon as he has recovered.

"10. If the bather be in a state of perspiration, he should take a tepid bath before he resorts to the cold bath. And if he be exhausted or fatigued, he may still take a tepid bath—but on no account take a cold bath.

"11. The time spent in the bath must be regulated by the sensations of the bather; it may be longer for

a tepid bath than for a cold bath. From five to fifteen minutes may be enough for the cold bath; from ten to twenty minutes for the tepid bath. But this time may be prolonged if the bather be engaged in the exercise of swimming."

is the free alkali over which advertisers make so much. In soaps for rough purposes this is not an important objection and no great effort is made to get rid of a moderate proportion of free alkali. The alkali increases the cleansing power of the soap and there are few objects upon which a laundry soap is used which a moderate excess of free alkali damages. But free alkali renders the soap very much more irritating and the frequent use of such a soap cannot be tolerated by a delicate skin. There is no need for free alkali in toilet soaps and in them it should be reduced to a very small percentage. In good toilet soaps the free alkali amounts to not more than one-fourth per cent. In this quantity it is not deleterious to the healthy skin. When, however, it is desired to overcome completely the effect of the alkali, soaps are superfatted, as it is called, by the addition of about one per cent. of lanoline, a fat which does not become rancid. These superfatty soaps are the least irritating of soaps and are little, if at all, less efficient for cleansing the skin than ordinary toilet soaps. When soaps are for any reason badly borne by the skin, these superfatted soaps are useful, although such refinement in soaps is not necessary for the ordinary individual.

Water can be incorporated in soap in very large proportion—up to 30 or 35 per cent.—without changing its consistence: it does no harm except to load the soap with a useless ingredient. Good soaps contain from 12 per cent. to 25 per cent. or 30 per cent., when fresh; the milled soaps as low as 12 per cent.; the cold made soaps—Castile, transparent, and floating soaps—25 per cent. to 30 per cent.; as the soap ages the water evaporates and the soap becomes dryer and harder. Floating soaps are made by the simple device of incorporating air in microscopical spaces in the soap—mixing it in while the soap is in a fluid state. It does the soap no harm. The commonest actual sophistication of soap is the addition of rosin to it. Saponified rosin—sodium resinate—is not a true soap; it is sticky, if not harmful; and, while it will cleanse, it is a poor ingredient of toilet soaps. It is more commonly used in foreign than in American toilet soaps. Its resinous odor is sometimes perceptible and, if it is abundant, its presence is indicated by a slight stickiness of the skin.

Soap, when it solidifies, is normally crystalline and for that reason opaque. Transparent soaps are made by adding to the soap alcohol or glycerine or sugar to an amount that prevents crystallization and holds

the soap in a colloid (amorphous, gelatinous) state. This in no way damages its quality. Transparent soaps are, however, usually cold made and are apt to carry an excess of free alkali, for in its absence the soap will not maintain its brilliancy. The only way to avoid this is by dissolving the soap in alcohol and resolidifying it by evaporation of the alcohol—an expensive process; so that as a rule only the best transparent soaps are free from an excess of alkali.

The natural color of soap varies from a dirty yellow to white. The natural color of the best quality of toilet soap is a creamy white; the dirty yellow of common laundry soap illustrates the color of cheaply made, impure soaps. Pure soap may be perfectly white, but whiteness is in itself no index of especial purity in soaps. Floating soaps, for example, are white, because of the minute air spaces throughout their structure. An opaque "flat" white without any translucence usually indicates the presence of a considerable quantity of some useless filler, as starch, zinc oxide, and similar cheap adulterants, and is an evidence of dishonesty in manufacture, which should make one suspicious of its other qualities.

Pure soap has a slightly disagreeable characteristic "soapy" odor, to overcome which a small

amount of perfume is properly added. The essential oils of which perfumes consist are strong antiseptics and, so far as they have any effect upon the quality of soaps, they are at least not deleterious.

Castile Soap.—Castile soap is a soda soap made with olive oil and is usually imported from olive-raising countries along the Mediterranean where it is made. Castile soap has a high popular reputation for superiority which is hardly justified. It is made in a crude way and it has no known maker with a reputation to maintain who is responsible for it. Mottled Castile soap is still less likely to be pure. Many so-called Castile soaps, especially those having distinctive names, are plain cocoanut oil soaps, and are not good toilet soaps. There is no other soap so much imitated as Castile.

Green Soap.—Green soap—a potash soap made with linseed oil with the addition of alcohol—is an alkaline soft soap, which is useful where it is desired to "cut" grease, but it is an irritating soap, not to be used indiscriminately. The so-called tincture of green soap is green soap dissolved in alcohol. Pure green soap, by the way, is not green at all, but of an amber color. When it is green it is colored. A very much more agreeable green soap—one free from the

unpleasant odor of linseed oil and of lighter color—can be made with cottonseed oil or olive oil, and it is to be hoped that makers will in time furnish this soap for the market.

Medicated Soaps.—Medicated soaps are of little value, except as soaps, and should not be used inadvisedly. The addition of almost inert substances, such as borax, boric acid, and witch hazel, does no harm; but soaps impregnated with strong and always irritating agents, such as corrosive sublimate, salicylic acid and carbolic acid, should not be ignorantly used if these ingredients are present in large enough quantity to produce any effect. Even in the hands of experts the medicated soaps have a very limited field of usefulness.

Action of Soaps.—Free alkali will combine with fats and many other substances to make them soluble in water and to that extent free alkali adds to the cleansing action of soap. But, as a matter of fact, the cleansing action of soap is independent of the presence of free alkali. It is due in part to the fact that soap is itself a solvent for fats, but more to its property of emulsifying fats and holding in suspension substances that are in the form of minute particles. Any substance that produces a viscid solution

in water has the same effect in less degree. A viscid solution of glycerine in water or of tragacanth or notably of soap bark—substances without any trace of free alkali in them—has to some extent the same action as a mixture of soap with water. The presence of free alkali, therefore, is not necessary to the cleansing action of soap, and the smaller its quantity in toilet soaps the better.

Selection of Soaps.—The essentials of a good soap are that it should be well made from clean fresh fats, be free from an excess of alkali or cocoanut oil, not sophisticated with rosin or other unnecessary ingredients, and that it should lather freely. These conditions met, the user may consult his own taste as to the hardness and feel, the odor, the color, or the other qualities that have to do with agreeableness. As a matter of fact, for all of the essential qualities of soap the user is dependent upon expert advice or, more, upon the reliability of the manufacturer; and for that reason he is surest when he gets a soap bearing upon it the name of a firm which has a reputation to maintain and which has assumed responsibility for it. There are many such American soaps—and foreign. It is also best to buy soaps made for toilet use and not of the lowest price. Cheap soaps are made

potato starch or rice powder. With these there is frequently a smaller proportion of precipitated chalk, zinc oxide or carbonate, and magnesium carbonate, and rarely lead or bismuth salts. Except the lead and bismuth, these substances are not in themselves harmful, nor are the pigments used for giving the powders their flesh tints. Lead and bismuth salts, particularly the lead, are dangerous, and the sale of cosmetic powders containing them should be prohibited. If the lead and bismuth powders are avoided, one may exercise his—or her—taste in the selection of a cosmetic powder.

There is no reason to believe that the moderate use of cosmetic powders is harmful to the skin. On the contrary, they furnish a very appreciable protection to the skin against the ravages of wind and sun, and in this way preserve its texture. Contrary to the common warning, there is practically no danger of clogging the pores from any but the most immoderate use of cosmetic powders, unless the skin itself is excessively greasy, or the powders are used in combination with greasy applications. If a powder is combined with a greasy application, continued use is likely to cause the formation of "blackheads" from the collection of powder and dirt in the openings of

the fat glands. Even greasy complexions, if washed as often as cleanliness demands, bear cosmetic powders with impunity.

Toilet Powders.—Toilet powders—powders used after shaving or the bath to give the skin a sense of freshness, to prevent or relieve chafing, and for similar purposes—are an agreeable adjunct of the toilet and are not objectionable. Talcum and starch or rice powder are the most desirable bases for such powders. Powdered starch and rice powder are the lightest and most absorbent, but they have the objection that they are liable to decomposition after becoming moist. Talcum is almost equally agreeable, is highly absorbent, and never changes. It is, on the whole, the best toilet powder, as it is the most commonly used. Rice powder, which has a high reputation, is no better than starch and is not so fine and smooth.

Good formulas for toilet powders are the following:

(1) Boric acid..... 1 part
Talcum ..... 9 parts

(2) Boric acid..... 2 parts
Starch ..... 8 parts

cream and it varies greatly in quality, chiefly according to the amount of pains which the pharmacist has put into its mixing. A good cold cream should be snowy white, creamy—not translucent or waxy—in appearance, of about the consistence of butter, and free from any odor of rancidity; it should have a faint odor of oil of rose, not a strong perfumed odor.

Fat-free Creams and Lotions.—In place of fats for cleansing and softening the skin, there are fat-free creams or lotions which are less well known, but which furnish excellent substitutes. Most of them are essentially mixtures of tragacanth and glycerine with water that form viscid greyish lotions or jellies, depending upon the proportion of tragacanth. A good recipe for such a lotion is the following:

Tragacanth	80 grains
Glycerine	½ oz.
Boric acid	½ oz.
Oil of bergamot	5 drops
Oil of rose	1 drop
Oil of lavender	2 drops
Water to make	1 pint

Dissolve thoroughly with moderate heat.

This lotion is a type of the hand lotion of hospitals. In use it is freely applied to the hands and face, using some friction or massage, and then wiped off with a soft towel. Lotions of this sort are not quite as effective as fatty applications in softening the skin, but they are free from the objections to fats. They cleanse satisfactorily and soften the skin; they are not greasy; they can be wiped off easily; and water removes instantly the last trace of them. There is no objection to the daily use of such a lotion, but it should be supplemented by the usual washings with soap and water.

SIMPLE REMEDIES

To meet various minor emergencies in the care of the skin there are a few simple measures and remedies which are safe for intelligent general use and which have many applications.

Antiseptics.—Antiseptics are agents which destroy organisms and thus prevent or overcome infections. The commonest infection of the skin is with pus organisms, which manifests itself by the presence of pus or suppuration. One of the best antiseptic measures for the skin is vigorous washing with soap and water; this acts by washing away the organisms.

For their antiseptic effect, soap and water have many uses, but, of course, neither soap and water nor any other irritating antiseptic should be used carelessly on an already irritated surface.

Solution of *Hydrogen Peroxide* and *Alcohol* are the two best chemical antiseptics for general use on the skin. Both are excellent antiseptics for washing abrasions or other small wounds of the skin. Alcohol has the objection of being irritating to raw surfaces.

Along with these may be included the solution of boric (or boracic) acid in water. This may be used in saturated solution, i. e., with as much boric acid in the water as it will take up. It is not a strong antiseptic, but it at least prevents organisms from multiplying, and it is a harmless non-irritating remedy which can be used freely. Boric acid, finely powdered, is also the best antiseptic powder for general use. And boric acid (10 per cent.) in vaseline is as good as any other antiseptic ointment for general use.

Tincture of iodine, one of the old domestic remedies, is perhaps the most efficient antiseptic for the skin. It is irritating, but it may be safely applied to a limited area, and, when the services of a physician are not available, it is the best antiseptic to

apply to an abrasion, fissure or wound in order to prevent or overcome infection.

Carbolic acid, which is very commonly used, is not a safe or satisfactory antiseptic for popular use on the skin, either pure, in solutions or in ointments. It has many disadvantages and some dangers and should be left to physicians.

To cover up minute wounds in the skin after they have been cleaned, and before they have become infected, flexible collodion is a very useful agent. It will not stick if the surface is moist or greasy, and it holds better if a few strands of absorbent cotton are laid on the surface before it is applied. Neither collodion nor any other impervious dressing should ever be put on a penetrating wound made with a dirty object, and the wound then left to itself; such wounds should go to a physician, for the have possibilities of serious danger. Court plaster, which is wet—usually licked—and then stuck on small wounds, is the poorest possible way of covering them. If an abrasion needs protection and cannot be covered with a collodion dressing, it is best to powder it with boric acid or cover it lightly with boric acid vaseline, put over this a bit of absorbent cotton and hold this in place with adhesive plaster.

PHYSICAL METHODS IN THE CARE OF THE SKIN

For the various physical methods, which have more or less popularity in the care of the skin—massage, cupping, steaming, electrical treatments, facial masks, etc.—really very little can be said.

Massage.—Among these, facial massage has the widest use. General bodily massage, which is a form of passive exercise, is a rational therapeutic measure, and it has some value for its systemic effects in certain skin diseases. But the value of massage of the skin for its direct effect upon the skin is very much less certain. It is used, of course, with the idea of toning up a relaxed skin, of coaxing away wrinkles, of removing deposits of fat, as a double chin, and of improving the skin's texture in various ways. I am not sure it is of no benefit for any of these purposes, but at least the benefits from it are so slight as to be almost inappreciable and wholly disproportionate to the amount of massage necessary before they may be expected. An occasional massage with cold cream or a tragacanth lotion, followed by a good washing with soap and warm water, is an agreeable and effective way of cleaning the skin and thus tends to preserve its attractiveness. Aside from this benefit,

it is a sad fact, but, in my opinion, true, that practically all of the energy and time is wasted that men and women everywhere are zealously giving to the massage of their faces. In certain conditions of bad complexions, with sluggish greasy skins and blackheads, massage may be useful, but in these cases if there are any pustules—pimples containing pus—the massage is liable to do harm by spreading the infection. This, indeed, applies to all suppurative conditions of the skin; massage is likely to spread them and, moreover, does them little good.

Steaming the Face.—Steaming the face is a measure used to a certain extent for the benefit of the complexion. It is carried out in various ways, but as good a way as any is to cover the head with a large towel, making a sort of tent, and then hold the face over a basin of hot water until perspiration starts freely. It should not be prolonged until the face is intensely reddened. After steaming the face it should be protected by the application of a little cold cream, or at least by a toilet powder. Steaming the face will produce a free flow of perspiration, and in that way it will cleanse the skin more thoroughly than washing with hot water; but it does little more than that. I know of no benefit that it confers upon a

normal complexion. Indulged in at intervals of several days or a week, it does no harm, but used too freely it relaxes the skin, instead of making it tense, and makes it sensitive and ready to chap. For a greasy, dirty skin an occasional steaming may be of use in cleaning it. I think it has no effect in permanently removing blackheads, and very little in acne—the bad complexion produced by "pimples"—except in cleansing the skin.

Cupping.—Cupping consists in applying to the surface of the skin glass "cups," which are made to adhere by suction. This suction is produced, in the usual forms of cups, by a rubber bulb attached to them. Cupping the skin causes an increased blood supply to the area cupped, and there are reasonable grounds for believing that the nutrition may be appreciably influenced in this way. It is a measure which may improve the tone of the skin, overcome flabbiness, and perhaps benefit wrinkles. It may also be of service in caring for a complexion affected with acne. Carried out with intelligence, I believe it has more claims for probable usefulness than any other of the physical methods in popular use for cosmetic purposes.

In cupping, the cup should be clean—boiled after

each seance—and the rim cleaned with alcohol frequently during the applications. The skin should be sucked up in the cup so that it bulges moderately —not to the point of painful tension—and an application should last three to five minutes, followed by an interval of two or three minutes, before reapplying the cup to the same area. An hour or three quarters may be given thus daily to cupping the face and adjacent skin. Like all other efficient measures, the details of its use depend upon the results to be obtained in the individual case, and it should not be vigorously used without proper advice.

Electricity, X-Rays, Radium.—Electricity has no proper place in the care of the skin. Its use requires expert knowledge and, even with that, its value in preserving and improving the quality of the skin is highly problematical.

X-rays and radium are dangerously powerful agents, not to be used except in the hands of experts.

Masks and Similar Devices.—It is hard to see any possible benefit that can come from the use of the various masks, commonly for the face, which are offered for the benefit of the skin. These devices make a show of doing something from the fact that, being impervious to water, the insensible perspiration ac-

cumulates abundantly under them. This macerates and softens the skin and loosens dirt, but it is a dirty way of doing what is readily done by soap and water, and it tends to spread infections.

THE CARE OF THE FACE

Even at the risk of repetition, it may be worth while briefly to recapitulate some of the points in the care of the skin as they apply to the face.

With a healthy skin of normal resistance the only care needed for the face is to keep it clean and to protect it from damaging influences. The way to keep the face clean is to wash it, sometimes with soap and water, sometimes with water alone. Washing may be indulged in to the benefit of the face as frequently as one pleases, provided it is not carried to the point of making the skin unnaturally dry and harsh or chapping it. Unless the skin is extraordinarily sensitive, the face bears perfectly well two or three rinsings a day with cool water, and one good washing with hot or warm water and soap. The thorough washing with soap and warm water once a day is the measure which should be depended upon to keep the face clean. This is best done at night before retiring, but it can be done at any time, if it is

followed, as it always should be, by a rinsing with cool or cold water. If the face is an unduly greasy or dirty one, this warm bath may occasionally be well replaced by steaming the face or covering it with hot towels for a few minutes. With sensitive skins the vigor of washing with soap and water has to be tempered to correspond to their resistance; it can easily be regulated by remembering the indication to avoid making the skin harsh and unnaturally dry or chapping it. Hardly any healthy skin will be unable to bear washing lightly with soap and warm water at least once a day followed by a dash of cold water.

For persons who have not greasy skins, a luxury of the toilet which tends still further to clear the complexion and keep the skin soft and smooth is an occasional massage of the face with a cold cream. This should be preceded and followed by a thorough warm soap bath, and should not be repeated often enough to keep the face greasy—once a week is often enough, unless the skin is unduly dry.

Where the skin is dry and sensitive, bland toilet powders perform a useful service in protecting the complexion. And the reasonable use on the face of bland cosmetic powders in general is a protecting measure, which does no harm. On the other hand,

the daily use of fatty preparations, or other substances of fatty consistence, do clog up the skin, prevent its cleaning, and damage it.

Next to having good health and good digestion, the most important factor in preserving the complexion in good condition is, I am convinced, its protection from unreasonable exposure to damaging external influences. The most important of these damaging external influences are lack of cleanliness in the care of the skin, undue exposure to dirt, and undue exposure to the elements. The necessity for cleanliness in the preservation of the complexion has already been emphasized; if one lives in a dirty environment, as, for example, in a city with a smoky atmosphere, attention to cleanliness of the face has to be redoubled. The effects upon the skin of excessive exposure to sun and wind have already been mentioned, but they may be referred to again in this connection. Excessive exposure to the elements, particularly the sun, damages the texture of the skin; makes it coarser; darkens it or brings out dark patches or, if it does not darken it, changes it to a ruddy hue. And if these effects are repeated for a few successive seasons of extreme exposure, the changes become permanent and the complexion never returns to its youthful at-

tractiveness. It is not intended to advocate the giving up of rational outdoor exposure either in one's vocation or his avocations and sports. Our skins are intended to serve us in our daily lives, and no sensible person would advocate that we should regulate our lives chiefly for the benefit of our complexions. But it is intended to point out that severe tanning of the skin and exposure to the sun damages its fine qualities, and that the custom of directly exposing the head, face, shoulders and arms to sun and weather is indulged in, particularly after one has passed twenty, at great expense to the attractiveness of the complexion. Broad-brimmed hats, sunshades, even powder and veils, make for a good complexion; and even the stronger sex is not damaged in its looks by wearing hats out of doors.

CHAPTER VIII

INFLAMMATION OF THE SKIN

CHAPPING

THE ordinary chapping of the hands and face in cold weather represents a familiar form of inflammation of the skin, or dermatitis, to use the technical term. In this condition the skin gets harsh, then reddened and tender, with some scaling, then develops painful cracks or fissures. The reason for chapping is that the skin, because of unnatural dryness, loses its usual power of resistance to external irritants. Like a piece of dry leather, it cracks and breaks under conditions that it endures without strain when lubricated. Chapping does not occur ordinarily in warm seasons because at such times the sweat and fat glands are active and keep the skin thoroughly oiled. Nor does it occur, except from gross misuse, in persons with naturally greasy skins. It is most troublesome in those with fair dry skins without a proper amount of oil. Those conditions

that produce dryness of the skin cause chapping: the dry, cold, irritating winds of winter; too frequent washing, especially with strong soaps; failure to dry the parts thoroughly after washing so that the rapid evaporation of the water by the dry air of winter causes sudden dryness of the skin—these are the conditions which cause the skin to chap.

The prevention and relief of chapping consist in attention to the details necessary to avoid or overcome these exciting causes. The dry air and winds of winter, of course, cannot be escaped by ordinary mortals, but the deficiency in the lubrication of the skin can easily be remedied, and the excessive dryness that comes from too frequent washing can be avoided. Too frequent or too vigorous washing of the hands and face is the commonest cause of chapping. To avoid or overcome chapping, soap and water should be used as sparingly as possible. A bland toilet soap, even an over-fatty soap in extremely sensitive skins, should be used, and after bathing the parts should be thoroughly dried, first by wiping and then by dabbing them with a soft towel. After this it is a good plan to apply a tragacanth lotion, or, if the chapping is severe, to grease the skin lightly with cold cream or some other bland fat. At bed time the

skin should again be softened by an application of fat or tragacanth lotion. The secret in preventing and curing chapped skin is to make up the deficiency of fat which the skin is failing to supply for itself.

CHAFING

Chafing is an inflammation of the skin produced by friction of adjacent parts upon each other, by the friction of clothing, or by friction and the irritation from maceration of the skin by sweat and skin fat. Chafing occurs chiefly in the furrows of the body, as in the groins and folds of the trunk and extremities. To prevent it, therefore, one should keep the parts dry and clean and overcome friction upon the parts. The deep folds of skin should be bathed often enough to prevent any accumulation of dead skin and fat and sweat; occasionally even bathing with alcohol is a useful measure. After bathing and thoroughly drying, the skin should be dusted with a toilet powder, such as boric acid and talcum. The dusting powder helps to keep the parts dry, but, still more, it protects the parts and lessens friction. When chafing has occurred, the parts should be kept as free from secretions as possible by frequent drying with soft cloths or absorbent cotton, and should be dusted after

each drying with boric acid and talcum powder. In severer cases the surface may be protected by a thin layer of vaseline or cold cream; but as little fat as possible should be used. To cleanse the surface an occasional washing with water or boric acid water is necessary, but this should not be used oftener than once a day. If the parts need cleansing oftener than this, they may be wiped off with tragacanth lotion or olive oil. Severe cases need the attention of a physician for their relief.

SUNBURN

As has already been pointed out, sunburn is due, not to the sun's heat, but to sunlight. It is not really a burn at all, in the sense in which we use the term burn from heat, but an irritation arising from the over-stimulation of the cells of the skin by the actinic or chemically active rays of light. The tanning that follows sunburn is a further manifestation of this same cellular stimulation, which results in the production of a quantity of pigment in the cells. This pigment formation is a protective measure, and in the dark races this protection by the pigment is so complete that almost no sunburn occurs.

The treatment of sunburn consists in using sooth-

ing applications. The frequent application of a dusting powder is cooling. This may be supplemented when the irritation is severe by the occasional application of cloths wet with cool water, or water containing a tablespoonful of alcohol to the pint, if the surface is not broken. These cool compresses must be replaced so frequently that they do not become warm. After they have been continued for fifteen to twenty minutes the surface should be dried by dabbing with a soft towel, and dusted with a toilet powder. In addition to these measures, in severe cases greasing with cold cream is grateful and serves to protect the irritated surfaces.

ECZEMA

The great inflammatory disease of the skin is eczema. Eczema is a disease which requires for its care the attention of a physician, and nothing reliable in the way of treatment is possible here, but it is so frequent a disease that a word should be said about it in the interest of common knowledge.

Eczema is not a specific disease produced by one cause or one group of causes. Under the term are included many forms of inflammation of the skin which vary infinitely in details, but all of which have the essential characteristics of dermatitis.

The presence of eczema is not proof of the existence of any particular systemic disease, or, indeed, of any systemic disturbance at all. It may occur in otherwise healthy persons as a result of external irritants. In many cases, however, it is chiefly or entirely due to some failure in the general health, and in most cases, even where it is excited by local causes, there is an underlying systemic disturbance which has rendered the skin irritable or lowered its resistance. The systemic disturbances underlying eczema are various, but for the most part they are disturbances that have to do with the digestion or assimilation of food. The local causes of eczema are innumerable—all the slight irritants with which the skin may have to come in frequent contact. There is one point which in charity should be known about eczema—indeed, it applies to all of the diseases which come within our scope—and that is, eczema is not a disease that reflects discredit on its victim. It is not a dirt disease; it is not an hereditary taint, or an evidence of "bad blood;" it is not a disease that indicates even careless habits of eating or drinking or of any other sort. In fact, sometimes it is—to use an Irish bull applied by Kaposi to psoriasis—a disease of the healthy.

Its successful treatment is largely a matter of determining its cause. In many cases its cure is simplicity itself; in others its relief is attended by some difficulty, but is attained by a reasonable effort; in a few, fortunately rare cases, in which it is dependent upon obscure constitutional conditions, its cure may baffle the most expert.

INFLAMMATIONS FROM POISON IVY AND SIMILAR IRRITATING PLANTS

Numerous plants are irritating to the skin. The most familiar of these are poison ivy and poison oak. Others are certain primroses, dogwood, sumac, cowhage, smartweed, oleander, and rue.

The effect of these poisonous plants upon the skin is the production of an inflammation which varies in different cases through all degrees of severity. In one it will be a slight reddening of the skin with some itching; in another an intense deep red swelling with blister formation, severe burning and itching, and even fever, the whole lasting for many days.

As is well known, susceptibility to these poisonous plants varies very greatly in different individuals. Poison ivy—one of the most irritating—may be han-

dled with impunity by some persons, while the slightest contact with it will produce an intense reaction in others. The less irritating plants, like the primrose, produce, as a rule, only a faint red irritation in the susceptible, and have no appreciable effect upon most persons. In the case of poison ivy the irritating substance is thought to be an oil, and in other plants it is probably the same or a very similar substance. Whether actual contact in the case of the most irritating plants is always necessary for the production of dermatitis is an unsettled point; unless the testimony is incorrect, very susceptible individuals in rare instances are affected by close proximity to poison ivy.

The most practical point in connection with the affections is prevention. For this, especially in the case of poison ivy, familiarity with the plant is important. Poison ivy is a trailing and climbing vine with handsome bright green foliage, which turns a brilliant yellow to red in early autumn (and is very tempting, by the way, to collectors of autumn leaves). It is easily distinguished from other similar-looking vines by the fact that its leaves occur in groups of *three* on a stem and not of *five*. It and other poisonous plants are most irritating when moist, and should

especially be avoided in the early morning when wet with dew.

After exposure to poison ivy, the ill-effects can be warded off by prompt removal of the irritating substance. This can be done by vigorously washing with water and soap, preferably using a hand brush, and after that with alcohol. If these measures are carried out before the effects on the skin become manifest, the usual reaction in the skin can, as a rule, be entirely, or in a great part, prevented. And even after dermatitis has begun, it can often be reduced to slight intensity and cut short by the same measures. Of course, after irritation has become intense, vigorous washing of the surface cannot be done and sponging with alcohol is painful. To relieve the itching, sponging with cool water or distilled extract of hamamelis, witch hazel water, followed by an application of dusting powder, is comforting. Salves, as a rule, are not well borne.

There are innumerable domestic remedies for poison ivy, none of which in my experience have proved to be entitled to any reliance. They should not be tried. If cases have passed the stage where they can be relieved by washing, they need the attention of a physician.

I can testify to the value of washing with soap and water and alcohol in primrose and some of the other forms of dermatitis. Presumably the same measures would be useful in the dermatitis from all of the irritating plants.

HERPES

(Cold Sores, Fever Blisters)

Herpes simplex, the familiar "cold sore," is an eruption of blisters that usually appear in a group, at the borderline between the skin and a mucous membrane. It occurs, as a rule, around the mouth, but may occur around the nostrils and rarely in the ear or around the eyes. The blisters develop suddenly, preceded and accompanied by a feeling of tension and pain. They may gradually dry up, but usually they are ruptured, leaving a raw surface, which quickly heals, unless it becomes infected. In that event the surface secretes a little pus and becomes covered with a pus crust, but heals after a few days. Herpes is extraordinarily painful for so trivial a lesion, the reason for which lies in the fact that it is associated with irritation of the minute nerves of the part.

Some persons are susceptible to herpes and develop

it upon the slightest provocation. Children are especially prone to it, and women more so than men. It occurs particularly with febrile diseases, but slight temporary disturbances, such as a cold, or a trivial indigestion, may bring it out. When a predisposition to herpes exists it is excited by various sorts of local irritation, such as exposure to a raw wind.

Its prevention is not easy. Its frequent occurrence usually indicates some digestive disturbance which should be cared for. Local applications for its prevention are numerous, but are not, I believe, of much value except as they protect the lips from irritation. For this purpose softening the lips with vaseline or cold cream once or twice a day may be useful. For the purpose of checking the lesions after they have appeared, spirit of camphor is popular, and, applied frequently to the point of producing slight irritation of the skin, is of some value. After they are developed the discomfort from them is relieved by opening the blisters with a sterile needle. When they become abraded care should be taken to avoid infection and, to that end, they should be bathed two or three times daily with hydrogen peroxide solution or some other non-irritating antiseptic, and afterwards greased lightly with borated vaseline.

CHAPTER IX

DISORDERS OF THE FACE

ACNE AND BLACKHEADS AND A BAD COMPLEXION

Acne is the familiar form of bad complexion that occurs commonly during adolescence and early adult life and is characterized by the presence of red, inflammatory "pimples" and pustules. It is one of the most universal diseases, and because of its occurrence on the face and at the most self-conscious age, is probably the source of as much humiliation and mental distress in the aggregate as any of the physical ills of life.

Acne is an inflammation of the tissue around the fat, or sebaceous, follicles of the skin. The pimples and pustules are really minute abscesses occurring in the follicles or glands.

The cause of every acne is the formation of blackheads (comedones). These blackheads are masses of fat and debris of the skin which have solidified in the glands and clogged them up. These masses in the

glands act as foreign bodies, irritate the skin, become infected and then inflammed, with the formation of inflammatory lesions. Very often blackheads may be very abundant without the presence of many acne lesions or pimples; at other times the acne eruption will obscure the blackheads; but in all cases they are associated and the blackheads are the primary eruption.

Acne is usually confined to the face and chest and upper part of the back, because there the fat glands are most numerous and largest. Any one of these areas may be involved alone, or all of them may be involved together. Most frequently the face is chiefly or alone affected. The severity and duration of the affection varies between the widest limits. In many cases there are only a few superficial pimples and the trouble disappears spontaneously after a few months, leaving no scars. In the severest cases the face and perhaps the back and chest are riddled with deep, small, indolent abscesses and the condition persists with variations in severity for years, perhaps from twelve or fourteen years old to twenty-five or more. Between these two extremes, cases of all degrees of intensity occur. The superficial eruption of acne leaves no scars, but when deep abscesses form small

pitted scars may be left, which in the worst cases leave the skin pitted. In cases, however, of moderate duration, even with a good many relatively large abscesses, usually no scars, or none that are appreciable, are left.

The occurrence of acne is involved in the causes that produce disturbances in the activity of the fat glands. Acne of greater or less severity is almost universal during adolescence; it sometimes persists after thirty, but rarely begins later than twenty years old. The reason for its prevalence during adolescence lies in the fact that at that age the fat glands, like the hair follicles, take on a new activity. The secretion of fat is greatly increased, and it takes only a slight disturbance of the function to cause the accumulation of fat in the glands and the formation of blackheads; and with blackheads present the train is laid for an explosion of acne. One factor very important in the occurrence of acne is the natural texture of the skin. Skins vary as greatly in the extent of development of fat glands as they do of hairs. Just as the hairy development of some persons is abundant and coarse, so is the development of fat glands. It is those persons with coarse pores and large fat glands who have the worst cases of acne.

Conditions of the general health, too, influence to a considerable extent the development of acne. Not infrequently bad acnes are seen in robust and vigorous boys and girls in whom no disturbance of health is discoverable. Frequently, however, the incidence of acne is simultaneous with some impairment of health, and when acne is present its condition usually varies with the state of the health. Conditions that lower the vigor and impair the resistance intensify, if they do not cause acne. Most frequently we see anæmia or digestive disturbances in association with acne, but anything that lowers the vital resistance during the period of susceptibility to it may be a contributory cause of acne. It does not occur as a result of sexual troubles, contrary to a cruel common impression.

Acne is a most stubborn condition and the treatment of it in obstinate cases taxes all of the skill of an experienced physician. Patients cannot themselves cure the affection. There are certain measures, however, which they can carry out to the benefit of it, and it is the more important that they should be known, because vast numbers of persons with acnes undertake to care for themselves and use all sorts of aimless treatments.

Local Care of Acne.—In the local care of acne the chief indications are to cleanse the skin and free it as far as possible from blackheads. The first of these indications is met by bathing with soap and water. The vigor of this bathing is determined by the condition of the skin. When the skin is thin and relatively dry, the face should be thoroughly washed with a good toilet soap and warm water, and care must be exercised not to make the skin unduly dry or chapped. In severe cases of acne with greasy, thick skin and with many blackheads, there is little danger of washing too thoroughly, and the skin should have at least one vigorous scrubbing daily with warm water and a fairly strong soap and a rough washcloth. In addition to this, it is often well to sponge off the face with alcohol in order still further to cleanse it. The effect of bathing on these cases is manifold. In the first place, it gets rid, of course, of extraneous dirt; and, more important, at the same time by removing micro-organisms it tends to prevent the infection that produces acne lesions; it reduces the excessive amount of fat present in the skin in these cases; and, especially important, the scrubbing takes off part of the thick layer of horny epidermis that is usually present, and thus gives the fat glands a better oppor-

tunity to discharge their fat upon the skin, as they properly should. This washing of the skin in acne is one of the most useful things that the patient can do for himself. Of course, it can be overdone and must be regulated by reason, but with a greasy skin it must be done vigorously.

When a moderate effect from bathing is to be obtained any bland toilet soap may be used. In the cases in which a vigorous effect is needed, the soap should be fairly strong. Green soap or tincture of green soap are much used and they are suitable in the cases with greasy skin. With green soap all degrees of scaling and thinning of the horny skin may be obtained, according to the vigor and duration of its use. In the greasy type of cases tar soap and sulphur soap are also at times useful. To make the face-bath more thorough it may be supplemented by steaming the face. Done not too frequently, say once in three or four days, it is a valuable measure, especially as a preliminary measure to removing blackheads.

Removing blackheads from the skin is a more difficult matter than washing it thoroughly, and one much more likely to be overdone. Nevertheless, carried out with moderation, the pressing out of black-

heads is beneficial. This should be done after the face has been cleansed. It is easiest done with one of the watch-key-shaped comedo extractors. This should have a rounded edge to the hole in it in order not to cut the skin in pressing around the blackheads. It is placed with the hole over the blackhead and moderately pressed down so that the blackhead is extruded into it. If the mass does not come out with moderate pressure, it should be let alone until next day or later. The extractor should be washed in alcohol or boiled before each use, and as each comedo is extracted the extractor should be cleaned with a clean toothpick or similarly shaped object. After pressing out the blackheads, the face should be wiped with alcohol or solution of hydrogen peroxide.

When pus forms in acne lesions they should be opened, but the opening of acne pimples or pustules is a procedure which one can carry out on himself to only a limited extent. Deep-seated acne abscesses which do not develop a yellow point cannot be opened properly by a patient. When acne pustules are very superficial and only covered by a thin layer of skin, the pus showing as distinct yellow point, they can readily be opened with a needle. Before they are opened the surface should be wiped with alcohol, and

after opening the pus should be carefully taken up with a bit of absorbent cotton which has been dipped in alcohol and squeezed out. Each time before opening a pustule the needle should be dipped in alcohol or tincture of iodine. Finally the whole face should be wiped with alcohol or hydrogen peroxide solution to prevent the spread of the infection by the pus to other points on the face.

Pressing out blackheads and opening acne pustules are measures which must be carried out with moderation and intelligence. They are very likely to be overdone by nervous, eager patients, with the result that many abrasions are produced, infection spread, and the condition made worse.

Steaming the face, which is a popular procedure in the care of acne, has some value in cleaning the skin, as has already been pointed out. I have, however, seen little in the numberless cases so treated to lead me to believe it is of material benefit in curing the trouble. Used at intervals of several days, it is a beneficial measure, but its daily use is, in my opinion, not as good for acne as bathing with warm water as recommended above.

Cupping the skin in acne is, I believe, the most useful of these physical measures. It furnishes the

most satisfactory form of massage, but in addition it produces a hyperæmia of the skin which is known to be of use in combatting inflammation and stimulating the tone of the tissues. The method of treatment has been described under Cupping, on page 94, and in acne it should be carried out with care in the details to avoid spreading infection.

Massage of the skin in acne, either by hand or by the various mechanical devices such as those used to produce vibratory massage, has authoritative recommendation and is very popular. In the manipulation which the skin undergoes in the removal of comedones and in the cupping treatment—both of which give the skin what is essentially massage—some of the benefit is probably due to the massage. From massage as such, however, the results in acne seem to me inappreciable. I have never been convinced of its value from my experience in observing cases so treated, and, on the contrary, in careless or ignorant hands, it often makes acne temporarily worse by spreading infection.

Creams.—Toilet creams, "skin foods," and similar fatty toilet applications have no place in the care of acne. They still further fill up the already distended fat glands, spread pus organisms, and thus in general

tend to make acnes worse. Their harmfulness is increased when they are used in conjunction with massage, which forces them into the pores of the skin.

The Care of the General Health in Acne.—The care which the general health should have in acne is simply that which promotes normal bodily vigor. There is no particular routine of personal hygiene that benefits acne except as it improves the health of the individual, and what has been said about the care of the health as it affects the skin as a whole applies as well to acne as if it had been written with specific reference to acne. If a patient is anæmic, has indigestion or any other disturbance of health, is taking too much or too little exercise, or is underfed or overfed, the defect should be rationally treated, but there is no routine care of the health that applies to the acne patient regardless of his general physical condition. It seems worth while to emphasize this fact because there is so much effort wasted and so many personal sacrifices made by acne patients in carrying out routines of living that are supposed to be specifically good for acne, no consideration being allowed for the individual's physical condition, aside from the bald fact that he has acne. All these routines are

useless, or worse than useless, for acne except as they are of benefit to the general well-being.

All that has been said already about exercise, sleep, fresh air and sunlight, and diet and digestion might be repeated here. The point that needs to be emphasized is that the person with acne should be particularly careful to live a rational, hygienic life. The person usually affected is a growing boy or girl or a young adult whose body is still developing. During this time of development there should be a liberal allowance of sleep, food, and active physical exercise; and the acne patient needs all these, but he does not need for the acne itself an excess of any of them.

The two commonest defects of health in acne are anæmia and digestive disturbances, particularly those arising from constipation. Both of these diseases need the attention of a physician. Constipation in particular needs to be cared for along the lines that have already been indicated. In the matter of food the normal growing boy or girl should not be put on a greatly restricted diet. Sins of diet that are common in the youthful, such as hurried eating, eating between meals, especially indulging between meals in sweet drinks, ice creams, and other sweets, should be avoided. There is no ground for the idea that but-

ter or other fats, taken in moderation, are specifically harmful for persons with greasy skins, blackheads, or acne. These fats are burned up in assimilation as completely as sugar or starch, and they no more pass directly out through the skin than sugar does.

SEBORRHOEA, OR GREASINESS OF THE SKIN

Greasiness of the skin, such as occurs with blackheads and acne, often occurs alone or in association with few blackheads. This condition occurring alone is most frequent during early adult or middle life. It is often associated with indigestion. This must be corrected in order to overcome completely the disturbance in the skin. The local treatment of it is the same as that which has been described for greasy skin in acne.

ACNE ROSACEA

(Flushing of the Face, Red Nose)

One of the common blemishes of middle and later life is Acne Rosacea. This condition is a redness of the nose, most distinct toward the tip, usually associated with some flushing of the adjacent parts of the face, with enlargement of the minute blood vessels in the skin and with the occurrence of a larger

or smaller number of blackheads and acne pustules. It is the condition, familiar in the vernacular as a "grog blossom"—an unjust and cruel name for it, since its occurrence is entirely independent of any use of alcohol. In my opinion, it is invariably caused by indigestion, although disturbances of the inside of the nose are also said to give rise to it. It frequently occurs in alcoholics, for in them there are always chronic digestive disturbances.

It improves with improvement in digestion, but after it is long established the chief benefit comes from local treatment.

WRINKLES

The exaggeration in the normal furrows or wrinkles of the face and the formation of other wrinkles which appear in later life are due to two changes which time produces in the skin: the first is a lessening of the tenseness of the skin, which results in its fitting less snugly over the underlying structures. The second and chief change is a disappearance of the subcutaneous fat, the cushion of fat, just beneath the skin, which fills it out. The part played by the skin fat in this matter is easily seen in the appearance of wrinkles when a hitherto plump

person becomes thin and the disappearance of them when the weight is regained. Both of these are permanent changes in the tissues that can no more be overcome than can any other of the conditions that indicate old age. Their prevention lies in the secret of perpetual youth. We have not yet found that, although we have unmistakably learned that by easy rational living we can at least for a while put off old age. This applies also to wrinkles; a salutary mode of life that tends to preserve well the body is their best prevention.

Of course, wrinkles come earlier and are more distinct in some persons than in others. That is an individual or family trait of the tissues, just as other premature senile changes, such as baldness or grayness, may characterize the next individual or family. For a few premature wrinkles in otherwise tense skins something can perhaps be done towards their effacement by cupping the skin or by applying at night strips of adhesive plaster so placed that they temporarily obliterate the wrinkle. I very much doubt that anything practicable can be done by local measures to prevent for long the development of wrinkles in lax skin or to obliterate them. Massage, the usual resort of those who become desperate on the

subject, is, I believe, practically or quite without effect. Cupping of the skin daily, in the way already described, is entitled to some confidence and is more worthy of trial. Of course, some wrinkles could be removed surgically by taking out a bit of the superfluous skin, but that would be an extreme procedure for so trivial a cosmetic defect.

Paraffin Injections.—A very common practice now to eradicate wrinkles, to fill out hollows in the face and neck, or to obliterate depressed scars is the injection of paraffin. In my opinion, these injections should not be used for the relief of such small defects. In the first place, they do away with all play of the expression in the part treated, and are only partially successful in a cosmetic way. But, more important, there is danger of the production of serious deformities from ulceration or tumor formation at the sites of injection. Some of the disfigurements that occur from these accidents are tragedies, utterly out of all proportion to the blemishes for which the injections have been given. These accidents resulting from paraffin injections do not develop, as a rule, until several months after the injections have been made. They are perhaps rare in comparison with the number of injections given—for the treatment is

hood, they disappear spontaneously. Warts do not develop into dangerous growths, except in the rarest instances. Unless situated in locations where they are exposed to injury, they give no trouble, and they are trivial lesions aside from their disfigurement. An exception to this statement must be made for warts upon the palms and soles. They frequently develop on the soles, particularly in school children—among whom they occur at times almost in epidemics. They may be very painful on account of the pressure and interfere seriously with walking.

Because of the sudden way in which children's warts often disappear, there are innumerable superstitious methods of treatment for them. They often quickly disappear after such treatments, but when one undertakes their removal by physical means they are at times remarkably resistant. The popular way of destroying them with strong mineral acids or other strong acids is frequently complicated by painful and troublesome accidents. Their removal should be left to physicians; if they are numerous, it is often not an easy task even for them.

MOLES

Moles represent small defects of development in the skin. In structure they consist of masses of normal tissues which are peculiar only in their excessive amount at the particular spot. Moles are really small birthmarks. On account of an excessive quantity of pigment in them they are usually brown to black in color, but they may be unpigmented.

The point of chief importance in connection with moles is that in some instances they develop into malignant growths. This tendency is undoubtedly very slight, for practically every human being has one or many moles, and the number of cases of malignant growths that we see which develop from moles is infinitesimal in proportion to the total population. Yet it is a common experience to see such cases; it is so common and the growths are so malignant that it is an accepted principle among surgeons that moles are potentially dangerous. They should not be irritated by inexpert attempts at removal. If a mole is so situated that it is subject to frequent irritation, it should be removed. When a mole, either spontaneously or as a result of injury, shows evidence of irritation or further growth, expert

advice and care should be sought at once. When moles constitute cosmetic blemishes there is no reason why they should not be removed, but this should be done by a competent physician. Moles, of all things, should be left alone by the inexpert.

SENILE WARTS AND SCALY PATCHES

As later life approaches there frequently develop grayish or brown, flat, wart-like lesions and scaly patches up to the size of a finger nail, concerning which some general knowledge should exist. These are known as senile warts and keratoses (horny patches), and they represent changes in the skin that are the result of time. It would be convenient if they were described by some other adjective than "senile," for they frequently appear in middle life when any term suggesting the approach of senility is unpleasant. They are exceedingly common and may give no trouble. Very frequently they are the beginning point of malignant growths of the skin; growths which are sluggish, however, and which, if taken early, are the most easily treated of malignant growths.

These senile lesions should be guarded in the same way as moles, and whenever they show persistent evi-

dence of irritation or a tendency to growth they should be removed.

MILIUM

(Small White Concretions in the Skin)

Milia are the small white masses usually about the size of a pin-head, placed just under the surface of the horny skin, which are often seen on the upper part of the cheeks around the eyes. They are small collections of sebaceous matter which have been caught under the horny epidermis and have dried into hard cheesy masses. They are really a sort of imprisoned blackhead and are often associated with them, although white, because protected from the surface dirt. They are easily removed by pricking the cover with a sterile needle and pressing out the contents. They do not tend to recur so persistently as blackheads.

XANTHOMA

(Yellow Plaques in the Skin)

Xanthomata are the small chamois-yellow plaques which sometimes develop in the skin of the eyelids. These plaques are usually slightly elevated, of about the size of a wheat grain, and oval or elongated in shape. There may be only one or two on either eye-

lid or they may be numerous. They practically always occur symmetrically around both eyes.

The cause of xanthoma is not known. The lesion may occur in healthy persons. They show no tendency to disappear, and their removal without scarring is rather difficult.

VASCULAR ECTASES

(*Permanent Red Spots in the Skin*)

Occasionally there occur in the skin one or more permanent red points due to dilated minute blood vessels. They may exist from birth or appear at any time of life. They show simply as small red spots, without elevation or slightly elevated. They are not inflamed and they give no trouble. If examined closely they are seen to consist of a central blood-red spot, surrounded by a red halo which is produced by numerous minute blood vessels radiating from the central point.

These ectases are of no importance, and cause very slight disfigurement. They are easily destroyed, but do not disappear spontaneously.

PIGMENTARY DISTURBANCES OF THE SKIN

The pigmentary disturbances of the skin are of very obscure origin, and aside from the familiar ef-

fects of sunburn we know little of the factors that produce them. They are also very slightly amenable to treatment.

FRECKLES AND TANNING

Freckles are due to an irregular distribution of the pigment-forming cells in the skin and their appearance is caused or exaggerated by exposure to sunlight, which stimulates the formation of pigment by these cells. Tanning is a similar manifestation of stimulation of pigment formation by light. The only difference between them is that in persons who tan there is an even distribution of the pigment-forming cells in the skin, while in those who freckle the distribution is uneven. The pigment cells become especially numerous in small fixed spots, which accordingly appear darkest, forming freckles, when the skin is influenced by causes that stimulate the formation of pigment.

The prevention of tanning and freckles consists in avoiding sunlight. In addition to the ordinary protections that are a part of dress, it may be mentioned that a thick coating of a heavy cosmetic powder affords some protection from light and is of some use in preventing freckles or tanning.

The removal of freckles or tan, except by time, is impractical and attempts are only partially successful. The remedies in general use are unsatisfactory. The frequent rubbing of the pigmented spot with lemon juice is a popular measure, and if carried to the point of causing some scaling of the skin may lighten the spots. Sponging with hydrogen peroxide solution, after washing the skin with an alkaline soap and warm water or cautiously rinsing with ammonia water, is a procedure that also causes some bleaching of the pigment. The most effective applications are strong solutions of corrosive sublimate, but this is one of the most dangerous poisons and such applications should only be used under a physician's direction; even then the results are unsatisfactory.

CHLOASMA

(*Liver Spots*)

This condition is the common mottling of the face by light brown spots or patches; these are the size of a coin or larger, oval or irregular in outline, occur especially on the forehead and over the cheek bones, and are seen most frequently in women, particularly those whose complexions are naturally brownish. Familiarly they are known as "liver spots." There is

no reason to believe that they have anything to do with the liver. Their cause is unknown. They sometimes occur with various abdominal disturbances, but they also occur in healthy persons. Their local treatment is like that for freckles, and is equally unsatisfactory.

CHAPTER XI

THE HAIR

STRUCTURE OF THE HAIR

The hair, and the nails likewise, are horny structures which are simply the horny layer of the skin arranged in special forms. They furnish beautiful examples of a phenomenon so often seen in the study of structures—nature's ability to adapt one structure to different purposes and to vary its form by a few simple modifications in the arrangement of its elements. To form a hair the epidermic layer of the skin dips down in the form of a tubule into the corium or body of the skin; at the bottom of this tubule there is a little papilla arising from the corium from which the hair grows. This papilla corresponds exactly to the papillæ which make up the surface of the corium. The hair grows up from this papilla in the shape of a slender spine, whose form is molded by a firm tubule through which its growth forces it. The lower end of the hair fits over the

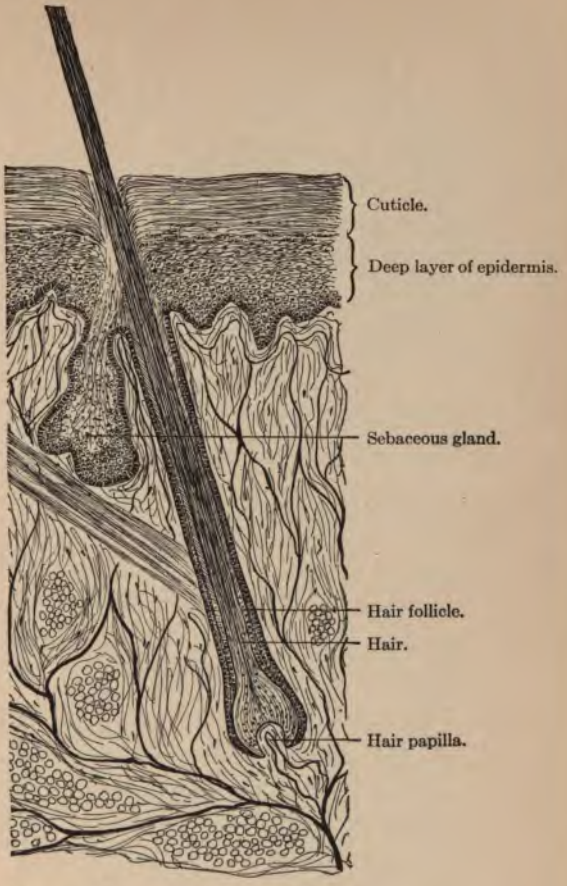

FIG. 3.—HAIR AND HAIR FOLLICLE.

papilla like an acorn shell over an acorn. It is firmly attached, except when shedding, to the papilla, and it grows and obtains nourishment from the papilla alone.

Of course, the hairs are as much a part of the skin as the nails or the horny layer itself. In their arrangement in the skin and in their form there is a resemblance to plants growing out of the ground, but the resemblance goes no further. The hairs are not independent living structures growing out of the skin like grass or wheat stalks out of the ground. They are rather like the leaves of a tree—a part of its structure, with no independent existence and dependent upon the trunk for sustenance. As a matter of fact, the hairs are hardly living structures at all; above the papilla for a very short distance up the hair follicle the hair is a succulent, living structure —like the deeper layer of the surface epidermis—but for the rest of its length it is a dense bristle of insensitive horn. For all of its length above the surface of the skin and for seven-eighths of it in the follicle the hair is without life. There is no circulation of vital fluid through it, like sap in a plant; it does not "breathe," like a plant. It is, in short, a finished structure made by the underlying tissues for a me-

chanical purpose and not further participating in vital activity. This would seem to be self-evident upon a moment's consideration, and yet most of the popular conception of the hair and all of the nostrum vendor's hair remedies are based upon the theory that the hairs are living structures growing out of the scalp like plants out of a bed, to be sprinkled, and fertilized and fed like plants. The hairs are not nourished that way. They get their sustenance, like every structure of the body, from the blood. They are very sensitive to alterations in this supply, so that we see the condition of the hair influenced by many disorders of the general health. Of course, the hair is also influenced greatly by local disorders, just as the skin in general is.

THE FUNCTIONS OF THE HAIR

The functions of the human hair are protection and adornment. Doubtless the hair man has now is merely a vestige of the abundant coat he wore in cold climates before he began to render it no longer a necessity by covering his body with clothes. Man has largely lost interest in the hair's useful function of protection, but as a vanishing feature of his personal beauty it is one of his most cherished possessions.

THE CARE OF THE HAIR

The purposes of the care of the hair are to render it attractive, to keep it clean, and to preserve it. These ends are all attained by the same means.

The Comb and Brush.—The comb and brush, which are used primarily to arrange the hairs, are both means of cleanliness, but from the custom of their common use they are also probably the chief means of the conveyance of local diseases to the scalp. For this reason the first requisite of them is that they should be clean. Aside from possessing that quality, the comb should not be such as to tear the hair or wound the scalp. A good comb has its teeth smooth and wide apart and their tips blunt. The fine comb of our grandmothers failed in both of the latter qualities and is justly falling into disuse. The material of which a comb is made is not a matter of importance, provided the form is correct. Metal combs are commonly condemned, chiefly, I believe, because they are not correctly made, but they have the great advantage that they can be sterilized by boiling without damage. A warning should be uttered against celluloid combs, particularly those that are worn in the hair, because they are danger-

ously inflammable. Every once in a while some one is seriously injured by the explosive burning of a celluloid comb.

Hair-brushes should have their bristles set wide apart. The brush with fairly stiff bristles set separately and rather wide apart is probably the best. The next best is the one with the bristles set in tufts. Brushes with metal "bristles" are not good, because, while they are agreeable in the ease with which they pass through the hair, the scalp cannot be vigorously brushed with them without injury to it. The proper stiffness of a brush depends upon the sensitiveness of the scalp. The brush should be stiff enough to allow one to brush the hair and scalp vigorously without injury.

Both combs and brushes should be kept clean by frequent washing with water and soap or ammonia and subsequent thorough drying, preferably in the sun. In addition, they frequently need sterilizing, particularly when used by persons with much dandruff. The most practical way of doing this is by wetting them in a solution of formalin, a teaspoonful to a pint of water. This solution damages nothing about a comb or brush that water does not damage. The comb can be immersed in this, and it is better if

the brush is of a kind that will also bear immersion; if not, the bristles may be wet several times up to their bed in the same solution and the brush then left to dry. The use of other than individual combs and brushes should be avoided, particularly in trains, hotels, clubs, and other places where they are in common use, chiefly because it is probable that the disease characterized by abundant dandruff, which is largely responsible for baldness, is transmitted through combs and brushes.

Brushing the hair is of first importance in the toilet of the scalp and hair. It cleans both; it makes the hair smooth and glossy, and it stimulates the scalp. Daily brushing, more than anything else, tends to give the hair a beautiful sheen. It also either stimulates the sebaceous glands of the scalp or distributes through the hair the fat of these glands and thus prevents lack of luster from dryness of the hair. Finally, it furnishes valuable mechanical stimulation to the skin of the scalp as a whole. I am not sure that the mechanical effect of brushing the scalp vigorously is not the best way of massaging it. The hair should be brushed at least twice daily; this brushing should be continued for a few minutes, at least—until the hair is smooth and glossy and until

there is a pleasant feeling of "life" in the scalp. The brush should be firm enough to enable one to exert a degree of force upon the scalp, but not so stiff as to irritate the scalp; and the brushing should not be so vigorous as to irritate the scalp. Nothing surely—after nature—contributes more to a beautiful crown of hair in a woman than daily, assiduous brushing.

Shampooing and the Use of Water on the Hair.—The daily use of water on the hair without careful attention to drying is almost certainly bad for it. In my opinion it is distinctly a factor for the production of baldness. When, however, the scalp and hair are thoroughly dried, as they should be after a proper shampoo, the case is different, and there seems no reason to believe that the hair is damaged by shampooing it as often as necessary for cleanliness. The proper frequency of shampooing depends upon the condition of the scalp and the amount of dirt to which the hair is exposed. No harm is done by a shampoo once or even twice a week, if necessary; but for the average person two weeks is a better interval between shampoos. In a shampoo care should be taken to clean the scalp thoroughly as well as the hair, and to rinse out thoroughly the soap or other

detergent. Afterwards the hair should be promptly and thoroughly dried.

In the selection of a shampoo soap there is room for almost as much choice as in the selection of a toilet soap. Any good toilet soap is suitable for the shampoo. Tincture of green soap is widely used and is excellent. It is much more agreeable if the soap is an olive-oil or cottonseed-oil green soap. Tar soaps or sulphur soaps are also good for the shampoo, particularly when there is much dandruff. The indication for the use of soap in a shampoo is that it should take out the dirt and, as most soaps will do that, the user is fairly safe in selecting a soap that is agreeable to him. The shampoo creams, jellies, and liquids of hairdressers are all essentially soaps. When they do not actually contain soap, they have in them ammonia or carbonate of ammonia, or some other alkali whose action is essentially that of a soap. It is a very popular practice to shampoo either with white of egg alone or to add white of egg to the shampoo. There is no particular objection to this, although there is nothing gained by it. It gives the hair some temporary gloss and prevents dryness, but this is better attained by the use of a minute quantity of oil.

it is due to improper care of the hair. The remedy is to give the hair enough oil to restore its elasticity and resistance. This does not imply simply one oiling, but the repetition of it as frequently as necessary to maintain the hair in proper condition. There is no harm in clipping off broken hairs, and when the ends split they should be clipped off at a point below the split.

It is a common practice for hairdressers to urge singeing the ends of these broken hairs instead of clipping them "because it closes the pores of the hair, keeping the fluid in." The same idea is the basis of singeing men's hair after trimming. The procedure is perfectly useless for the hair. There are no pores and there is no fluid in the hair, and, except for the fat in them, they are as dry as a shell hairpin.

OILINESS OF THE HAIR

(*Oily Seborrhœa*)

Excessive oiliness of the hair comes from an exaggerated secretion of fat by the sebaceous glands of the scalp. This may be excited by disturbances of the general health of the same sort that cause acne, and to cure these cases constitutional treatment may be required. Most cases of excessive oiliness of the

hair are cases of dandruff or seborrheic dermatitis, which is considered under the subject of Baldness, and the treatment for that condition applies to them.

DRYNESS OF THE HAIR

This condition, although the antithesis to oiliness of the hair, is closely related to it in its causation. It is, of course, due to deficient secretion of fat by the sebaceous glands. This may be caused either by disturbances of the general health or by local scalp troubles. It is a manifestation of many disturbances of the general health. As frequently, it is due to constant washing of the head, exposure to sunlight, or some other local mismanagement which deprives the hair of its natural oil.

It is a condition which should not be allowed to persist. The condition can readily be corrected by greasing the hair lightly with vaseline, olive oil or sweet almond oil. Harmful measures in the toilet of the hair should at the same time be especially looked for and corrected.

HYGIENE OF THE BARBER SHOP

There is little to be said about the proper care of the hair in the barber shop that is not covered by the general consideration of its care above. It is desira-

ble that one should have his own comb and brush for the barber's use, that the barber's scissors should be dipped in alcohol or formalin solution, and that his hand should be freshly washed. Failing these—and fail they must—the next best thing is to give the hair and scalp a thorough wetting with alcohol after a visit to the barber.

As far as the preservation of the hair is concerned, one may have it trimmed as he pleases; it probably has no influence upon its growth. There is no ground for the belief that cutting it short stimulates its growth, and there is, if possible, even less for the stupid practice of singeing the ends of the hairs to prevent the escape of their "sap."

Hygiene of Shaving.—In shaving the beard there is little need to consider the beard itself, but great need to consider the care of the skin, for in this operation abrasions and cuts are commonly produced, and these offer dangerous opportunities for infection. If one shaves himself, as he should do, he should take care that his shaving kit is kept clean. If there are any pimples or other source of pus about his face these should be wiped off with hydrogen peroxide solution or alcohol before shaving, and, after shaving, his brush and razor should be washed in alcohol.

To require ideal conditions for shaving in a barber shop is impossible; it would necessitate as much care as for surgical operations. In a barber shop one should at least have clean brush, razor, soap and comb and the barber's hands should be clean. It is best to have one's own razor, soap and brush in a barber shop, but when these are lacking the next best thing would be to have the razor and brush dipped in one-tenth per cent. solution of formalin. After the shave, the face should be rinsed in warm, and then cool water, and after this with dilute alcohol. The most convenient form in which to get this is in spirit of bay rum—essentially dilute alcohol—which the barber always has. Witch hazel, which is commonly applied, is agreeable, but of no service in preventing infection. If any bleeding points have resulted from the shaving, the bleeding should be stopped by pressure with a hot, wet towel. The styptic pencil should not be used; it is a possible source of dangerous infections. After the face has been rinsed with water and dilute alcohol or bay rum, it should be dried and powdered with talcum for its soothing and protective effect, and the operation ended here. If the face is irritated enough to require an ointment, one should himself apply some cold cream or vaseline later.

After the barber has finished the shave he should not proceed, as is the custom now, to give a pseudo-massage with a "skin food." It is not of the slightest use and it is an ideal procedure to infect the minute abrasions which have just been made in shaving.

Barber's Itch (*Sycosis*).—Barber's itch (sycosis) is a form of suppuration of the skin of the bearded part of the face. The name is unjust, because it may occur entirely independent of the barber and through no fault of his. For its occurrence all that is necessary is an abrasion of the skin and infection with the ubiquitous organisms that produce pus.

It begins with a point of superficial suppuration; the surface exudes pus and this dries into yellow crusts. The process is likely to spread rapidly. If left unchecked it becomes very unsightly, and difficult to cure; and for these reasons whenever an infected spot develops after shaving it should be given immediate attention. If there is only one such point, the individual may clean it with alcohol or hydrogen peroxide solution and then paint it with tincture of iodine. If this does not cure it, or if the condition has gained any headway before it is discovered, a physician's assistance should be sought without delay.

CHAPTER XII

THE HAIR (CONTINUED)

FALLING OF THE HAIR

THERE is a normal continual shedding of the hair, which is analogous, in a way, to the constant shedding of dry scales from the surface of the skin. Each hair, after a variable period, depending upon circumstances, becomes detached from its papilla at the bottom of the follicle. A new hair immediately begins to form on the papilla and its tip follows the loosened hair as it is gradually leaving the hair tube. Apparently, and perhaps actually, the loosened hair is pushed from the follicle by the new hair growing up beneath it. The normal "life" of a hair is uncertain; it probably varies from several months to two to four years. It may vary with seasons and other conditions, particularly with varying conditions of the health, and the abundant falling of hairs may not presage baldness. Nevertheless, in all forms of bald-

ness which come on slowly the state is reached through this shedding process. If the hair is in normal condition, each shed hair is replaced by a new hair, which grows to the approximate size of the one it has replaced. In approaching baldness the shed hairs are not lost forever, but are replaced by finer hairs, and this process goes on until no hair is found at all. Its follicle has shrunk as the hairs have become finer until finally no follicle or papilla is left and no further hair can be formed. Persons who are anxious about their hair are apt to exaggerate the extent of its shedding; nevertheless, when abundant shedding persists it indicates need of attention if the hair is to be preserved.

BALDNESS

(*Alopecia*)

The term baldness or alopecia, is used to indicate either partial or complete loss of hair. The condition may be divided into three forms:

I. Baldness due to disturbances of the general health.

II. Baldness due to local diseases of the scalp.

III. Simple or senile and premature senile baldness.

I. Baldness Due to Disturbances of the General Health.—The nutrition and growth of the hair are under the body's control, and it is not to be wondered at, therefore, that its condition often reflects disturbances of the general health. This is sometimes seen in the loss of the hair's luster in conditions of disturbed health, as a result of failure of fat secretion by the skin, but it much more frequently manifests itself in rapid partial loss of the hair. The individual finds that his hair is shedding with alarming abundance. The shedding may begin suddenly or develop gradually. It varies in quantity from time to time, sometimes almost stopping, but showing no tendency to cease permanently. The scalp is apparently healthy or at least it shows no unhealthy condition adequate to account for the rapid loss of hair. The falling of the hair in these cases is often so abundant that the individual becomes alarmed by the fear that he is quickly going to be bald. And, of course, he would quickly become bald if the hairs lost were not replaced by new ones; but in this, as in all of the ordinary forms of loss of hair, as rapidly as a hair falls out a new one begins to grow up from the follicle. It may be finer than the one it succeeds, but it is only after new hairs have grown repeatedly and

result. The scalp should be kept clean and should be vigorously brushed. In addition to the brushing, manual massage may be beneficial, and in these cases much help is gotten from proper stimulating local applications. I am sure nothing of benefit to the hair is gained by shaving or closely cutting it, as is commonly done in these cases.

II. Baldness Due to Local Diseases of the Scalp: *Dandruff, Seborrhoic Dermatitis.*—There are several diseases of the scalp which may cause atypical forms of baldness, but those are not responsible at all for baldness such as is ordinarily understood by that term, and they are so uncommon that they need no consideration. There is, however, one scalp disease which is responsible for a great deal, if not the greatest part, of the common baldness and that is seborrheic dermatitis—the condition familiarly recognized as dandruff.

The ordinary condition of dandruff is well known. There forms on the scalp an abundance of fine scales which become loose in the hair and are apt to be shed upon the clothing. The scales and the hair are usually oily, but both may be dry. There is some itching of the scalp. When the condition becomes exaggerated, as it often does, the scales collect in dirty, yel-

lowish, greasy crusts, which may be in spots or spread over most of the scalp. These crusts adhere rather closely to the scalp, and when removed the skin beneath is reddened, and sometimes abraded. In these exaggerated cases there is usually annoying irritation, especially in the form of itching. In a given case the condition varies in intensity from time to time, but if neglected continues indefinitely.

There is general agreement among experts that seborrheic dermatitis is due to an infection, although there is difference of opinion as to whether the producing micro-organism has been found. It is at least established that the condition represents a chronic inflammatory process in the scalp, which, if allowed to continue for years, results in great thinning of the hair, or ultimately baldness. It is very important, therefore, to recognize dandruff and treat it. Slight dry scaling from the scalp is normal and need cause no anxiety, but the persistent presence of a greasy, scaly condition of the scalp means a disease that threatens the preservation of the hair. It by no means always indicates inevitable baldness, but it usually brings about gradual permanent thinning of the hair.

Dandruff is one of the commonest disorders of the

skin among civilized people, and this is probably accounted for by the fact that it is an infectious process which is transferred by hats, combs and brushes. It is so trivial that hardly anyone gives any thought to the necessity of efforts to avoid its spread to others, so that practically all combs and brushes in common use are contaminated with it and are means of its transmission. For this reason it is practically impossible to avoid infection with it—to undertake to avoid it is a good deal like trying to prevent dandelions from taking root in a lawn. The only practicable course is to avoid manifest sources of infection, such as toilet articles in common use, and persistently to fight it by keeping the scalp clean.

Shampooing often enough to keep the scalp clean is the best measure the individual himself can carry out to prevent or overcome dandruff. If there is a tendency to dandruff, shampooing once a week, or even at shorter intervals, is not too often, provided care is taken to dry the hair thoroughly. This shampoo is best taken with tar or sulphur soap. Corrosive sublimate soap is also useful in these cases and it is not dangerous to use on the unbroken scalp. As a further measure of cleanliness and as an antiseptic the frequent application of alcohol to the scalp is very

useful in combatting dandruff. It dissolves some of the oil from the hair and scalp, and if it causes the hair to become too dry this can be overcome by adding from one to five or six teaspoonfuls of castor oil, according to the indications of the case, to each pint of alcohol. For men, simply wetting the scalp with alcohol is sufficient; in the case of the long hair of women it is better applied by parting the hair in various places and rubbing on the alcohol with a small sponge. Another useful application is sixty grains of sulphur to an ounce of vaseline, to be rubbed into the scalp at intervals of a few days.

Aside from avoiding sources of infection, these are the most efficient measures that the individual can use for himself. For aid beyond such measures as these the attention of a physician is needed; for the cases require individual attention, and even with this the successful treatment is difficult.

III. Simple Baldness.—*Senile Baldness and Premature Senile Baldness.*—Between the skin of the scalp and the skull there is a thick layer of fat to which the skin is loosely attached and upon which it is freely movable. In civilized man, who lives in houses and wears hats, the following changes take place as he approaches later life: This fat layer gets

thinner; the scalp becomes more firmly attached to the skull and less movable; the skin becomes more tense; and with these changes the hair becomes thinner and thinner over the top of the head. Finally, in the extreme cases, the hair disappears and there is left a bald, glistening crown closely drawn over the skull. That is the picture of senile, spontaneous, or simple baldness. Premature baldness is the same thing, only occurring before the age when these changes, which we ordinarily attribute to old age, are expected to appear.

What is the process that has taken place here? There has been a disappearance in great part of the subcutaneous fat; the scalp has become much more dense in structure, or it has become fibrous or sclerotic, as we say technically; and with this shrinking, as it were, in the scalp there has been a gradual shrinkage in the hair follicles until they entirely disappear, and are replaced by fibrous tissue. It is a process very like that taking place in many of the tissues in later life, and in some of the organs often as a result of disease. It resembles very closely, for example, the destruction of the epithelial tubules in the kidneys that takes place as a result of chronic inflammatory processes. And it is a process that can

readily be explained as a result of a chronic inflammatory process in the scalp. This is a reason for one view that all so-called senile baldness is really due to dandruff or seborrheic dermatitis. The sounder view seems to be that the change may be simply one of atrophy—shrinkage—occurring as a primary process and not secondary to any diseased condition of the scalp.

The explanation of the fact that baldness is usually confined to the top of the head probably lies in the fact that the increased tension of the scalp resulting from its shrinkage exerts its chief pressure on the top of the head. If one pulled a bag tightly down over the head it would exert much more pressure on the top of the head than around the border.

Simple or senile baldness, in spite of its name, usually begins to manifest itself early. The thinning of the hair becomes apparent before the age of thirty in eighty per cent. of the cases, and individuals who are not nearly bald at fifty are likely to keep a passable covering of hair until they reach old age.

The definite causes of simple baldness are uncertain and there is much room for speculation. As a result, all sorts of factors are involved to explain it from the wearing of tight hats to improper methods

of breathing. Some would go so far as to say there is no such thing and to attribute all of the cases to seborrheic dermatitis. That is an extreme view, but certainly the ravages of dandruff have to be taken into account in all cases of baldness and in considering the causes of the condition no separation can be made between simple baldness and that due to dandruff.

Baldness is much commoner in men than women. This is, however, only true of complete baldness; thinning of the hair as a result of nervousness and other depressing influences on the health is commoner, I believe, in women than in men. The reasons for the occurrence of baldness less frequently in women than in men are probably various. In the first place, women give much more attention to the toilet of the hair—to brushing it, and to keeping it clean and in good condition; their hats are light things that merely rest on the hair; and finally the fat layer of the scalp, as of the skin generally, is more abundant in women than in men and atrophies later in life. Man sometimes is inclined to have it that baldness is a sign of intelligence and a result of mental labor and that that is the reason it is commoner in men. This fiction is one of the few conso-

lations that can be urged for the condition, and it seems mean to disturb it, but, truth to tell, there is no ground for it. Baldness may make one look wiser, but it occurs indifferently in the great and the small, and it is no more a sign of wisdom than long hair is of genius.

The broad fact seems to be that in the common occurrence of baldness we have a manifestation of a transitional stage in man's evolution. The hair on the body now is a vestige of a former abundant coat. In the economy of nature structures atrophy and disappear when they cease to have function, and the need for warmth and other protection afforded by the hair is no longer of great importance to man. Man now uses a hat instead of relying for protection for his head upon a shock of hair as his ancestors did, and, as a result, in spite of all of his coaxing, the shock of hair is gradually vanishing. This does not mean that you and I can save our hair by discarding our hats. We are a result of our ancestors, and to save our hair we would have to discard the hats of all of our ancestors for scores of generations back.

According to this view, heredity is one of the great causes of baldness, and all statistics indicate that this is true. In the statistics of Jackson and of White the

condition is hereditary in 30 per cent. to 40 per cent. of the cases.

Mistreatment of the hair is also an important factor in the production of baldness. Daily wetting of the hair, especially if no attention is given to drying it, keeping it poor in oil by excessive use of soap and water without supplying any fat in place of that removed, failure to keep it clean, excessive exposure to sunlight, the indiscriminate use of drugs, particularly "hair tonics," and over-zealous treatment by barbers and hairdressers—all of these causes are influential in the production of baldness, and are to be guarded against, particularly in the care of the hair of those who have already a predisposition to the condition.

The effects of heavy and tight hats by interfering with the circulation of the scalp is considered to be of great importance, and there can be little doubt that it is a factor to be considered. Hats should be light. They should provide for circulation of air, and should not bind the head. It can at least be said for women's hats that usually they are better in these respects than men's.

But after all other factors have been considered, we must still come back to seborrheic dermatitis—dan-

druff—as the most important cause, and the one to which most care must be given in preventing baldness. According to White's statistics, it is a factor, and perhaps the chief factor, in 79 per cent. of the cases, according to Jackson's 72 per cent., and according to Elliot's in 91 per cent.

Prevention.—The care of the hair to prevent baldness or stop its progress is the same as that already given for the care of the hair in general. In the first place, the scalp should be kept clean in the ways already considered. The hair should be brushed daily, and the hair and scalp shampooed as often as necessary for cleanliness. The hair should not be allowed to remain dry and lustreless from lack of oil, but, if necessary, should be oiled lightly. For this purpose the best applications are olive oil, sweet almond oil, vaseline or liquid vaseline. Keeping the hair devoid of all oil is one of the commonest faults of the present taste as to its toilet. This does not mean that it should be smeared with bear's grease; an excess of fat in the hair becomes rancid and is harmful. All that is needed is that it should have enough oil in it to retain its gloss and pliability—distinctly not an excess.

The promiscuous application of "hair tonics" and

other nostrums is regarded by some authorities as an important cause of baldness. In my experience I have not been particularly impressed by that fact, although I believe that these haphazard applications, without any regard to the indications of the individual case, are at least valueless. The same is true of the numerous activities of barbers and hairdressers, when their efforts go beyond the use of measures directed merely to cleansing the hair and scalp. Their singeing the hairs, their various methods of massage, "hair tonics" and "hair restorers" and "scalp treatments," applied indiscriminately without intelligent appreciation of the indications to be met, may be harmful; they are at best useless forms of diversion. There is no objection, however, to a good shampoo by a careful and clean barber or hairdresser. Having it done for one is a form of luxury.

Massage of the scalp as a measure to check the falling of hair is of some service when the scalp is free from dandruff. With dandruff present it is of doubtful value or harmful. In massage of the scalp all that is necessary is to give it a good rubbing, carried only to the point of producing a feeling of "life" and glow. This requires no especial skill, but can be

done for one more easily than one can do it for himself. Mechanical massage offers no advantages over simple rubbing, and is likely to be too vigorous.

Of the value of electricity in stimulating the scalp I am uncertain. In the hands of one who knows the indications to be met, it may be serviceable; used without intelligence, it is not.

GRAYNESS

(*Canities*)

There is a natural tendency for the hair to turn gray in later life. It is one of the changes due to time—scientifically a senile change, to use that unpleasant word—although it may come on comparatively early in life. The degree and the age of occurrence of grayness are largely matters of heredity. It is a family characteristic, the hair inheriting a tendency to early grayness just as so many other physical changes of later life show a family type. While, as a rule, grayness signifies nothing of the sort, there is little doubt that it is often influenced by emotional and other mental trials, particularly those that are prolonged, and it is not an uncommon occurrence to see it develop rapidly from grief, severe business anxiety, or other conditions of intense men-

tal strain. That grayness sometimes occurs suddenly is a general impression which, I believe, is correct. That this may occur is often denied, because it is difficult to understand the mechanism of its sudden production; but some of the most unromantic and reliable scientific observers have recorded cases of it.

Why grayness occurs we do not know. The explanation of the phenomenon is that there is in most cases a failure of the formation of the pigment which gives the hair its color. For some reason no more pigment is formed at the papilla or in the bulb of the hair, and as the hair gradually grows upwards it shows as an unpigmented hair. The lack of pigment alone, however, does not account for its whiteness; it alone would leave the hair a yellowish white color. The silvery or perfect whiteness seems to be due to the fact that at the same time as the failure of pigment in the hair there is a change in the formation of the texture of the hair, so that spaces are left which become filled with air, and these cause whiteness in the same way that minute air spaces make snow or beaten eggs white. Some authorities believe that ordinary grayness is hastened or produced by dandruff. I have not been able to see that dandruff or lack of

care of the hair are factors of any importance in the production of grayness.

Curative treatment for grayness is without avail.

SUPERFLUOUS HAIR

(*Hypertrichosis*)

The term superfluous hair, which, of course, is relative, is applied chiefly to a growth of hair beyond what is ordinary on the face or other non-hairy parts in women.

An excessive growth of hair is usually a peculiarity of structure of the skin. Some individuals have as a congenital characteristic an unusually abundant or coarse development of hair follicles. This characteristic may be individual, but in most cases it is hereditary and shows as a family tendency.

Aside from heredity, we know little of either the actual or exciting causes of hypertrichosis. It is in rare cases apparently excited by certain diseases which produce nutritional changes in the skin. It usually increases as the individual gets older and it often appears about middle life in women. Those who have an overgrowth of hair are most zealous in trying to find some cause for it and usually attribute it to some previous application, particularly vaseline,

or to some irritation or other accident to the skin. Cases have been recorded of the stimulation of a growth of hair on non-hairy parts by hot dressings, irritating plasters, poison ivy, and other irritants, but such cases are very rare. I have never seen a case where I was convinced that such a local cause was responsible. Vaseline in particular is blamed for many cases of hypertrichosis. Probably the idea had its origin in the conception that such a substance feeds the hair and thus stimulates its growth. There is, I believe, not the slightest basis in fact for the idea.

The only means of permanently removing superfluous hairs is electrolysis. When the hairs are not too numerous the method gives satisfactory results. If they are very abundant, the treatment is very tedious and must extend over a long time, and in such cases the results often fail to meet the expectations of patients. Aside from electrolysis, the only measures are palliative. The simplest way to avoid this disfigurement is to clip the hairs off close to the skin with manicure scissors. This does not, I believe, stimulate their growth, as shaving or the use of chemical depilatories is likely to do. If there is a growth of fine, dark hairs, it can be made much less conspicu-

ous by frequent bleaching with hydrogen peroxide solution; this keeps the hairs light and at the same time dry. It certainly does not stimulate their growth, but rather tends, I believe, to diminish it.

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