CHAPTER IV

BATHING AND ITS IMPORTANCE TO THE BODY

WE ALL probably judge one another, both consciously and subconsciously, more by the condition of our skin than by anything else. A clear, clean skin is usually indicative of a healthy body and its implications of right-living habits, self-respect, social-mindedness and a keen, alert mind.

Moreover, all of us, whether man or woman or child, are instinctively attracted to beauty. And a clear, clean skin is a beautiful skin—indeed, it is the only kind of skin that is beautiful. No classic features, no silken tresses, no amount of cosmetics, no skillful tailoring can detract from or conceal a poor complexion. On the other hand, a smooth, healthy skin can make a crooked nose, an awkward figure, shabby or out-moded clothes fade into nothingness. But there is no need to dwell upon the charm of fine skin—we all know well the role that physical attractiveness plays in our lives and happiness.

Aside from its social significance, from the standpoint of health the skin is a most important—and in many respects the most important—organ of the body In the first place, it serves as a protective covering for the whole body and in the second place it performs several important vital functions, not least of which

is the elimination of waste material. Without a clean, healthy skin, there can be no vigor and health, for when the skin is not functioning properly, the other organs are often affected and likewise do not function as they should. Infection may set in—for that matter, a sickly skin is an ideal breeding place for many death-bringing germs and it is a simple matter for them to reach the mouth and nose—the mere touch of the hand on a towel, on food, or the face itself is sufficient.

On the other hand, it is true that if the internal organs are not kept clean and functioning in good order, the skin will be affected. Nevertheless, no matter how well the inside of the body is kept clean, that alone is not sufficient to maintain the skin in a healthy condition. It must be thoroughly cleansed from the outside as often as is necessary. And the first and foremost way to keep the skin clean is through the bath with plenty of water and a good soap.

The Skin and Its Functions

The significance of soap and water and a clean skin for a long life and a healthy one, can only be appreciated if the structure and the functions of the skin are understood. Strangely enough—and it is to be regretted—in spite of the importance of the skin—our knowledge of dermatology is far from complete. Small wonder then, that the average person clings to strange superstitions about this organ and easily falls prey to quacks who spell-bind him—more likely her—into throwing away money on magical liniments and salves guaranteed to cure at least twenty internal disorders over night, not to mention all the rare oils, herbs and

creams which iron out wrinkles, fade out blemishes, remove two-out-of-three chins, dry out blackheads and bring back the beauty of Apollo and Venus before the first jar is emptied (which really would be very bad business). So, forgetting our pet skin tonic or lotion for the moment, let us see what the skin really looks like and how it functions.

First of all, even though your physiology text books emphasize that the liver is the largest solid organ of the human body, the skin really is the largest organ. Indeed, it is about six to eight times larger than the liver and that fact alone should convince the reader of its importance. Moreover, the structure of the skin is as complicated as it is vast. It is divided into three layers—the epidermis, the corium or true skin and subcutaneous tissue. The outer layer or epidermis is composed of a horny layer of dead cells, a layer of translucent epithelial cells, a layer of coarsely granulated cells and a mucous layer which contains the pigment which distinguishes the blond from brunette and protects the underlying layers from the chemical action of the sun's rays. This layer also contains the openings of the sweat and fat glands.

The next layer—the corium—is divided into two parts, the papillary layer which is composed of fine connective tissue fibers and contains nerve endings and loops of blood vessels. With a high-powered magnifying glass you can see tiny, rounded depressions which are the openings of the sweat glands. A single drop of sweat can usually be discerned at each opening, especially after exercise. The lower or reticular layer has a coarser, loose structure than the papillary layer and contains some of the glandular structure of

the skin (fat and sweat glands) as well as hair follicles, muscles and blood vessels.

There is no definite line of demarcation between the reticular layer and the subcutaneous tissue—indeed, many authorities consider the latter a part of the corium. It varies in thickness and is composed of a network of interlacing bundles of connective tissue less clearly arranged than those in the corium and enclosing irregular spaces containing fat cells, so that it serves as a buffer or pad against external violence.

The nutrition of the skin is supplied by arterial blood, the vessels of which are controlled by the vaso-constrictor and vaso-dilator mechanism. In the corium there is a very abundant network of blood vessels, but in the epidermis there are no blood vessels, its nutrition being obtained from the fluid part of the blood which circulated between the layers 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 vaso-constrictor and vaso-dilator nervous mechanism which controls the blood supply is very sensitive and is affected by many factors, but it is not under voluntary control. It may be affected by direct action on the nerve centers or on the peripheral mechanism of substances in the blood; by reflex stimulation after the application of heat or cold to the surface of the skin; and by various forms of cerebral or mental stimulation such as emotional excitement. Pallor, for instance, may be caused by shock—the blood vessels of the skin contract and the blood supply of this area is diminished. Blushing is another example of the

disturbance of the blood supply produced by emotional factors. In this instance the blood vessels are dilated and the blood rushes to the surface. Poisonous substances in the blood may produce similar disturbances. The most familiar example of this is the flushing of the face from alcohol or from improper eating. The control of the blood supply by the nerves exists throughout the skin, but it is more sensitive in the skin of the face, as most of us have learned through experience, often to our embarrassment. When you're trying to act nonchalant when the girl of your dreams puts a flower in your lapel, you feel like choking little brother who points his finger at you and shrills out that "he's blushing, he's blushing!"

The functions of the skin may be divided into five general classes: protective, sensory, respiratory, heat-regulatory and secretory. As a protective covering, it guards against the harmful action of the sun's rays, the loss of body fluids, the entrance of toxic substances into the body, and against mechanical violence. The outer surface of the epidermis is highly resistant and very dense and insensitive. Therefore, although it is tissue-thin, it serves perfectly to protect the living, highly sensitive layers lying beneath it, against all ordinary injury. It is remarkably resistant not only to physical contacts, but also to the most active chemical ones and is able to prevent the invasion of bacteria. The corium is an exceedingly tough tissue, and is therefore the layer that gives the skin its strength. The fatty layer which lies beneath the corium is a very loose network and therefore acts as the cushion or buffer against any physical violence. It also gives a smooth even contour to the body—curves instead

of knobs and angles. And as it is composed of a very loose network of fibers with spaces filled with roundish deposits of fat, it furnishes the skin with a comparatively large amount of freedom of movement over the underlying structures.

In connection with its protective function, the sensory function of the skin is very important. The skin is richly supplied with nerves, as we have said, and it is highly sensitive to heat, cold, pain, pressure and friction. This sensitiveness not only serves as a warning against harmful external forces, but it also controls the other functions, as well as the nutrition of the skin. As we shall see, this sensitiveness of the skin is of utmost importance in the effect that baths of varied temperatures have on the system.

As we explained before, the source of heat and energy in the body is the constant oxidation of tissue. While oxidation is taking place all the time, the rate of oxidation varies with the output of energy. During sleep, for example, the burning of tissue is much slower than during exercise. It is obvious that a delicate heat-regulating mechanism is required to keep the body at even temperature. This mechanism is chiefly provided for by the skin. The surface of the body, it will be recalled, has just beneath it a very abundant network of blood vessels. The constant flow of blood through the vessels causes continuous radiation of heat from the surface. When the surface is cold and the body needs to retain heat, minute muscles in the skin contract and cause "goose flesh". By this mechanism the blood vessels are emptied, perspiration is checked and the amount of heat given off is much less. On the other hand, in the presence of ex-

cessive heat, or when heat is produced during muscular exercise, the cutaneous blood vessels dilate, the skin becomes congested with blood and at the same time the perspiration becomes "sensible". This increased supply of blood rapidly gives off heat by radiation and the body is further cooled by the evaporation of sweat.

The skin is also important as an organ of elimination and excretes the waste products of the body just as the lungs and kidneys do. The waste products are given off through the pores of the skin in the form of sweat. It is estimated that about one liter of water is given off during twenty-four hours, and during exercise, two or three as much.

The secretion of sweat is constant unless stimulated to an increased degree through exercise, emotion, drugs or illness. It evaporates as rapidly as it is formed and is known as "insensible perspiration". When it is given off in abnormal amounts it is called "sensible perspiration".

Sweat is about 99 per cent water and through its secretion the chief function of perspiration is performed—the elimination of water. This regulates the temperature of the body and, as we pointed out above, renders the horny layer of the epidermis soft and pliable by percolating through the spaces between the cells and thereby keeping them moist.

The sebaceous or fat glands are also constantly secreting a semi-fluid substance called sebum. This also tends to keep the skin soft and pliable as well as to protect it from external injury. As sebum tends to harden in the ducts and form blackheads which may cause infection, the necessity of keeping the pores clean and open is imperative. This is particularly true

in adolescence when the glands are secreting more than at any other period in life.

Before leaving the subject of the functions of the skin, a few words—particularly for the female sex's benefit—should be said on the subject of the skin as an absorptive agent. The skin is primarily an organ of *elimination* and of protection against foreign substances. In no sense is it an active organ of absorption, although some substances, such as certain vitamins and fats, may be absorbed and utilized in some measure when properly applied. There is practically no absorption of fats when merely placed on the skin. Fats and oils, however, may be absorbed by inunction or friction. And if the natural fat of the skin is removed by either or if the blood vessels of the skin are dilated by the application of heat, absorption takes place more readily.

This fact is of utmost importance when considering the effect of the various preparations used in the care of the skin—soaps, lotions, medicaments, as well as external applications for internal cures, such as counterirritants, for two reasons. First, abrasive substances may break down the physical structure of the skin and therefore lower its resisting powers. Likewise, strong chemicals, such as caustics, may break down the chemical composition of the skin and lower its resistance.

The horny layer of the skin is markedly acid and as such has the power to inhibit the growth of or to destroy many germs. On the other hand, the lower layers are alkaline. It is in this alkaline medium that many germs multiply. Hence the necessity of keeping the acid layer clean, intact and free from excess

perspiration which lowers the resistance of the outer layer and acts as food for bacteria and other micro-organisms.

The horny substance of the outer layer of the skin not only protects the skin from mechanical irritation, but it can stand prolonged macerations in 50 per cent solutions of mineral acids. On the other hand, it is soluble in cold, weak solutions of potash and soda, quick lime, alkaline earths and sulphides. These substances can dissolve the horny material that holds the hair roots in place and act as depilatories.

We could go on describing the prophylactic powers that the skin possesses in addition to its protective powers against mechanical and chemical injury, if time and space permitted. But we shall have to close the subject with a warning that it should be kept in mind that the resistance of the skin is only relative, nor is it the same all over. It is slower and slighter on the external surfaces than on the flexor surfaces, the differences not being governed by the thickness of the skin. It is such inequalities as these that make the skin less resistant to external noxae. And, with particular reference to the effect of soap on the skin, it should be kept in mind that *alkalies* are the chemical agents against which the outer layers of the skin have the least power of defense.

Before entering the all-important subject of how to keep the skin in good condition, let us quickly sum up what we have found, for truly our findings have been many and complicated. The skin, we learned, is one of the most important organs of the body, from a social and from a physiological point of view. It is composed of three layers of a highly complicated

physical and chemical structure. Each layer has its own particular functions to perform. The outer layer is composed of a horny substance which serves as a protective covering against mechanical and chemical injury, not only to the skin itself, but to organism as a whole. This layer also has self-disinfecting powers which are particularly efficacious when the skin is clean and especially when it is free from fatty substances. Moreover perspiration is known to be an excellent culture medium for bacteria and fungi. It is obvious, therefore, that the skin must be kept clean and intact if it is to perform its functions of protection, elimination, heat regulation, respiration and sensation. And we shall soon see that the best way to keep the skin clean and intact is through the soap and water bath—provided the soap is mild, nonirritating and yet thoroughly detergent.

Diseases of the Skin

We sincerely believe that enough has been said to convince the reader that the skin deserves as much care as any other organ and we hope that those of you who have been guilty of neglecting it, will henceforth treat it with all the respect it deserves. However, for you who are known as skeptics, we have another proof of the importance of this organ, in the form of the dread diseases that may attack it—and through it the whole body. And, strangely enough, some of them may be caused by as innocent an looking object as a cake of soap.

It is not for us, of course, to describe the gruesome diseases in detail. Just stop a moment and recall the pictures you've seen when furtively glancing through

a textbook on dermatology, or recall the face of a friend (or your own) who was suffering from a severe case of allergy or eczema. That will be sufficient. Here we need only point out the various ways in which a skin may be affected. Two well-known authorities sum up the causal factors in skin diseases under fourteen broad headings. Individual sensitivity or allergy heads the list. More and more the medical profession is realizing that allergy is the root, not only of much skin trouble, but of serious systemic disturbances. For this reason we have devoted an entire chapter to the subject. It will not be necessary to discuss the subject again here.

Race and nationality are also important factors in skin diseases. For instance, psoriasis is common amongst the Irish, pellagra amongst the Latins, such as the Italians, and various diseases of nervous origin among the Hebrews. Age, too, affects the skin. Advertisements, if nothing else, have impressed upon the public that acne is a condition usually associated with adolescence, being due to an oversecretion of the sebaceous glands of the skin. Likewise a form of pruritis or itching is associated with old age and still other conditions with infancy and childhood. Still other conditions are limited to one or the other sex.

Doubtlessly you have experienced some of the annoying and embarrassing rashes that break out on your skin when the seasons change or you move from one climate to another. Psoriasis and eczema, for example are worse in winter than in summer and prickly heat is worse in hot weather.

Occupation is another cause and a very important cause, of skin trouble. Dish washers, laundry workers,

housemaids, bakers, etc., are all subject to dermatitis due to the materials they constantly handle, such as soap and other cleaning materials, bleaches, flour, sugar—in short, anything with which the skin may come in constant contact. The reaction may be chemical or allergic.

A faulty diet may cause serious and persistent skin trouble, such as pellagra and scurvy. These types of dermatitis are considered fully in the chapter on vitamins. Various foods, too, may produce hives, redness and swelling, as we shall see when we come to the study of allergies. Drugs taken internally frequently cause eruptions on the skin. Bromide and luminol rashes are quite common. Moreover, drugs merely applied to the skin may be highly injurious—sulphur, cresol, carbolic acid, etc. This, too, is often an allergic condition.

Internal secretion disturbances may produce abnormal skin conditions, and circulatory disturbances may produce varicose veins, eczema or ulcers.

Boils are caused by bacteria and ringworm and similar diseases are caused by fungi. In this connection it should be remembered that dermatitis caused by any of the other factors opens the way for invasion by bacteria.

Prolonged exposure to the sun's rays produce sun burn, freckles and more serious inflammatory conditions which sometimes involve the whole organism. Blonds are more likely to be subject to such disturbances than brunettes. It should be pointed out here that the color of the hair and eyes has nothing to do with the scientific classification of blond and brunette. One may have black hair and still have a blond skin

with its sensitiveness to the sun's rays and a tendency to dryness.

The form of skin irritation which is probably of greatest interest to us at the present moment, since soap is one of its major causes, is known as "contact dermatitis". It is also known as trade or occupational dermatitis or eczema. Its manifestations are familiar to all of us. They vary from a mild itching and scaling and redness to actual pain, swelling, inflammation, even cracks, lesions, vesicles and ulcers which are not only unsightly and pain-giving, but which pave the way for bacterial invasion and disturbances of a serious constitutional order. And it must be remembered that the vast majority of skin troubles are usually mild in the outset and that this mild condition is nothing but a warning of impending disaster if steps are not taken at once to remedy it.

While all contact dermatitis, as the name implies, is due to the contact of the skin with a given substance or a combination of substances, the reaction may be one of several. It may be purely physical. That is, it may be due to some abrasive substance, such as pumice in soap, which may scrape and tear away the outer covering of the skin, exposing the more delicate inner layers to the invasion of bacteria or harsh chemicals. Or it may be due to weather conditions, as chapping in winter. Again, the reaction may be chemical or physico-chemical. For example, carbolic acid and cresol (which are often found in so-called deodorant soaps) may actually burn the skin. And sometimes, as we mentioned above, the reaction may be allergic. Orris root, to take a common allergen,

which is found in many cosmetics and soaps, causes an allergic reaction in a large number of persons.

More will be said of contact dermatitis and allergy anon. Here it is only necessary to emphasize that one form of irritation opens the door for other forms—and forms of a more serious nature. For instance, if a person is suffering from an allergic condition due to contact with a perfume such as bergamot, which causes many cases of allergy, the resistance of the skin is lowered and the way is paved for various other diseases. Nor is this fact only true of those forms of irritation which may be definitely classed as occupational dermatitis. Doubtlessly you have suffered from the painful annoyance of ordinary chapping in cold winter weather. The chapping is due, in this instance, to the unnatural dryness of the skin caused by the cold. Chapping may also be caused by too frequent washing, especially with strong soaps, or by the failure to dry the parts thoroughly. Naturally, a chapped skin has not the resistance that a healthy, well-oiled skin has, and is therefore subject to external irritants, and more liable to infection.

Chapping, whether due to cold weather or to harsh soaps, is not the only cause of lowered skin resistance. The coming on of occupational rash is hastened weeks by hyperidrosis or excessive perspiring, and months by seborrhea or excessive fat secretion. High temperatures or strenuous exercise causes the body to sweat freely. The sweat, which is normally acid in reaction, becomes markedly alkaline in reaction and dissolves out and washes away the natural fats of the skin. Under these conditions even bland dusts may become irritants. Recall, too, that sweat is favorable

for the growth of bacteria, some molds and wild yeast. Moreover, working in a moist or dry heat, especially if added to strenuous exertion, produces congestion and abnormal activity of the skin glands. Prickly heat is the result.

Why the Skin Must Be Kept Clean

It should be obvious by this time that a clean skin is all important. Since the skin has been provided for by nature to act as a protective covering of the body as well as an organ of elimination, it is essential for its complete and perfect functioning that the integrity of its surface remain unbroken. It can only be maintained if the surface resistance is not lowered by disease, wounds or chemicals. It is evident that the first rule to observe is cleanliness. Cleanliness is the safeguard against the ills caused by excess sweat and excess fat secretion; it is a safeguard against clogged pores and all the conditions they produce; it is a safeguard against the irritation of foreign substances, whether their action be purely chemical or allergic; and consequently it is a protection against the invasion of bacteria and other disease-causing organisms.

We have learned, moreover, that the skin possesses self-disinfecting powers. This important function cannot be over emphasized, nor the state of cleanliness necessary for its performance. As one well-known authority points out, dirty or fat-covered skin may have viable bacteria on it very many hours, for the dirt or fat as a breeding place for germs is far more potent than the disinfecting power of the skin.

It must be remembered that when a skin fails to

perform its functions properly and grows sick because it has not been kept clean, that the entire body and its performance is affected—and this is due not only to the invasion of bacteria through the skin or the organs of respiration. When the skin fails to perform its functions of heat regulation and elimination of waste adequately, the other organs are over-worked to keep the body in normal condition. This overtaxing may lower both mental and physical efficiency.

Undoubtedly you remember the epidemic of amœbic dysentery which broke out in Chicago during the Exposition, and from there was taken to the home cities of the sightseers. Whatever might have been the ultimate source of this disease, it was definitely proved that it was spread through unclean hands, in a large hotel, which washed and dried the dishes and handled the food. It is difficult to believe that havoc could be wrought by a pair of unclean hands, but such is the case. And similar cases of infection are being constantly spread. Pneumonia, influenza and colds are frequently contracted in this manner. A person suffering from a cold may dry the supper dishes. He or she might suddenly sneeze, spreading the filtrable virus that causes the cold, over the towel with which he wipes the dishes. Naturally the germs reach the dish and from there the food which enters the mouth. In a short time another cold results. So you see how necessary clean hands are—it is through the medium of hands that respiratory and other diseases may be easily contracted.

But a clean skin is not only necessary for health—it is equally necessary for beauty. To many persons, particularly women, beauty of skin is just as neces-

sary as health. A lovely skin is one that is clear and soft and smooth. It is unmarred by unsightly blemishes such as roughness, scales, swollenness, blackheads, oiliness, pimples and eruptions. While the general care of the body is essential for such a skin, local care is equally important. No skin can be beautiful if it is not regularly and properly cleansed with materials that are actively detergent and yet non-irritating. This is particularly true of the hands and face which are constantly exposed to dust and grime and bacteria, as well as to contact with irritating chemicals used in one's occupation, as in the case of a woman who does housework or man who works in a dye factory.

Care of the Skin

The hygiene of the skin embraces all the factors that are essential for the maintenance of general good health. Sleep, exercise, fresh air, sunshine, proper elimination of waste, balanced diet, protective, but non-restricting clothing and bathing are all necessary. At present we are concerned with the local care and cleansing of the skin.

All dermatologists and most honest beauty specialists agree that the best way to cleanse the skin is through the regular use of good soap and water, the temperature of the water varying with the type of water, the type of soap and the amount and type of dirt that has accumulated on the skin. Soft water cleanses more easily than hard, and therefore can be used at a cooler temperature. Some soaps lather only in soft water, while others lather in both. Again, some soaps require water of a rather high temperature

before they lather, while others lather equally well in cooler temperatures.

The manner of washing, i.e., the use of tub, shower, cloth, brush or fingers, and the number of times one washes, is an individual matter and depends largely on the nature of one's skin and one's environment. A tender skin cannot be bathed as frequently as a hardy one (although, to be sure, such a skin may be conditioned to more frequent ablutions), an oily skin and one that tends to perspire excessively must be cleansed more frequently than a dry one, and a skin exposed to the dust and grime of the city requires frequent washing. The only rules that can be generally applied are: wash as frequently as necessary, wash until the skin is thoroughly cleansed, use only that soap which "agrees" with one's skin and rinse and dry thoroughly.

It is logical to assume, however, that the best time for a complete cleansing bath is at night, just before retiring. Ordinarily the water should be quite warm for the cleansing operation and should be followed by a cool shower or immersion. Most persons find that a warm bath at night is not exciting—in fact, is rather soothing and relaxing. Some, on the other hand, find that they cannot sleep, that such a bath is stimulating. Such individuals, of course, had better confine their full bath to the day time, preferably the morning on arising. But whichever time you find best suited to your constitution and habits, remember that the face and hands should always be cleansed thoroughly before retiring, and if possible at least two or three times during the day. Even a tender skin can stand

that, providing it is dried thoroughly and water near the body temperature is used.

Speaking of full baths, do you know how to draw a tub of water? The question probably seems absurd at first glance, but we are almost willing to wager that your answer (and those of most of your friends if you ask them) is equally absurd. And we are also willing to wager that we know just how you draw a tub (and this method applies likewise to those of you who prefer the shower). You turn on the spigots full force until the tub is filled and then you step into it gingerly or nonchalantly, depending on your courage and toughness of skin. Ouch! it's hot. This time the cold water is turned on full blast until the water reaches the right temperature. And no doubt you had to let out some of the hot water. By the time you step into the tub, the bathroom is filled with a nice wet steam that somewhat resembles a London fog. And when you emerge you find the walls actually weeping and the mirrors are no longer to be seen. What's worse, no matter how much you rub, you can't get dried. As a result you're in a good condition to "catch cold".

Fortunately there is a right way to fill a tub (or regulate a shower). Run the tub almost one third or one half full of cold water, turn off the cold water, and then run in the hot, until the right temperature is reached. You'll be surprised to find that your heating bill is considerably less, that the room won't be filled with steam and that when you leave the bathroom you will feel pleasantly dry. And, best of all, the next occupant (particularly if she is a modern woman who indulges in permanents and "make-up"), will bless you, and she will doubly bless you if she is a good

housewife who takes pride in shiny walls devoid of water marks and mirrors that really reflect.

Even if you are accustomed to take your cleansing bath at night, you probably enjoy a quick bath in the morning—it is an eye-opener and makes you look so fresh. Hardy souls like a brisk cold shower and are apt to look down upon those of us who prefer a warm one, probably finished off with a short cool immersion or shower. If you feel chilly after a cold shower, have a queer sensation in your head, or have any other sensation save one of exhilaration, don't try to emulate the cold water addicts, and don't feel that you are a softy—you'll probably live just as long or longer than the cold water men. You might ask them, the next time they tweek you, how they feel after a warm or hot shower in the morning. But if some puritanical streak in you makes you feel that you should brave the cold shower, consult your physician and get his verdict first. It is well to remember, too, that it is wise to wrap a wet towel around your head or sprinkle your body with cold water before immersing yourself in cold water. In this way you will avoid any shock to your system or pressure headache. It is also wise not to take a full bath directly after eating, or to go out in the cold after a warm bath.

It might surprise you to know that the first bath tub with running water was built less than a hundred years ago. A Mr. Alan Thompson of Cincinnati, Ohio, installed one made of mahogany and lead in his home December 20, 1842. He gave a Christmas party to introduce it to society and some of the bolder guests actually bathed in it. It received widespread publicity through the newspapers and contro-

versies waxed hot and furious throughout the whole country. The consensus of opinion was that it was unsanitary. The next year Philadelphia enacted laws prohibiting its installation and in Virginia one was compelled to pay a tax of thirty dollars a year if he wanted to have such a doubtful luxury in his home.

President Fillmore was the first president to use a bathtub. After trying the celebrated Cincinnati tub, he had one installed in the White House in 1850. Yet we must not forget that a tub quite similar to our own was recently excavated by archeologists in what was of old called Olynthus, and that many ultra-modern establishments have adopted its style.

We have from time to time mentioned soap as the best cleansing agent for the skin. There are, of course, many women (and a few men) who are deluded in the belief that their skin is too delicate for soap and that they can only use cold creams. In reality such skins are rare indeed, and the few that cannot endure soap are usually under a dermatologist's care for some abnormal condition or disease. The humorous part of it is, toilet soap is made of the identical ingredients that creams are. Indeed, many soaps openly claim to be made with cold cream or lanolin, and all of them are more actively detergent than creams. For that matter, it might interest those with "delicate skins" to know that soap was originally used as a medicament—and that its basic formula was not much different from that used today.

Soap

Toilet soaps may be divided roughly into about eight classes. Milled soaps are prepared by first obtaining a

finely powdered or flaked soap that is pure and dry, then adding perfume, if desired, and compressing the soap into cakes. More delicate perfumes can be used for this class of soaps, since the perfume is mixed in the process of milling, than in ordinary soaps where the perfume is added before the soap is dried. Milled soaps are economical as they contain little water. They are of good appearance and may be used without deteriorating or changing shape.

Floating soaps are soaps in which tiny air bubbles are incorporated into the hot soap by a specially constructed crutcher. These air bubbles are so small that they are almost invisible and so numerous that they not only make the soap lighter in water, but also largely increase the surface of the soap exposed to the water when used and therefore render it more quickly soluble than soap without bubbles.

Castile was one of the first, if not the first, toilet soap to be manufactured on a large scale. It was originally made from pure olive oil and caustic soda without the admixture of any other fat. Many of the so-called Castile soaps, especially those having distinctive names, are plain coconut oil soaps and are not good toilet soaps. No other soap is so much imitated as Castile. In the United States in particular one must be wary of Castile soaps for now the term Castile refers to a *type* of soap.

Transparent soaps were originally made by dissolving soap in alcohol, filtering and evaporating off most of the alcohol. Now the transparent is generally due to the presence of alcohol, glycerol or sugar. The transparency was formerly considered an indication

of freedom from impurities, but is actually no indication whatever of quality or purity.

Various drugs are often combined with a soap with the purpose of making it prophylactic, antiseptic, bactericidal or curative. Theoretically soaps should be more useful than they are, but in practice they do not prove as satisfactory as they promise in theory. They do not carry the drug as well as ointments do and the dosage is uncertain in amount and concentration. Aside from the fact that such drugs may prove irritating to the skin, it is not likely that the soap itself is improved insofar as its cleaning power is concerned. Usually it is lessened.

A superfatted soap is one which contains an excess amount of fatty substance. The fat is usually olive oil or lanolin, the latter being superior since it does not become rancid. Such a soap, providing the excess of fat does not exceed 4 per cent olive oil or 1 per cent lanolin, is particularly good for sensitive skins which cannot endure excess free alkali.

There are many other forms of toilet soap such as tar soap, liquid and green soaps, special hand grit soaps, etc., but since they are not in general use there is no need to dwell on them here.

The effect of soap on the skin may be divided into beneficial effects and injurious effects. In the first division are included the detergent action, the germicidal or antiseptic action and the emollient action of the soap. The injurious effects may manifest themselves as physical or chemical irritation or allergy. We have already described the various types of dermatitis that are caused by foreign substances that come in contact with the skin, and elsewhere allergy will be discussed

more fully, so that it is not necessary to describe the manifestations of soap irritation—they are the same.

Any of the ingredients which go into the making of a soap may cause irritation. Certain fats and oils, for example, are highly irritating, coconut and cottonseed oil being the worse offenders and tallow, lanolin and castor oil being the mildest. Free alkali in excess amounts is also irritating. Many perfumes, dyes, rosin, orris root, soap bark, silicate of sodium and the medicaments of so-called germicidal soaps may be offenders of the first rank, both from an allergic and chemical standpoint. Therefore, the greatest care must be exercised in the selection of a soap.

It must be remembered, too, that since soap is generally used in conjunction with water, the action of the soap depends to a certain extent on the concentration of the solution, the temperature and quality of the water. Water itself may act as an irritant since even when used alone it removes the normal oils of the skin.

While no theory has been definitely established as to the action of soap, it is known that a soap solution, due to its power of lowering surface tension, with the aid of mechanical action, detaches and breaks up loosened particles of dirt and surrounds them with a soapy film which prevents the particles from adhering to the surface being cleansed. The particles are held suspended or emulsified in the water and soap solution. Both the soap and dirt are removed by thorough rinsing.

This is precisely what happens when soap is used to cleanse the skin. Being a solvent for fats, soap emulsifies and removes the excess fatty secretion from

the sebaceous glands which has combined with dirt particles, bits of dead skin and perspiration. Not only does such a layer of dirt make a fine culture medium for bacteria, but it clogs the openings of the sweat glands and sebaceous glands. As a result these glands cannot perform their function of lubrication properly. The skin becomes hard and scaly and tiny bumps appear. Unsightly blackheads stop up the opening of the glands and are often the beginning of infectious pimples. A mild, pure soap that cleanses thoroughly keeps the skin soft and pliable, partly by the emollient action of the oils and fats used in the making of the soap, and partly by the removal of the dirt, the hardened cuticle, excess perspiration and sebum. On the other hand, a soap that is too active or too harsh in its action may dissolve out the natural fat of the skin and leave it dry and thin.

In addition to its softening and cleansing action, soap has a definite antiseptic action. Until about 1880 soap was considered as a merely general hygienic agent. About that time the idea was conceived to incorporate various medicaments in soap to increase or impart curative or bactericidal properties. This naturally led to innumerable experiments to test the relative efficiency of the various types of medicated soaps and particularly their superiority to ordinary soaps. Such experiments have now definitely proved that the so-called germicidal soaps are by no means superior to ordinary toilet soaps in this respect. Indeed, as we explained above, they are generally inferior to the ordinary soaps in their cleansing action, and if it were possible to incorporate a sufficient quantity of the germicidal drug and to use the soap in a

concentration and for a length of time sufficient to be effective, it would be highly irritating to the skin.

On the other hand, experiments have proved that ordinary toilet soaps are antiseptic and germicidal in their action. This property is partly due to the detergent action of the soap—the washing away of the germs—and partly due to its chemical action. The action, however, is selective. Soap will kill some frail microorganisms, but it cannot be relied upon, for instance, to kill staphylococci or typhoid bacilli. But if the skin is washed thoroughly with a good lather of any ordinary toilet soap, it will do away with many adhering diphtheria bacilli, streptococci and pneumococci.

We have now completed the story of the skin—its delicacy and sensitiveness, the numerous and complicated functions it performs and the structural components of the organ that make it possible to perform these functions, and lastly, the effect that the condition of the skin has on the whole body and the absolute necessity of the utmost thoughtful care in order to maintain the health of the skin and the whole body. For the normal skin soap and water are the best guardians of health. But there are soaps and soaps on the market and almost as many claims of miracle performances as there are soaps. And not all soaps are good, any more than all claims are justified. How then, you ask, does one go about selecting a good soap? It's really quite a simple matter.

Every soap should be selected primarily on the basis of its ability to meet the special cleaning requirements of the moment, and its effect on the substance to be cleaned, whether it be the skin, cloth, wood,

metal or other substance. As almost all soap comes in contact with the skin, directly or indirectly, its effect on the skin is of foremost importance. Hence all soap, and toilet soap in particular, should be selected for its cleansing power and its non-irritating effect. The water content, the amount of free alkali or acid, the amount and kind of builders or fillers, the salt content, the quality of oils or fats used, the perfume and coloring matter and the relation of the weight of soaps to its price are all important. Experience will soon tell whether a soap is actively cleansing and whether it is non-irritating. And with respect to the latter qualifications, remember that one soap may be soothing to one type of skin, but irritating to another.

Generally speaking, avoid all highly colored and highly perfumed soaps and those containing medications which purport to make the soap a deodorant, a germicide or cure-all. Don't buy imported soaps—you cannot be sure what they contain; they are apt to be rancid and always are more expensive than is warranted. Only soap manufactured by a reliable company with a reputation to be maintained should be purchased, and its directions should be followed exactly. When you find a soap that thoroughly cleanses your particular skin and leaves it smooth and clear, and when you know that the uniformity and the purity of that soap are assured by the manufacturer's name, use that soap, and that soap alone.

Most persons will find that Dr. Charles A. Tyrrell's Skin Soap meets all the requirements. It forms a rich, creamy, lasting lather that is actively cleansing, in both soft and hard water and in cold as well as warm water. It contains no irritating perfume or coloring

matter, and the addition of cold cream and lanolin is an assurance against drying, chapping or any other form of irritation. In fact, it is so gentle in its action that many men have found it delightful to shave with. Moreover, it does not become rancid, crack or lose its shape or deteriorate in any other manner. It is economical, too, for a single cake lasts a long time and can be used down to its last bubble. But try a cake and see for yourself how clear and smooth and glowingly healthy your skin looks and how soft and satiny it feels.