# MACFADDEN'S ENCYCLOPEDIA *of* PHYSICAL CULTURE

A work of reference, providing complete instructions for the cure of all diseases through physcultopathy, with general information on natural methods of health-building and a description of the anatomy and physiology of the human body

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# CHAPTER II.

## THE SCIENCE OF HYDROTHERAPY.

THE science of hydrotheraphy is that of healing by the use of water. Physcultopathy is different from most other systems of healing in that it is inclusive of all natural methods. By natural methods, I mean those that fully recognize that it is not the physician or his drugs that heal disease, but it is the power possessed by the body, which is self-regulative, self-curative, self-adjustive, if given the opportunity. From the moment of birth until that of death the body, under certain simple conditions, maintains itself, dependent only upon that Great Fount of Nature which is the prime source of all life and power. The diseased body is the body that is out of harmony with natural conditions. Water, by the ease of its application in a variety of ways, so readily helps forward the simple and natural healing processes of the body that it is recognized as one of the most powerful agents in the hands of those who seek to supplant weakness and disease with strength and radiant health.

I have made it clear, however, in other parts of this work that I do not rely solely upon any one method of healing. I avail myself of all natural processes, such as mechanical Physcultopathy—which means rational development and maintenance by easy exercises of the whole muscular system, voluntary and involuntary; massage; rational diet; abstinence from harmful beverages; the use of proper and appropriate dress; and the utilization of the natural forces of healing such as fresh air,. pure water, sunlight, and the electricity of the earth.

For many centuries hot, cold and tepid water, together with hot and cold mud baths, have been used by all people, both aboriginal and civilized, in the cure of disease and the maintenance of health. It is only within the last generation or so, however, that hydrotherapy has advanced to the dignity

of a science. That it is now recognized as such, there can be no question. And the various effects of water can be better prognosticated than almost any other form of helping forward the processes of the body.

It will be impossible in this work to enter into any disquisition as to the scientific basis of hydrotherapy. This is thoroughly discussed in elaborate works devoted to the subject. My aim is but to present a few of the fundamental principles and then give illustrative examples of methods of treatment, with specific directions, which can be followed in cases where certain symptoms seem to call for such assistance.

Water possesses three remarkable properties, all of which render it most valuable for healing purposes. These are: 1. Great power in absorbing and communicating heat. 2. Great solvent properties, water being the one universal solvent. 3. The facility with which it may be changed from a liquid to the solid and gaseous forms.

It is well known that water absorbs more heat than any other body, hence it is taken as the standard of specific heat. Water both absorbs and communicates heat with great readiness. It can be used, therefore, for communicating heat to the body or abstracting it.

Being a universal solvent, its internal application materially aids in the elimination of uric and oxalic acids and other abnormal products which, under certain unhealthy conditions, rapidly accumulate in the body to its great injury. Elsewhere we have shown its advantages in the use of the enema.

While water is generally applied to the body in the liquid state, there are times when the application of steam, or rather, steam condensed to mist or vapor, is of great advantage, while at other times, water solidified by the effect of cold into ice is of equally beneficial effect.

It must never be forgotten, however, that though water is a most simple and natural remedy, it is one of the most powerful agents known to mankind. Hence it must be used with caution and wise discrimination, due observations being taken

of the resistant power of the patient. For instance, a remedy that would be most effective in aiding the body to eliminate a serious catarrhal condition from which a thick-set robust and generally vigorous man might be suffering, would possibly mean death if applied to the frail, anemic person of low vitality if suffering from the same disorder. This fact will explain the disrepute into which hydrotherapy has been brought by its ill-advised and ignorant followers. Some person having been cured from serious ailment by some particular treatment has enthusiastically urged the same remedy, applied in the same fashion, to some friend to whom it was totally inapplicable. The resultant disaster has been attributed to the inadequacy of hydrotherapy rather than to the ignorance of its advocate.

In addition to its use for communicating and abstracting heat from the body, water may be used by friction or percussion on the skin, administered either by the hands of an attendant or mechanically. These cutaneous methods do not rest upon any effect produced upon the skin alone. They depend for their efficiency upon the fact that by means of an intricate system of nerve centers and blood vessels, the outer surface is connected most directly with the interior of the body. Thereby two effects are produced by the water upon the skin and through it upon the muscles, nerves and blood vessels of the interior of the body. These are known as reflex and mechanical effects. If by the application of heat, cold, massage or percussion, contraction of the blood vessels of the skin occurs, similar contraction will take place within the interior of the body. This is the reflex effect. But on the other hand, the mechanical effect is of an entirely different character. If the contraction of the blood vessels of the surface is made to take place, this contraction naturally forces a rush of blood to the interior vessels. The result is that there seems to be two opposing effects, that of the reflex action which contracts the blood vessels and the mechanical action which fills the blood vessels of the interior with fluid. It can readily be seen, therefore, that the real effect of the application to the skin can be

judged properly only when both reflex and mechanical effects are taken into consideration.

Among the chief effects desired by the application of water, however, are the abstraction of heat in cases of fever or the communication of heat in cases of low vitality.

When cold water is first applied to the body, its primary effect is to lessen the activity of that part of the body which it affects. That this depressing effect is generally understood is seen from the universal habit of placing foods in a cool cellar or ice chest. This simply arrests, by the effect of cold, the activity of the bacterial organisms in the food. If the cold application is long continued, the vital depression also continues and remains for some time after the withdrawal of the application. But, if the vitality of the patient be reasonably good, the secondary effect is that the parts affected return to their normal condition, nay indeed, to greater activity than the normal, and this is the explanation of the so-called reaction or tonic effects of cold water upon those of good resistant vitality. So that by the use of cold water upon the skin we have the apparent anomaly of producing a stimulation by that which primarily depresses the activity of the skin, thus clearly showing that it is not so much the actual effect of the cold that one seeks to produce as the *after* effects induced or provoked by the cold sensations.

There are many effects of cold water which it is well to understand. The primary effect of cold water on the skin is that, by the contraction of the small blood vessels, it produces pallor and coldness. But as soon as the cold application is withdrawn, the contracted blood vessels expand and the pallor or blueness gives place to redness. Percussion or slapping and friction have much the same effect as cold water, giving first the contraction of the blood vessels and later their expansion.

The first effect of cold on the skin is to decrease or suspend the action of perspiration. This action is resumed often with marked increase, as soon as reaction occurs. Another primary effect of cold upon the skin is to eliminate heat while

the application continues. But when the reaction occurs there is an accelerated action of blood through the vessels of the skin and while this seems to increase the heat, the effect in reality is to produce further cooling of the body, owing to the further radiation of heat that takes place when the interior heat is brought to the surface.

The sensation of feeling is also variously affected by the application of cold water to the skin in different ways. For instance, one feels the cold much more if he slowly immerses his body in water than if he suddenly plunges into it. Fine spray feels cooler than a heavy percussion douche, because the douche stuns the skin by its force and lessens the sensibility.

The application of cold water to the skin slows the circulation and retards the heart's action. Yet everybody is familiar with what seems to be the contrary fact, namely: That the sudden application of cold water causes a shock which momentarily increases the heart's action. It is when the cold is long continued that the heart's action is reduced. If a very cold compress or an ice bag is applied over the heart for several hours, it diminishes the activity of the organ and consequently reduces the speed of the circulation of the blood throughout the body, whereas, on the other hand, if a tonic effect is required for the heart a cold application lasting for only a few moments will produce that effect.

The use of the cool enema and the drinking of an abundant supply of cool water is the most efficient means of combating a fever.

There is a similar effect upon the organs of respiration resultant upon the application of cold water. While a quick cold application produces increased respiration, the respiratory movements are decidedly slowed when the body is immersed for a little time in a full cold bath.

If increased respiration is required, it can be produced by the cold douche or spray being applied to the chest. In cases of asthma, however, such treatment will generally produce a paroxysm of "wheeziness," sometimes bordering upon a sense

of suffocation. This unpleasant symptom disappears when the reaction sets in.

Every person is familar with the effect of cold water upon the muscles. If one's fingers are allowed to remain in cold water for any length of time, they become stiff and clumsy. Yet, when cold is applied swiftly and for a short time only the effect upon the muscles is as upon the skin and respiration, namely: It augments their activity. In cases of great muscular fatigue, a cold bath of two or three seconds immediately preceded by a short hot bath is a wonderful restorative, but it should also be followed by vigorous rubbing, quick dressing and exercise sufficient to assure reaction.

The effect of cold water applied to the skin of the feet or lower abdomen will often excite the voluntary muscles of the bowels and bladder, thus stimulating uric and fecal evacuation.

Recent experiments have shown that the continued application of cold to the chief trunk of a nerve may greatly diminish or entirely abolish its functions. In other words, the prolonged application of cold diminishes nervous and mental activity to a high degree. This is one reason why the application of a cold compress to the base of the brain will often reduce mental activity and thus induce sleep. On the other hand if the application of cold is of very slight duration, an immediate reaction, owing to the awakened resistance, may produce the very opposite effect. It has been found, too, that so close a relationship exists between the blood and lymph circulation of the brain and the abdomen that a moist bandage placed upon the latter will generally withdraw the blood from the brain, at the same time abundantly filling the lymph membranes, thus supplying the conditions required for normal sleep.

The reflex effects of cold applications have been thoroughly studied so that it is now well known that applications of hot or cold water made to certain parts of the body definitely affect certain interior organs according to whether the applications are hot or cold, short or long. For instance, the popu-

lar practice of holding a cold key to the spine to check nose-bleed is the recognition of a fact, that science now demonstrates, that a prolonged application of cold to the upper spinal region relieves congestion of the nasal mucous membrane. Many a case of hysteria caused in women by uterine troubles may be relieved by application of cold water to the breasts, abdomen, hands or feet, as it is found that these cold applications produce contraction of the involuntary muscles of the abdominal viscera. It can well be seen that a full knowledge of these reflex actions upon the voluntary and involuntary muscles is of the greatest possible service to any one seeking to understand and practice the healing art. Many cases of suppression of urine which might have developed into something serious have been relieved by a cold foot bath of a few moments' duration.

Cold applications also have a decided effect in increasing the number of red and white corpuscles. This is due to the contraction of the blood vessels of the viscera, thus driving the corpuscles into the general circulation.

It is also assured that the effect of cold is to increase the powers of absorption by the gastric and intestinal mucous membranes, thus aiding in the process of nutritive assimilation.

Cold applications have also been demonstrated to produce wonderful effects in increasing the secretions and furthering of change of tissue within the body. The same effects are produced upon the organs of excretion.

I have already referred to the effect of cold applications upon temperature, and the laws by which the temperature of the body may be increased or decreased are now well understood.

One great student and practitioner of hydrotheraphy claims that the proper application of cold to the surface of the body most probably has a wonderful effect in influencing the storage and discharge of nervous energy. Our own experience in thousands of cases confirms this and Physcultopathy definitely applies this principle in its hydriatic treatment of the spine. This subject is fully discussed in our first volume.

The scientific followers of hydrotherapy must thoroughly study and understand the phenomena of reaction, because upon the wise understanding of the laws governing these phenomena much of the treatment must depend. They must understand how to produce circulatory action and reaction and thermic action and reaction. There are many cases in which it is essential to prohibit reaction, either partially or wholly, hence the laws must be known.

There are many conditions which the practitioner of hydrotherapy must take into consideration in regard to this matter of reaction. Not only are there certain conditions of disease which operate against healthful reaction, but care must be exercised in all cases of low vitality, of old age, infancy, temporary exhaustion or nervous exhaustion, obesity, the possibility of impending chill, and the other similar conditions.

The application of heat to the body is as important as the application of cold, and the laws by which heat operates should be thoroughly understood. Heat may be applied to the body in several ways, by means of hot water, hot fomentations, steam vapor, hot air, the direct rays of the sun, or radiation from an electric incandescent body. As with cold, so the effects produced by the application of heat depends, 1, on its mode of application; 2, its temperature; 3, its duration; 4, the condition of the subject.

The fact that the mucous membranes can endure water ten or fifteen degrees hotter than the skin is evidenced by the fact that people can be found drinking hot liquids that would scald the skin. In the Russian or vapor bath, a temperature up to 120 is generally enjoyed and some people can take it as high as 145 degrees without discomfort. In the case of the hot dry air of the Turkish bath, 140 to 180 Fahrenheit is common and in special cases it is often raised to 220 or 250 degrees without injury. In the salt works on the Colorado Desert, in Southern California, Indians and Mexicans used to work continuously during the hot summer months when special thermometers would register as high as 165 and 170 degrees,

and yet sunstroke was unknown and few of them experienced any discomfort.

While water at about 99 to 101 degrees Fahrenheit applied to the skin relaxes the surface blood vessels, applications of 104 and higher causes contraction. Those who have been scalded tell us that intense heat causes shivering, exactly the same as cold, but the general effect of hot water at moderate heat is to produce a dilation of the capillary vessels and consequent reddening of the surface of the skin.

The effect of such hot applications is not only to increase the dilation of the arteries but also of the small veins and lymph channels. The result is an increased amount of perspiration and a stimulant to respiration by means of the skin. These same effects are produced even in a larger degree by the electric light bath and the sun bath.

It is important to remember, however, that prolonged and repeated perspiration induced by artificial means weakens the skin and lessens its reactive power. This is the reason why hot applications are generally followed by cold ones, the cold restoring the tone and reactive power of the skin.

While the application of heat to the skin seems to increase the heat of the body, in reality, it increases the loss of bodily heat, 1. By dilating the surface vessels and thus increasing the area of the blood exposed to the cooling influences outside the body. 2. By increasing the rate of the blood-current in the skin, thus bringing more blood into contact with the outside cooling influences. 3. By increasing the amount of perspiration, through increased activity of the sweat glands. 4. By increasing the conductive power of the skin, thereby radiating more heat.

One of the chief values of the application of hot water to the skin is that it prepares the body for the application of cold. The reactive power is largely increased if this preliminary heating has taken place and in cases of fatigue, rheumatism, neuralgia, or anemic and enfeebled persons, this preliminary heating of the skin is of the greatest importance.

Heat materially affects the circulation of the blood. The

first effect of a full hot bath is to increase the activity of the heart. This renders it unwise to administer a hot bath to those of plethoric habit, those who are liable to apoplexy, or those who have symptoms of incipient arterio-sclerosis.

Generally applications of moist heat increase the facility of the respiratory movements, though after a hot bath there is a temporarily diminished rate and depth of respiration. Hot water diminishes muscular excitability and capacity for muscular work. It also lessens muscular irritability. At the same time experience has demonstrated for scores of years that very short hot applications are the best possible means of recovering persons who are prostrated with prolonged or violent exercise. An eminent English Army surgeon over a century ago habitually used the hot enema on soldiers who had fallen by the way from utter exhaustion. Where the vitality is seriously low, the body does not have the power of reaction from a cold application. In such cases a *short* hot application produces the desired result. It is made much more effective and permanent in its result if it is immediately followed by a short, sharp cold application, as for instance, a jet of cold water down the spine for a couple of seconds, the cold mitten friction rub or a cold wet sheet applied with vigorous rubbing for two minutes or so.

In nearly all cases where the hot bath has a weakening effect, this may be neutralized by a sharp, quick application of a cold douche, rub or pack as here suggested, and all hydrotherapeutic practitioners should bear this in mind.

There are cases where very hot applications have most stimulating effects upon the nervous and muscular systems. In cases of enlargement of the prostate gland, very hot rectal irrigation is found of the greatest benefit; and a large hot high enema will relieve constipation by its stimulating effect upon the nerves and muscles of the upper intestines.

Hot water may be so used as to excite or depress the nervous system. Baths of a high temperature, 100 degrees Fahrenheit and upward should not be too long, or they will produce exciting effects, sometimes causing nervousness,

headache, dizziness, nausea, etc., while if the heat is very long continued, nervous exhaustion may appear. On the other hand, the prolonged neutral bath—that is of water slightly below the temperature of the body (92 to 95 F.)—if continued from half an hour to an hour and a half, produces such complete isolation of the nerve centers as to act as a delightful sedative. It must be remembered that the brain is constantly receiving impressions from the nerves located in large numbers in every part of the cutaneous surface. Where one is in a sensitive condition each of these impressions increases the excitement which it is desired to remove. Not only does the neutral bath have the effect of directly quieting the nervous and muscular systems, but by completely isolating the whole surface of the body from these outside, exciting influences, it materially helps in bringing about the desired soothing results.

The reflex effects of local applications of hot water are as well understood as those of cold water, and they should be thoroughly known and mastered by the hydrotherapeutic student.

Hot applications are known to have a decidedly stimulating effect in increasing the healthy action of the stomach, liver and other digestive organs. While short applications of heat to the body diminish heat production, that very fact of heat elimination generally produces a reaction which means greater heat production. Prolonged applications of hot water, locally or to the whole body, will materially increase the temperature of the body.

While the reaction following the use of cold water is generally to be preferred, there are times when reactions from hot applications are of greater benefit. One of the most stimulaing effects in therapeutical applications is found in alternate hot and cold applications to the skin. This is a most efficient means of stimulating nutritive assimilation, etc., without causing any serious disturbances of the heat balance of the body.

Vital reactions and organic changes of great importance

are thus seen to depend upon the practical application of the principles of hydrotherapy.

These effects may be increased by a mechanical stimulation such as friction and percussion. Friction may be light, energetic or very vigorous and each method has its specific value in certain cases. On the other hand percussion has its specific value. It has been found that where an unbroken cold stream is projected upon the body with strong pressure, the immediate effect is to contract the blood vessels so that the blood is forced out. Immediately the stream and pressure are removed, the vessels dilate again and thus by the constant moving of the stream, an alternate contraction and dilation of the muscles of the blood vessels is produced. According to the greater or lesser power with which this douche is applied and its temperature are its effects gauged. In the hands of an efficient practitioner both friction and the hot and cold douche are of the highest value.

There are a few general principles that should be well understood by those who use the methods of hydrotherapy. The first and fundamental principle is that which has been laid down throughout this series of volumes, namely, that it is the patient and not the symptoms of his disease that is to be treated. In the main, all disease is one, that is, impurity of the blood, the various manifestations or symptoms being merely the evidences of personal or local idiosyncrasies. In all treatments followed at our institutions, I seek first of all to understand the patient and the causes of his disease. And then, paying little attention to whatever symptoms may manifest themselves, we devote all our energies to aiding the body in its own natural way to eliminate the disease.

Where wrong habits of life have caused the difficulty, we endeavor to instruct the patient and show him how his disease was caused, and therefore how it may be cured, namely, by a change in his habits of life and by aiding the body in its self-curative powers.

Before we begin this treatment, we first examine the patient to discover the state of his heart, nervous system,

liver, kidneys, etc., as well as to determine his reactive power. Where a patient is feeble and with limited vitality, different remedies must be prescribed from those which are given to those of vigorous body and strong reactive power, or at least modified applications of the same forms of treatment.

After short cold applications, we watch for the bright red color of the skin which indicates normal reaction. When this does not appear in less time than a minute under vigorous friction, we generally precede the cold application by some general hot application, which, continued from three to five minutes, prepares the body for the cold application and a perfect reaction.

As a general principle, the lower the temperature of the water, the shorter should be the application. For very cold applications, one to five seconds is enough. Tepid, warm or hot douches may be more prolonged, the duration lasting even as high as fifteen minutes. When employed to reduce fever cool applications may be prolonged to fifteen or twenty minutes. The neutral bath, as already explained, may be so administered that there is no reaction and for sedative effects from thirty minutes to two hours is permissible. We aim to secure reaction with the water at as low a temperature as possible for we have found that short cold applications, frequently repeated, produce the best and most durable effects. While we often follow the hot percussion douche with a long cold application of a similar character, we shorten the time if we find the effect too exciting by too strong a reaction. Sometimes the effect is sedative or exhausting instead of bracing. And then either the temperature is increased or the time of the application is reduced. In all cases of nervous exhaustion or anemia cold applications are of very short duration.

A most careful study of the reactive power of the patient should be made after each application, so that the progress of the curative process or the reverse may be determined. Where the patient does not react well to low temperatures the

effect desired may often be produced by strong friction or increased pressure of the douche.

While bathing weak patients one should be careful not to expose their bodies for too long a period to air when in a moist condition, as radiation of heat rapidly takes place from the moist body. This same fact also renders it imperative that the patient's body shall be thoroughly dried after each bath if recuperative powers are lacking.

Wherever possible, we require our patients to exercise prior to the taking of the bath for the reason that a slight perspiration before the bath favors the tonic effect of the application and reinforces it to considerable extent. Where there is a weakness of body, as in the case of nervous exhaustion or in case of anemia, one must guard carefully against profuse perspiration and in every case the bath must be taken immediately after the termination of the exercise and before there has been any opportunity for cooling of the skin by evaporation. But the radiation of heat from a moist body must always be avoided when vitality is low or where one is seeking rapidly to build up vigorous health.

In our gymnasium we provide for the best forms of indoor exercise by gymnastics, dumb-bells, club swinging, weight pulling, etc., but where outdoor exercise can be taken, such as vigorous walking, bicycle riding, or any other work that will exercise the muscles sufficient to produce slight perspiration it is preferable to indoor exercise. Where the taking of exercise is inadvisable, patients can be prepared for the bath by massage, friction, the application of heat or various mechanical Physcultopathic treatments which are fully explained elsewhere. Of equal importance is exercise after the bath if reaction is not quickly noticed. Where there is incomplete reaction chills often result which produce serious disturbances. A moderate walk of from half an hour to an hour's duration, or a few minutes' exercise is sometimes beneficial if the patient has the strength; otherwise, should he not recuperate promptly, he should be wrapped up in blankets or made warm and comfortable as quickly as possible in some

convenient manner. It must always be understood, however, that where this is necessary, the tonic effects of the baths are materially lessened. The broad general principle to be followed after a bath is to see that reaction is as complete as possible without any artificial heat. Further reference to this important matter is made in a special discussion of *Recuperation.*

Following this general presentation of some of the fundamental principles of Hydrotherapy, the various special topics are taken up in alphabetical order, for the greater convenience of the reader. In all cases, however, the foregoing principles should be very carefully studied. The student should also make it a special point to read the sections of this chapter devoted to *Internal Baths, Air Baths, Sun Baths* and *Dry Friction Baths,* which, being allied remedies of great potency and value, are properly included here.

ABDOMINAL PACK.—See *Girdle.*

ADVANTAGES OF BATHING IN HEALTH.—When one finds the practice of bathing one of the greatest comforts and joys of life, as it should be, then he may be sure that it is just as beneficial as it is pleasurable. The question as to whether it is harmful or healthful may be decided by this test of its pleasure-giving qualities. Here, as in other matters, we may trust largely to our instincts.

For the particular purposes with which we have to do here, it is unnecessary to enter into any discussion of the history of bathing. It is sufficient to say that it is as old as the human race, as we have good reason for believing. It has invariably been associated with the more civilized, progressive and powerful nations of the world, although it has also been practiced by most races of savages in one way or another, chiefly in the natural form of swimming. We know that bathing was given a prominent place in the lives of the ancients, Athens, Carthage, Corinth, Memphis, Agrigentum and all the seaport cities of Western Asia maintaining free public baths, while Rome was particularly lavish in the provision of luxurious facilities and in their indulgence. There can be no

question that their fondness for bathing was a very great factor in promoting the health and vigor of all these robust nations of the younger world.

Bathing is of value as a health-building agency in two different ways—as a means of cleanliness on the one hand, and on the other as a tonic. The old saying that "Cleanliness is next to godliness" has long been something of a commonplace, but it is nevertheless significant of the great truth that external cleanliness, aside from its value for its own sake, its æsthetic value, has a very great deal to do with the purity of the blood and general internal wholesomeness.

As we have already observed from our study of the structure of the skin, it has, among others, the function of helping to eliminate the wastes of the body through millions of tiny pores. If these pores are active in their work, so much the better for us. If they are interfered with in these labors, so much the worse, for as a result of such interference the impurities of the body will accumulate until they cause disease in some form or other. Without a proper amount of bathing, these pores are likely to become clogged up with grease, dirt and the impurities excreted by the pores themselves.

It is true that in a state of nature and nudity there is no special need of bathing for the sake of cleanliness, because the exposure to the air and the occasional friction to which the skin is subjected will provide well enough for this purpose. The so-called "scarf-skin" consists of innumerable tiny epithelial cells, in the form of infinitesimal scales, constantly forming and pushing to the surface, where, in a deadened and dried condition, they are rubbed off. At least, they are so rubbed off under natural conditions of the exposure of the skin, thus providing for a continuously clean and good condition of the skin. But in the use of clothing we have so seriously impeded this process that bathing becomes a necessity from the standpoint of cleanliness. The savage may bathe for the exhilaration of it, but not because he needs it for the health of his skin.

The amount of bathing necessary for this purpose will

vary according to the individual, his diet and his habits. If his diet is clean and favorable to a perfectly pure condition of the blood, and if his internal condition is wholesome and normal, then there will be no excess of wastes to be eliminated through the skin. On the other hand, if one is a heavy consumer of meats, if he is negligent in the matter of exercise, if his functional organs, and particularly his other depurating organs, are sluggish and inactive, then the importance of eliminating as much as possible through the pores of the skin becomes more than ever insistent. (See *Dry Friction Baths.*)

The influence of exercise upon the internal condition of the body, and also upon the amount of perspiration, is very important in this connection. If one is able to spend two or three hours each day in wholesome and congenial exercise in fresh air, dressed in the conventional "running suit," or other similarly scant apparel, which permits of the contact of the air with the skin, then the body wastes carried out through the pores will to a great extent be taken up by the air through evaporation. In my remarks upon the advantages of muscular exercise, in another place, I have pointed out its influence in cleansing all of the tissues of the body, but just here I would emphasize the importance, yes, the necessity, of bringing about at least a certain normal amount of perspiration daily as a means of preserving health, it being assumed that this perspiration is the natural result of this same physical activity. Though one should be careful in laying hard and fast rules for others, still it may be set down as a general rule that, unless one's life is such as to induce a certain amount of perspiration each day, he cannot maintain a perfectly pure and wholesome condition of the inner man. It is the old story of "the sweat of thy brow!"

If the pores are not properly active in this way, then it means either that the kidneys are overworked, or that waste matter is accumulating somewhere, with the ultimate result of disease. The curative processes of the disease, when it comes, will eliminate this waste, but at the expense of some loss of

vitality and probably with very marked discomfort and inconvenience for the individual. It is ever so much better to keep everything working perfectly and to eliminate all wastes day by day as fast as they are formed, thus avoiding the necessity of calling upon these beneficent though often painful disease processes to accomplish the work spasmodically.

The more imperfect one's health, the more corrupt and impure the condition of his blood, the more important are these various forms of bathing for insuring that cleanliness which makes for the greatest activity of the pores. But aside from this aspect of the subject, the tonic effects of the use of cold water are invaluable for building health and vigor. Not only does it have the most remarkable effect upon the circulation of the blood, thus invigorating and toning up the vital and functional organs, but it has a particularly good effect upon the nervous system as well, through the contact of the cold water with the myriads of nerve end-organs located in the skin. Those who suffer from nervous weaknesses or disorders can often secure results through the use of cold or cool water which they can bring about in no other way.

The daily cold bath, more perhaps than any other one agent, increases the vital resistant power of the skin. By increased cutaceous activity and enlarged circulation of the blood, the body is able to withstand cold to a far greater degree. This means the ability to laugh at coughs, colds, catarrhs, pneumonia and many other ailments which are constant bugbears to those whose skin is not in a vitally resistant condition.

By reflex action this daily stimulus to the skin affects the processes of digestion and assimilation; the necessary secretions are increased in quantity and quality, and the enlarged activity of the circulation strengthens the digestive organs by the conveyance of more and better blood to them.

Every robust child, therefore, should take his daily cold bath, though some experts think that care should be exercised in infancy; that is, until the child has reached the age of seven or eight years. But my experience has been such that if a cold

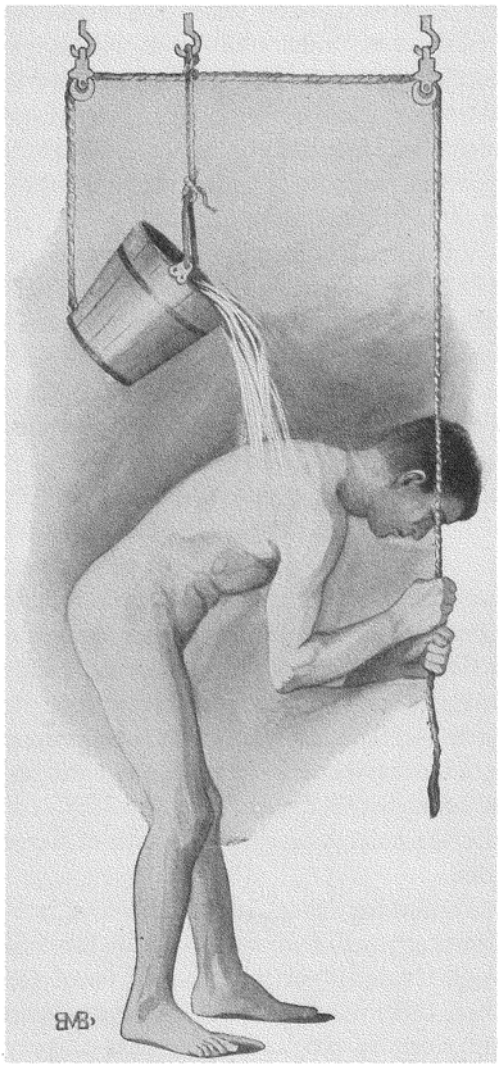
or cool bath is given quickly and the drying done perfectly, not only is there no injury to even the youngest infant, but a decided benefit. I have known of many cases where infants from the day of their birth have taken cold baths with regularity. But it has been the sudden quick affusion or pouring of a large volume of water, so that the shock did not last more than one or two seconds. Naturally, if the infant is sickly, it will be better to begin with the warmer temperature and slowly reduce it until a better state of health is gained.

For growing boys and girls, especially as the epoch of puberty arrives, the cold bath is beneficial, in that it healthfully stimulates all normal functions and promotes all healthful secretions. By its action, it will largely destroy so-called "growing pains" and at the same time prevent the establishment of nervous conditions that so often become established through want of proper attention at this time.

There are few adults who cannot take the cold bath to advantage, but it must be adapted to the condition of the individual. To immerse the body in a bath tub of cold water is not always either practicable or wise, even for a reasonably vigorous and healthy person, but there are very few who cannot take the cold rub down every morning advantageously. Several suggestive methods for taking the cold bath or its equivalent will be explained a little later on. Men and women whose occupations are sedentary especially need the tonic influence of the cold bath and yet if they are not healthy it is better always to precede the cold bath by a hot bath of three or four minutes' duration.

In the cases of those suffering from Bright's disease, neurasthenia, rheumatism, gout, gravel, it is better to take the cold bath with caution, though its daily use will usually be of the greatest possible benefit. The water should not be too cold so as to give the patient a severe shock. In the case of very feeble persons where the cold bath is advantageous it is far better to apply the water with friction over a small part of the body at a time than to immerse the whole body at once. (See *Cold Baths in Health and How to Take Them.*)

I firmly believe that if the habit of taking the cold bath every morning could be established throughout the land one single generation would show such a marked improvement in the health of the nation as to be nothing less than marvelous. It will not be long before every school will be provided with its gymnasium for physical culture exercise, connected with hot and cold shower baths and a swimming tank. These measures we have long advocated as a hygienic necessity and if the race is to progress instead of deteriorate, it is essential that measures of this kind shall be established and done speedily.



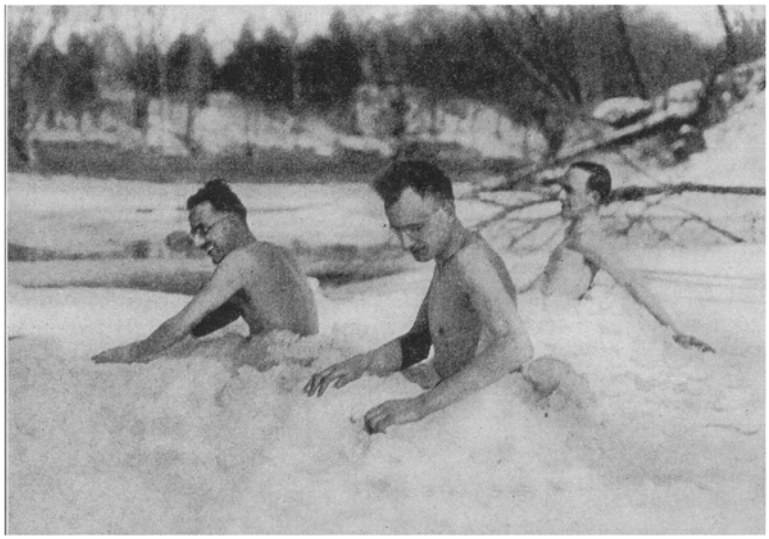
A "home-made" method of securing an affusion to the spine or any other localized part of the body desired. The suspended pail of water is gradually tipped by means of the pulley rope fastened to a hook near the bottom of the pail, thus giving a single column of water instead of the shower or spray shown in other illustrations. Drainage, etc., should be attended to as with showers.

THE AFFUSION OR POURING BATH.—Where the horizontal douche is not available, practically the same effect can be produced by having a sufficiency of water and pouring it upon

the body as indicated. Necessarily the pressure effect upon the skin cannot be obtained in this manner, still the pouring bath can often be used to good effect where the other appliances are not available. One may sometimes arrange to secure a certain degree of pressure by pouring from a sufficient height, though this is more or less difficult when a local application is required. In this form of bath, however, every preparation must be made before the patient's body is exposed to the air, so there is no delay while the bath continues.

It should be borne in mind that discomfort or even injury sometimes results from the arresting of a bath halfway because of carelessness in making abundant preparation beforehand.

AIR BATHS. [See also *Respiratory System,* Chapter X, Volume I.]—In a state of natural living the skin of the body is exposed to the air, so that it is kept in perfect condition. In civilized communities, as well as necessarily, in very



Hardy physical culturists, enjoying air baths on the snow and ice in zero weather. This is not to be recommended for the average man, or for the student who has taken up physical culture very recently. It shows, however, the degree of hardihood and vigor which may be attained through the practice of air baths, cold water baths and a general physical culture life.

cold climates, it is covered and smothered with clothing. But we can accomplish a partial return to the natural state by the practice of air baths, and in that way keep the pores of the skin active.

There are constant vaporous exudations from the pores of the skin which should be taken up and away by the air through the process of evaporation. In great quantities these vapors are condensed in the form of the liquid perspiration with which we are so familiar, but this too, will largely evaporate as it comes to the surface, if the air is permitted to play upon the skin freely. In the summer there is much more of this perspiration, and the process of its evaporation serves to keep the body cool and comfortable when it would otherwise be overheated; so wonderfully has Nature provided for our every need!

Air baths consist simply of exposing the entire body to the air, bathing it in the air, so to speak. The thought of an air *bath,* would never have occurred to anyone if it were not that the skin has been deprived of air very largely—in short, has been smothered—by the irrational use of coverings. Air baths will not only give the skin a chance to breathe by this means, keeping the pores active and promoting the most perfect elimination of wastes, but they will have the most soothing and at the same time invigorating effect upon the nervous system, and particularly when the air is either cool or cold. The contact of the air with the innumerable nerve end-organs located in the skin has a most resting and refreshing influence, and for this reason I would especially advise those suffering from nervous disorders or any nervous tendencies to devote themselves faithfully to air bathing. It would be wise for such sufferers to take two or three extended air baths each day, and it would be even better if they could so locate themselves that it would be convenient to avoid the wearing of clothing at any time of the day or night. To have the skin continually exposed to the air would alone accomplish wonders in neurasthenia and allied complaints.

The length of time that one should give to his air baths will depend upon his convenience. Let him make them last as

long as possible, and if this means all day, so much the better. Every one should try to take an air bath of at least a half hour every day, even if this includes the time when he is taking his exercise. It is particularly important to take one's exercises nude because of the excess perspiration under such circumstances, and because one will enjoy them much more. It is also a good thing to take the dry friction bath, referred to later in this chapter, in conjunction with the exercises and this air bath.

One advantage of this form of health-building is that it really takes no time. You can take the air bath while you are doing other things, whether reading or moving about in your room. A couple of young men spending the evening together can play checkers, chess or other games and at the same time enjoy an air bath through the entire evening. The more pure the air the better, though you will naturally desire the purest of air for the sake of your lungs, and the windows should be open. Just how far open will depend upon how cold it is and how much cold you can endure with comfort.

It is naturally essential that the body be kept comfortably warm, with the blood in good circulation. If the room is very cold this may be done by exercise, either mild or active, as the case may require. The colder the air the more invigorating, for really cold air will have something of the effect of a cold water bath. If you can take an air bath in zero temperature you will find it very stimulating, but it should not last long in such an atmosphere, and I would not advise the man of average strength or resistance to attempt it. You will really get the same benefits from exposure to the warm air in summer. It is a tonic under all circumstances.

For the same reason I would advise every one to cultivate exposure to the winds. It is the action of the winds which keeps the atmosphere of the earth pure, and they are beneficial in every way. When you go out on a boisterous day, when the wind is strong enough to blow through your clothing as though it were mere mosquito netting, you will find the result exhilarating and thrilling.

As I have said elsewhere, one should endeavor to so clothe himself that he will exclude no more air from his person than he can help. In summer, if he dresses as lightly as he can and should, he can almost enjoy an air bath all the time. Fabrics which keep out the air should be avoided, and this is why linen, or even cotton, is preferable to wool for underwear.

Wherever possible, it is advisable to take a sun bath at the same time that you take the air bath. (See *Sun Baths*, this chapter.)

BEDROOM BATH.—*How to Take a Cold Rub in One's Bedroom.*—This can be done in two ways, either by the use of the hands or with a cold towel. To some the former is the more enjoyable, while the latter is the more effective. If splashing must be avoided, then the latter is by far the better plan. The splash can be taken with nothing more than the ordinary wash-bowl, though the addition of an absorbent bath-mat is an advantage. On jumping out of bed, dip both hands in a bowl of water, bring up several handfuls of the water directly upon the face, opening the eyes to allow them to get the full benefit of the cold water. The effect of contact with the water itself in this way is very different from merely dipping the hands in the water and then rubbing the face. There is no comparison in the enjoyment, especially when one gets used to the volume of water. Now take as much water as the hand will carry and rub around the neck; then scoop up water with the right hand, taking it up the left arm over the shoulder and into the left armpit. Do the same with the left hand over the right arm. Then bring a good "splash" over the chest and body, working the hands around to the back and wetting it as much as posible. Then give each leg a rub with as much water as it is convenient to use. Now, if the bowl is movable, place it on the floor and give the loin parts as quick a bathing as possible.

Follow this with a vigorous rubbing down, taking care that the body is thoroughly dried.

BRAND BATH IN TYPHOID.—The so-called Brand baths, much used in typhoid fever, offer a good illustration of the

value of hydrotherapy in toxemic conditions. According to Brand's directions, the full bath should be given and repeated as often as necessary, when the rectal temperature reaches or exceeds 103 degrees Fahrenheit. Preferably a portable tub is used, brought to the bedside for convenience. The temperature of the water is about 68 degrees Fahrenheit. The patient's face and chest are first sponged with cold water, and then he is quickly immersed in the cold water, up to his chin. A cold moist turban is wrapped around the head. Attendants rub vigorously while he is immersed for three minutes, he is then placed in a sitting position so that in a few seconds several gallons of water at fifty degrees may be poured upon his head and neck, whereupon he is again immersed and the rubbing continued for five minutes, except for the abdomen. He is again raised to the sitting position and the affusion of cold water repeated, whereupon another immersion of five minutes with friction follows. Sometimes the bath must be shortened, though it should usually be repeated every three hours if the rectal temperature exceeds 103 degrees Fahrenheit. In cases of extreme debility, heart lesions, pregnancy, tuberculosis of the lungs and arterio-sclerosis this bath should be avoided.

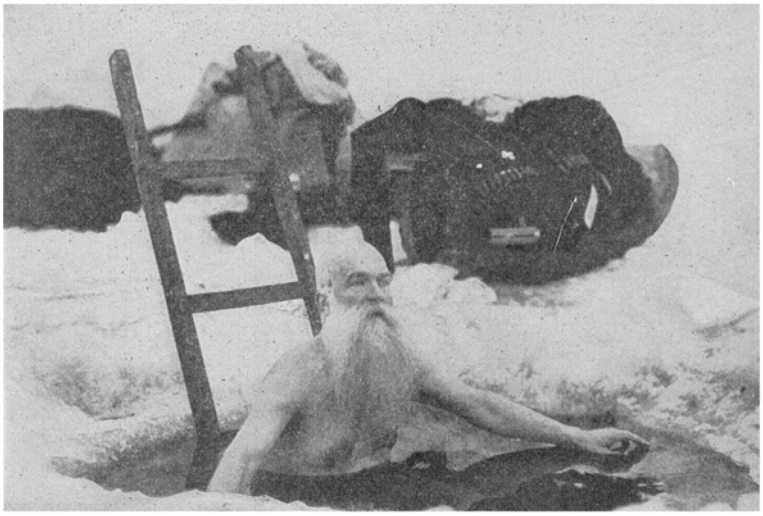
Between these Brand bath treatments cold abdominal bandages should be applied, with frequent changes, as necessary, and cold rectal irrigations should be administered after each movement. Two or three colon retention enemata will of course be given each day.

In some cases where this treatment cannot be applied, cold sectional ablutions must be applied. In many cases prolonged neutral full baths are effective with rubbing, and cold affusions to head, neck and chest every three minutes.

CABINET BATH.—See *Hot Air Cabinet Bath* and *Vapor Bath.*

COLD BATHS IN HEALTH AND HOW TO TAKE THEM.—[See also *Cold Plunge, Bedroom Bath, Shower, Sitz, Sponge.*]—Cold water, like cold air, is highly energizing, and if we avail ourselves of its advantages we can accomplish a great deal in increasing the vital

stamina and hardihood of our bodies. It is necessary, however, for each one to know something of his own individual requirements and powers of resistance to cold, not merely in order that he may get the best results, but even that he may avoid doing himself any harm. What may serve well enough for one man, perhaps a magnificent example of robust animal life, may not at all be suited to another of less vitality. Those who are strong may plunge into cold or icy water at any time and under any conditions, and emerge with a sensation of exhilaration and delight, but the man of poor circulation, who is only trying to gain in strength, should pause before he attempts to emulate the heroic example of his stronger and more full-blooded friends. He should proceed intelligently; it should be his purpose to gain as much benefit as possible from his efforts, and not to see how much he can endure. Not only should the temperature of the water be adjusted to suit his powers of resistance, but the form of the bath should also be selected according to his condition.



An ice cold bath at the age of sixty-five, illustrating the extreme hardihood and vigorous circulation which may be acquired with the help of cold bathing. In this case the bather first gets his exercise by chopping the hole in the ice, then undressing there preparatory to his dip. This form of bathing is too rigorous and severe to be generally recommended, except for those of powerful strength and exceptional vital resistance, but it shows clearly the degree of vitality which may be attained through rational methods.

*The reaction* is the important thing in a cold bath, and unless one secures this reaction he would do better not to attempt it. There are few cases, however, in which an individual is so weak or delicate that the application of cold or cool water may not be so modified as to make it possible for him to get a reaction and to benefit by it.

The first effect of the contact of the cold water with the skin is to cause the latter to contract, driving the blood away from the surface of the body and toward the internal vital organs. Immediately, however, the reaction follows, the nerves are awakened, the heart is aroused and the blood comes surging back to the surface of the body in great volume, accompanied by a delightful sense of warmth and exhilaration. The skin takes on a ruddy glow of color, and the entire body is invigorated, stimulated, energized. The physiological processes of this reaction are referred to in the general discussion of the Science of Hydrotherapy in the beginning of this chapter. It is for the sake of this reaction that one takes the cold bath, and without this response and recuperation one may suffer a more or less severe depression. [See also *Recuperation.*]

As a general thing, therefore, it may be said that one should not stay in the bath longer than necessary to get this reaction, which means a very few moments in most cases. The average man and woman will get much better success in his cold bathing if strict brevity is observed. Having accomplished the purpose of the bath, there is no reason for longer remaining in it, for to do so may result in wearing off the stimulating effect of the reaction and in reducing the vital heat of the body to an undesirable extent.

There are certain conditions which are favorable and some which are unfavorable for successful cold bathing. One of powerful physique, as we have already seen, need scarcely consider any of these, for he would undoubtedly profit by a cold bath under any conditions. He could take a cold bath in an atmosphere and temperature like that to be found at the North Pole, first stopping to cut a hole in the ice for the purpose, and he would make himself even more hardy and

vigorous by the experience. As a matter of fact, I have known a number of men who have made a practice of doing this very thing all winter long. But for anyone who is delicate, or who is in any way doubtful of his recuperative powers, I would certainly recommend that he take his cold bath in a reasonably warm atmosphere, even if he has just concluded taking his exercises in a cold, open-air room. It is ever so much easier to get the reaction and to enjoy a cold bath in a warm room, and for the beginner this is an important fact to keep in mind. We should always remember that this is a matter that depends upon the individual and his strength.

The temperature of the water is a matter that must also be adjusted to the varying needs of different individuals. The colder the water, the more invigorating, providing one can recuperate. But it is usually best for the beginner to go about it gradually, and if he cannot truly enjoy really cold water the first week that he takes up the practice, then he should content himself with water that is only cool. Perhaps, indeed, if he is delicate, he should use only tepid water, gradually lowering the temperature as his circulation improves and he gains in strength, until he reaches a point where he can simply "wallow" in water at forty or fifty degrees Fahrenheit, or colder, with delight.

A very important condition is that one should be thoroughly warm before taking a cold bath, and it is for this reason that it is usually advantageous to take the bath after the active exercise of the day, when one is warmed through and through with the natural warmth of the body. There is an old theory that one should never touch cold water when he is very warm, but the supposed dangers of this have been greatly exaggerated, to say the least. It is true that a sudden change from an over-heated condition to a chill is likely to disturb or upset the internal harmony of the body, causing serious congestion and subsequent trouble, but a cold bath, taken properly, will not produce such a chill, even when overheated. Prolonged immersion in cold water after being overheated would often do so, but no one who knows even the

A B C of cold bathing would make such a mistake. When one is very, very warm, he is better able to withstand the application of cold water than when he is already cold or chilly, for he has an excess of body heat which he can dispense with to his added comfort. If he takes a cold bath when he is very warm, he will get the reaction all the quicker, and he will continue to be warm. Indeed, he will probably find himself perspiring after he has tried to dry himself thoroughly with a towel.

I would never advise anyone to take a cold bath when he already feels chilly, or when his hands and feet are cold. If you are ready for the bath, and have any doubt on this point, it would be wise to take time for sufficient exercise to warm you through and through before taking the bath. Any form of exercise that will answer this purpose will be satisfactory, though if limited in time you will probably find that you can warm up for the bath through rope skipping or stationary running more quickly than through ordinary free movements.

The time of day selected for the cold bath may depend upon the individual and his other habits and affairs. As a rule, it is most satisfactory taken after the regular daily exercises, and in most cases it is a good rule to take only one cold bath each day. If one takes his constitutional exercises the first thing in the morning it is a very good time to follow them with the bath. Even if one takes his exercise at some other time of day it is often a good plan to take the cold water bath immediately on getting out of bed, or following a dry friction rub, in order to thoroughly awaken and arouse all the functions and activities of the body. There is no objection, in such a case, if one takes another cold shower or sponge later in the day to follow his exercises. If one plays tennis for an hour or so in the afternoon of a hot day, for instance, the fact that he has taken a cold plunge in the morning should certainly not deter him from taking another at this time, for he will enjoy it and benefit from it.

*After exercise,* especially if one has taken a great deal of vigorous exercise and has perspired freely, it is usually a good

plan first to rinse off the perspiration with warm water before using the cold. This is very conveniently done in a well equipped shower bath, but may of course be accomplished equally well in the use of a tub or even in sponge baths.

If one makes a regular daily practice of this, that is to say, if he perspires profusely in his daily exercises, and if then, still perspiring, he quickly but thoroughly rinses the sweat all off with warm or nearly hot water before using the cold, he will find that this will answer all the demands of bodily cleanliness and will for the most part make unnecessary the weekly or occasional warm bath with soap.

*Dressing without drying* is a very good plan in many cases, providing one has good recuperative powers. Rubbing dry with a rough towel has many of the advantages of the dry friction bath, which is referred to elsewhere, but it also helps to stimulate the circulation and to bring about the most perfect recuperation after a cold bath. For the average man or woman this is usually the preferred plan, or at least whenever there is any doubt about recuperation. But if one has no difficulty in this direction, then it is often better to avoid drying, and to put on underwear over the wet skin, allowing it to dry naturally with the heat of the body. The effect of the bath is thus intensified. As a means of increasing the depurating activities of the skin this is similar in form and result to the wet sheet pack.

THE COLD MITTEN FRICTION BATH.—This bath is taken the same as the *Wet Hand Rub* (page 1495), except that a mitten made of coarse mohair, or something of this kind, is used for the purpose. It can be taken, if necessary, in bed, though it is better that the patient stand with his feet in water of from 104 to 110 degrees, if possible. It is administered ice cold, cold, neutral or hot, in accordance with the needs of the patient, and different results are obtained by either saturating the mitt with water, or having it merely wet, or simply moist. The attendant must be careful to administer this bath in accordance with the instructions of the physician or director. There is no bath administered outside of the percussion douche

which equals the cold-mitten friction for producing prolonged reaction.

COLD PLUNGE.—This is one of the most satisfying forms of cold bathing, and while in some instances it may be rather too robust a treatment for very delicate persons, yet by modifying the temperature of the water it can usually be made agreeable. It is perhaps the most natural form of bath, and one practiced by barbarians and aborigines the world over, as well as by many species of animals. In a state of nature, one merely takes a plunge into the river or lake most convenient, but in the civilized home one accomplishes practically the same thing by complete immersion in the gratefully cool waters of the large porcelain-lined tub.

One advantage over other forms of bathing lies in the comfort of shifting to the horizontal position and thus resting the body in general and the internal organs in particular. In the vertical or erect position these organs are all hung, as it were, from the spine, but in the horizontal we are relieved of any strain incident to this. Furthermore, when submerged and subjected to the consequent equalizing of pressure on all sides, the effect is like that of floating the internal organs in a fluid of density and weight very nearly equal to their own, and this cannot help but be restful. Of course this applies with even greater force in the restful and relaxing qualities of the hot bath, discussed in another place.

Where possible, fill the bath tub the night before so that little or no interval elapses between the time of getting out of bed and the beginning of the bath. Stand by the side of the tub and with both hands bring the water vigorously to the face, and around the neck, but not over the hair. (I'll tell why later.) Then quickly scoop up as much water as possible with the right hand up and over the left arm and shoulder, taking especial care to reach the arm-pit. Do the same with the left hand over the right arm and shoulder. Now, lean over the tub, rapidly scoop up with both hands as much water as possible throwing it upon the chest slapping it vigorously at the same time. Now, jump into the tub, sit down and rapidly

scoop up the water over the chest and trunk and do the same thing up the back, at the same time stretching the legs out so that they are entirely covered. If by this time you have had enough, pull out the plug but stand in the cold water while vigorously rubbing off with a coarse towel. If, however, you desire a little more, the whole body may be immersed in the cold water for a few seconds in the horizontal position. The advantage of standing in the cold water while drying is that the prolonged bath to the feet generally favors a more powerful reaction, thus bringing good and healthy blood to circulate in the feet and by that means keeping the feet and legs in a more healthy and vigorous condition.

COLD SPLASH. [See also *Hot Splash.*]—This is a simple and convenient method of taking a cold bath when one is limited in facilities. Sometimes it will be more expedient even than the cold sponge bath, because one does not even require a sponge or cloth.

The general comments made in the case of the cold sponge bath will apply here as well. All that is necessary is a small bowl of water. It is easy to recuperate from and is well suited to those of delicate strength. The technique of this bath is described in detail under the heading *Bedroom Bath,* (which see).

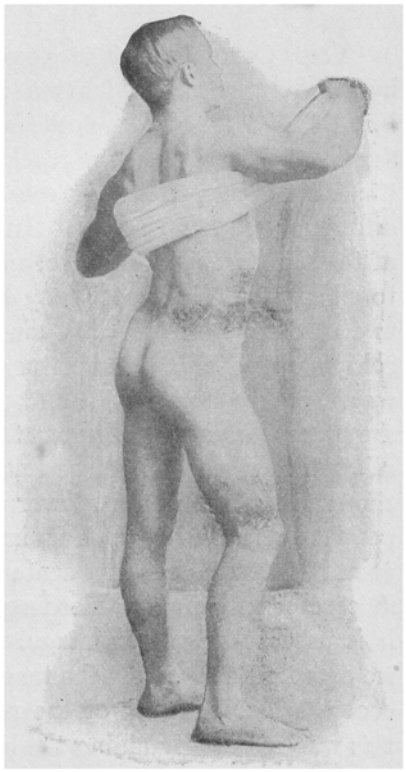
Another method of taking it is to have two or three inches of water in a bath tub, then either squatting or sitting down in it, quickly splash every part of the body.

COLD SPONGE IN HEALTH. (Self-applied.)—This is the method of bathing usually suggested for a beginner, or one of limited recuperative powers. The plunge and the shower are both more invigorating, if one can take them, but even the most delicate can take a sponge and benefit from it. For those who have not the facilities of tubs and showers, the cold sponge offers a very satisfactory substitute.

If a very large sponge is used, one can hold it above his head and squeeze it out, thus getting practically the equivalent of a shower, and many athletes have trained with just this kind of an improvised sponge shower. As a general thing,

however, the term, "sponge bath," has reference to the use of either a sponge, cloth or towel, by means of which one can wash or rinse off the body by sections. If it is done quickly, the entire body can be covered in a few moments.

One can take a sponge bath anywhere, for any kind of a cloth may be used, and very little water is required. The temperature of the water should be determined by the strength and vigor of the individual, remembering that the colder the water, the more invigorating, providing it is not too severe to permit perfect recuperation. It is well not to try to take it too cold at first. As a matter of fact, for one who is very delicate, I would recommend starting in with the use of tepid water, scarcely colder than the body temperature, gradually changing to cool, and finally, when strong enough, using water that is really cold.



A towel wet in cold water, and vigorously used in this manner over the entire body, is an excellent mode of stimulating the skin, combining a measure of exercise with the tonic effects of the bath.

COLD SPONGE WITH HOT FOOT BATH. (*For Delicate Persons.*)—Even when taking cold baths under ideal conditions, and with all possible care in regard to the temperature of the room and water, there are still some of weak hearts, poor circulation and low vitality who have difficulty in getting a proper reaction. In such cases I would recommend the plan of standing with the feet in hot or rather warm water for a few moments before the

bath and while taking the cool or cold sponge, as elsewhere advised in description of *Sponge or Towel Bath,* for patients (which see). The water should be deep enough to immerse the ankles, and sometimes, if in a large tub, it is well to kneel in it while sponging the upper body.

The hot water in which the feet are placed will do much to keep up an active circulation and a satisfactory degree of bodily warmth, so that with the aid of this help one may be able to truly enjoy the cold water on the other parts of the body. No one should entirely abandon the idea of taking cold baths for the sake of building increased vigor until after trying this plan, which will make them a possibility in practically all cases.

THE COMPRESS.—The compress is simply the modern hydro-therapeutic application of the old-fashioned poultice. Folded linen, or soft cloths answer for the purpose, with flannel, rubber blanket or mackintosh for covering to exclude the air. Compresses vary considerably, largely owing to the differences of temperature. In cases where a speedy reaction of temperature is imperative, an ice cold compress can be used to advantage. Not only may the tissues immediately related to the skin be affected, but also deep-seated tissues. A very cold compress is made by saturating the folded cloths with ice water, or breaking up ice and placing it between the folds of the cloth. It is very seldom that such a compress should be allowed to remain for more than four or five minutes, as continuous cold applications lower vital action, and they even suspend all vital activity. Yet, in cases of local inflammation of joints, in fever, delirium, acute nausea or cerebral congestion; in case of inflamed or bleeding hemorrhoids or hemorrhages, it is used to great advantage. Oftentimes an ice bag or an ice compress laid across the trunk of an artery will reduce and cool the blood supply of the part supplied by the artery, in this way materially aiding the healing processes. Contraction of the vessels of the uterus may often be caused by the application of cold compresses to the inner portions of the thighs, the perineum, the vagina and lumbar region. In cases of

fever, ice bags, or ice compresses to the spine will materially aid in lowering the general temperature. When severe bleeding needs to be relieved temporarily, an ice compress applied directly to the wound, and over a large area surrounding it, will have the effect, but as the freedom of the flow of the blood stream is essential to induce healing, great care must be exercised not to allow the cold too great an influence or too long an application, usually not longer than half an hour.

The ice cold or cold compress has a powerful effect through the blood vessels of the skin upon the circulation of the blood in the internal viscera. Rapid contraction of the cutaneous blood vessels causes the dilation of the deeper lying vessels, and when the reaction takes place the withdrawal of the blood from the internal blood vessels to the surface induces a healthful and vigorous circulation.

In typhoid fever the cold compress applied to the abdomen is exceedingly useful. In cases of pneumonia, with the lower front chest and the affected side covered with such a compress, and not changed until reaction to warmth has been secured and maintained for several minutes, the effects are highly beneficial. In order to produce the continuous contraction of the surface blood vessels, the compress must be renewed every five to eight minutes, as if it is allowed to remain until reaction is established, from fifteen to thirty minutes, the effect is different. When intestinal hemorrhages call for constant cooling treatment, the cold abdominal compress is far better than the general cold bath.

The cold compress applied over the heart for a few minutes in cases of cardiac insufficiency is very effective, and some authorities use it as a stimulant by allowing it to remain for five or six minutes, then removing it for about double the period, and again applying it.

The Evaporating Compress consists of the folded linen so applied that the evaporation takes place from it. When a cold in the head is acquired such a compress is of great value, applied to the neck.

THE COMPRESS, ALTERNATE. (*Hot and Cold.*)—This, as its name implies, consists of the application of very hot and very cold compresses alternately. They should be renewed about every half minute. Occasionally it is found desirable to apply the cold for a longer period than the hot compress, or *vice versa.* The effect of this alternation is to produce the primary effects of both hot and cold compresses, without any of the after reaction. The result is it is generally a powerful excitant and stimulant, and can be used to good advantage upon the spine and elsewhere, in the case of vigorous people who wish to secure a rapid tonic effect. When the hot fomentation is allowed to remain in place for four or five minutes and is removed, and the cold one applied for only a few seconds, the effect is very different from where both are applied for the same length of time. In cases of neuralgia, gastric or any other visceral congestion, or spinal irritation this form of compress is better than the alternate where each application is of the same duration.

COLD TOWEL BATH.—This is exactly the same bath as the *Bedroom (Splash) Bath* except that by sufficiently wringing out the towel in the cold water all splashing is avoided. There is an advantage, too, in that one can "saw down" the back with the towel when it is impossible to reach the whole back with the hands alone. If this bath can be taken with a towel that is not wrung out it is, necessarily, much to be preferred, but the ordinary housewife has decided objections to any such splashing proceedings in her bedrooms.

COLD TOWEL BATH FOR PATIENTS.—The same effect as in the case of the *Cold Mitten Friction Bath,* but to a slighter degree, is produced by the use of the cold towel. This is generally applied to a patient who is unable to rise. Instead of rubbing the body with the towel, a linen towel is wrung very dry out of cold water, shaken and then laid over as large a surface of the body as it will cover, the attendant then vigorously rubbing the towel, covering as large a portion of it at a time as possible with the hands, and pressing it firmly upon the surface of the patient, the rubbing being con-

tinued until the towel becomes warm. The wet towel is then removed and a dry towel placed in the same manner, and rubbed until vigorous reaction sets in. It must be distinctly understood that the rubbing is over the towel, and not by use of the towel upon the skin itself.

THE DOUCHE BATH.—The douche bath is where one or more columns of water are directed against some portion of the body. The douche is subject to three controllable variations, namely, temperature, force or pressure and amount. In other words, the douche may be hot, tepid or cold; it may be given with slight initial pressure or with that of 50 or 60 pounds; and the amount may vary from the hair jet to a nozzle three-eighths of an inch in diameter. It may be a general douche, a localized douche, and is also capable of internal application as to the nose, eye, ear, stomach, rectum, colon, bladder, urethra and vagina. The douche is essentially stimulating, combining both thermal and percussion effects, and is one of the most powerful agents used in hydrotherapy.

The percussion of the douche is found to aid the movement of the blood through the heart and accelerates the current of lymph in the lymph channels, thus improving the general circulation. The hot douche also elevates the temperature and the longer the bath and the higher the temperature, the greater its effect upon the body. The cold douche is found to have the most powerful tonic effects. It increases the capacity for mental and muscular activity and stimulates the appetite for food. By reason of the massage effect produced by the moving pressure of the douche on the surface of the body, it encourages circulatory action to a high degree, and at the same time tones up the nervous system to resistant power against all attacks from cold.

The horizontal jet is the most common form of the douche. Its simplest form of application is by means of the jet attached to an ordinary piece of garden hose. In cases of inflamed or sensitive points, or places made sensitive by disease,

as well as all the sensitive parts, as the stomach, bowels, uterus, etc., except in the case of the most robust, the horizontal jet is broken into a spray.

It is self-evident that to properly administer the horizontal douche the appliance must provide an abundance of both hot and cold water, so they may be mixed to produce any required temperature, with "head" sufficient to produce any pressure, and in a tube of sufficient capacity to allow of a greater or less mass as required. The patient stands at the required distance with his back turned to the jet which is in the hands of the attendant. Beginning with the left foot, the attendant applies the douche or stream up and down the left leg; then up and down the right leg; across the lumbar region, up and down and back and forth across the back; also up and down the arms which are held at the sides. The spine should receive special attention, the douche reaching from the coccyx to the cerebellum, and being also applied up and down on each side of the column. The patient now turns his left side to the attendant, holding the arm out so as to allow the douche to reach the sides and under the arm-pit, lowering the arm and receiving the jet on the arm itself after the side has been well douched. The same is done with the right side. Then, facing the attendant, the front parts of the legs and body are treated as were the back parts, care being taken, of course, to break the jet at any point needed by the sensitiveness of the patient.

In the general application of the douche, the stream is directed upon different portions of the surface in succession, but is never allowed to fall steadily upon one spot.

The temperature and length of time of this douche should generally be specified by an expert. It is then followed by a reduction in temperature to meet the special condition of the patient, or if the best effects are required, the hot water is completely turned off and the cold douche immediately substituted. The attendant should be exceedingly careful and the patient should insist that there be little or no interval between the application of the hot douche and that of the cold.

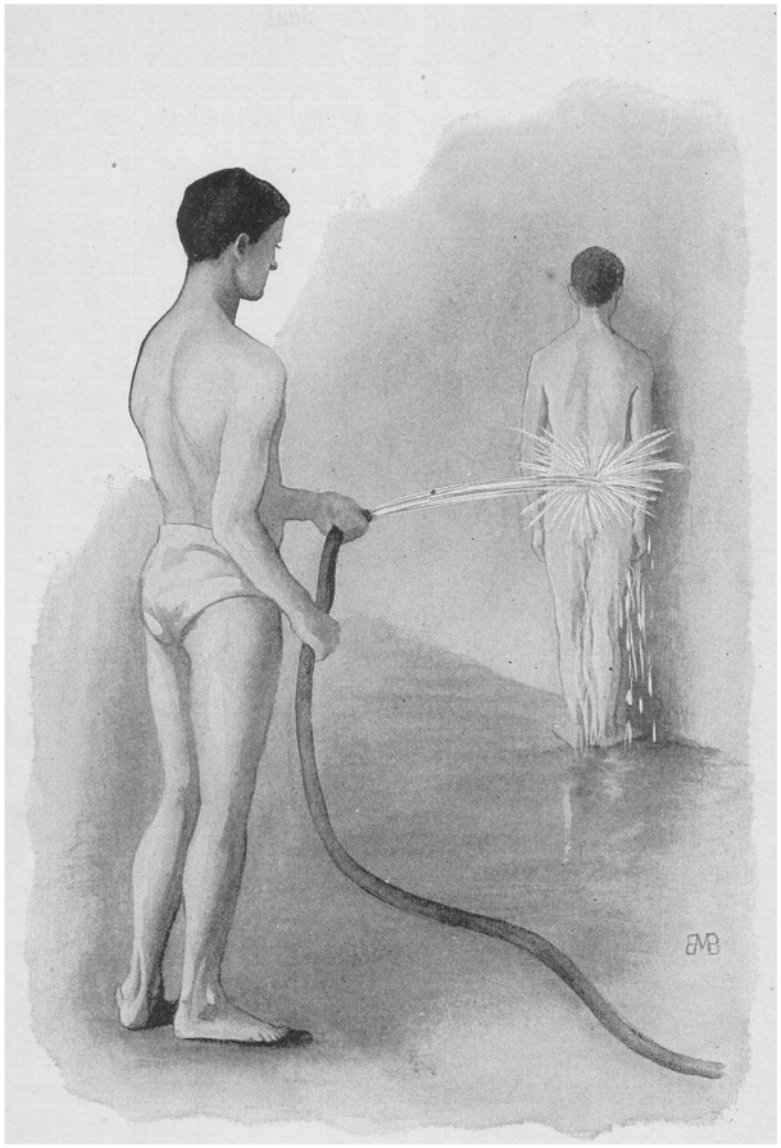
After the hot application, the body radiates heat quickly and the skin speedily becomes chilled. If there is any delay, the cold douche not only fails to produce the tonic effect desired, but becomes an actual injury. If for any reason the delay between the two applications is necessary, the patient should be covered by a warm woolen blanket, and if the interval is much prolonged the hot application should be again applied before the patient is subjected to the cold jet. The sooner the patient learns that the cold is not to be dreaded after the hot douche and that the effect is far greater when the cold immediately follows the hot, the better it will be for him. The reaction in such cases is not only physically beneficial, but produces an exhilaration the like of which no other bath is able to effect.

The whole body should be gone over with the cold as with the hot, less time being taken for it, especially if the water is very cold. The body is then thoroughly dried, and if a short walk or moderate exercise be taken thereafter, its beneficial effects will be enhanced.

If for any reason the vitality of a patient is so lowered that danger is apprehended, or if through inadvertence there has been too excessive an application of cold to the patient, it is well to remember that a general hot douche, a full hot bath, a hot blanket pack or any other general hot application is the very best course of procedure to follow.

It can well be seen that with proper appliances the douche is capable of a variety of applications. It may be hot, cold or neutral, or very hot and very cold. If necessary, where the pressure can be regulated, it may come with great force or very gently.

The neutral douche at a low pressure has a calming and sedative effect, when taken for from three to fifteen minutes. Yet the same douche used with a pressure of fifty to sixty pounds dilates the surface vessels and causes contraction of the vessels of the brain and internal viscera, thus powerfully stimulating instead of soothing. Yet the neutral douche has so decided an effect in lessening the muscular tone and capacity



Application of the douche. Any garden hose can be used for the average home. The percussion douche may be applied very simply by merely pinching the hose with one hand, thus interrupting the column of water into separate and momentary jets.

that it should never be used where the patient is strong enough to endure the hot or cold douche.

*The percussion douche* is practically the same as the ordinary douche except that by means of an ingenious device the stream of water is cut off at rapid intervals and a certain amount of air introduced behind each jet of water, so as to increase the force of its propulsion upon the body. The result is a fusilade of water jets which strike the skin one after another with great rapidity. This percussion douche can be used at any temperature and pressure and is especially desirable where rapid and powerful reactive effects are required. By its use both hotter and colder water can be projected upon the body than when a steady stream is used. This kind of douche applied to the skin is the most powerful of all known tonics. It also allows the use of very hot water on the bodies of those who are sensitive to cold and who shrink from the ordinary cold douche. (See also *Shower Bath or Rain Douche.*)

DOUCHE. *Localized Douches.*—There are times when a special effect is desired upon some certain part of the body. When this kind of treatment is indicated, the douche is localized upon the spot and given at the temperature suggested. For instance, in cases of typhoid, or other grave fever, where it is necessary to arouse the activity of the brain and thus excite the nervous and muscular systems throughout the whole body, it is well gently to pour water at from 50 to 60 degrees over the back of the head. Such an application of cold water given for a short time will excite the brain, and is useful also in melancholia, either with or without stupor, and in sunstroke where the skin is pallid. Continued too long, the opposite effect is experienced.

The cold douche on the back of the neck is a powerful stimulant upon the respiratory organs, but the water should not be too cold nor the douche too prolonged, otherwise suffocation by arresting the heart's action may result.

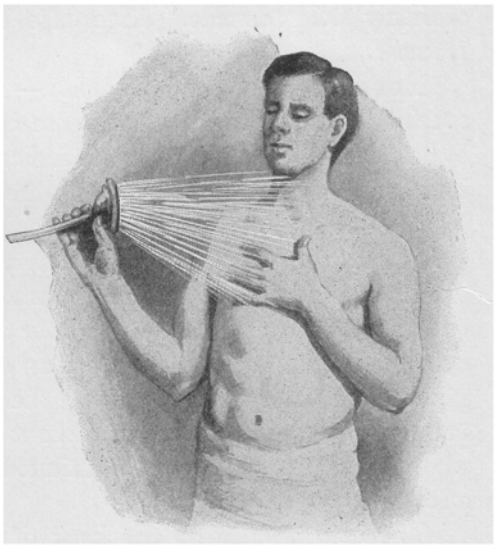
A short tepid douche on the back of the head or back of the neck will often allay cerebral excitement and may be used

in insomnia or any form of cerebral irritation. In such case, the water should be from 80 to 92 degrees and the douche should last from three to five minutes. It is always well in using this form of application to the head to be exceedingly careful. It is best to begin with milder measures and watch the effects before proceeding to the more rigorous methods.

The spinal douche is often used to great advantage at all temperatures. The jet should play not only upon the center of the spine, but upon both sides and with all the pressure that the patient can bear.

There are cases where douches can be applied to the lumbar region, the abdomen, the shoulders, upper part of the trunk, the feet, the soles of the feet, the perineum, and the anus. In all these cases, specific results are desired and the treatment should always be given under expert advice.

There is a series of douches termed visceral douches. These are all given for the express purpose of reaching some specific organ within the body, and necessarily require expert advice, and an intimate knowledge of the exact location of the parts concerned.



The use of the hand spray, rubbing with the other hand, a very acceptable form of bathing for those who have limited facilities in the way of shower baths. The hand spray may be purchased for almost nothing, and can be attached to the bath tub faucet, or indeed, to any faucet by means of an insert. It offers a most satisfactory cold douche after a warm tub bath. One should be careful, however, to keep the spray directed upon himself rather than upon the ceiling, floor and walls of the room.

THE DRIPPING SHEET.—The dripping sheet bath is the same as the *Wet Sheet Rub* bath, except that it is more vigorous, and the sheet must be, as its name implies, dripping with water. In some cases a better effect is produced by spatting

the patient all over the body, rather than by rubbing. After the spatting is continued for not more than half a minute, a half pail of water, at a temperature of fully five degrees lower than the temperature of the sheet is instantaneously poured over the patient. The spatting then continues for another half minute, and another half pail of water is used, as before. The colder the water, the greater the beneficial effect, provided the patient has the necessary reactive powers. But, if after the first shock he begins to have a secondary chill, the bath must speedily be terminated.

If the patient is unable to stand to take this bath it can practically be given in bed, with a rubber sheet to protect the bed-clothes, though the wet sheet must be partially wrung out before being applied, and instead of pouring the water over the patient, a little water can be sprinkled, either from a sponge, or by means of the hand.

DRY FRICTION BATHS.—For increasing the circulation in the skin and so rendering it keenly active in its function of throwing off the waste products of the body, to the great increase of health and vitality in the whole system, nothing is so good as the dry friction bath.

An excellent type of flesh brush for use in the dry friction bath.

In order to be well and strong, not only must you have a clean skin, but you must have an active skin. The skin really breathes; through its minute pores it absorbs oxygen and throws off impurities, just as do the lungs.

Note the difference between a horse that is curried and brushed daily and one that is given but little attention in this way. One looks sleek and proud, while the other appears out of condition and far from satisfied with itself. Nowhere is the value of currying more recognized than in the United States cavalry. Many troop commanders insist upon grooming for three-quarters of an hour in the morning and the same length of time in the afternoon. When out on frontier scouting expeditions, it has been invariably found that the commander who insisted most rigorously on the grooming of his horses, headed the most effective troops in respect to the endurance of their steeds.

The pores of many persons manifest but little activity. They wear very heavy clothing, the air rarely comes in contact with the skin, and circulation and the functional processes are therefore performed very poorly. The skin becomes rough and coarse, almost like sandpaper to the touch, or moist and clammy, almost dead. A perfectly healthy skin is smooth and soft like satin, and in order to acquire and maintain the surface of the body in this condition not only is a proper diet essential, but dry friction baths of some kind must be regularly taken. Perfectly pure blood depends largely upon open and active pores. Many diseases can be avoided if you have an active skin to assist the depurating organs of the body.

The best time to take a friction bath is immediately on arising. If you take any exercise it should precede not follow the bath. The various ways of using the towel, which will enable one to thoroughly rub every part of the body, are shown in the following illustrations. The average individual will imagine that he can rub himself all over without instructions of this character, and no doubt, to a certain extent, this is true; but if the friction bath is taken as herewith described, and its effects compared with the ordinary rubbing that is done without any definite knowledge of the subject, one will very quickly learn the value of thoroughness in this connection.

Not only do these methods thoroughly awaken every part of the surface of the body, but they exercise nearly all the muscles of the arms, chest, and the back between the shoulders. In fact, if one will vigorously go through all these various motions, he will usually experience a certain amount of fatigue.

As most readers know, the friction bath can be taken with the ordinary Turkish or a friction towel. Care should be taken to secure good towels, as the cheap kind tear easily. Soft bristle brushes can be used, though one cannot secure quite as much exercise while using them as with the towels. It is advisable to follow the friction bath with a cold bath. The latter can be taken with a wet towel or wet sponge, or, if desired, immersion in a tub can take the place of these.

Better even than the friction bath, in that it accelerates the circulation throughout all the organs of the body as well as the skin, is muscular exercise. This especially increases the activity of all the depurating organs. The skin, kidneys, lungs and bowels will perform their work of eliminating the impurities far more effectively if you exercise regu-

A dry friction rub with the bath towel.

larly than if you lead an inactive life. (See also *Exercises and How to Use Them,* Chapter I, Volume II.)

THE DRY PACK.—There are some cases where the patient is weak or anemic through loss of blood, through hemorrhage, or after a severe surgical operation, or when subject to some form of intermittent fever where the temperature of the body is persistently lowered, that a dry pack serves the purpose of raising the temperature better than the wet sheet pack. This is applied in exactly the same way as the wet pack, except that dry woolen blankets are used, taking care that the blankets are well tucked in at the head and feet to avoid a circulation of air. Plenty of hot water bags should surround the patient and especially at the feet and he should be induced to drink plenty of water during the continuation of the pack.

If a rise in temperature is desired the pack should cease before sweating begins. If it is allowed to continue, the sweating will soon be as vigorous as in the cold sheet pack. It is necessary, however, to be cautious in the use of this pack as heat elimination is practically avoided, while in the wet pack it is produced. If, therefore, the dry pack be continued too long, the temperature may be raised higher than is desired. (See also *Wet Sheet Pack.*)

THE ELECTRIC LIGHT BATH.—This is a cabinet-bath in which a number of electric lights are placed so as to shed their rays upon the whole body of the patient at the same time, except the head, of course, which is excluded, and around which and the neck a cold towel is placed. The effect is to produce heat and also further the processes of elimination. This bath is always followed by the warm and cold douches, and it is used with great benefit.

ENEMA.—See *Internal Baths.*

THE EVAPORATING SHEET.—There are certain cases where it is essential to reduce the temperature immediately. In no way can this be done better than by enveloping the patient in a wet sheet wrung out of hot or cold water, and then allowing the cooling to take place by evaporation. If possible, the patient should be made to stand up and a gentle rubbing

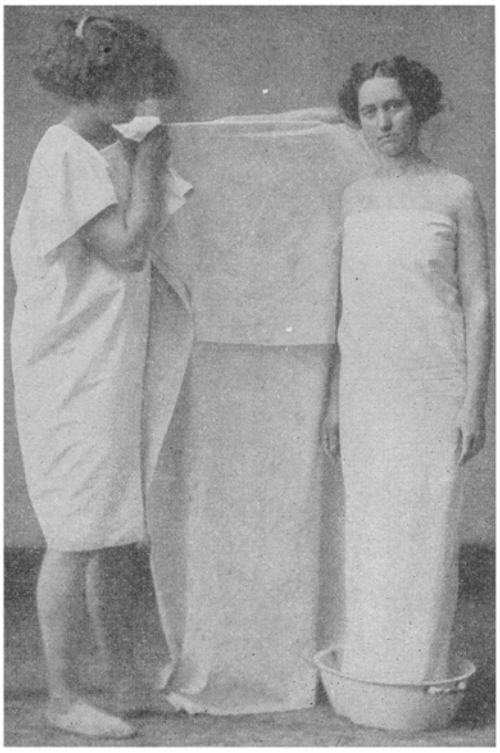
of the whole body kept up during the continuation of the bath. If ordinary evaporation does not produce the result desired speedily enough, vigorous fanning will aid the process. The effect is equally good whether the hot or cold sheet is used and many prefer the hot sheet. The cold sheet should be used only when surface congestion is so pronounced that the cooling by means of the sheet will restore the normal condition of the blood vessels. (See also *Wet Sheet Pack.*)

FOOT BATH.—See *Cold Sponge, with Hot Foot Bath.*

FRESH WATER BATHING.—See *Open-Air Bathing.*

FULL BATH.—See *Cold Plunge, Hot Bath, Neutral Bath.*

THE GIRDLE OR ABDOMINAL PACK.—This is simply a wet pack, bounded by the nipple line of the breast above and the hip joints below. It is used for the purpose of combating congestion of the abdominal viscera and is more easily applied than the half pack or the complete pack, and yet often produces all the effects that it is desired to secure.



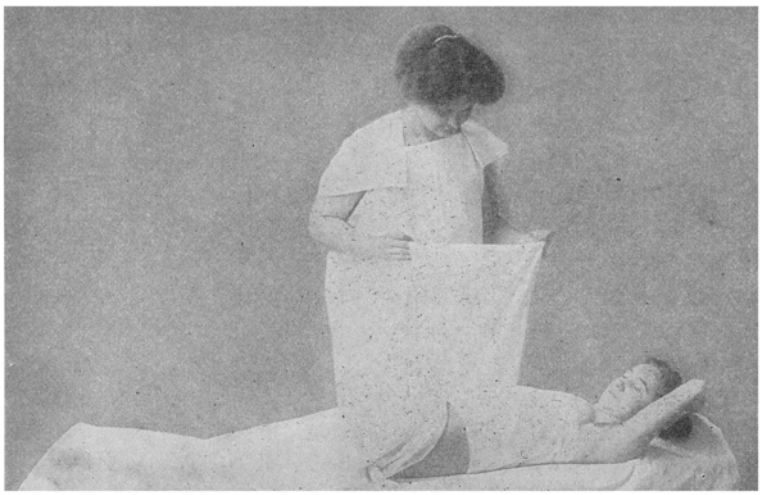
Illustrating method of putting on evaporating sheet.

The wet cloth may be either hot or cold, according to the condition and effect desired. In either case, it is snugly covered with a dry woolen cloth. When the pack is applied cold it is allowed to remain for

two hours or longer. If applied at night it may remain until morning. When applied hot, hot water bottles are placed over the pack to maintain its heat. It may remain for from a half-hour to two hours.

HALF BATH.—The half bath, as its name indicates, is a modification of the full tub bath, and may be either hot or cold. It is not generally to be advised in the case of hot baths, but where a full cold bath would be somewhat of a tax upon the recuperative powers of the individual, the half bath, which consists in immersing legs and hips, the water coming up to the navel, is very effective and comparatively easy to recuperate from. It is like the sitz bath with the legs included. The so-called "Nature Bath" is similar except that the water is not deep enough to reach the navel and only hips and feet are included. The half bath is a satisfactory bath for those in health who do not feel quite equal to a full plunge in the tub in the beginning. It is a stepping stone to the full bath, in other words.

HEALTH AND BATHING.—See *Advantages of Bathing in Health.*



Putting on an abdominal pack, showing the extent of the surface of the body covered.

HOT AIR CABINET BATH.—The cabinet bath is a device for supplying in one's own home the advantages of a Turkish bath in the way of dry hot air, inducing copious perspiration. As its name indicates, it is a cabinet large enough for one to sit in, but with the head outside, so that one may breathe perfectly pure air. These baths are made in varying forms and of different materials, some of which are quite inexpensive.

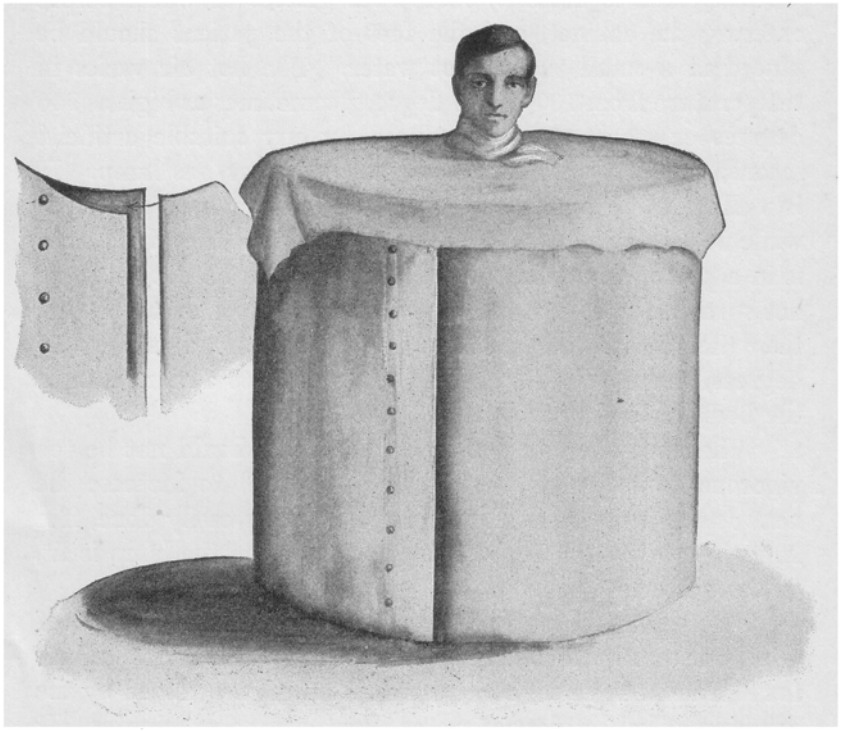
It is well to drink two or three glasses of water before entering the cabinet, and the feet of the patient should be placed in a small tub of hot water. The hot air varies in temperature from 100 to 180 degrees, sometimes as high as 200 degrees or more, and is produced by any suitable artificial means, frequently by means of an alcohol or gas lamp. It is well to place a cold wet towel around the head and neck while in this bath, which should continue until the whole body is in a profuse perspiration. On leaving this bath a warm or hot spray or douche of some kind should be administered, and then the temperature gradually reduced to not less than 75 degrees, and applied for from a half minute to a minute, until the body feels comfortable.

When possible, the hot air in this bath should not be too vigorously applied, to begin with; it is well to increase the heat as the body adjusts itself to it. This is easily done, if a lamp is used by getting into the cabinet when the lamp is lit, or soon after.

When it is necessary to continue the sweating effect of this bath, the patient can be wrapped up in warm blankets for half an hour or so, and the perspiration encouraged by the drinking of half a glass of water about every five minutes. It is very seldom that this bath is used alone, as its purpose is generally to induce perspiration. The sweating process alone does not eliminate all of the toxins of the body. It is good only as far as it goes, for the muscular system must be strengthened and the nerves toned up before all of the eliminative processes are as perfect as they should be.

The cabinet bath is an excellent way to break up a cold, because of the rapid elimination of waste matters; and similarly

it is of value in many other ways, because of its depurating qualities. It is somewhat of a strain upon those of weak hearts, and should be discontinued at the first signs of exceptional weakness or depression. In any event, it should not be continued over half an hour. For those who are overweight it is of service, though I would say emphatically that it can never take the place of vigorous daily exercise in the

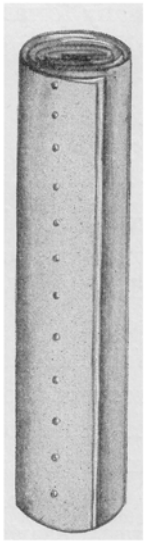


An inexpensive and simple cabinet bath, for either hot-air or vapor baths. It consists of a single sheet of zinc, sheet iron or any other available sheet metal, bent in the form of a cylinder, with the two ends brought together, and the top provided by a piece of rubber sheeting, oil cloth, blanket, canvas or any other available material, leaving a space for the head to project. A towel should be wrapped around the neck for a snug fit. The patient sits upon a chair, and the height of the bath should be on a level with the neck of the patient when seated. It should be from three and a half to four feet in diameter. Any village tinsmith can make it at little expense, using a sheet of zinc or other material, eleven to twelve feet long. In order that the two ends may fit snugly together, it would be well to attach a little strip of the metal on one end, as shown in the diagram at the left, so that the edge of the other end may be inserted in the niche thus provided. Or if preferred, the edges of each end may be folded back in such a way that they may hook into each other when brought together. Those who have a furnace with a radiator in the floor can conveniently place the cabinet over the radiator for the source of hot air, otherwise an alcohol or other quick heating lamp may be used. If placed under a chair, the seat should be protected underneath by a piece of sheet metal. For the vapor bath place a small pan of water over the lamp.

open air either as a means of purifying the blood, of inducing perspiration or reducing flesh. For absolute internal cleanliness there is nothing like exercise and outdoor life, and measures of this kind are only substitutes at the best. At the same time, in some cases where radical treatment is required these baths may be used effectively in purifying the blood. And there are occasions, when one is over-fatigued, and incapable of accomplishing much through exercise, when a good, vigorous sweat is the one thing that the body needs. Under such circumstances a cabinet bath is of great value, though a hot water bath will often answer very much the same purpose. (See *Hot Water Bath.*)

A cabinet bath, like any other hot bath, is best taken before retiring. The body should not cool off too quickly.

If one does not have the apparatus for a cabinet bath, it is a very simple matter to improvise a sweat bath that will answer practically the same purpose. This is done by the use of a hot foot bath, immersing the ankles as well, and wrapping the rest of the body well with warm blankets. This will soon bring out the perspiration, but the effect is hastened and intensified by the drinking of hot water or hot lemonade.



Showing how the Hot Air Bath Cabinet illustrated may be rolled up when not in use, taking up little space in the household.

A beautiful and well made wooden cabinet, with doors, will cost too much for many homes, but a suitable and simple device may be secured at little expense with the help of any tinsmith, using a sheet of zinc to form a cylindrical cabinet perhaps four feet in diameter and a height approximately that of the neck, when sitting. (See illustration.) This can be rolled up into a smaller space when not in use. This furnishes the side walls, the top being provided by rubber sheeting, oil cloth, blanket or any tightly knit fabric, with an opening near the back the size of the neck, that the head may project. This may be made to fit more snugly by a towel wrapped about the neck.

FRICTION BATHS.—See *Dry Friction Baths.*

HOT BATHS.—Hot baths are in many respects just the opposite in their influence from the stimulating cold baths. Hot baths are inclined to relax the tissues of the body and for this reason they are invaluable in a great many ways. As a curative measure, the hot bath in various aspects is invaluable, but it may be used for many health-building purposes. It should usually be taken before going to bed and will generally be found a splendid remedy for sleeplessness. Another reason for taking it at this time, however, is the advantage of allowing the body to remain for hours afterward in its relaxed condition.

Hot water is always very soothing and is invariably effective for relieving pain. But its most marked and valued influence lies in stimulating the activity of the pores of the skin. It is such a powerful eliminant that by its means the skin may be made to do much of the work of the kidneys, and for this reason the hot bath has been found of great value in many forms of kidney trouble. Old persons also, with failing kidneys and otherwise imperfect elimination, will find the practice of hot baths an indispensable means of keeping the blood pure and the health good. It is true that hot baths are likely to prove depressing unless used carefully, and that as a general thing they are not to be employed without good reason. It is also true that the invigorating effects of the cold baths are to be preferred. And yet they are so very effective that they deserve all possible credit in many cases. In cases of catarrh which have proved extraordinarily stubborn, in skin eruptions and in other common manifestations of waste accumulations in the body, they will work wonders. I would suggest, however, that as a general thing they be not used more than three times a week.

For those who are very thin, who have poor circulation or weak hearts, the hot bath is inclined to be weakening and I would not recommend it. It will be most useful to those who are above normal weight and who can take it with-

out any special loss of strength. But even in such a case it should not be continued too long, a half hour being as long as could ever be advised, and usually half that time, or even less, being sufficient. One's own instincts may guide him in the matter to a very great extent, and as long as the sensation of immersion in the hot water (that is, as hot as can be endured comfortably), is gratifying and pleasant, then it is beneficial. But if one stays in the bath beyond a certain time, he will experience a sensation of great lassitude, weakness and weariness, and when this feeling begins to come on the bath should be discontinued at once.

As a rule it is best to get into the water at a neutral temperature, or about 95 degrees Fahrenheit, hot water then being added until the temperature is raised to a degree varying from 105 to 115 Fahrenheit.

Those who have special reasons for taking hot baths should also make it a point to take cold baths to invigorate the body at other times. For instance, a cold bath every morning will enable one to build vigor and hardihood while the three hot baths a week accomplish the other purposes desired. In a case of this kind it would not be necessary to take the ordinary warm baths with soap twice a week, which are otherwise advised for the sake of cleanliness. These hot baths will accomplish this result as well.

It is very important to avoid becoming chilled after a hot bath, but this is not likely if one goes straight to bed. One may take a cold sponge before leaving the tub or not, just as his needs and feelings may require. In most cases this cold sponge or spray should follow the hot bath, but if one desires the maximum of relaxation and the possibility of immediate sleep, it may be best not to use the cold water. There is not so much danger of becoming chilled after a hot bath as is popularly supposed, for the excess of warmth in the body will enable one to withstand a great deal. Still, it is well to be careful, and much greater benefit will be derived from the bath if the body cools off very gradually.

As a means of breaking up a cold, the hot bath is excellent.

It will answer the same purpose as a hot cabinet bath or any other means of inducing a profuse perspiration, and it will usually be found much more comfortable than the cabinet bath. It will serve pretty well as a household substitute for a Turkish or Russian bath, and may have the advantage of the latter in that one can provide for ventilation and fresh air in his own home, which invariably the public bath establishment does not offer. And as a means of taking the soreness and stiffness out of the muscles after over-exertion or strain, there is nothing like it.

*Japanese Hot Bath.* The hot bath is so much a national institution in Japan, and its benefits so marked among these sturdy and healthy people, that every one should know of their practice of it. It is a daily habit, taken at the close of day, and after the labors of the family are over. Usually the tub is outdoors in front of the little cottage, and the water is heated on a stove indoors late in the afternoon. When the master of the house comes home from his work the tub out in front is filled with the hot water and he gets into it. It is so hot that he takes on the color of the proverbial boiled lobster, and he scrubs and souses himself, with the help of his wife, until he feels that he is clean. Getting out of the tub, his wife takes his place, and after her the children, in the order of their age, until all are clean and red. The weak point about it all is that the entire family uses the same water, one after another, but this is only a matter of economy, and even so, the bath is effective. It is to be remembered that since this is a daily habit, not one of them is ever very dirty, either externally or internally. (See also *Warm Cleansing Bath.*)

THE HOT BLANKET PACK.—In old age and cases of extreme weakness it is sometimes inadvisable to use the cold wet sheet pack, and in such cases rapid elimination may be accomplished by a hot blanket pack, which is often more convenient and comfortable than a full hot bath. It will often prove useful in cases of chill. And there are other occasions where it is necessary to produce the sweating effect quickly. In such cases, instead of using the cold sheet a woolen blanket

wrung out of water as hot as the patient can bear should be used. Its effect is almost immediate, but great care must be exercised to not allow it to continue too long as it then becomes exhausting and depressing. As a rule, patients prefer it to the cold wet pack as it avoids the unpleasant cold shock, but the general effect of the hot blanket pack upon the body is nothing like as beneficial. (See also *Wet Sheet Pack.*)

HOT FOMENTATIONS.—The hot fomentation is simply a hot compress (see *Compress*), but instead of using linen cloths, folded flannel cloths should be used. In using the hot fomentation care should always be taken to allow the flannel to be large enough when properly folded to well cover the area to be affected. A common mistake is to make hot fomentations with too small a flannel. Whenever hot fomentations are to be applied, if the patient is occupying a bed, a rubber cloth should be placed under to prevent the bedclothes from becoming wet. When an abundance of hot water is provided, and a wringer is at hand, the flannel may be placed in the hot water and wrung out by the machine, but when no other appliance is available, it is well to place the flannel, after being dipped in hot water, in a large folded towel or cloth; it can then be wrung by twisting the ends of the cloth. When very hot water is used the cloths must be wrung thoroughly; otherwise, there is danger of blistering the skin of the patient. Before placing the fomentation upon the body, a rough towel, or a piece of dry flannel, should be placed next to the skin. In our own practice we have found the use of the rough Turkish towel wrung out of hot water to serve the purpose admirably. Care must always be taken, however, to see that it is not too hot when applied.

The attendant should rub his hand rapidly under the fomentation and feel if it is too hot for the skin. If it is too hot, a few movements of the hand in this fashion will cool it, or it may be lifted and waved in the air for a moment or two, to induce rapid evaporation. It is better, however, to keep it on if it can be borne, and cool it by use of the hand, if possible.

When great heat continuously is required, the fomentation will need to be renewed at the end of about every four or five minutes or at even shorter intervals. In some cases it is found sufficient to apply the fomentation and then cover the first cloth with a dry flannel, and then add a hot water bag which will help to maintain heat. In arranging the cloths great care must be taken that the surface is not dried by evaporation and the effect of the fomentation lost. In all cases the new hot fomentation should be prepared before the cooled one is removed. The hot fomentation is generally used in cases of great pain. Very hot applications lessen the sensibility of the nerves of the skin, and while the first effect is excitation the secondary effect is soothing. In all cases of acute inflammation involving the surface structures the fomentation may be used, and for the relief of severe pain it perhaps has no equal in all therapeutic measures. (See also *Compress, Alternate.)*

HOT FOOT BATH.—See *Cold Sponge, with Hot Foot Bath.*

HOT SPLASH. [See also *Cold Splash.*]—Although hot baths usually have the influence of relaxing the body, yet a hot splash may be taken in a manner that will stimulate and invigorate with much the same results as would result from a cold bath. There are perhaps some cases in which it would be more satisfactory.

It should be *brief* to accomplish this result. Three or four inches of hot (not warm) water should be allowed to run into the tub. Step in and sit down quickly, and then rapidly splash the hot water over the entire body for a few moments. This will bring the blood to the skin in large quantities, and you will step out with something of the exhilaration that comes with the reaction from a cold bath. The result accomplished is very much the same, and it is not continued long enough to bring about a reaction of chilliness, which otherwise might be the case. The body should be rubbed dry vigorously.

HOT WATER BAGS.—Hot water bags and bottles are useful in the same way as hot fomentations, and may sometimes

be used in connection with the latter. They are of value in relieving inflammation, in producing relaxation, and in accelerating the local circulation. Care should be used, however, that they are not too hot. The general remarks in regard to the application of *Hot Fomentations* will apply here.

INTERNAL CLEANSING.—By this is meant the introduction of water into any of the cavities of the body. The simple and natural mode of thus introducing water is by the mouth into the stomach by the process of drinking, and the advantages of giving the stomach an occasional bath of either hot or cold water have been demonstrated by the experiences of all ages.

In discussing the exclusive meat diet there will be found a presentation of the reasons for the use of hot water in the stomach. The water should be at a temperature of about 110 degrees Fahrenheit and should be taken from an hour to two hours prior to the meal, slowly sipped, from half a pint to a pint. In this way the slime and mucus that have accumulated are washed out of the stomach before another meal is introduced. At the same time the blood is able to take what extra moisture it needs to further liquify it. Those suffering from all diseases that arise from defective digestive processes will find the use of the hot stomach bath of great benefit. "It excites downward peristalsis, dilutes the ropy secretions of the body, dissolves all abnormal crystalline substances that may be present in the blood and urine, and everywhere promotes elimination. It supplies a foundation for the thorough treatment of all chronic diseases by an inside bath which cleanses and refreshes the entire system."

At many "hot springs" people are required to drink the waters at certain intervals, generally at 6 A.M., 11 A.M., 4 P.M. and 9 P.M. With the average person's superstitious belief in the advantageous effects of the mysterious substances that are supposed to be found in these waters, the benefits that occur are generally attributed to these minerals. In reality, however, it is the simple hot water that produces the good effect by the washing process before referred to.

There is but little doubt that hot water used internally is

of greater benefit in cases of disease and where the vitality is low than the use of cold water, but where it is necessary to reduce the temperature, two or three pints of water at, say, 40 degrees will cause a reduction from one and a half to two degrees within the short space of ten minutes. But it is not only by the absorption of heat that water-drinking lowers the temperature. It produces the same effect by diluting the blood and thus promoting evaporation from the skin and exciting the kidneys to increased activity, thereby aiding in the elimination of the blood toxins that are causing the fever. It is a good plan in almost all fever cases to allow the patient to slowly sip a glass of cool water every hour.

At many "cold spring" resorts the patient is required to drink large quantities of cold water, supposedly for the benefits that are derived from the ingredients in the water. Immediately after the drinking, a walk of greater or lesser duration is required, and whatever benefit the patient derives is naturally attributed to the medicinal virtues of the water. To those who are familiar with the principles of hydrotherapy, however, it will be self-evident that the improved health is attributable to the liquifying of the blood by the increased water-drinking and the tonicking effect of the exercise in the open air. These effects might be produced at home with equal measure if one would follow the same régime.

But where drinking is objectionable to the patient or for any reason inadvisable the same effect can be equally well produced by introducing water of any given temperature into the intestines by means of an enema or an injection.

INTERNAL BATHS.—There are several methods of taking the enema. Many people take it when seated upon the toilet. A complete irrigation of the colon cannot be secured in this position. The tube of the large intestine descends on the left side of the trunk towards the rectum, but by a wise provision of Nature, it forms a loop known as the sigmoid flexure immediately at the entrance to the rectum. This is for the purpose of preventing too great a pressure of the contents of the colon upon the rectum and the sphincter muscle of the anus.

When one attempts to take an enema in the sitting position, it is difficult for the water to pass this sigmoid flexure and frequently the rectum alone is affected. If rectal irrigation is all that is desired, this is sufficient, provided no attempt is made to inject too large a quantity of water at the time. If, however, one is ignorant of the existence of the sigmoid flexure and supposes that by forcing the water into the rectum it can thus be made to enter the intestine, and the water used is warm or hot there is great danger that dilatation of the rectum will occur, which may have injurious after effects.

Some people are in the habit of taking an enema while lying on the right side. In this position the water is compelled to arise against gravity around and through the sigmoid flexure. Complete flushing of the colon is, therefore, practically impossible in this position. Indeed, it is doubtful whether when one lies on the right side and takes an enema the flexure itself is ever properly cleansed.

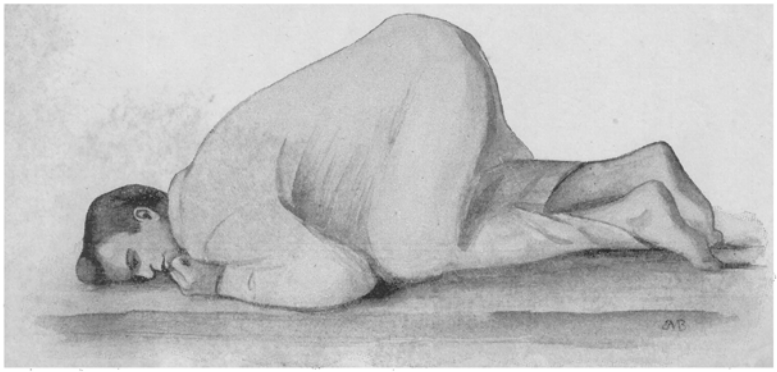
If the patient reverses his position and lies upon his left side, the condition is slightly improved, although the transverse colon now becomes a perpendicular tube through which it is impossible to make the water go without the expenditure of an amount of force that is dangerous.

Proper position for an invalid to assume when taking a full enema. The patient's hips should be raised about a foot higher than the head. This position can be used when too weak comfortably to take the knee-chest position. An ironing board may be used for the purpose with one end raised upon a chair or side of the bed. If the patient is in bed, the foot of the bed or couch should be raised.

Experience, therefore, demonstrates that there are but two methods by which a complete flushing of the colon can be secured. In the first of these for very weak persons, the patient lies upon his back with his hips slightly raised. If, before a sufficient amount of water has been introduced, the patient feels a strong desire to expel the water, he should be urged to resist the impulse, and the attendant should aid him by pressing a napkin tightly against the anus for a short time until the desire is controlled.

The most satisfactory position and the one I recommend to all except the bed-ridden, is the knee-chest position. The patient kneels upon a bed or table and then leans forward, resting the chest upon the hands or elbows upon a cushion or on the table, or in any other position that will project the buttocks in the air and keep the head down.

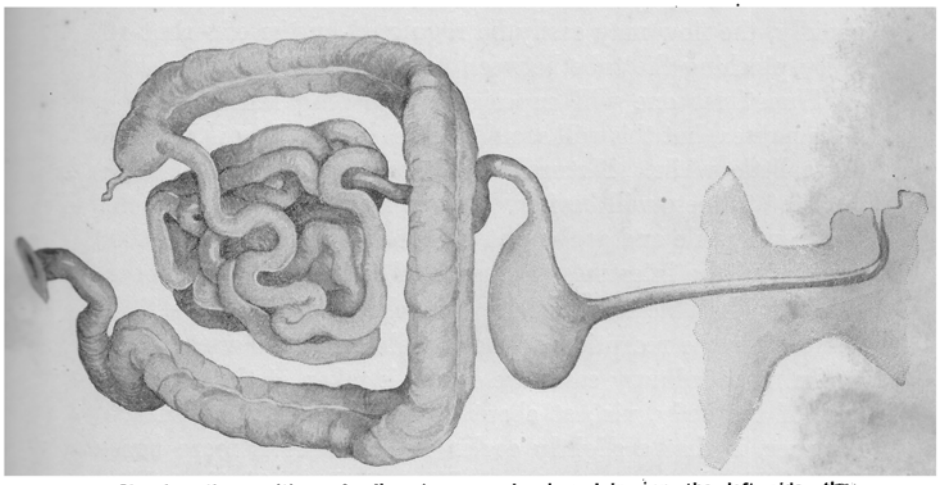
This attitude is both comfortable, easily assumed, and gravity assists the water in its flow through the descending colon and across the transverse, and, if a sufficient quantity has been injected, a certain amount will flow by gravity into the ascending colon as soon as the patient assumes the upright position. Anyway, this will fill naturally if enough water is used, for, seeking its level, it will rise in the ascending colon as the descending colon becomes very full. This is also largely true of the position on back with hips raised. In this manner, practically the whole of the large intestine is reached.



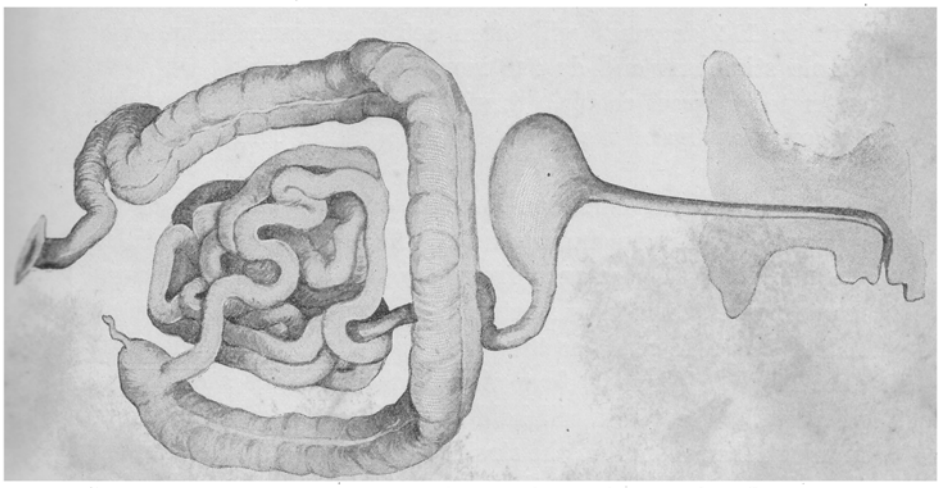
Knee-chest position. This is by far the best position to assume when taking an enema. As will be seen by cuts of alimentary canal, on page 1457, the water will flow more easily to all parts of the colon, while in this position than in any other.

When the patient assumes this knee-chest position, from four to six pints of water, and even more, may be injected without inconvenience or injury. This complete filling of the colon is absolutely essential to its effective cleansing.

The simplest method of taking the enema is to have a table



Showing the position of alimentary canal when lying on the left side, the proper position for taking an incomplete enema, when only the rectum and descending colon is to be cleansed.



Showing position of alimentary canal when lying on the right side. The proper position for taking a full enema, as shown on another page, is the knee-chest posture. If for any reason this cannot be assumed, then lie on the right side, hips elevated.

or bed close by the wall where the fountain has been suspended. The patient assumes the correct position. A little vaseline or olive oil is applied to the hard rubber rectal tube before it is inserted in position. Do not insert the tube until enough of the water has been run out to expel all air and also to reach the proper temperature. If the water comes too rapidly, the flow may easily be regulated by the clip shut-off or by pinching the tube between the fingers and thumb.

Sometimes one will experience a griping sensation or a little nausea, but this will soon disappear if the flow is arrested for a little while. Naturally, as more water is taken in, a sense of fullness will be felt. If this is oppressive, arrest the flow for a while and as the water finds its way into the farther recesses of the intestines, the sense of fullness will disappear.

It is advisable to retain the knee-chest position for a little while after the reception of the complete flow of water.

In most ordinary cases the enema is taken at the temperature of the body, viz., at about 98 degrees. My experience, however, is that a slightly cooler temperature is more beneficial. The best temperature will generally be indicated by the condition of the patient, and the purpose for which the enema is to be used. Where there is low vitality the hot enema (104 to 115 degrees) will often act as a powerful and yet simple stimulant and do far more effective work than with water ten degrees colder. A widely known hydrotherapeutic authority writes of the relative merits of the cold and warm enema:

"The warm enema soon loses its efficiency because of its relaxing effect upon the intestines. The tone of the muscular walls is gradually lessened from day to day, until the bowel may become enormously stretched. Large quantities of water should never be used, as they overstretch the bowel and produce atony. Three or four pints is the limit for a daily application. The colon will hold a considerable quantity more than this, but should not be stretched to its full capacity under the relaxing influence of the warm water. The introduction of cold water into the large intestine is entirely free from

this objection. Half a pint or a pint of cold water may be employed daily without injury, for the reason that the cold water energizes the muscles and nerves of the intestine. In the ordinary use of the enema, the temperature should be (80 to 70 degrees)."

There is good reason for the caution expressed by this authority in regard to daily warm enemas, and especially among those in fair health, but this should not be taken as advice against the use of a complete, full, hot enema in those emergencies in which it is truly beneficial. The enema should really be regarded as a special treatment, and not as an every-day matter for those in health. One should not learn to depend upon this measure, for such vigor and functional tone should be established and maintained that the bowels may be kept in good condition under ordinary circumstances without such help.

The hot enema has also been found of great benefit in cases of infantile diarrhœa, bilious cholic and in soothing uterine pains during parturition, and the irregular contractions that sometimes occur after child-birth. Many a case of collapse or of conditions where the skin is pale and the pulse weak, has been materially helped by the hot enema. In cases of this character it is often advisable that a cold friction rub be given briefly and speedily to the whole body, immediately after.

In cases of the suppression of the urine, or in renal difficulty or inflammation, the hot enema is of greater value than the warm, the hot water being more readily absorbed because of the increase of blood pressure and acceleration of the heart action. Many persons suffering from renal suppression have had their lives saved by the repeated employment of the hot enema during periods varying from one to three or four hours, but it must not be forgotten that the temperature must not be below from 110 to 120 degrees.

But the enema is not only useful for its commonly accepted purpose of flushing the large intestine. It has other uses and benefits which should be thoroughly understood.

The rapidity with which water is absorbed from the colon is indicated by the copious discharge of urine that immediately follows the use of the enema. This is a clear indication that the processes of elimination, by means of the kidneys, are being aided. At the same time the blood vessels also take up a quantity of the water and are distended and stimulated to more perfect action.

In cases of fever the cold enema is of the highest value. It not only helps to reduce the temperature, but by stimulating the action of the kidneys and the skin, aids in the process of elimination of the cause of the fever. In such cases as typhoid fever (see also *Brand Bath*), the cold enema should preferably be used. For not only does it cleanse the alimentary canal, but it reduces the temperature and encourages the action of the liver, kidneys and skin, all of which are most desirable results to obtain.

In cases of inflammation accompanied by great pain in the pelvic region, hot enemas are of the greatest value. The water should be at a temperature of 110 to 120. In cases of painful menstruation or ovarian difficulty or prostatic inflammation, the effect of hot water is generally immediately apparent, and, combined with the fast, is of the highest value.

In cases of threatened collapse, in typhoid fever, cholera, and yellow fever, in which life is threatened by the absorption of the poisons the disease is endeavoring to eliminate, the hot enema is of inestimable value, especially when accompanied by the fast.

The enema may be given: 1. Cold. 2. Warm. 3. Hot. And there are practically three kinds of enema that may be administered, namely: 1. The simple rectal irrigation, with cold, warm or hot water. 2. The irrigation of the large intestine which must be administered under expert direction and with great care. 3. The full enema of the large intestine.

In administering an enema, except under expert advice, one should never use anything but absolutely pure water. Soapsuds, salt, soda, or other additions should be positively

refused. They are unnecessary, as the water does the work most effectively, and there are times when these foreign substances cause unnecessary irritation and even danger.

While there is unquestionably some danger to be apprehended from the injection of too large a quantity of water, especially when used warm, the danger is practically nullified by the effects of the fast. It should be self-evident that the amount of water to be injected should be limited to the natural capacity of the patient, for any attempt to force into the body an excessive quantity of water might produce injury that would take some time to cure. It must also be remembered that the usual caution about warm water losing its efficiency because of its relaxing effects upon the system is practically nullified by fasting. But I would have it distinctly understood that I am not an advocate of too large enemas or their too frequent use.

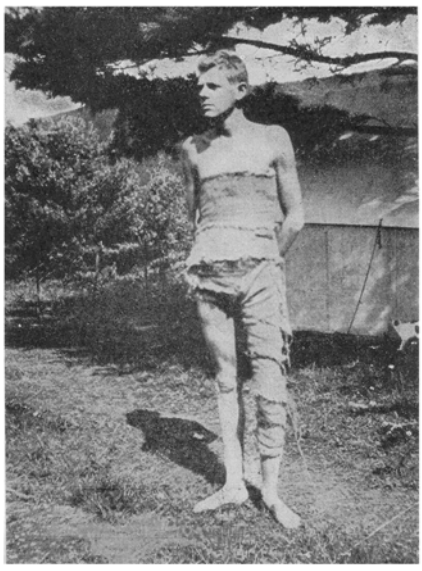
Where warm water has been used and a discharge has ensued the processes of elimination will be further aided by following it with the injection of about a pint of water from about sixty to seventy degrees which, if possible, should be retained. The effect of the cold water is to stimulate and tone up the muscular tissue of the colon, thus increasing the activity and energy of the nerve centers controlling the muscles.

*Lavage* is an irrigation of the stomach by means of a double tube, one to introduce the water from an elevated source, the other to serve as an outlet. It is of special use in cases of poisoning and extreme cases of catarrh of the stomach. It is not convenient for home treatment, however, since it requires the special apparatus. In most cases of emergency an emetic is much quicker.

THE MASSAGE DOUCHE.—This form of bath is sometimes called for where there is exceeding sensitiveness to cold, and yet the stimulating effect of the cold douche is required. The massage simultaneously with the application of cold water materially mitigates the cold effect and this bath, therefore, is found most effective in producing the desired results, and at

the same time trains the patient to a lesser susceptibility to colder applications. It is especially applicable to the back and limbs and the abdomen and where the joints are stiffened by chronic rheumatism, it is very beneficial. The kneading of the massage and the mechanical effect of the jet combine to produce results far deeper in the body than those that are produced by either when taken alone. It can be used cold, neutral or hot as the state of the patient indicates.

MUD BATHS.—This is a form of treatment to which a certain school of European hydropathic or "Nature cure" enthusiasts are much devoted, and it must be said that these mud baths have a decided value in many cases as a means of eliminating the wastes of the body and thus overcoming disease. As to whether it is really the best treatment, however, there is some doubt owing to the fact that the air is thus excluded from the body. A wet sheet pack is much more convenient, much cleaner, and probably more effective in most cases.

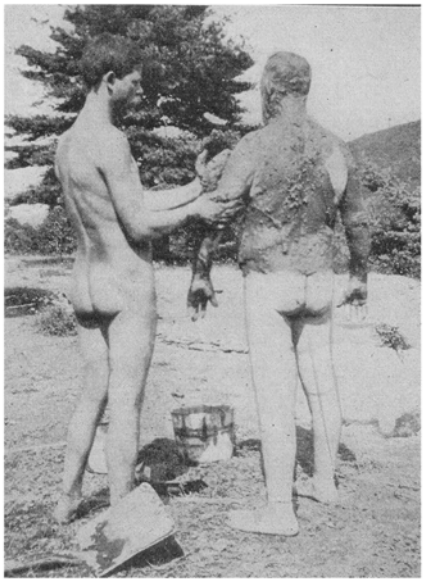


Method of applying a mud pack. First a layer of wet mud, then a bandage or wrapping of any available cloth.

Wet clay is usually used, where it can be obtained, in place of ordinary mud or wet dirt. Dry sand is also considered valuable, the idea being simply to bury the body of the patient in the ground with his head left out for the air. The sand is not nearly so effective as the wet clay or mud, although when the sand is well heated through by the sun it warms the body and stimulates perspiration. In the use of mud and wet clay baths it is absolutely essential that they be sufficiently warm

to insure the comfort of the body. Prolonged burial in cold damp earth will have the effect of chilling the body too much and greatly reducing the vitality. The treatment, therefore, is only suited to the warm summer months.

There is another important consideration to be kept in mind in the use of mud baths, or at least one which is important in many cases, and that is that the soil used should be the natural soil of a locality free from the taints of civilization. In other words, one should go far into woods where the earth is pure and not contaminated in any way. It is true that in a fit condition one need not fear this contamination, but at the same time it is just those who are so diseased and reduced in vitality as to need such special treatment who might possibly suffer from infections derived from impure soil. The slapping of mud packs upon open wounds or sores, as recommended by some of these enthusiasts, is not to be advised unless there is absolute certainty that the earth is pure. I have seen trifling wounds become dangerous through infection in this way, leading to weeks of suffering when they should have healed in a few days. On the other hand, where the skin is unbroken, local packs of mud are often very effective in relieving pain from rheumatism, strain or bruising. Yet for relieving pain in such cases, hot wet cloths (See *Fomentations*) will act far more quickly and certainly, or sometimes cold compresses, being also cleaner and more convenient.



Attendant applying damp clay to back.

NATURE BATH.—This is the name somewhat ar-

bitrarily bestowed upon a form of sitz bath much practiced by a school of Europeans. There is no good reason why this particular form of bath should be singled out for the rather pretentious title of "Nature" bath, but it unquestionably has its value in many cases. The most *natural* bath would seem to be the plunge, although the shower of a natural rain may lay claim to the same distinction. The name of *Nature Bath* was given to this form of sitz bath for the apparent reason that its originator had observed that some animals are accustomed to "wallow" or rub their abdomens in the mud of shallow water.

The method of taking this bath, accordingly, is to sit in a bath tub in cold water about three and a half inches deep, thus partly immersing the hips and the feet altogether. While sitting in this water the bather splashes the water up over the abdomen, rubbing the abdomen and the groin with the hands. It is a very satisfactory form of bath, but in many ways the regular cold sitz bath described in another paragraph, is to be preferred. In the case of the regular sitz bath the reaction is more powerful and the result more invigorating, while owing to the fact that the extremities are kept out of the cold water it is much easier to recuperate from with warmth. While this consideration may not be applicable or necessary in many or even most cases, yet it is an important one for those of poor circulation and reduced vitality. For overcoming sex weaknesses this *Nature Bath* may be commended. (See also *Cold Sitz Bath.*)

NAUHEIM BATHS.—The Nauheim bath treatment has been found very valuable in cases of heart disease and consists of a saline and carbonic acid bath. These were originally given at the Nauheim Springs, where the waters are naturally saline and gaseous. These baths act as mild irritants of the peripheral nerves, causing first contraction and secondarily dilatation of the blood vessels, first the surface and then the internal. The result, apparently, is to so diminish the strain upon the heart that it secures a degree of rest, resulting in better nutrition and increased metabolism.

They are commenced with a small percentage of salt and a very small amount of carbonic acid, first lasting eight to ten minutes and at a neutral temperature, 92 degrees to 95 degrees F. The temperature is then reduced one degree each day until 80 degrees Fahrenheit is reached, also gradually increasing the saline and gaseous strength of the bath. Artificial Nauheim baths may be administered in the patient's home, using only porcelain or wooden, never metal lined tubs, using ordinary table salt, bicarbonate of soda and a few ounces of hydrochloric acid.

These baths should not be attempted, however, except under the personal supervision of one thoroughly versed in their technique. As we shall see elsewhere, however, the heart can be benefited and strengthened by other hydrotherapeutic methods of a more simple kind.

THE NEUTRAL BATH.—This bath receives its name from the fact that it is neither hot nor cold, but warm, near (just below) the temperature of the body itself. The temperature should be from 92 to 95 degrees Fahrenheit, and the bath tub should be so filled that one can lie comfortably in it, the whole body being covered up to the chin. It is of especial advantage to those whose occupations and professions call upon them for great mental activity with very little exercise of the muscles. One may remain in this bath from fifteen minutes to two hours, as is most agreeable, and if taken just before retiring, it will be found to have a most soporific effect, often inducing sleep when every other means has failed. No harm will come from the use of this bath even though continued daily for a long period, provided the cold morning bath is used with equal regularity, and the body is well nourished. Continued immersion in this bath is advised in cases of severe burning or scalding of a large surface of the body. It is the most soothing and satisfactory treatment in such cases.

OPEN-AIR BATHING.—The various other forms of cold water bathing discussed in this chapter are only substitutes for the oldest and most natural form of bathing, which con-

sists of plunging joyfully into the generous bosom of a river, lake or sea. In temperate latitudes this is not possible at all times of the year, but this is all the more reason why we should avail ourselves of any opportunities for open-air bathing which we may have during the summer months. For the small boy there is nothing like the lure of "the old swimmin' hole," and for all those who retain any traces of their youth through their adult years there is no other physical pleasure which is quite like the robust delight of splashing and sousing oneself in the cool and refreshing open-air waters.

Happy and fortunate are those men and women who live near enough to such conveniences as to take daily advantage of them. Where proper privacy can be observed, the less clothing one can wear in these outdoor baths, the better. There is a moral and mental as well as a physical tonic effect that comes from the exposure of the whole surface of one's body to the air. While it may be necessary to restrict the use of abbreviated bathing suits at public seaside resorts, the effect is exactly the contrary where one may bathe in satisfactory seclusion. There the nearer to absolute nudity the more perfect the bath.

A happy group enjoying the pleasures of salt water bathing, the most ideal relief from the congestion and stifling summer heat of a large modern city.

Here are a few general rules which should always be observed by the sea or fresh water bather.

1. Never bathe when exhausted physically or nervously, or when the vitality is low through loss of sleep or any other cause.

2. Never bathe within an hour after or before eating a meal.

3. Where possible, enter the water quickly. The longer the sensation of shock is prolonged, the less benefit does one derive from the reaction. Get the chest and shoulders covered as speedily as possible. The best way is either to dive in or to run forward as far as possible and dive headlong into the first breaker that comes. In other words, make it a "plunge."

4. One naturally feels a chill on entering water at a temperature lower than the body. After this first chill, however, there is generally a speedy reaction. As soon as the body begins to experience a *second* chill, leave the water immediately, as the power to react after a second chill is much reduced.

*Fresh Water Bathing.* In the nature of things only a limited number of people are so situated that they can enjoy the pleasures of salt water bathing, but through the kindly provisions of Mother Nature there are few localities in which men dwell where there is not somewhere in the neighborhood a stream of water or lake. Fresh water bathing is nearly as satisfying and pleasurable as bathing in the ocean, and there are some who even prefer it. There is one advantage in the fact that fresh water bodies are usually warm enough for bathing with comfort much earlier in the summer than the sea.

The general principles which I have outlined for successful results with other forms of cold bathing may be followed in bathing in the open air. There is the same necessity for perfect recuperation and for normal warmth of the body before entering the water. When you see a group of bathers shivering and talking through chattering teeth, you may know that they are not being benefited, or that they have been in

the water too long. If you feel chilly before reaching the water, it will probably be best not to go in. Sometimes the reaction from a cold plunge will warm one through and through even in such a case, but one should be sure that this will be the case before attempting it, and it would be wise not to linger in the water after getting this reaction.

The temperature of both the water and the air are to be considered for good results and the real pleasure of the bath. If you find the plunge and the swim a source of comfort and delight, then it is good for you. But if you dread to "duck" and get wet, and if the entire bath seems a hardship, then you should either cut it short or keep out altogether. In many cases where the water is warm enough, a cold condition of the atmosphere makes it much harder to keep warm or to recuperate. Sometimes on a raw and chilly day this is sufficient to make it unwise for the delicate man or woman to take the open-air bath at all, though naturally one who is vigorous need never hesitate on any such account. As I have said elsewhere, there are some who can enjoy a dip in a lake or sea all the year round, but this cannot be advised for every one.

The colder the water, the shorter the period of time that one should remain in it. These remarks are intended for the average man and woman, as will doubtless be understood. The athlete will know his own limitations in the matter. As a rule, nearly every one, from the school-boy to the middle-aged woman at the seashore, stays in the water much too long to get the best results. One should leave it when he still feels that he could enjoy remaining there for another hour. Half an hour is plenty of time to stay in the water on a summer day when both water and air are balmy. When either the water or the air is cold, the time should be shortened. A ten-minute bath that does one good is far better than a bath of two hours that leaves one weak and trembling the rest of the day. While taking the bath or the swim it is well to stay in the water all the time until ready to dress, for exposure to the air when wet will chill you much quicker than immersion. Basking in the sun and covering with sand, which usually

"feels good," and keeps one warm, may be recommended just so long as it is enjoyed.

*Salt Water Bathing.* The salt of the seas has a certain tonic effect which is lacking in fresh water bathing, and a dip in the ocean is especially to be recommended for this reason. It is, indeed, a fairly good plan to buy a supply of sea-salt for use in the bath tub at home, in connection with the morning cold tub, if one employs this form of cold bath. The suggestions which I have offered in regard to fresh water bathing will apply here as well, although I would add that one can usually stay in the salt water a little longer, with benefit, than in the fresh water. The heat of the body is not rapidly dissipated as in the latter case. A very good plan for a swimmer, however, or for anyone who is compelled to be in the water a long time, is to have the entire body rubbed very thoroughly with olive oil. This will protect him against losing too much of the warmth of the body, and in impure waters would likewise offer protection from any contamination which might be present.

For true exhilaration, however, I would especially recommend bathing in the surf. There is nothing else so stimulating in the way of a bath. Fighting the heavy surf and being buffeted about, perhaps rolled over and over by the mighty and resistless force of a breaker, splashed and soused and tumbled about—this indeed awakens every living cell in the body, arouses a new sense of life in every fiber and seems to impart to the vital organs some of that restless power which surges in the rolling billows of the sea.

*Swimming* is a delightful form of exercise in which bathing and exercise are combined. But since it is a valuable exercise for developing the strength and symmetry of the body, and is not an essential part of bathing for the sake of health, it is taken up for discussion in another place, among outdoor sports and exercises, in Volume II. Artificial respiration is taken up in the same place.

PACKS.—See *Dry Pack, Wet Sheet Pack, Dripping Sheet, Evaporating Sheet, Hot Blanket Pack.*

PERCUSSION DOUCHE.—See *Douche.*

PLUNGE.—See *Cold Plunge.*

RECUPERATION.—As will be seen from my remarks upon the general subject of Hydrotherapy and the conditions under which cold baths are beneficial, it is the reaction from the cold water that is the important factor in the invigoration of the body. If one does not recuperate properly and perfectly, then the bath will weaken instead of strengthen. It is better not to take the bath under such conditions, but if one has already done so and finds himself, as it were, enduring a lasting chilliness, then he should adopt special measures for bringing about a satisfactory recuperation.

For this purpose it is generally best not to depend upon artificial means, like blankets warmed over the radiator, for these will probably only intensify the sense of chilliness after their immediate warmth has passed away. The only way to recuperate thoroughly and properly is to increase the natural warmth of the body itself, and this requires an improvement in the circulation. To accomplish this, the one most perfect and absolutely satisfactory method is active exercise. Do not try to regain warmth by closing up all windows, and shutting off the supply of fresh air, for the more pure air you can breathe under such circumstances, the more vitalizing oxygen you can secure, the more quickly you will regain

Massaging the chest after the bath. Massage helps materially in improving the flesh and the texture of the skin, also assisting in recuperation.

perfect warmth. It is much better if the room is cold, to keep the windows open and to put on a little more clothing so that you will not suffer from any chill in the air while you are endeavoring to regain your natural body warmth through the exercise. Rubbing, of course, is always effective, just as is any other form of massage, since it accelerates the circulation in any parts subjected to the treatment.

There are some who through anemic and nervous conditions are particularly susceptible to cold, and who find that while their exercises use up their nervous energy and give them strength, yet they do not get warm so quickly as those of more robust and full-blooded types. Sometimes, suffering from the depressing effect of an injudicious cold bath, those in this delicate condition find that they would have to exercise to the point of nervous exhaustion before they could become satisfactorily warmed through this method, at which point their over-exertion would make the situation worse than before. The greater one's weakness, the greater the difficulty in this direction. However, if one is chilled after a cold bath, it is absolutely necessary to get warm, and the sooner the better. Moderate exercise should be combined with other measures; for instance, the drinking of hot water or hot lemonade, and perhaps the addition of clothing. Mere warming the feet by external heat is scarcely satisfactory, but after enough exercise to arouse a vigorous circulation, such warming of the feet will be of advantage. When convenient, a hot foot bath, combined with wrapping up well and the drinking of hot lemonade, might be suggested if the case is serious and the person too weak to depend upon exercise. Indeed, complete immersion in a warm bath, a little above blood temperature, and continued until bodily comfort is regained, would be effective. but like the hot foot bath and other external applications of warmth, should only be used as a last resort. Wherever possible, one should depend upon internal warmth generated by exercise, breathing pure air, and perhaps vigorous rubbing. In most cases, active and prolonged rubbing with the rough bath towel will bring about perfect recuperation.

Simply remember that the one essential thing after a cold bath is warmth. Our natural instincts for comfort in this direction must not be outraged. Cold air, coming directly in contact with the unclothed body, is powerfully invigorating, but only so when the body is able to keep warm. Even a severe chilling under such circumstances will have no effect, or at most very little effect, upon one who is very strong and vital, but one of limited vitality should not voluntarily undergo prolonged shivering.

The best guide usually is to be found in the question as to whether or not the hands and feet are warm. Every one should aim to have the extremities normally warm under all conditions. You may know that the circulation is all right if the hands and feet are warm.

RUBBING. See *Wet Hand Rubbing, Wet Sheet Rub, Cold Towel Bath* and *Dry Friction Baths.*

THE RUSSIAN BATH.—The Russian bath is practically the same as the Turkish bath, except that hot vapor or mist is used instead of hot air. The Indians of North America have used this bath from time immemorial (See *Sweat Bath*), though perhaps it would be more correct to say their sweat bath is a combination of hot air and steam. A willow frame is erected and covered with skins and blankets, in which the patients sit. Several red hot rocks are placed in the sudatory until sweating is thoroughly induced. More hot rocks are put in at intervals, and then water is poured over the hot rocks and steam vapor is thus produced. The Indians generally follow this bath by a plunge and a rub down with mud, lying out in the open air, exposed to the sun's rays until the body is thoroughly cooled.

The general effects of this bath in the modern institution are about the same as the Turkish or hot air bath, though in cases where the heart is weak it is well to avoid it. In all cases of chronic rheumatism and uric acid poisoning the Russian bath is exceedingly useful. It also affords great temporary relief in cases of acute bronchial catarrh. The steam or Russian bath is not so enervating as the Turkish bath, and

can usually be taken occasionally with benefit by those who are under normal weight. There are some objections to both the Russian and Turkish baths which are referred to briefly in the discussion of the latter. (See *Turkish Baths* and *Cabinet Baths.*)

THE SALT GLOW.—For this purpose a sufficient quantity of medium fine salt is put in a bowl and covered with water. The patient is then rubbed down, beginning with the chest and proceeding over the whole body as in the *Wet Hand Rub.* The temperature of the room must be sufficiently warm, and it is well for the patient to stand in a foot tub with water at 104 to 110 degrees. The vigor of the rubbing will largely depend upon the temperament of the patient, and his feelings must be considered by the attendant. If necessary this bath can be taken either sitting or in bed, though it is better to give it when the patient is standing. The salt glow must never be given in any case of skin disease, or when it produces skin irritation.

SEA BATHING.—See *Open-Air Bathing.*

THE SHALLOW BATH.—This bath, as its name implies is taken in a tub partially filled with water. Before bath is taken the patient must be well warmed throughout either by the application of hot water bags in bed, or by a full warm bath. He then seats himself in the tub, allowing the water to cover the legs and begins a vigorous rubbing of his arms, chest and abdomen, while the attendant rubs his back and sides with both hands. This is done for twenty seconds. The attendant then dips water from the tub and dashes it upon the back of the patient for ten seconds. The rubbing is then continued for twenty seconds, after which the patient lies down while the attendant rubs the legs ten seconds. So far this bath has occupied just one minute. If the bath is to be continued for two or three minutes, the procedure is repeated as required. But it is imperative that at one minute intervals the patient shall lie down in the bath so that the whole of the body except the head is submerged, the attendant vigorously rubbing his legs in the meantime.

When this bath is used for tonic effects, the temperature of the water should be from 65 to 75 degrees and the length of the bath from one to three minutes. When it is used for the purpose of reducing temperature, the water should be from 70 degrees to 85 degrees and the duration from 6 to 15 minutes. The adjustment of the temperature is an important matter, for if it is too high, the skin is left in a pale relaxed condition. If too low, there may be inability to produce reaction and thus the tonic effects be lost.

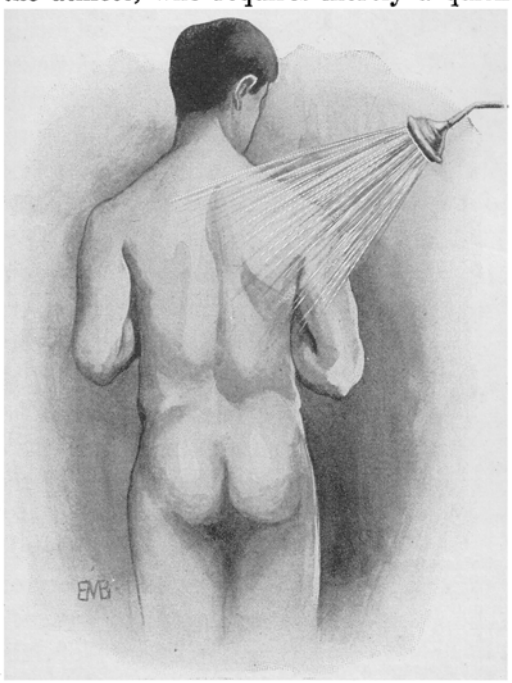
The depth of the water in the shallow bath should not be more than six inches, so that the rubbing is not interfered with.

In certain cases the effect of the bath can be enhanced if there are two attendants, one rubbing the legs and the other the sides and back. With a fairly vigorous patient, this bath may be taken alone, the effect of rubbing the back being produced by taking a cold wet towel and sawing up and down the back the length of time required. Taken in this fashion, it is a most invigorating daily bath for the healthy which can be used with good advantage instead of the cold shower or full bath.

The same kind of bath may be taken standing, the water in the foot tub being from 75 to 80 degrees. The water is poured over the spine, chest and shoulders at intervals of 15 or 20 seconds. The rubbing should be vigorous and the hands of the attendant dipped in the water.

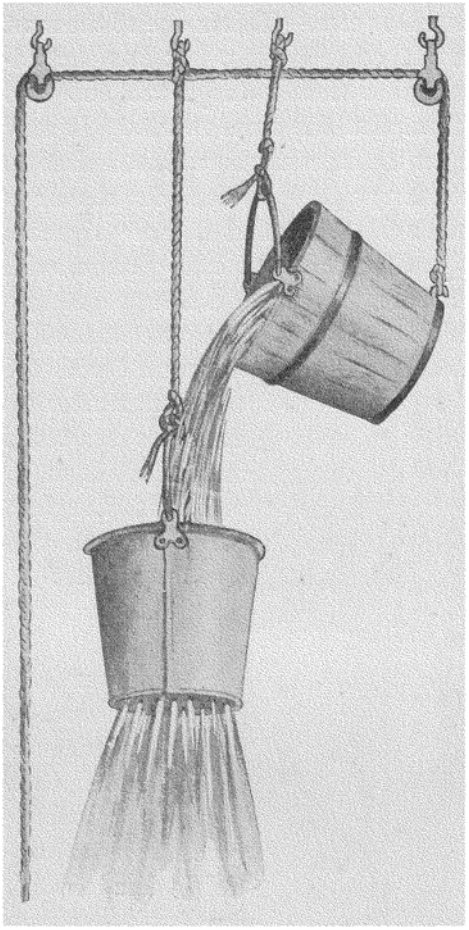
In concluding the bath a pailful of water from 60 to 65 degrees should be poured completely over the body, followed by the usual brisk rubbing and quick drying. Moderate exercise should then be indulged in, out of doors if possible, until good reaction is secured. The best time for giving this bath is when the body is thoroughly warm in the early morning after a good night's sleep. For it is essential, if this bath is to have the desired effect, that the patient's body be thoroughly warmed through before it is administered. When a douche bath can not be secured this bath can be used instead, though it is not by any means as effective.

SHOWER BATH OR RAIN DOUCHE.—This is one of the most popular of modern forms of cold bathing. It has the advantage of requiring less space than a large tub and also demands less water to accomplish the same results. It may therefore be preferred in an institution where it is desired to provide baths for a great many people. The cold shower is very exhilarating and bracing. Some find it more rigorous and more difficult to respond to than the cold plunge, with water of the same temperature, but it is quicker to get into and out of, and is altogether a most satisfying method. For the athlete, who requires merely a quick rinsing off with the cold water after his exertions on track or field, it is to be preferred, though in many cases he will do better first to rinse off with warm water.



Illustrating the use of a lateral oblique shower, one of the most satisfactory forms of the regularly installed shower or spray. It enables the bather to enjoy his shower bath without getting the hair wet, and for this reason will be much appreciated by women. Some modern bath rooms are equipped with this arrangement, but it can be installed anywhere at comparatively little expense. If placed over the ordinary bath tub, a curtain of muslin or linen may be suspended above and around in the bath tub to prevent splashing the rest of the room. It is not necessary to go to the expense of rubber sheeting for this purpose. A bath mat could advantageously be used to prevent slipping on the porcelain bottom of the tub. Slipping in a tub is dangerous.

The shower bath is so universally known as scarcely to need explanation. The water is conveyed to a perforated disc which breaks up a column of water into a number of fine streams which descend like rain, hence the name. The same effect may be produced by a movable hand jet and it is then called the *hand spray.*



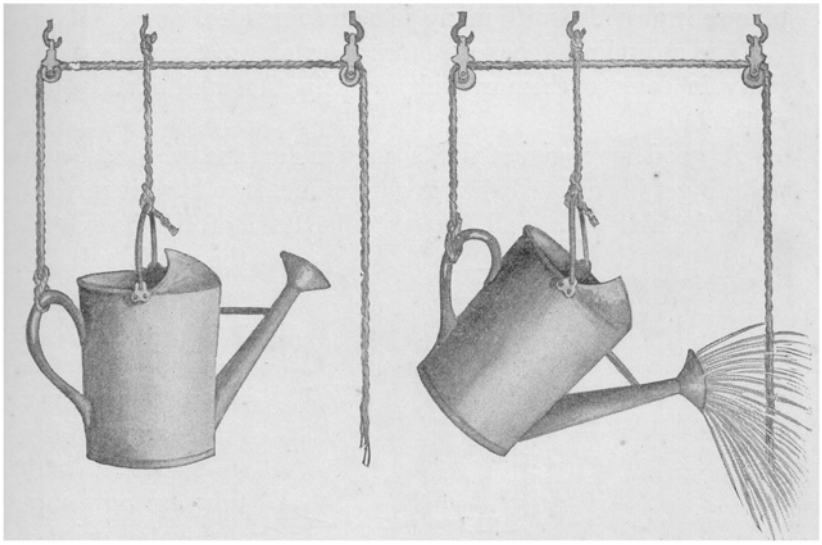
This is probably the most satisfactory and simple of all home-made shower baths, constructed by means of a couple of pails. The bottom of one pail is punctured with a small nail in many places, to provide the spray or shower. Another pail is suspended just above and a little to one side, as in the illustration, this being filled with the water for the bath. Another cord or light rope is fastened to one side of this upper pail, close to the bottom, either by means of a hook or screw eye in the case of a wooden pail, or by a band around the pail, close to the bottom if it is made of sheet metal. This passes up over a couple of pulleys and then conveniently down to the hand of the bather. One pulley or even a hook would answer if necessary, but the two pulleys, as illustrated, work better. By using a second upper pail, one on each side of the lower pail, it will be possible to have a warm shower first and a cold shower immediately following, by filling one pail with cold and the other with warm water of the desired temperature. See description of illustration of the "garden sprinkler" shower for suggestions in regard to drainage of water.

The same general principles apply in the use of the shower bath as to the use of the horizontal douche. The quantity of water falling at each instant and the amount of surface exposed to contact with the water being greater, it is a somewhat more vigorous form of cold treatment than the horizontal jet; yet, the pressure being less, the reaction is less prompt, so that in cases of low vitality, all necessary precaution must be taken to insure perfect reaction.

The shower disc should not be placed more than two or three feet above the head of the patient. The cold shower falling upon the most highly sensitive portions of the skin causes a tremendous rush of nervous impulses toward the spine and brain. The result is a number of reflex actions are powerfully set up. The

first effect is almost to inhibit the powers of breathing. The heart is powerfully excited, the blood pressure raised and the brain and nervous system are greatly aroused. Except in cases of vigorous vitality, it is well to begin the shower bath by first allowing the water to fall upon the feet, holding first one foot and then the other to receive the falling water, then the hands, arms, shoulders, and back should be exposed, and finally the chest and abdomen. In cases of low vitality, the head should always be covered with a thick towel or a rubber cap, but this is not necessary where the shower is used as a tonic measure for those of vigorous health. It is well to keep in active motion during the continuation of the shower which should never last more than from one to three minutes. It is well to rub the chest vigorously.

In many cases it is well to precede the cold shower by a hot



Showing how a capital shower bath may be improvised by means of an ordinary garden sprinkling can. The top handle should be suspended on a rope, with another cord or rope, fastened to the side or back handle, passing up over a couple of pulleys and down to the hand of the bather. This makes a good outdoor shower if one has a secluded place in the back yard of a country home. If in the house, provision should be made for catching the shower either in a bath tub or ordinary tub. In this case a curtain made of ordinary muslin may be suspended from strings stretched across the room, or from a large ring suspended horizontally, in order to confine the shower and splash, and prevent wetting the rest of the room. In the ordinary bath tub it is well to have a bath mat to prevent slipping, for the bottom of a porcelain tub is sometimes so slippery as to be dangerous. If one has a porch that can be satisfactorily screened in, temporarily, this would be an excellent place for such an improvised shower, sweeping the water off the porch afterward and also making the porch refreshingly clean at the same time.

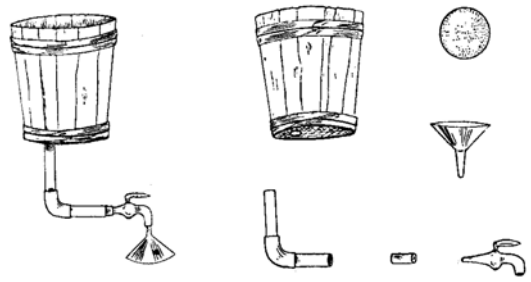
one and the quicker the change is made from hot to cold the more effective the reaction. The hot shower at a temperature from 100 to 112 degrees is sometimes beneficial where it is necessary to excite the heart's action. The neutral shower has somewhat the same effect as the neutral bath, but the effect is produced somewhat quicker.

Those who are feeble and of low vitality should never attempt to use the cold shower bath except under skilled advice. Its habitual use, however, by boys and girls, young men and women and adults as a daily hygienic measure for preserving and increasing the vital force is highly commended, but it should always be taken rapidly and the body should be perfectly dried and clothed as soon as possible after the bath.

The horizontal rain douche or spray can often be used to good advantage, and in many establishments this special appliance is provided with many jets on four sides.

The ascending douche is oftentimes of great service, especially in cases of hemorrhoids, constipation and rectal difficulties.

A good arrangement of a shower for one who does not wish to get his or her hair wet every time, is to have it project from the side of a wall at about the level of the neck, and the neck of the nozzle or spray bent downward at an angle of forty-five degrees, or a little more. Many up-to-date bath tubs are now supplemented with a shower apparatus, arranged to use either hot or cold water, or medium, the tub itself serving as a drain, and



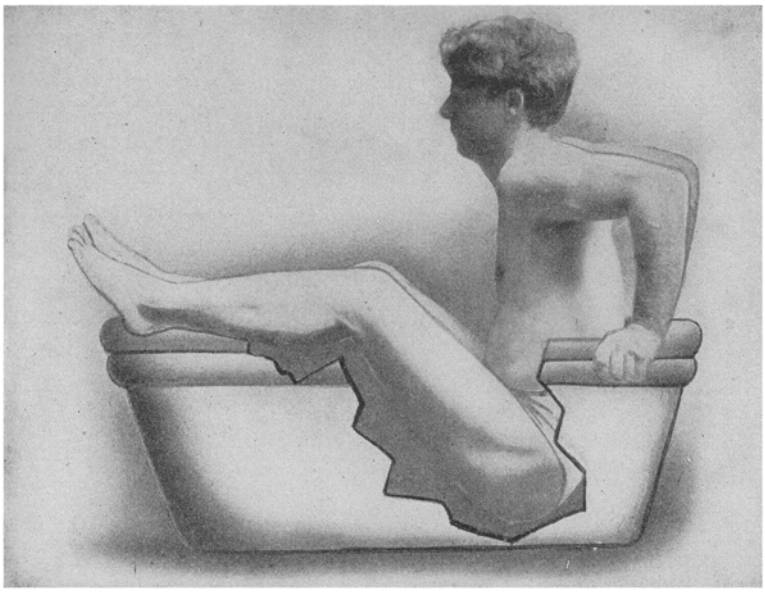
A convenient home-made shower bath may be made with the aid of a wooden tub; a lard or butter tub is preferable. Secure two pieces of 1 1-2 inch iron pipe and an iron elbow. Next make a plug of soft fine wood and drive it into one of the pieces of pipe. Then bore a hole in plug large enough to admit an ordinary brass faucet. Purchase a large tin funnel. Cut a piece of tin the size of the top of the funnel and punch it full of holes, then soldering the same on to the top of the funnel. Next solder the funnel into the faucet. Now the entire faucet must be attached to the tub, which has a hole bored through the bottom for the purpose. After filling the tub the shower is obtained by simply turning on the faucet.

a circular curtain hung from a large ring above prevents any splash outside of the tub.

A home-made shower is a very simple thing to devise, for those who live in country houses not provided with modern bathing conveniences. A common garden sprinkler will do fairly well, suspended overhead, and tipped when ready by means of a cord tied to the bottom and passing up over a pulley and then down to the hand of the bather.

*Cold Hand Spray.*—The suggestion given elsewhere for a *cold sponge* with a *hot foot bath* can be advantageously applied to the cold hand spray. After a warm bath with soap it is a good plan to spray the body quickly with the cold water while the feet are still in the warm water.

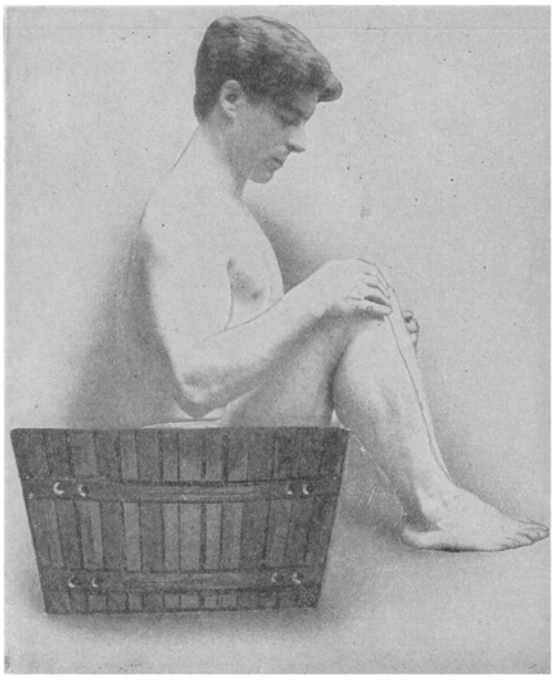
THE SITZ BATH.—This is one of the oldest and most serviceable of hydro-therapeutic measures. Many homes are



Illustrating manner in which a sitz bath may be taken in an ordinary bath tub. One must be sufficiently strong to be able to lower and raise the body with the arms in order to employ this method, the feet being kept out of the water by placing them upon one end of the tub. It is also possible for those of limited strength and less recuperative power to take a warm foot bath simultaneously in a large bath tub, by simply placing the small foot tub or pail full of the warm water into one end of the large tub containing the cold water. Naturally, in this case, the cold water must not be of sufficient depth, even with hips submerged, to overflow into the small foot tub.

now equipped with the sitz bath tub in the bathroom, but where such an appliance is not established and its use is needed an ordinary wash tub or a regular bath tub may be used, or a movable zinc sitz bath tub may be obtained at any first-class hardware store. The tub should allow of water deep enough to cover the navel, and where possible one should have an abundant supply of hot and cold water. The temperature of the sitz bath may be adjusted to whatever is required. In the regular bath tub the feet may be placed up on one end or may rest on the sides, while the body is lowered by the arms until the hips rest on the bottom. The feet are excluded.

*Sitz Bath, Cold.*—It is seldom that the temperature of this bath is required lower than from 55 to 60 degrees, and the time should be from one to fifteen minutes. The cold sitz bath, however, should never be taken by weak patients unless the feet are in hot water in another pan or foot bath. The effect of this bath is invigorating in the extreme, especially to the spine, the brain and the organs of generation. As a tonic measure in cases of healthy men and women its daily use is highly advantageous. When

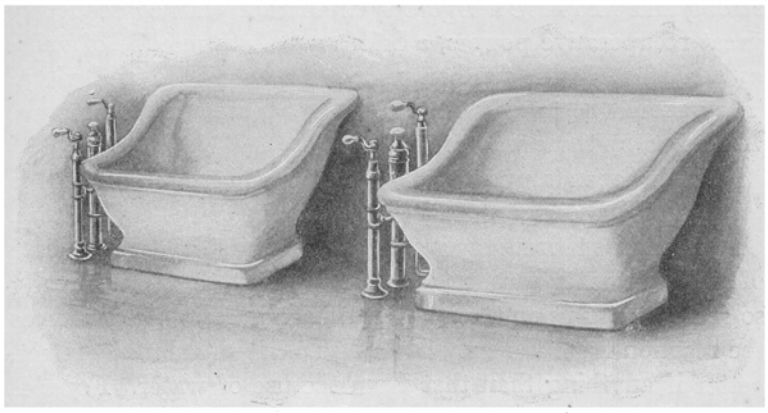


A home-made sitz bath, showing how it may be improvised through the use of an ordinary small wash tub. In many cases it will be better to elevate the back of the tub a few inches which will also require less water. This will likewise offer greater comfort to those whose legs are short.

suitable clothing is worn it can be taken without undressing. Unfortunately our modern dress for women would require that they entirely disrobe for the sitz bath. But man's costume allows him to take the bath without this inconvenience, so that it can be self-administered at noon, which is perhaps the best time for the cold sitz. The effect is tonic to a high degree, and unless it is taken for too prolonged a period is always beneficial.

When a sedative effect is desired a tepid sitz bath, with the water from 70 to 80 degrees, should be administered, and one may sit in this bath for from ten to twenty minutes, as desired. There are times when the flowing cold sitz is advisable. In this case the flow of cold water should be allowed to come in sufficiently to preserve the required temperature of the bath, as otherwise, the longer one remains in the cold sitz, the higher the temperature of the water becomes, on account of the abstraction of heat from the body. There are some rare cases in which a prolonged cold sitz bath is indicated, but this should be taken only under expert advice.

After being in the bath long enough, one may, if he has great recuperative powers, splash over the entire body quickly with the cold water, or may even take a quick plunge in the



Two tubs side by side, for taking alternate hot and cold sitz baths; a wonderfully effective procedure in many cases. The illustration shows the special type of sitz bath made and sold for the purpose, though one can also improvise the bath with an ordinary wash tub, as indicated in another illustration. In taking the single cold sitz bath it is often desirable to use the hot foot bath at the same time, in which case a small foot bath tub may be placed just in front.

tub, if a large tub is used. This is not an essential part of the cold sitz bath, however, and may be regarded as merely supplementary, when it is desirable. (See also *Nature Bath.*)

Hot sitz baths also are invaluable for many purposes, relaxing, relieving pain and inflammation, and remarkably accelerating the circulation locally.

THE SITZ BATH, REVULSIVE OR ALTERNATE HOT AND COLD.—This, as its name implies, requires two sitz bath tubs; one is filled with cold water and the other with hot water (115 to 120 degrees). The patient first sits in the hot water for from three to eight minutes, then he changes to the cold bath, sitting there for a period varying from a few seconds to a minute or more; after which he returns to the hot bath, the temperature of which should be re-established by the addition of more hot water. Three or four changes may be taken, according to the requirements of the case.

SNOW BATHS.—In referring to snow baths I do not wish it understood that I would recommend their general practice for the average man or woman, for in many cases it is much better to sound a warning against such extreme measures. They are better as a means of testing one's condition than as a means of improving it. However, for those who are already strong and who have a vigorous circulation, with consequently great recuperative powers, a brief snow bath may be of value as a means of still further promoting hardihood and vigor. They should be taken with caution by those who are strong, and never by those who are not.

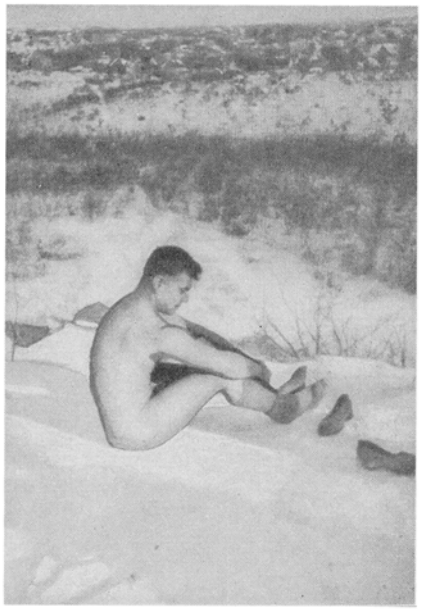
Much depends upon the manner in which a snow bath is taken, and especially upon the temperature of the atmosphere. One should be thoroughly warm before taking it, as in the case of any cold water bath, and it may be said that it is not really so severe a tax upon the body as a bath in ice water, whereas the reaction from the snow is the most delightful and perfect, better if anything than that from the use of water. For this reason I would often recommend local packing with snow when it is available instead of with cold wet cloths.

The trouble with snow baths in many cases is that the

enthusiast ventures out-of-doors unclothed in an atmosphere perhaps forty degrees or more colder than the snow. When the thermometer indicates that the temperature is below zero, Fahrenheit, it is the cold air and not the snow that so severely taxes the vital energy and heat of the body. One should not attempt a snow bath under such conditions unless he is phenomenally powerful. If the snow bath is taken in a fairly comfortable atmosphere, however, it will be greatly enjoyed by those physically fit for it. Prolonged exposure is not to be desired. The essential health-building factor is the reaction, and having accomplished this one should not linger to reduce the heat of the body and its vitality. It is best to lie down in the snow and quickly cover the body, or to roll over in it.

For true health-building purposes it would be best to bring a large quantity of snow into a reasonably warm bathroom. There is nothing I could more highly recommend than a sitz bath in snow, in a warm room, for this will not prove any special drain upon the vitality even of one who is not very strong.

For building vigor of the pelvic organs this snow sitz bath cannot be surpassed, though it should not be continued too long. The reader will of course understand in all such cases that the limits of comfort and pleasure are not to be transcended, and



A morning toilet a la North Pole, guaranteed to wake one up. The use of snow is splendid for a rubbing bath, but is best applied for this purpose, and for the average man, in a warm room. For the outdoor snow bath the better method is to lie down in the snow drift and roll in it for a few moments only.

if snow bathing is a hardship or punishment, it should be strictly eschewed.

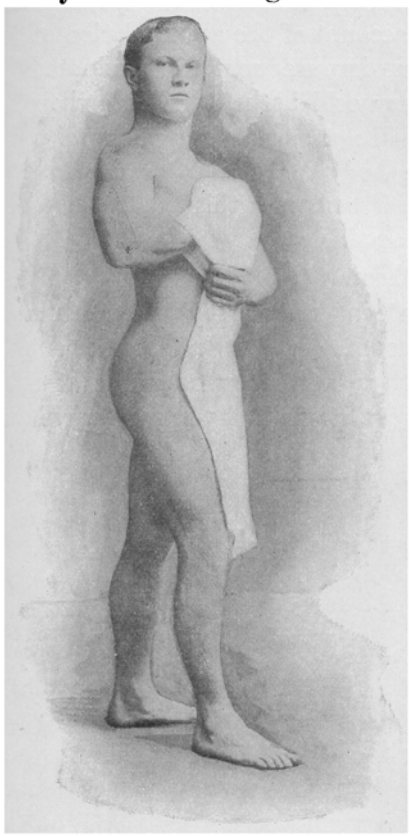
A snow bath, or snow rub, which corresponds with a sponge bath or splash, may especially be recommended for the average man or woman, as a substitute for a cold water bath. Simply take a handful of snow in each hand, and rub briskly over all parts of the body. We all remember how we have involuntarily had our faces washed with snow in the course of play when we were children, and we recall the exhilaration which we could not help but feel in spite of our unwillingness to be subjected to such undignified treatment. In washing the entire body with snow we may get the same effect constitutionally, waking up every inch of the surface of the body and stimulating the activity of every one of the three million or more pores of the skin. It is well worth trying when there is snow to be had, though one should use the same care as in cold water bathing.

SOAP AND ITS USES.—For cleansing a truly dirty skin, soap may be regarded as a necessity, though it is important to use some care in regard to the kind of soap employed, and to know that it is easily possible to use too much even of the most perfect and satisfactory kind. I must say that, as a general thing, soap is more valuable for cleaning dirty floors and soiled clothing than the human epidermis, though where there is visible dirt or unquestionable forms of contamination, the use of a pure vegetable soap is essential.

One reason why the skin is such a smooth and flexible fabric, with such splendid resistant powers, is to be found in the protection afforded it by its waterproof coating of natural, delicate oils. The removal of too much of this oily substance is a great disadvantage, and for this reason soap should be used moderately. The alkali of soap takes away this oil along with the other dirt leaving the surface dry and harsh. The result is likely to be tiny cracks into which the dirt works its way and stays. Naturally, more soap and energetic scrubbing are required to get the dirt out of these cracks, but this again only makes the skin more dry than before, deepens the cracks, and the condition gets worse and worse. When once the skin gets

badly chapped it is with some difficulty that it is brought back to its normal state, particularly if the excess use of soap is continued, though Nature will attend to this if left alone. The rubbing in of olive oil or other wholesome fats will relieve the situation. A few drops of fresh, sweet cream would answer.

One should avoid all soaps made of animal fats. A pure castile soap is probably the best, though, as I have said, even this should be used moderately. We must not forget that a great deal depends upon the character of the skin, for some are so much tougher than others, so much more leathery, that they can endure a good deal of abuse in the way of strong soaps. There are some skins which protect themselves much more effectively against such abuse by secreting a far greater quantity of the natural oils than others. It is they who are happy in the possession of such a robust outer covering who are most accustomed to say, and with the utmost conviction and assurance, that "plenty of good soap and water never hurt anybody!" Some skins, however, are so delicate and sensitive that the use even of a little soap results in a dryness and irritation that means real suffering. The possessor of such a tender scarf-skin, after a bath in which soap has been used freely, will experience a smarting and itching which upsets the entire nervous system, interferes with sleep and accomplishes a



A very satisfactory way of taking a cold "sponge" or towel bath in one's bedroom, where there is no means of draining water, and where splashing would not be desired.

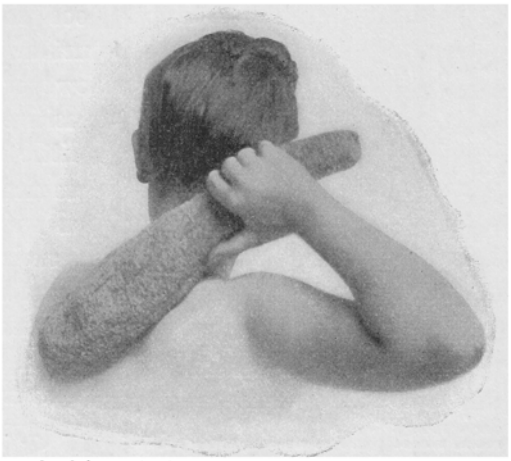
measure of harm which is far greater than any good which might have been secured by the cleansing qualities of the bath.

Those having such skins should use only the faintest suggestion of pure castile, if any, and should take special pains in rinsing with cold water, afterwards drying very thoroughly. In such cases I would really advise the use of no soap at all, but to substitute oatmeal or rolled oats, which will be found very cleansing and free from any injurious effects.

Under no circumstances would I recommend the use of soap every day in bathing. But for those whose skins are not so delicate, the use of castile soap in warm baths perhaps twice a week is to be desired on account of the accumulation of stale perspiration and various impure matter eliminated through the pores. The ordinary cold baths, taken for their tonic and invigorating effects, will not answer this purpose.

One good way to keep the body clean is to arouse free perspiration through exercise, and then wash this off, rubbing with the hands, even without soap.

THE SPONGE OR TOWEL BATH. (*For Patients.*)—This bath for patients is taken in practically the same way as the wet hand rub, though if possible the patient should stand in a foot tub with a sufficiency of water at a temperature of 104 to 110 degrees. In this bath, however, it is not necessary to dry each part of the body before proceeding to the next. Sponge over the whole surface with plenty of water at from 60 to 70 degrees, and see that there is always a sufficiency of water in the sponge. After the general sponging throw a dry sheet



Applying a bath sponge to the back and shoulders.

over the patient, then let him hold each foot alternately over a foot tub while cold water is poured over it. If the patient is able to take moderate exercise after this bath it is advisable that he do so; if not the attendant should rub his body until reaction sets in.

When the patient is unable to take this bath standing, a rubber blanket should be placed beneath him on the bed, so arranged that the water may drain without wetting the bed clothes.

The temperature of this bath varies according to the effect desired. If needed to reduce fever it should be cold. Its use is exceedingly advantageous in slight cases of fever, in feeble patients or children, and is also capable of self-application. (See also *Cold Sponge in Health.*)

SPRAY, HAND SPRAY.—See *Shower Bath.*

SPLASH BATH.—See *Splash, Cold* and *Splash Hot.*

SPONGE BATH.—See *Cold Sponge.*

SUN BATHS.—When we realize that the sun is the source of all energy and life upon the earth it is not surprising that its rays should be of such great value in vitalizing the human body and building health. Without the sun the earth would be infinitely colder than any ice chest; it would be even colder everywhere than it now is at the North Pole, and life of any kind would be impossible. Without the sun, the atmospheric vapors would not rise, and there could be no rain. No plants could grow, no sheltering trees, no fruits, not even a blade of grass, and animal life could never have commenced.

One can readily demonstrate the importance of the direct rays of the sun in the growth and condition of vegetation. Suppose that you supply air, warmth and moisture, all these really depending primarily upon the beneficence of the sun, in an experiment with a plot of grass, but contrive to shut out the light, you will soon see the result. The grass may grow, but will lose its color and its strength, and in time will cease to grow. The experiment can be best made with two plots of grass side by side, one covered and the other exposed to the light. But yet thousands of human beings avoid the sun day

after day and week after week, and then wonder why they are pale and lacking in energy. The pallor of the city dweller is a distinctive characteristic as compared with the ruddy complexion and virile blood of the country people.

The power of sunlight is shown very clearly in the chemical processes of photography. But it is made even more emphatic in our personal experience with sunburns, when our unaccustomed and usually sheltered skins are exposed for too long a time to the direct and nearly vertical rays of the sun. For this reason one should be careful not to overdo the practice of taking sun baths in the beginning. They are very energizing and effective, but they must not be carried too far. In a general way, I would advise those with very light complexions to be very careful in this respect. The coloring pigment of the skin serves as a protection against the harsher rays of the sun, and dark complexioned people can endure a great deal of sunshine for this reason. The aboriginal races of the tropics are all dark skinned, and some of them actually black. There is nothing to be feared from the rays of the sun in the early

Take all the sunshine that you can—but in reason.

morning or late evening, and not much in the winter time, when they are far from vertical; but in the noonday sun of summer I would not advise a sun bath of more than ten or fifteen minutes' duration to start with. With some very light skins this would better be cut down to five minutes at first. To overdo it suddenly will occasionally result in headaches and a marked sense of weakness. Follow your instinct in this matter, and so long as the sun "feels good," warm, balmy and gratifying, it will do you good, short of sufficient exposure to cause sunburn. But if it begins to feel oppressive and weakening, do not remain in the sun because anyone tells you it is good for you. Take only a few minutes of it at a time and take another few minutes the next day. As you gradually become tanned, the increased pigment in the skin will protect against the harsh rays so that you can benefit more from the others. Cases of low vitality should keep the head covered.

Clothing should as much as possible permit the light of the sun to penetrate, and for this reason light colored fabrics should be used as much as possible. Though white is not usually very serviceable, yet a light tan or gray will answer just about as well, and are among the most serviceable of all colors. Black is almost insufferable in summer. It absorbs the heat but shuts out the light. Light colored fabrics, on the other hand, seem to reflect or minimize the heat and allow the light to penetrate to the body.

Investigators have come to the conclusion that orange colored cloth will protect the body against the destructive rays of the sun, without interfering with those which are favorable to the welfare of the body, just as red and orange colored glasses will protect photographic chemicals. It is probable that it is only the excessive strength of the destructive rays, that makes them harmful. In moderation, even they may be beneficial. However, a few years ago experiments were made with orange-colored underwear for the United States Army in the Philippines, to test this point. I do not know the outcome of these experiments, but it is very evident that the khaki uniforms now used are a great improvement over the heavy dark blue.

Sunshine is a germicide and disinfectant, as well as a vitalizing influence for the body. Its value in both respects is now well recognized in nearly all large sanitariums and hospitals, for they invariably provide sun parlors and conservatories where patients may get the benefits of this form of treatment.

THE SWEAT BATH.—The sweat bath has been used by aboriginal men from time immemorial. To this day its use is regarded as a religious act and required weekly by many tribes of North America. The songs sung during its progress indicate the belief of the Indians that it was instituted by their good god for their benefit. In northern Russia and in Finland, almost every house has its own sweat-bath. This is a room where the bathers assemble and in which hot steam is produced by pouring water upon red-hot rocks. The rocks are brought in, in three or four relays, so that the heat is not only kept up, but increases, as the bath continues, until the bathers are dripping with perspiration and their whole bodies are thoroughly heated. They then rush out and either jump into cold water or roll in the snow, thus producing the most vigorous and healthful reaction.

All people of a sedentary occupation or who for any reason lack opportunities for, or fail to take, sufficient exercise, should take a sweat bath at least once a week. The effect of the moist heat upon the sebaceous glands is to soften all the products of elimination that have accumulated there and at the same time to dilate the surface blood vessels to their utmost extent. This not only promotes the removal of waste excrementitious matter, but by calling the blood to the surface relieves inward congestion. As soon as the surface of the body is cleansed, the cold application should take place. This immediately causes a vigorous inrush of blood to all the interior vessels, thus stimulating all the inward functions and increasing their healthful vigor by the flux backwards and forwards between the exterior and interior of the body.

It also stimulates the nutritive processes and invigorates the nervous system so that the appetite and powers of assimilation are improved. Powers of resistance are also increased,

thus making the body better able to withstand the encroachments of disease. The sweat bath should never be taken until an hour and a half has elapsed after a meal. The better time, however, is just before retiring, though it is well, if possible, to take a fifteen or twenty minute walk in the open air, or a little not too vigorous exercise just after the bath and before retiring. (See also *Cabinet Baths, Russian Baths* and *Turkish Baths.*)

THE SWIMMING TANK.—If water in a swimming tank is cold enough, without being too cold, the tonic effect of the water is added to by the invigorating and healthful exercise incident to swimming. There are few recreations that have such a beneficial effect upon the muscles of the chest, lungs and back as has swimming. Where possible, it is always best to dive or jump into the water rather than to enter it slowly feet first. Care, however, should be exercised not to remain long, as the reduced temperature of the water causes the heart to work violently to bring the blood to the surface of the body, and while the latter condition is one of the desired effects of the cold bath, if prolonged to too great an extent, it produces weakness instead of renewed energy. (See *Open-Air Bathing.*)

SWIMMING.—See *Open-Air Bathing.*

TEPID BATHS.—Tepid baths are mildly cleansing and refreshing. Apart from curative measures they are to be recommended in those cases where one is too delicate to take either cold or cool baths, and as a rule are best taken in the form of a sponge. As a form of treatment this subject is covered in the discussion of the *Neutral Bath,* which see. (See *Cold Sponge Baths.*)

TOWEL.—See *Cold Towel Bath, Sponge or Towel, Wet Towel Spank Bath.*

TUB BATH.—See *Cold Plunge, Neutral Bath* and *Hot Bath.*

THE TURKISH BATH.—This bath is similar to the hot air bath, but differs from it in that it encloses the whole body, and as administered by the Turks in Constantinople and through-

out all large cities in the civilized world, is accompanied by friction, massage and shampooing. Necessarily it can only be given in an establishment that is equipped for the purpose. The nude patient enters the hot room (120-140 degrees F., having previously drunk freely of hot or cold water), where he remains for ten or fifteen minutes. The attendant rubs the surface of the body to excite skin action and induce perspiration. He then enters the second department, which is much hotter than the first, from 150 degrees to 190 degrees and after thoroughly perspiring he goes to the shampoo room where, lying upon a slab, he is rubbed down by certain peculiar motions for the purpose of arousing and removing the dead cuticle and all eliminative matter which has accumulated in the subcutaneous glands. He is then shampooed with soap and water, by the aid of a shampoo brush, after which a douche is administered, beginning with a warm shower of about 105 degrees. When well heated the hot water is turned off and cold administered, after which he may enter the plunge bath and swim for a minute or so if he desires. He is then quickly dried, rubbed vigorously, and then reclines for fifteen to twenty minutes, covered merely with a dry sheet, in the cooling room. Dressing is not advised until the pulse has become normal, and the skin is cool and dry. The benefits of this bath and its use are too well known to need any extended comment.

But it is well to know that there is a great possibility of abusing the Turkish bath by its over-use. In fact if it does not seem to bring proper reaction with a material increase in energy it should not be taken. In many cases where below normal weight it is productive of harm.

In short, these baths may be recommended as a means of elimination if one is so situated that he cannot do better. They are used a great deal to get rid of the effects of excessive alcoholic indulgence and other forms of dissipation. They are used by a great many men as a substitute for healthful exercise and outdoor living. After being clogged up with wastes through their negligent habits they go to a Turkish bath and do what they can to sweat out the results of their inactivity

or misbehavior. The worst thing about them is the foul air, for the hot air rooms are nearly air tight and sometimes have practically no ventilation from one day to another. This fact, in many cases, is enough to undo any benefit to be derived from them, and has been responsible for many colds and other diseases contracted in these places. If the ventilation of the rooms could be properly attended to, then these baths could be highly recommended for many purposes. These same objections apply, perhaps even to a greater degree, to the Russian Bath. In both cases, one should insist upon a clean individual brush in the scrubbing process, for otherwise he suffers the possibility of being infected with some disease. The origin of cases of syphilis has in a few instances been traced to the promiscuous and careless use of such brushes in Turkish and Russian Baths. [See also *Russian Bath and Cabinet Baths.*]

THE VAPOR BATH.—The effects of the Russian Bath may be produced in a moderate way by means of the Vapor Bath in a cabinet. A number of home appliances have been designed for the use of this bath, which simply consists of a moveable cabinet in which the patient takes his seat. Under his chair or stool a basin is placed over a small gas, alcohol or kerosene stove. The basin should be as large as possible so as to allow the quick boiling of the water and the rapid production of steam. Its use is valuable in all cases where the sweating process is desired. (See *Hot Air Cabinet Bath.*)

WARM CLEANSING BATH.—This warm bath, with soap, which we may frankly call an old-fashioned wash, really has nothing to do with the various forms of cold bathing intended for their constitutional and stimulating effects. This warm bath is not a tonic, but a cleansing agency, and as such is important in preserving the activity of the skin, which I have already referred to briefly in the paragraphs on the *Advantages of Bathing* in this chapter.

Cold water is only slightly cleansing. Cold baths are not intended for this purpose, and while they may remove some of the heavy dirt, yet they will not affect the more serious accumulations of grease and fine dirt which alone are capable

of clogging up the pores. For this purpose, soap and warm water are necessary. [See *Soap and Its Uses* this chapter.] A hot bath is not necessary for this purpose, but warm water may be used, very little above the normal blood temperature. As a general thing it is best not to remain in the bath more than ten minutes, and to rinse off quickly with a spray or sponging with cold or cool water afterwards, before stepping out of the tub. In country places where no bath tub is available an ordinary circular wash tub is often used, heating the water for the purpose on the kitchen stove. But if even this wash tub is not convenient, one may at least take a warm sponge bath with soap, washing a part at a time and finally rinsing thoroughly with a sponging with clean water. A warm cleansing bath may also be taken very conveniently with a warm shower.

The frequency with which this warm cleansing bath should be used will depend upon the individual, though as a general thing I would suggest twice a week. It should preferably be taken before going to bed. In some cases once a week would be a better plan, particularly where the skin is very sensitive and does not so readily recover from the use of soap. To maintain the most perfect cleanliness one might even take such a bath every day, but this would mean an excessive and detrimental use of soap, and for practical purposes the twice a week plan is quite satisfactory. However, it is of course desirable to wash daily those parts which perspire most profusely, and which are less exposed to the air, such as the armpits, the feet, etc.

Occasionally we hear of some one who advocates that we avoid bathing entirely on the ground that the skin is self cleansing and the bath an interference with its natural action in this respect. As I have already said, the scale-like cells of the scarf-skin gradually rub off and take the dirt with them, especially in a state of nature where the skin is exposed. But the use of clothing, even such clothing as many savages themselves wear, materially interferes with this process, whereas on the other hand proper bathing will greatly help

the skin in this direction. And certainly most of us do not desire to carry around with us any accumulations of stale perspiration, nor to permit our persons to become offensive to our fellows. We are not much interested in disease germs, as the reader has found in another part of this work, being concerned rather with the vital resistance of the body in making itself proof against them, but as far as these germs are concerned, we have no desire to make ourselves particularly attractive to them through our external uncleanliness, or to make our epidermis a breeding ground. And in warm weather, we prefer not to have the surface of our bodies in such a condition as to attract the flies, mosquitoes and other insects and vermin. And for these reasons the most of us will continue to bathe, using the bath not as an interference with the natural self-cleansing action of the skin, but as a help.

WET HAND RUBBING.—*General Instructions for Certain Baths Where the Entire Surface of the Body Is to be Reached by Rubbing, etc.*—There are several forms of bath in which it is found advisable to rub the patient down either with the wet hand, a sponge, or a towel, beginning with the face and then continuing over the whole body. As the procedure in all these baths is practically the same, the general method will here be indicated.

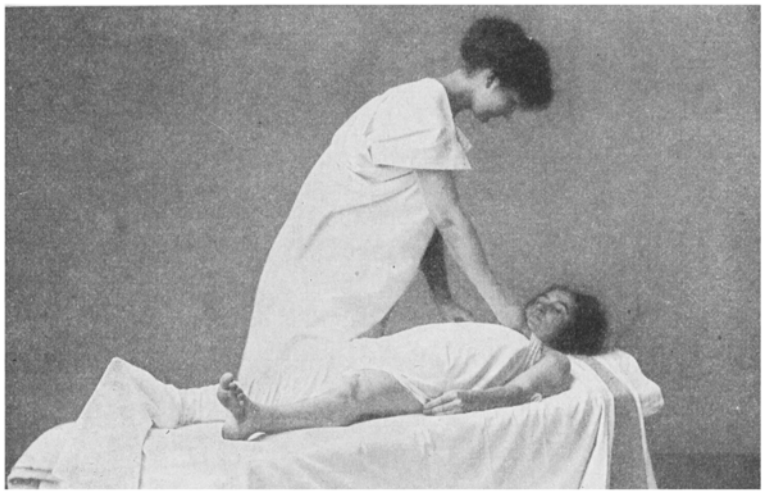
Suppose that the bath is to be given by wet hand rubbing. The patient lies down upon the couch on his back. The attendant dips his hands in the water and applies them to the forehead of the patient, one hand covering one side and the other, the other. He rubs from the center of the forehead, over the temples and down the cheek around under the chin, in a sort of semi-circle, repeating the movement from six to eight times. Women who do not desire to have their hair wet should have a Turkish towel wrapped around their heads and ears; but with men it is well to shampoo the head with the wet fingers. Now rub the upper part of the chest vigorously, then the sides and then the abdomen. In rubbing the abdomen, first bring one hand across from side to side, rubbing vigorously with considerable pressure; immediately followed with the

other hand. Rub thus transversely over the whole abdominal surface three to six times, then follow with a circular motion following the course of the colon.

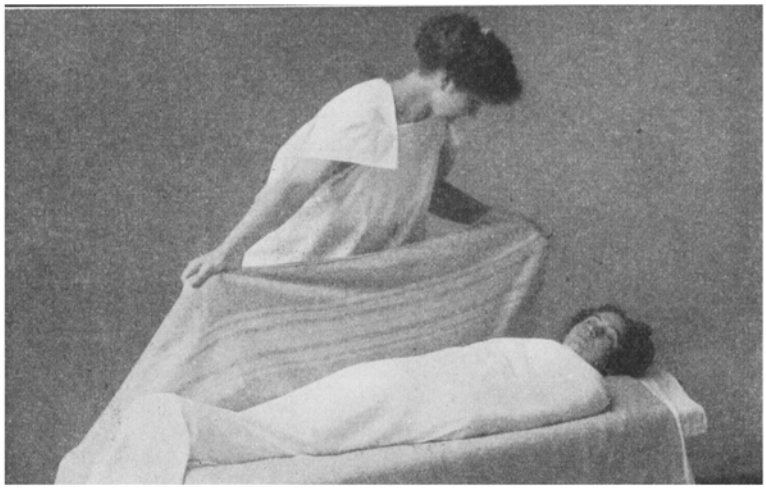
Dry each part quickly before going to the other. Rub until the skin becomes red. Now the arms are taken one after the other. If the patient is strong enough to hold up his own arm firmly, the attendant may use both hands for rubbing. Otherwise he must hold the arm with one hand and rub with the other. Begin at the shoulders and rub vigorously down to the wrist, seeing that the whole arm is covered. After drying the arm by vigorous rubbing with a towel until good reaction is induced, give the hand a vigorous rub, the attendant constantly dipping his hands in the water, and finishing by administering three or four sharp slaps upon the palm of the patient with his own hand.

The thighs are next treated, rubbing with both hands downwards, one only being uncovered at a time; then the legs and feet, slapping the soles three or four times vigorously. The patient now turns and lies face downward, resting his forehead upon his folded arms. The neck should first receive careful attention, being well rubbed with the hands around on each side as far as possible. Then treat the back in the following order the same as the front part of the body was treated; the upper part of the back, the shoulders, the arms, concluding with very vigorous strokes from the top of the spine to the coccyx, drying each part as fast as rubbed. The legs, ankles and feet should now be rubbed in the same way. If the wet rubbing from five to fifteen seconds does not produce reddening of the surface, then administer light percussion for that purpose. But everything must be done quickly and a perfect reaction secured on one part of the body before going to the next. This bath may well be given before the patient arises in the morning, and while the body is warm.

THE WET SHEET PACK.—This bath consists in enveloping the body with a wet sheet with other outside wrappings to prevent evaporation. The requisites are a large double blanket, one single blanket, two large sheets, one of which



The Wet Sheet Pack. A.—Illustrating one of the first processes in applying the wet sheet pack. Over the first dry sheet you lay a woolen blanket then spreading thereon a sheet wrung out of the hot or cold water, as required in each case. As soon as possible after the patient has lain down upon the latter, you begin by bringing one-half of the wet sheet under the arms and over the chest to the armpits, also tucking it in between the legs thoroughly, as illustrated here.



The Wet Sheet Pack. B.—You then bring the other half of the sheet over the shoulders, arms and the entire body as tightly or snugly as possible, without binding or constricting any part. You are now ready for the blanket, which should be snugly wrapped around the whole, beginning the process as illustrated here, and tucking it in under the shoulders and feet as shown in the next photograph.
(See next page.)

should be linen, a large towel and two or three gallons of water at 60 to 70 degrees.

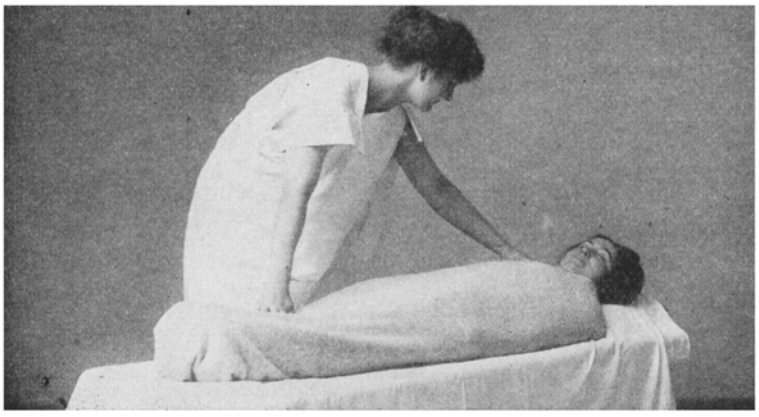
1. Fold a sheet lengthwise and lay it over the couch. See that the upper edge covers the lower third of a thin pillow placed at the head of the couch.

2. Spread a double blanket across the couch. The side opposite to the attendant should hang over about two feet. Place the upper edge of the blanket two inches below the upper edge of the sheet and a single blanket at the foot of the couch.

3. After dipping the second linen sheet in water, wring it out as dry as possible by two persons holding the sheet at each end and twisting in opposite directions. Spread this sheet out upon the blanket, placing the upper edge an inch or two below the upper edge of the blanket.

4. Now let the patient lie down upon the wet sheet so that its upper edge projects three inches above his shoulders, raising both arms above the head.

5. The attendant now draws one side of the sheet across the body, turning it well up under the arms and tucking it in closely all along the sides of the bed. One leg is now carefully wrapped up and the sheet well tucked in, leaving the other leg uncovered. The farther side of the sheet is now brought over



The Wet Sheet Pack. C.—The next and final process is to snugly wrap the under dry sheet over the blanket for the purpose of excluding as much air as possible.

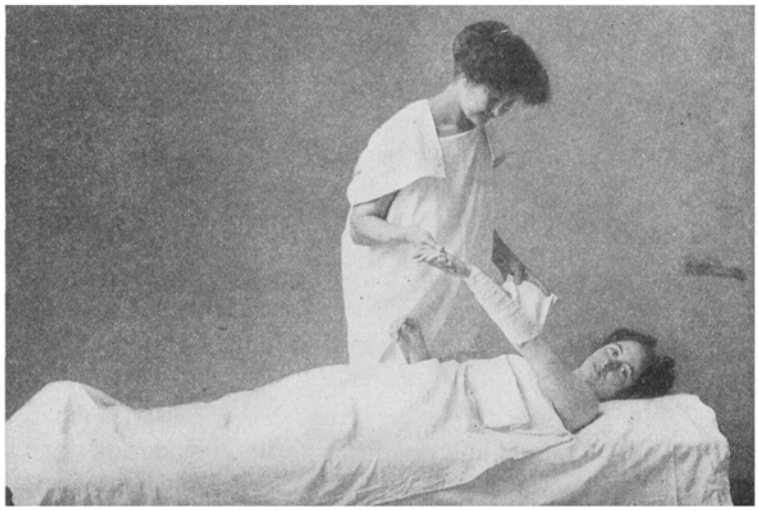
the body, the patient having lowered his arms and placed them close to his sides. A fold is made in the sheet over each shoulder, so as to make it fit snugly, but care must be taken not to constrict the blood vessels.

6. The farther edge of the blanket is now drawn across the patient and tucked around the legs, and under the sides and shoulders with great care, a fold being made over the farthest shoulder so as to make it fit snugly to the neck. The longer end of the blanket is now seized and pulled tightly so that the pack is made to fit snugly to the body of the patient. The loose end is drawn up and tucked around the patient so that he is enveloped as completely as if he were a mummy. The blanket at the foot is then doubled under and the underneath sheet wrapped carefully around the body snugly so as to exclude the air.

Where additional warmth is required one or more woollen blankets may be placed upon the patient, care being taken to tuck the upper end under the shoulders and well about the sides and legs. If the wrapping up process is not *tightly* done so that the sheet is brought in close contact with the body and kept there all the time, chilliness is often the result, because under such circumstances, evaporation takes place, when the object of this pack is to produce the accumulation of heat and vigorous reaction. It will be seen, therefore, that extreme care must be exercised in the pulling of this pack tightly around the body and if the patient complains of local chilliness at any spot, the bath should be discontinued or else more carefully administered. Where the patient is either very feeble or exceedingly nervous, it may be well to leave one or both arms out of the wet sheet, but care must be taken to wrap arms well in the blanket (if excluded from the sheet), in order to prevent chilliness.

This bath when properly administered has the effect of quickening the elimination of toxins in the blood, quieting the nervous system and at the same time developing vital resistance. In pneumonia, its value has been demonstrated in many cases. If warming up does not begin soon after the

The application of a knee pack. It should fit the knee closely but should not be drawn tightly. Packs should never be tight.

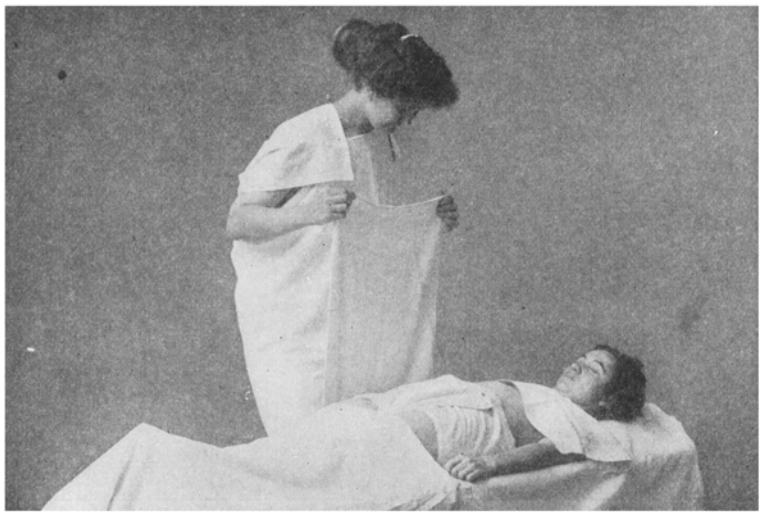


The application of an arm pack. In applying hot fomentations to an arm or leg, the attendant may take hold of each end of the folded hot towel, place the middle of it upon the arm or leg, and then wind around with each end.

patient is placed in the pack, the outer blankets should either be rubbed to help produce warmth or hot water bags or stones should be placed at the feet and sides and on the abdomen.

The head, face and neck should be thoroughly cool before the patient enters the pack, and a cheesecloth napkin wrung out of cold water every few minutes should be placed on the

Method of applying the cold towel bath.

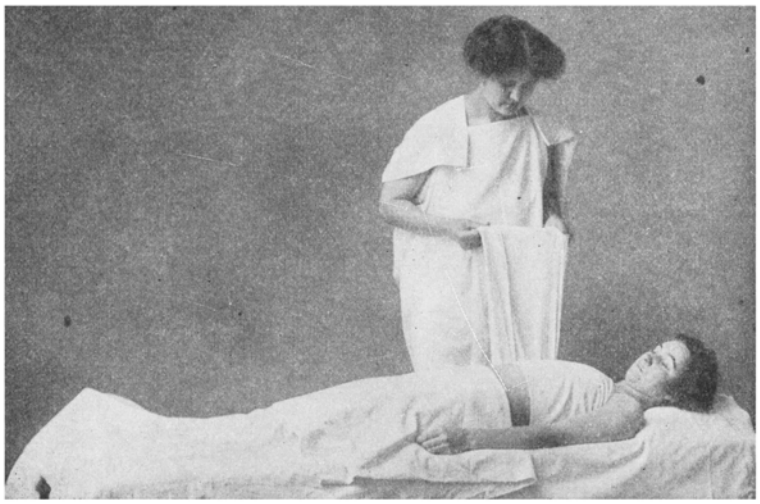


Method of applying a hip pack.

face and head throughout the duration of the pack. The length of this will depend upon the effect desired. Where tonic effects are looked for the patient should remain until he experiences a comfortable sensation of warmth, which denotes that reaction has taken place. This should occur in not less than twenty minutes. Where stimulating or heating effects are desired the pack should be continued until perspiration begins. And where decided elimination is the object sought, the pack should continue so long as sweating continues, even if for one or two hours, or more, provided it does not exhaust patient. More blankets may be added if desired.

It is not uncommon for the patient to feel nervous when first put into the wet sheet pack, but this soon disappears and gives place to a soothing, restful feeling which is generally speedily followed by invigorating and refreshing sleep.

The wet sheet pack may be said to have four distinct stages. These depend upon the length of duration of the pack and the general condition of the patient. 1. Cooling. The temperature is reduced by the cool application. 2. Neutral. 3.



The application of a chest pack. By applying pack nearer the center of the body an abdominal pack is secured.

As heat accumulates there is a decided increase in temperature which leads to—4. Sweating. This latter effect may be increased and prolonged by inducing the patient to drink freely.

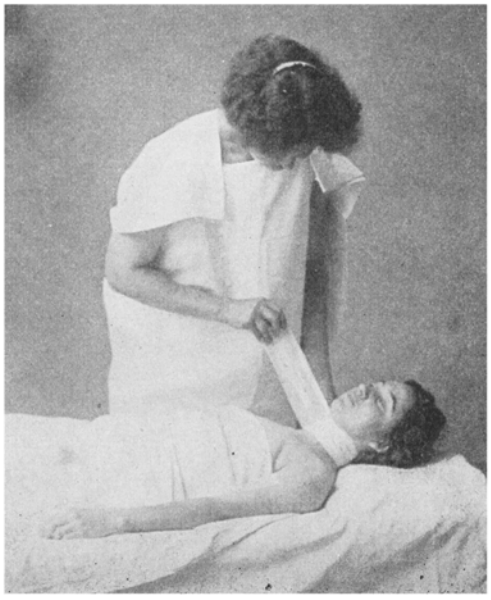
If this pack is not administered the first thing in the morning while the patient's body is warm with the accumulated heat of the night, he should be required either to exercise vigorously, walk briskly or else be prepared for the pack by a hot bath. As a rule it should never be given if he already feels chilly.

If the effect to be produced is purely tonic, the patient should be removed from the pack at the end of seven to ten minutes before the reaction begins. If then followed by a vigorous rubbing down and brisk exercise, the wet pack is as invigorating as the percussion douche.

When it is desired that the pack should reduce the temperature, as in case of fever in some cases a fresh cold sheet should be applied at the end of about ten minutes, or before the reaction begins.

When the application continues until the neutral effect is produced, it acts as a neutral bath, soothing and calming the patient and inducing restful sleep.

In the next period the elimination of toxins begins and if it is continued to the fourth stage, this elimination becomes of the greatest value. Its beneficial effects should be height-



Putting on a neck pack.

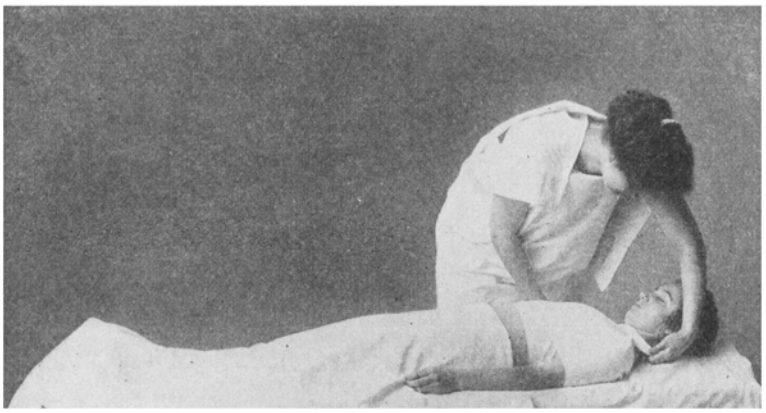
ened by inducing the patient to drink copiously of hot water or hot lemonade.

It can well be seen how the wet pack can be utilized in a variety of diseases, especially where there is fever, or insomnia, or where it is essential that accumulated poisons in the blood shall be eliminated. I have used it with marvelous results in the early stages of measles, scarlet fever, small-pox, etc., for it will arrest any of these diseases by the rapidity with which it causes toxic elimination.

There are two ways of making the wet sheet pack effective for purely cooling purposes without removing any other than the outside wrappings. Either sprinkle the outside of the chest with cold water or rub the pack from top to toe with ice. The warming blanket should then be rearranged as before.

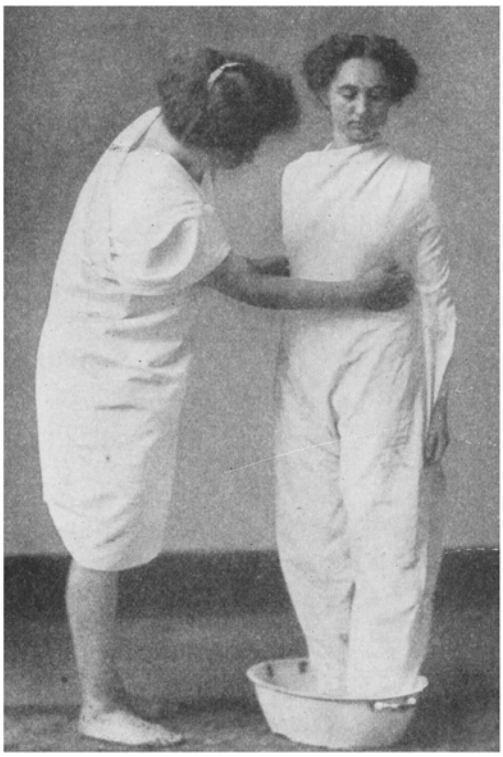
Where sweating is the end desired, the more blankets that are placed on the patient to begin with and the more hot water bottles, etc., the better. (See also *Hot Blanket Pack, Dry Pack,* and *Evaporating Sheet.*)

THE WET SHEET RUB.—This is one of the oldest and best known hydrotherapeutic applications, and has been used for centuries with good effect. The temperature of the



Method of applying chest and shoulder pack. The pack should first pass around the chest under the arms, then around outside of the arms, covering shoulders perfectly, and pinning with a safety pin over shoulders.

water is determined by the needs of the patient. Standing in a foot-tub of hot water (104 to 110 degrees) a sheet is wrung out of water of the required temperature and rapidly and firmly brought up around the neck of the patient, who seizes it and wraps it entirely around his body, tucking it in between his legs. The attendant then with open hands rubs across and then down the back, down the chest and then down each leg. The sheet must be kept as close as possible to the body of the patient; so that the rubbing is done solely with the arm or hand of the attendant, and not with the sheet. No time should be lost in putting on the sheet and beginning the rubbing, and in some cases it is essential that two attendants administer this bath, one rubbing in front and the other behind.



The application of the wet sheet rub.

When the body is too sensitive to allow of too vigorous rubbing, gentle patting may be administered instead. Every part of the body should be gone over many times in rapid succession and with as vigorous rubbing as the patient can tolerate with comfort. Only a strong attendant can administer this bath. (See also *Dripping Sheet.*)

THE WET TOWEL SPANK BATH. — When very vigorous and

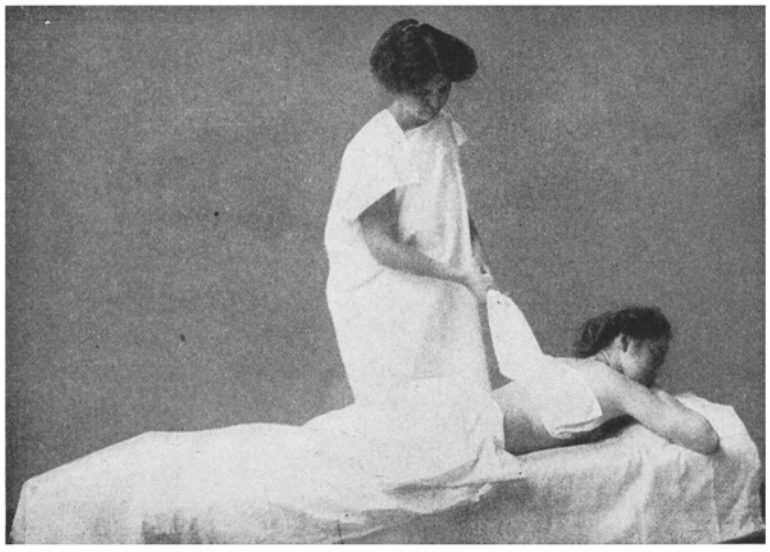
quick reaction is required, and the patient is willing to endure the rather sharp smarting that comes from spanking with a wet towel, I know of no bath that produces such immediate tonic effects, as the Cold Wet Towel Spank Bath. It is the invention of Dr. George Wharton James, who has used it for many years with good effect, and in a large variety of cases. But it must never be administered without the consent of the patient, as it is apt to provoke anger if applied without full knowledge of what it is. The colder the temperature, necessarily the greater the tonic reaction. In cases of hysteria, or great cerebral excitement, insomnia where the non-sleeper is of vigorous body and mentality, of alcoholic excess, etc., there is nothing equal to it. First thoroughly wet the face, neck and chest of the patient, having him stand in a foot-tub with the water at about 110 degrees. Then, beginning with the buttocks, spank quickly and vigorously with the towel in the following order: up the spine, down and across the back, down both legs, at the back, the feet, up the legs in front, then the chest, and then the abdomen, though the spanking here must not be as heavy as elsewhere. A light towel should be used, well saturated with as cold water as one can secure; the spanking should be with quick, sharp taps as it were, rather than heavy, dull, thud-like blows. Reaction is immediate and permanent.

WOMEN, BATHING FOR.—Especially for women is the cold bath to be commended. Many a woman suffering from functional derangement might have avoided all her pain had she simply utilized the invigorating properties of the cold bath. Nothing is more conducive to functional regularity, for it tones up the nerves, combats almost every form of nervous weakness and practically banishes hysteria. To women approaching what is known as "the change of life" the ordinary distress and discomforts are almost unknown where the cold bath has been a daily practice.

For the most part the general discussion in these pages of bathing in its various forms will apply to women the same as to men. The beneficial results

are the same in both cases and the conditions for success are identical. But in a much larger number of cases it is necessary for women to avoid extremes of cold water and to employ some of the less strenuous forms of bathing. Owing to the great prevalence of nervous weaknesses and disorders among them, it is especially important that they take advantage of the nerve-tonic offered by the use of cold or cool water in some appropriate form.

Probably the first question that will occur to women, on the subject of daily cold bathing, is as to whether or not any exceptions should be made during the menstrual periods. Women have been taught to shun water, and particularly cold water at this time, and there is of course a certain justification for this. The woman who is frail and delicate cannot afford to experiment with herself at such a time. But, here, again, everything depends upon the individual and her strength. The entire question of the advisability of cold



**The reclining spank bath, showing how the cold wet towel is held and applied.**

baths at this time, as at any other time, depends upon the question of *perfect recuperation.*

Most women who have practiced physical culture for some time go right along taking their cold baths every day without exceptions for any reasons whatever. If they can recuperate after their bath with perfect warmth and bodily comfort, and with the circulation more active and vigorous than before, then certainly it will benefit them and there is nothing to fear, even during menstruation. It is only when one cannot recuperate, when she feels weakened and chilled afterwards, that any harm can come, and under such circumstances the bath could not be recommended, either at this or at any other time.

Naturally, in a matter of this kind, where unsatisfactory results might have really serious consequences, the only plan to pursue is the safe one, and so long as there is any doubt upon the score of recuperation, a woman would do well to omit the bath during this short period. At least, it might be well to do so in the beginning of the practice, though after she has gained a greater degree of strength, she need no longer deny herself the pleasure of the bath even at this time.

Individual experience must really determine what is best in this matter. I know of hundreds of cases of young and middle aged women who habitually take the cold bath, making no difference whatever between this time and any other. But on the other hand there are certain conditions that clearly indicate that it is best to suspend the cold bath at this time.

It cannot be too emphatically stated, however, that in many cases of functional disturbances, especially where severe measures, when properly applied, are among the most powerful remedial agents known to women at these times.

During pregnancy and lactation it is well to avoid the use of too cold water and all forms of percussion bath. The interior reactions from these forceful applications to the skin are somewhat complex and occasionally produce serious disturbances when not properly applied. Hence it is best to avoid them. (See also *Nature Bath.*)