

**Sea-air and sea-bathing : their influence on health : a practical guide for the use of visitors at the sea-side / by Charles Parsons.**

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SEA-AIR  
AND  
SEA-BATHING  

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PARSONS



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SEA-AIR  
AND  
SEA-BATHING

THEIR INFLUENCE ON HEALTH

A  
*PRACTICAL GUIDE FOR THE USE OF VISITORS  
AT THE SEA-SIDE*

BY  
CHARLES PARSONS, M.D. EDIN.  
*Honorary Surgeon to the Dover Convalescent Homes, &c. &c.*

"THE SEA IS HIS, AND HE MADE IT."

PHILADELPHIA  
LINDSAY & BLAKISTON

—  
1877



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## PREFACE.

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IN compliance with the courteous request of the Publishers, that I would prepare for them a short and reliable work on the subject of "Sea-Air and Sea-Bathing," the following pages have been written in the intervals of busy professional work.

In performing my task, it has been my object to produce a thoroughly practical and trustworthy Guide to Health at the Sea-side, which should be as free as possible from technical terms, so as to be easily understood by general readers. In endeavouring to give scientific accuracy to the subject it was impossible to avoid the introduction occasionally of some



very elementary physiology and chemistry, and I venture to hope that this will be found to impart additional interest to the perusal, whilst it can in no wise impair the practical utility of the work.

CHARLES PARSONS.

2, S. JAMES STREET, DOVER,

*May, 1877.*

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# SEA-AIR AND SEA-BATHING.



## CHAPTER I.

SEA-BATHING—ITS MODE OF ACTION ON THE SKIN—CIRCULATION—RESPIRATION—GLANDULAR SYSTEM—MORE ENERGETIC THAN FRESH WATER BY REASON OF ITS GREATER DENSITY—SALINE CONSTITUTION—CONSTANT AGITATION, ETC.

ACCORDING to an ancient writer, “the practice of bathing was instituted with a view to cleanliness, to the increasing the body’s heat, for the preservation of health, or for voluptuous gratification.” In these days, however, we cannot be said to use sea-bathing for purposes of cleanliness, but rather for personal gratification ; or under medical direction for the prevention, alleviation, or cure of disease ; or more generally, for the renovation of health and strength when impaired by the wear and tear of modern life ; or when the system is enfeebled by the deleterious habits and practices of a cultured civilization. A more useful remedy, at once salutary and efficacious, does not exist when judiciously



employed; nor one more pernicious in its consequences, when improperly and unwisely used.

The habit of daily immersing the body in cold water has become so established in this country, that the "morning tub" has come to be regarded almost as a national "institution," to the great bewilderment of foreigners, who wonder at the eccentricities of *les drôles Anglais*.

The popular belief with regard to sea-bathing is that it is both strengthening, bracing, and hardening; and there can be little doubt but that this opinion is well founded. It does not, however, follow that the practice of it should be indulged in by all indiscriminately. Some indeed hold that the immersion of the body in water, which is of lower temperature than the air, fortifies the system against attacks of catarrh and chill, and renders it indifferent to vicissitudes of temperature, whilst some few contend that perfect immunity from colds may be insured by continuing the morning plunge throughout the year. It is undoubtedly true that sea-bathing renders the body far less sensitive to the influence of cold, and to the injurious effects of prolonged exposure, than any other agent with which we are acquainted; but this is clearly due to its invigorating and strengthening properties generally, and not to any



special virtue dependent upon lowness of temperature alone.

The *immediate* action of cold bathing upon the system is very nearly identical, whether the medium employed be salt water or fresh; its *remote* effects, however, are varied somewhat by the difference in density, composition, and other modifying circumstances to be considered presently.

When a healthy person is suddenly immersed in cold water, he experiences a series of sensations, familiar enough to all who have practised cold bathing, which follow each other in rapid succession. He is first of all conscious of a shock which seems to penetrate the whole system, accompanied by a general sensation of cold and shivering: the skin becomes pale and contracted, rendering the hair-bulbs prominent, and producing that peculiar appearance of the surface, which is commonly called goose-skin, from its resemblance to that of a newly-plucked goose: the circulation is accelerated, and the pulse becomes small and frequent; the respiration at first hurried and gasping, grows deep and laborious, with a feeling of oppression or constriction of the chest, and of fulness and weight in the head.

These phenomena are but of momentary duration, however, and rapidly yield to a general sensation of warmth, which by degrees pervades



the whole body, and the weight in the head instantly disappears; the respiratory embarrassment is relieved, and the pulse gradually returns to its normal condition, with perhaps a little increase of volume. The surrounding water now no longer feels cold, but rather pleasant and agreeable, and the bather is in full enjoyment of what is called "reaction."

If the body be now rapidly dried and covered from the air, the feeling of warmth is persistent, a glow pervades the skin, and every function appears to be carried on with increased energy, the spirits are buoyant and elastic, and the whole system feels strengthened and refreshed by the bath.

It is important, however, to bear in mind that the benefits of cold bathing cannot be increased, *ad infinitum*, by prolonging the immersion, but on the contrary, they are greatly diminished by it. If the bath be so imprudently continued that the sensation of warmth grows less, and finally disappears, then numbness and shivering come on, the teeth chatter, the extremities of the fingers become blue, dark rings appear beneath the eyes, which have a sunken appearance, the skin is blanched, and apparently bloodless, nausea and vomiting frequently supervene, the feeling of depression is intense, respiration is irregular and rapid, and the pulse



weak and small. "Reaction" from this condition is of necessity a slow process: but if immersion be prolonged till cramps of the limbs, a feeling of coldness at the stomach, and vital exhaustion even to fainting ensue, then "reaction" is difficult, sometimes impossible, and death may ultimately follow.

1. *Skin*.—From the foregoing remarks it is evident that the primary action of cold bathing is upon the nerves of the cutaneous surface, and secondarily upon its capillary circulation. The cutaneous nerves may be regarded as outposts, whose duty it is to telegraph to head-quarters whatever sensations are made upon their extremities: it is almost impossible to estimate their number, so numerous are they, but taken in the aggregate they present a sentient surface of enormous extent, capable of receiving the most powerful impressions, and transmitting them with undiminished intensity. Hence, when a plunge is suddenly made into cold water, the whole cutaneous surface is immediately brought under the influence of this agent, and the collective violence of the impression is conveyed, with lightning rapidity, to the central nervous system as a healthy shock. The nervous centres being thus stimulated and aroused, transmit corresponding energy to the vital organs,—the heart and lungs, as well as to



the glandular system and the skin,—by the agency of a set of nerves, whose office it is to control and regulate the various functions of the body.

2. *Circulation*.—Moreover, the contact with cold-water in bathing, causes the minute blood-vessels of the cutaneous surface to contract; the small arteries are reduced in size, and the flow of blood from them into the capillaries is consequently diminished; hence the blanched appearance of the skin. The surrounding structures being no longer distended by so great a volume of blood as usual yield to their natural elasticity and close in, imparting to the skin a contracted appearance, and rendering the hair-bulbs prominent, and the hairs erect, as any one can observe for himself who cares to watch the action in his own person.

This obstruction to the free passage of the blood in the surface of the body causes it to be ponded back, so to speak, upon the internal organs, and it accumulates in the glands and in those regions which are most vascular, embarrassing the heart and lungs in no ordinary degree. But when the reflex stimulus arrives from the nervous centres, which the shock to the cutaneous nerves had excited, the heart is roused to greater exertion, contracts more vigorously, and propels the blood with increased force; at the same time the spasmodic contrac-



tion of the capillary vessels is relaxed, dilatation follows, and the current of the blood flows with more than wonted energy through the accustomed channels.

It is now, when this reaction is setting in, that the genial and pleasant glow is experienced to which reference has been made, and so long as the vital powers can resist the depressing effects of cold, so long will this reaction continue, and the warmth of the surface be maintained. But when prolonged immersion has so reduced the animal heat that numbness and insensibility of the skin is produced, the nervous system participates in the exhaustion, reflex stimulation is no longer possible, and general collapse is imminent. This reactive power, which enables the human body to resist external influences and impressions by which it might otherwise be injured, appears to be the outcome of that conservative energy which is stored up in the animal economy, and is sufficient for all the demands which may be reasonably made upon it.

The closest relationship exists between reaction and the cause by which it is excited. They are proportionate the one to the other, the more intense the exciting cause, the more energetic is the following reaction. Hence the colder the bath, the more powerful is the impression on the cutaneous surface, and the



quicker and more active is the consequent reaction ; on the other hand, however, the more rapid abstraction of caloric in the colder medium, shortens the duration of reactive glow, though it does not diminish its intensity, and renders a brief immersion imperative.

3. *Respiration*.—We have seen that in the cold bath the respiration becomes deep and laborious, and the chest is filled to its utmost capacity. These deep inspiratory movements are entirely beyond the control of the bather. He cannot suspend them even for a moment. They are performed, independently of his will, in obedience to the laws which regulate *reflex* movements. The sensory nerves of the general surface of the body, and especially of the face, are the most important agents in exciting these movements, for they convey the impressions made upon their extremities to the centre whence the motor impulse arises, which is transmitted to the respiratory muscles, and occasions their contraction. Everybody must have experienced these phenomena some time or other, in the gasping sigh which follows the sudden sprinkling of the face with cold water. But an equally important part is performed by the efflux of blood in larger and more frequent quantity to the capillaries of the lungs, whereby the *excitor* impression made



upon the nerves of the lungs is greatly increased and the resulting respiratory movements quickened.

4. *Glandular System*.—Again, the glandular system is aroused to exalted function, by the presence of the blood which the application of cold has driven from the cutaneous vessels; for an increase of secretion, as a rule, accompanies increased blood supply, and indeed is dependent on it.

Such is a brief outline of the effects and mode of action of cold bathing generally upon the human body; it remains to consider the distinctive qualities which belong especially to cold sea-bathing.

It is a remarkable fact that many persons who cannot bathe in fresh water can do so in the sea; and the explanation doubtless is that the abstraction of caloric from the body in salt water is less than in fresh, by reason of its *greater density*. Probably also the *saline ingredients* have a more stimulant effect upon the skin, and induce a more energetic reaction.

The most important characteristic of sea-water is its *saline* composition, and it is impossible to over-estimate the influence of the salts of the sea in marine meteorology. It has been estimated that "the average quantity of saline matter in sea-water is 3 per cent., which consists of chloride of soda, or



common salt; sulphate of magnesia, or Epsom salt; sulphate of soda, or Glauber salt; also muriate of magnesia and lime, with salts of iodine and bromine.\* Maury, however, estimates the saline ingredients at 4 per cent. The above constituents are uniform as to presence, but are unequal in quantity in various parts of the world, so that "in the Baltic a pint of water contains nearly two scruples of salt; on the coasts of Great Britain it contains more than half an ounce; in the Mediterranean much more; and in some parts under the Line the quantity amounts to more than two ounces."†

It is in consequence of its saline character that sea-water does not evaporate so readily as fresh water from the skin, and even when the body is carefully dried particles of saline matter remain adherent, and find their way into the pores of the skin—as may be proved by the application of the tongue to the surface—and keep up a tingling glow long after the bath has terminated. It is a well-known fact that persons when wetted to the skin by sea-water, do not take cold so readily as they do when caught in a shower of rain; and the explanation probably is that this pungent action of the salts of sea-water so stimulates the cutaneous circulation as to enable it to

\* Lee.

† *Ibid.*



resist the depressing effects of the cold produced by the evaporation of the fluid portion.

Again, it is to its saline character that the temperature of the sea in great measure is due. A recent writer says, "It is the salts of the sea that assist the rays of heat to penetrate its bosom; but for these the solar ray, instead of heating large masses of water like the Gulf Stream, would play only at or near the surface, raising the temperature of the waters there, like the sand in desert places, to an inordinate degree."\* Instead of this, however, the temperature of the sea on our coasts is tolerably equable, and seldom so low as that of river water; so that sea-bathing may be enjoyed at a time when the fresh-water bath would hardly be tolerated; and indulgence in the luxury may be permitted for a much longer period than would be advisable in fresh water without fear of any disastrous result.

Lastly, in fresh-water bathing we have to deal for the most part with a still and placid agent, whilst the sea, on the contrary, is seldom or never at rest, and oftentimes severely tries the strength of the strongest bathers in their endeavours to withstand its waves. Here we have an agent in constant motion, whose beneficial influence is in no small degree due to this fact. We have seen that the immediate

\* Maury.



effect of plunging into cold water is a stimulation of the nervous and circulatory systems of the body; the blood-vessels of the skin in the first place contract, and subsequently dilate, allowing more blood to flow through their walls, as soon as the reflex stimulus reaches them from the nervous centres. Now when the waves of the sea strike the surface of the body in constant succession the shock of the first plunge is repeated again and again, the double action of alternate contraction and dilatation is maintained in the cutaneous circulation, the reactive glow is much intensified by the constant friction, displacement, and renewal of the surrounding water in violent agitation, and the whole system is stimulated and excited to more energetic action. On the other hand, bathing in a rough or turbulent sea is in the nature of things more exhaustive than bathing in calm weather, from the necessity of struggling with the waves which is involved, and from the temptation to prolong the bath beyond what is prudent, because of the immediate exhilaration which it affords. But when indulged in judiciously, and restrained by prudence, there is not a more beneficial stimulus, nor a more exhilarating enjoyment than sea-bathing on a breezy day.

From what has been stated in the preceding pages, it will be sufficiently evident that sea-



bathing may become a most important auxiliary, both in the treatment of disease and in the renovation of health when impaired, if employed with judgment and discretion; whilst it is equally clear that when rashly used or thoughtlessly abused, it is capable of producing the most disastrous consequences.

Briefly summarized, then, the practice of sea-bathing appears to be attended with the following phenomena:—A sudden and violent shock is given to the whole system by the first immersion; refrigeration of the surface by abstraction of heat follows, and is accompanied by a retrocession of the blood from the exterior of the body, and a determination of it to the interior; a reaction of the system ensues, in virtue of that principle of self-conservation which is inherent in all organized beings, counteracts the shock, re-establishes the capillary circulation, revives the animal heat, till at length the reactive glow prevails throughout the whole system. It is this power of stimulating the vital energies to unwonted exertion, which sea-bathing undoubtedly possesses, that constitutes its chief claim to be considered a restorative agent of great value and efficacy.



## CHAPTER II.

SEA-BATHING—GENERAL DIRECTIONS—THE SEA-BATHING SEASON—TIME OF DAY FOR BATHING—FREQUENCY—HOW TO BATHE—OUGHT ONE TO BATHE WHEN HEATED? EXERCISE NECESSARY BEFORE AND AFTER THE BATH—DURATION OF THE BATH—AFTER THE BATH—WHAT NOT TO DO.

IN order to bathe with advantage, we must do so intelligently. Many persons, however, come to the seaside for bathing, with no very clear ideas of what they ought to do, nor of what they ought not to do: they simply go into the sea when they like, and how they like, and only leave it when they are too fatigued to remain any longer therein; they have no intelligent perception of the principles of sea-bathing. These principles they ignorantly transgress, and consequently derive little or no benefit. On the contrary, sometimes even positive harm is the result of what, under other circumstances, would have been a health-giving process. No wonder that "sea-bathing does not agree with them!"

In this chapter, then, we propose to lay down a few broad principles, in the form of "general directions," for the guidance of those who are unaccustomed to sea-bathing, and for the information of those who, though not inexperienced, delight to regard everything from a scientific standpoint.



1. *The Sea-bathing Season.*—Between the first day of June and the last day of September is undoubtedly the best time of the year for a course of sea-bathing, because at this period the temperature of the sea ranges higher than at any other, and on our shores commonly averages from 55° to 70° Fahr. It has been calculated that the sea attains its lowest temperature in the month of March, from which period it begins gradually to accumulate heat from the increasing intensity of the sun's rays till it reaches its maximum in the month of August. The summer being now at its highest, the sea slowly cools down month by month with the declining sun till the annual extreme of cold is again reached, and the cycle is repeated.

Many persons prolong their bathing through October, with manifest benefit, and there really can be no valid objection to it, inasmuch as the colder medium exerts a more bracing and tonic influence upon the system: and some even continue the practice throughout the winter months with marked improvement in health. Such a course, however, can only be followed by those who, in addition to great reactive power and large vital capacity, are possessed also of a sound and vigorous constitution.

Invalids and those in delicate health should on no account be tempted to continue their



bathing in the open sea beyond October at the latest; and even September would be late enough for many persons. It need hardly be said that it would be highly improper for a beginner to commence a course of sea-bathing in the winter season.

2. *Time of Day for Bathing.*—It is impossible in this matter to lay down a hard and fast rule of universal application; local circumstances, such as the nature of the coast and the state of the tide, sometimes compel a deviation; but as a general rule it may be said that all sea-bathing should be over by 1 p.m. It appears that the minimum temperature of the sea for each day is in the morning before 10 o'clock, its maximum from 12 to 5.\* There can be no doubt that the best time for taking the cold bath is immediately on rising from bed, when the body has been refreshed by the night's repose and the surface is warm; few persons, however, have that reactive energy which is absolutely necessary to render bathing in the open sea before breakfast beneficial. Early morning bathing, therefore, can only be safely recommended to those who are robust and vigorous in constitution, and for them it is the most invigorating and potent of sea-side agencies.

For the majority of persons, and for invalids especially, the most suitable time for bathing is

\* Lee.



about two or three hours after breakfast, when the morning meal is digested and the system is beginning to feel the effects of the conversion of food into force, and is therefore the better prepared to withstand the shock of the cold plunge. It is not wise, however, to bathe within two hours of any meal, and the reason is obvious: whilst digestion is proceeding, much blood is attracted to the digestive organs in order that the process may be efficiently performed; but if we rudely divert a portion of the blood to the surface of the body by the action of the cold bath, digestion is suddenly interrupted, assimilation checked, and congestive headache, cramps in the stomach, etc., not unfrequently follow.

It will be well to bear in mind that the temperature of the sea on those coasts which are rocky and shelve off rapidly into deep water, is lower in *summer* than on flatter shores, where a large expanse of sand, exposed to the burning rays of the sun, imparts its acquired heat to the advancing tide. In *winter* it will be obvious these conditions are reversed.

3. *Frequency*.—Next to “May I bathe?” the question which is most frequently put to the practitioner of medicine at the sea-side is, “How often may I bathe?” It may be laid down as a fundamental rule, with rare exception, that no one should bathe in the open sea



oftener than once a day. No augmentation of health follows more frequent immersions, but rather a diminution of strength; for the reactive energy of the body is speedily exhausted when incessant demands are made upon it, and inordinate nervous stimulation is invariably followed by corresponding exhaustion and depression. It is impossible to condemn too strongly the folly of those who thus trifle with their health.

A daily repetition of the open sea-bath is not suitable for all persons, and can only be safely recommended to the healthy and the strong. By the majority, bathing on alternate days will be found amply sufficient, and quite as much as the average sea-side visitor can sustain.

It is a very good rule to begin with two baths a week only, and then to advance to three, and not exceed this limit.

Invalids, and those who are of delicate constitution, should not bathe in the open sea oftener than twice a week at most; and we cannot express too forcibly the opinion that they would do well not to venture into the sea at all without obtaining in the first place the sanction of their medical adviser. Much mischief results sometimes from the neglect of this simple precaution. The first baths should certainly be tentative, to ascertain the reactive



power, and the question of frequency should be regulated and determined by the experience thus obtained.

4. *How to Bathe.*—The sensation of comfort which usually accompanies the open sea-bath is much lessened, and sometimes even converted into one of discomfort and misery, by an improper method of entering the water. The correct and proper mode, no doubt, is to go in head foremost by means of the “plunge,” whenever circumstances permit, in accordance with the experience of all who are practically acquainted with the subject. It requires, however, some degree of boldness and resolution to take this step for the first time; but the exhilarating effect upon the system amply repays one for the effort, and, inasmuch as the physiological reaction is much intensified by the shock of the plunge, we recommend every bather to cultivate this mode of entering the water.

Upon flat sandy beaches where the tide recedes some considerable distance, such procedure is impracticable, and we are driven by necessity to enter the sea on foot; in this case no time should be lost in “ducking” beneath the first advancing wave, in order that the element of suddenness may not be wanting to the shock.

Many timid persons, who cannot summon



sufficient resolution either to "plunge" or "duck," may now and then be observed standing knee-deep in water, with chattering teeth, shivering in every limb, and helplessly waiting for the needful courage which never comes. Now such people derive no benefit from sea-bathing, but almost always return from the bath with congestive headache, and sometimes sickness; no reaction follows, but a wretched depressing sensation of chilliness takes its place, and is occasionally succeeded by the congestion of some important internal organ. Such bathing is utterly worthless, and not altogether free from danger; it had better therefore be abandoned.

It is highly advisable, whilst in the water, to keep the body and limbs constantly in motion, thereby stimulating the circulation, promoting animal warmth, and rendering the bather less liable to cramp; there is no better exercise for this purpose than swimming. It is a good plan to allow the waves to break upon the body, taking care that the shock be not received upon the head or the pit of the stomach, as unpleasant consequences may ensue from violent concussion of those parts. Every shock of every wave is a repetition in miniature of the primary shock of the first plunge, and conduces to vigorous reaction. A word of caution, however, is necessary: when



the beach slopes rapidly the waves are deeper and heavier than they appear to be, and the bather is very liable to be carried off his feet by the swiftly flowing back-wash of the sea unless he is on his guard against this accident.

Those who cannot swim may quicken their reaction by well rubbing the various parts of the body whilst in the water as a substitute for the muscular exercise which the art of swimming involves.

5. *Ought One to Bathe when Heated?*—This is a question which is frequently asked, and much misconception seems to prevail on the subject. It used to be thought—and the opinion is still held by many—that it was a highly dangerous practice to plunge into cold water when overheated by exercise or otherwise. So long ago as 1797 this belief was proved by Dr. Currie to be erroneous, and the experiments of Dr. Fordyce and Sir Charles Blagdon\* lend support to his views. In more recent times the practice of hydropathy has clearly demonstrated the fact that persons may pass from the sweating bath, in the most profuse perspiration, direct to the cold shallow, plunge, or douche bath, not only without taking any harm, but also with positive benefit! It appears that when the function of the skin is exalted in the act of perspiration the impression

\* "Philosophical Transactions," vol. lxxv.



received and conveyed by the cutaneous nerves on the application of cold is much more violent than under any other condition, and is followed by a reaction of corresponding intensity, inasmuch as the circulation was already excited by the perspiratory act before the additional stimulus arrived from the cutaneous surface.

Another word of caution, however, is necessary. If the body be over-fatigued by violent exercise, or the powers of the system lowered by the loss of animal heat, which long-continued profuse perspiration entails, then to plunge into the sea would be highly imprudent, and attended with considerable danger. Reaction under such circumstances is a matter of great difficulty.

6. *Exercise Necessary before and after the Bath.*—From what has been already stated it will be obvious that those who by previous exercise have excited the capillary circulation, and as it were prepared themselves for the sea-bath, may certainly expect to derive most benefit from it. So also after the bath, in order that the reactive glow may continue and augment, it will be well to take gentle, not violent, exercise for some little time subsequently, till the sensation of warmth and comfort is general throughout the system.

7. *Duration of the Bath.*—This must be regulated in accordance with the principles already



stated. As a general rule, from which no deviation should be allowed, all sea-bathing to be beneficial should terminate before the stage of chilliness comes on, *i.e.*, before the animal heat has been lowered below the proper degree, and whilst the primary reactive glow continues in force; always remembering that the colder the water the more powerful and depressing are its effects, and though the reaction be more speedy and active, its duration is shorter. The temperature of the water, therefore, is one factor to be considered in determining the duration of the bath. Another important guide is the character of the pulse, which enables one to estimate with sufficient accuracy the amount of reactive power possessed by the individual.

A vigorous circulation and a full pulse imply energetic reaction; but a weak and languid pulse, feeble reaction. It is clear, therefore, that what would be proper in the one case would be injurious in the other.

For those in good health a bath of from five to six minutes will generally be found sufficient; those who are weak and feeble should not exceed three or four minutes; and the delicate and invalid should be content with two or three dips in the sea, and out again. This latter plan indeed may be recommended to all who are unaccustomed to sea-bathing, in order



to ascertain their powers of reaction, and then their period of stay in the water may be gradually prolonged.

Vigorous and robust persons, who are strong swimmers, may remain in the water a quarter of an hour, though even for them ten minutes would be better.

Many people who bathe merely for self-gratification and enjoyment fall into the grievous error of remaining too long in the water, half an hour and upwards, till they are thoroughly chilled and incapable of reaction. Boys and girls, and young adults of both sexes, are the chief offenders in this respect. It is surprising how much harm frequently results from this mischievous practice, especially to those of feeble constitution; it cannot, therefore, be too strongly condemned.

Everybody knows the chilling effects of a long railway journey in mid-winter, when after long exposure to cold the sensation of chilliness and shivering is not eradicated for many hours after the body has become thoroughly warmed. Similar sensations obtain after protracted sea-bathing. In both cases congestion of the internal organs, especially of the lungs, is to be apprehended; and not till the local congestion subsides does the feeling of discomfort pass away, and the harmonious play of the various organs is restored.



Invalids and those who bathe for health's sake, generally do so under medical direction and advice, and are consequently not so liable to transgress the regulations which we have ventured to lay down for their guidance.

8. *After the Bath.*—Immediately on leaving the water the body should be briskly rubbed and rapidly dried with rough Turkish towels; or better still with what is known as the “Malvern bathing-sheet.” This is made of two and a-half yards of a coarse kind of canvas of two yards width. The bather stands upon the margin of the sheet and wraps himself in it; the external air is thus excluded and the animal heat is retained within the sheet, and forms a warm envelope around the body. The comfort of this method is unsurpassed.

As soon as the body is properly dried it is a good plan, if the reaction be feeble and the surface at all chilled, to use friction with flesh-brushes to stimulate the circulation in the skin. The “Clarendon flesh-rubber,” made by Dinneford, is perhaps the form of brush that will be found most generally useful; it has the merit of being cheap, and possessing two surfaces, one hard, the other soft. The “flesh strap or belt” for rubbing the back, shoulders, and loins, can also be recommended as an excellent promoter of reaction.

Finally, no time should be lost in putting



on the clothes as quickly as possible, and proceeding to take brisk walking exercise till reaction be fully and permanently established. When this has been accomplished, the sensation of warmth and comfort remains throughout the day. In some cases where reaction is delayed or imperfectly developed by reason of feebleness of circulation, or imprudent protraction of the bath, it may be necessary to resort to some stimulant or other to counteract the depressing effect of the cold water. For this purpose nothing is better than hot soup, beef tea, and coffee; or in extreme cases sherry, port-wine negus, and even hot brandy and water; walking exercise will then in all probability completely restore the usual animal warmth.

9. *What not to do.*—In order that this section may not seem incomplete, we add a few hints as to what ought *not* to be done by any who desire to derive permanent benefit from the practice of sea-bathing.

(1.) Do not bathe after a full meal or after much wine, *i.e.*, with a loaded stomach.

(2.) Do not bathe when exhausted by exercise or over-fatigued; nor when chilled and cold.

(3.) Do not bathe more than once a day.

(4.) Do not, as a general rule, exceed five or six minutes in bathing.

(5.) Do not remain in the water till the reactive glow subsides and chilliness takes its place.



(6.) When heated and perspiring, but not exhausted and fatigued, do not wait till the surface has cooled down, before entering the water.

(7.) Do not enter it feet foremost unless obliged by local circumstances to do so.

(8.) Do not loiter over your dressing.

(9.) Do not forget to take brisk exercise after your bath.

A few general directions for invalids specially will be included in a future chapter upon "Seabathing in Disease."



### CHAPTER III.

THE WARM SEA-WATER BATH: ITS MODE OF ACTION ON THE SKIN—CIRCULATION—NERVOUS SYSTEM—ABSORBENT SYSTEM—GENERAL DIRECTIONS FOR ADMINISTRATION AS TO TEMPERATURE—TIME OF DAY—DURATION—FREQUENCY—AFTER THE BATH—COLD AFFUSION—ACTION OF HOT AND COLD BATHS RESPECTIVELY COMPARED—DIFFERENCE BETWEEN SALINE AND FRESH HOT-WATER BATHS.

THE importance of the warm sea-water bath as a remedial agent has not been sufficiently recognised, although its influence upon the human body is not less potent than that of the open-sea bath. In some respects indeed it



may be regarded almost as the more powerful agent of the two; whilst its wide range of action, within certain limits, allows of its more universal application as a remedial measure. However it may be with the ordinary warm bath, as a matter of fact the warm sea-water bath is seldom resorted to for purposes of luxury and self-gratification, but generally as a hygienic and curative remedy, under medical advice and supervision, so that we seldom hear of disastrous results from its careless employment. In regard to its ultimate effects upon the constitution, it bears a close resemblance, especially in tonic and stimulant properties, to the cold sea-water bath; but in immediate action upon the system the two are diametrically opposite. The features of similarity and difference are not, at first sight, very readily apparent; but in the course of the following observations we shall endeavour to render them sufficiently evident to all.

Before proceeding to give directions for the proper administration of the warm sea-water bath, it will be well to consider its mode of action upon—

1. *The Skin*.—The sensations which are experienced on entering the warm bath are familiar enough to most people. A feeling of comfort and enjoyment immediately follows immersion, and continues to augment until the



termination of the bath, imparting to the system generally a genial sensation of luxurious warmth and refreshment. The heat which the surrounding water communicates to the surface of the body is propagated to the central nervous system, and excites reaction, with its attendant phenomena, already described in a previous chapter on the cold sea-water bath. In this latter case, however, the reactive glow is developed from *within*, by the more energetic action of the vital organs, the whole system having been excited by the first plunge to resist the refrigerating process; but in the warm bath the warmth is communicated from *without*, and its radiation from the body is prevented.

The first effect upon the skin which is noticeable is a swelling and expansion of the surface, due to dilatation of the capillaries under the influence of heat; and the longer the immersion is continued the greater is its relaxant action, not only upon the skin itself, but also upon the structures which lie beneath it; so that even the muscles themselves seem to soften and to have less tension. Hence it is that after the bath an easy fitting boot or shoe is found to be tight, and is drawn on with difficulty; rings also that previously fitted loosely, cannot now be removed at all.

This increase in volume is to be attributed



to the relaxant action of the water upon the skin, and to the degree of heat which the warm bath communicates to the system generally, as well as to the absorption of fluid, this latter being proportioned to the density of the water. For a long time it was a much disputed point whether the skin had the power of absorbing water or not, and authorities were divided in opinion upon the question; the loss of water by evaporation from the skin having been an obstacle to the satisfactory solution of the inquiry. It may, however, now be regarded as finally settled that the skin does possess this absorbent property. The many experiments of Dr. Madden, confirmed by the observations of M. Berthold and M. Edwards, in the same direction, have conclusively established this truth. In the warm sea-water bath, therefore, the saline ingredients already enumerated are actually absorbed into the system, and exert their special influence upon the organism generally; hence its superiority to the simple fresh-water bath as a remedy, where the object is not to exhaust, but to stimulate and refresh.

2. *On the Circulation.*—The effects of the warm sea-bath upon the force and frequency of the heart's action, as indicated by the pulse, depend very much upon the temperature of the bath. Of course the nervous excitability



of the patient, as in the cold bath, exercises a disturbing influence in this direction. But practically the temperature of the bath is that which determines the character of the heart's action and the frequency of the pulse.

On first entering the bath the pulse and respiration are both quickened, be the temperature what it may, from 92° upwards. If the heat be moderate, however, the pulse gradually subsides to its ordinary frequency as soon as the body is thoroughly warmed, and is only marked by greater fulness. As the temperature of the bath is raised, so is the frequency of the pulse, *pari passu*; the heart becomes more and more excited with every additional increment of heat beyond blood heat (98°); and this excitement of the circulation oftentimes continues long after the termination of the bath, and subsides but slowly and gradually.

Another effect of this high temperature is to cause a larger flow of blood through the capillaries everywhere, in consequence of their dilatation under the relaxing influence of warmth. If the heat be moderate, the distribution of the blood appears to be determined towards the capillaries of the surface only.

It is upon the skin and subjacent structures, as we have shown, that the stimulant and relaxant properties of the saline bath is exer-



cised, and hence the increased capacity of the superficial blood-vessels attracts, as it were, a larger quantity of blood from the internal organs, thereby relieving congestion, and causing a more equable distribution in the external parts.

3. *On the Nervous System.*—Everybody must be conscious of the gentle soothing effect of the warm bath ; no sooner is it entered than the most delicious languor steals over the body, allays irritability, and blunts the pain of over-sensitive nerves, exercising a sedative influence upon the whole nervous system. Its efficacy in alleviating local pain is most marked in cases of cramp and spasm ; but its soothing and refreshing properties are never more evident than after a fatiguing railway journey, where the physical wear and tear are but trivial as compared with the nervous weariness and irritability. In order to secure this sedative action the temperature must be moderate, and then refreshment follows ; a higher temperature stimulates the nervous system unduly, and leaves behind depression and exhaustion, as the result of inordinate excitement.

4. *Absorption.*—From what has been already advanced it will be unnecessary to do more than allude to the influence of this bath upon absorption ; how the stimulating action of the salts of the water quickens the process, and



renders the performance of function throughout the body more active and vigorous; whilst at the same time it promotes the more ready oxidation of the tissues.

It is clear, therefore, that the warm sea-water bath may be regarded as a tonic, a sedative, a diaphoretic, a derivative, and an alterative, according to the manner in which it is employed; and in a future chapter we shall allude more particularly to its various applications in the treatment of disease.

We proceed, in the next place, to consider those precautions which it is needful to observe in using the warm sea-water bath.

1. *As to Temperature.*—This ranges from  $92^{\circ}$  to  $98^{\circ}$ , and should always be ascertained by the thermometer. It is impossible to lay down an inflexible rule as to the precise degree of heat which everybody should adopt. This must be regulated first, by the nervous susceptibility of the patient, and secondly, by the effect which is desired to be produced. It is evident that these conditions must vary in almost every case, so that what would be suitable and beneficial in one, would be improper and injurious in another. A temperature that to one person would be simply soothing and tonic, to another with a highly sensitive nervous constitution, would prove to be too exciting and too stimulating. Regard, therefore, must



be had to individual peculiarities. As a general rule, a temperature ranging from  $94^{\circ}$  to  $96^{\circ}$  will be found to be that which is most universally adopted when it is desired to produce a tonic and soothing effect only, and it is one also which is pleasant and agreeable to the sensations of most people. If, however, we desire to induce perspiration, it will be necessary to use a temperature not lower than  $98^{\circ}$ .

After a few baths each person will be enabled to fix the temperature which is most salutary and beneficial to himself; and as a matter of prudence and caution, it is safest to begin with a bath of low temperature, and gradually to raise it till that degree of heat is reached which imparts the greatest amount of comfort and benefit to the patient.

Whatever be the temperature adopted, it should be maintained to the end of the bath by the addition of hotter water from time to time, according to the indication of the thermometer, and this instrument alone should be relied upon for determining the proper temperature.

One word of caution. Invalids and persons who are delicate, and those who suffer from actual disease, or are convalescent from it, should on no account indulge in warm sea-baths without medical advice.

2. *Time for Bathing.*—On this point a considerable degree of latitude may be allowed,



provided always that due regard be had to those general principles which were laid down when speaking of the cold sea-bath. Unless circumstances render it expedient that some definite time should be fixed for taking the bath, the personal habits and convenience of the individual may be considered. As a general rule, the best time for bathing for those who dine late is about an hour and a half or two hours before dinner; and for those who dine early, a more suitable time will be about three hours after breakfast. In either case the preceding meal will be well digested prior to the bath, and the system will be placed in the best condition for deriving benefit both from it and from the meal following it.

3. *Duration of the Bath.*—The period of stay in the bath must be governed by the requirements and peculiarities of every individual case, just as in the matter of temperature, and must therefore be ever-varying and inconstant. Sufficient accuracy in this particular will be attained, however, if the following considerations be carefully borne in mind. First, what is the effect which it is desired to produce? and secondly, what temperature is best calculated to promote this end? Now a bath at 98° is stimulant if used for a brief period only, say ten minutes; but if immersion be continued for half an hour or so the effect is



decidedly relaxant, and this becomes more pronounced as the bath is still longer protracted. It is clear then that this relaxation comes on only after the stimulant and tonic effect has subsided, so that really the character and influence of the warm sea-bath may be said to be determined by its duration. If a soothing and tonic effect be desired, the period of immersion should be comparatively brief; but if relaxation or sweating be the object, then it should be more prolonged.

As a general rule, subject of course to modification, from fifteen to twenty minutes will be found the period best adapted to produce tonic and soothing effects; and from half to three-quarters of an hour to promote relaxation or sweating. The lower the temperature of the bath the longer must immersion be continued before the effect which is desired be attained, and *vice versâ* with regard to the higher temperatures.

4. *Frequency*.—The question of the repetition of the warm bath is one which cannot be settled absolutely. It may be sufficient to state, that for general purposes three or four baths a week, *i.e.*, one every other day, will be ample. In special cases, of course, it may be necessary to reduce, and even to exceed this number. But inasmuch as those who use warm sea-water baths are, for the most part,



persons of delicate constitution, and requiring care, it is better for them that they should not settle this point themselves, but refer it to medical opinion, and act accordingly.

5. *After the Bath.*—Many of the directions already given for the cold bath are equally applicable here, and need not be repeated; but there are one or two particulars having special relationship to the warm bath which require to be mentioned in this place.

First, it will add very much to the luxury and comfort of the bather if the towels which are used for drying the body be thoroughly warmed, thus getting rid of the sensation of chilliness which is always experienced, more or less, on coming out of the warm bath into an atmosphere many degrees lower than the temperature of the water.

Next, should exercise be taken afterwards? This must depend a good deal upon circumstances. As a general rule, applicable to the majority of patients, it is better to remain quiet until dinner-time, or at most to take only a gentle walk for a brief period, and then to rest till the dinner hour arrives. Where it is desired to promote sweating, the patient should be enveloped in warm blankets on leaving the bath, and be placed in bed for an hour or so; then, before dressing, he should be rubbed down with a sheet, dipped in cold



sea-water, and briskly dried with rough towels.

If one or two pails of cold sea-water be dashed over the body immediately on leaving the bath, the *tonic* effect is greatly enhanced. The skin at this time, with its blood-vessels full and turgid, holds a large amount of heat, and is therefore in the best condition for receiving and reacting against the impression of cold; the object of course being to restore to it the tone which the direct application of heat and the process of sweating have, for the time being, lowered. This result is quickly brought about, and a feeling of exhilaration follows which is intensely pleasurable. The stimulus, however, is so powerful, that only those in health should venture to resort to it without medical advice.

Whenever the warm bath is followed by the application of cold water, it will be proper to use active exercise afterwards, in order to restore the animal warmth, and this may be regarded as a rule which should never be violated.

It seems hardly necessary to say, that to lie upon the beach on a windy day, or to sit in a draughty place by an open window, after the bath, is in the highest degree dangerous, and yet the practice is by no means uncommon, though the risk of "catching cold" at this



time is infinitely greater than under any other circumstances, as the process of cooling down proceeds with unusual rapidity.

Before closing this chapter, it will be well, perhaps, to compare the relative action of hot and cold saline baths respectively, and if the previous sections have been clearly understood there will be no difficulty in recognising the prominent points of agreement and difference in the following comparison.

We have seen that the cold bath causes first contraction of the skin and capillaries, and afterwards dilatation. In the warm bath, on the contrary, swelling and enlargement of the surface is the first result, and contraction only ensues when the application of heat is withdrawn.

The warm bath raises the temperature by furnishing heat from *without*, and preventing its radiation from the surface of the body; the cold bath abstracts heat by refrigeration, and the animal warmth is restored from *within* by increased functional activity of the vital organs.

The warm bath calms and soothes by supplying heat, and thereby lessening the need of its production by the activity of the vital processes; the cold bath refreshes by the very activity which it excites.

The warm bath of high temperature resem-



bles the cold bath in its action as a stimulant of the heart and nervous centres, but from its nature, the impression which it conveys is less violent in character, and its mode of action more gentle and gradual.

The warm bath, therefore, is well adapted for those who are too delicate to withstand the shock of the cold bath, for young children, and also for the aged and infirm. The cold bath is best suited for those in health, who have no organic disease, and who suffer from functional disturbance only.

The warm bath of high temperature, unduly prolonged, causes fainting, giddiness, and sometimes vomiting and intense headache. The cold bath, protracted beyond proper limits, occasions congestions of the internal organs, and all the symptoms of collapse.

In the warm bath, transudation by the skin exceeds absorption, and the excess keeps pace with the elevation of temperature; in the cold bath, however, absorption exceeds transudation, and this holds good of all low temperatures.

We have thus briefly recapitulated the distinctive characteristics of hot and cold sea-water baths respectively, and it only remains that we should add a few observations upon the importance of its saline constitution as distinguishing the warm sea-water bath from



the common warm bath. Experience teaches us that salt water is more tonic and less relaxing than ordinary warm water; it is more stimulant to the skin and more derivative to the surface; it can be taken consecutively for a much longer period, not only without exhaustion, but with marked benefit; and lastly, the liability to take cold is much less after the warm sea-bath than after any other.



## CHAPTER IV.

MINOR ABLUTIONS—THEIR USE AND MODE OF APPLICATION—THE DRIPPING-SHEET—SHALLOW-BATH OR SLIPPER-BATH—TEPID-BATH—SPINAL-BATH—THE DOUCHE; USEFUL IN SURGICAL CASES, ETC.—CAUTION.

HITHERTO we have considered those methods of sea-bathing only which are most commonly practised by visitors to the sea-side, but there are other processes of scarcely less importance, in a hygienic point of view, which are capable of application in many cases where the use of warm and cold baths is quite inadmissible.

For example, in the treatment of young children, delicate women, weakly invalids, and persons of general feebleness of constitution, it would oftentimes be rash indeed to employ



the open sea-bath, whilst the warm bath may be equally unsuitable to their case. The minor ablutions, which we propose to describe in this chapter, may very well therefore claim an intermediate position, between the cold bath on the one hand, and the warm bath on the other; whilst their area of usefulness is so extensive, that but few maladies entirely exclude their employment.

Of all cold applications, the one which is most gentle and refreshing in its action and by no means wanting in tonic and strengthening properties, is—

1. *The Dripping-sheet*.—This is administered in the following manner: The patient stands in an ordinary round sponging bath, whilst an attendant takes from a bucket of sea-water a Malvern bathing-sheet, throws it dripping over the patient, and vigorously rubs him with it, the friction being continued till reaction is well developed. This process may be repeated until three or four dripping-sheets have been used in succession according to the reactionary powers of the patient, and the impression which it is desired to produce on the system; the abstraction of caloric in this manner being much better borne by some than by others. The patient is next enveloped in a dry bathing-sheet, and the friction process prolonged till the whole surface glows again. It is obvious that



the reaction in this instance is similar in character to that which has been already described in a previous page ; here, however, the shock is brief and momentary, the blood-vessels contract rapidly and as rapidly relax again, whilst the accompanying friction draws the blood largely to the surface and maintains it there in the dilated capillaries.

Many persons who practise sea-bathing for the first time are unaccustomed in their own homes to bathe in water of lower temperature than their body, and for these the "dripping-sheet" is an invaluable means of preparing the system to receive the fullest benefit from open sea-bathing. Others again, it is to be feared, are entirely innocent of baths, and the pores of their skin are so obstructed that cutaneous transpiration is almost a matter of impossibility ; the surface is white and bloodless and its circulation languid to a degree.

Under such circumstances vigorous reaction could hardly be expected to follow sudden immersion in the open sea ; some preparatory process is necessary to restore the obstructed functions of the skin, and to accustom it to the shock of cold water ; and for this purpose also the dripping-sheet energetically applied can be strongly recommended.

2. *The Shallow-bath*, or as it is sometimes called "slipper-bath" from its shape, is a more



potent remedy than the preceding, and may be used as a substitute for it in appropriate cases. Its action on the system is modified by the temperature of the water employed; and this in its turn must be regulated by the reactionary power of the patient. The best time for taking this bath is early in the morning, immediately on rising from bed; and it should contain about eight inches of water, in which the patient sits with legs extended. Friction of the body with rough towels or flesh brushes should be vigorously employed during the whole period of immersion, and the water copiously poured over the neck and shoulders.

For those who can bear a more stimulating method of administration, two or three pails of sea-water in succession may be dashed over the body immediately on entering the bath. It is clearly evident that the constant renewal of the water in contact with the surface of the body abstracts a larger amount of animal heat than the dripping-sheet, when this is only once or twice applied, and demands considerable power of circulation in order that the constant refrigeration may be beneficial and not hurtful to the patient.

As regards temperature, the "shallow-bath" is undoubtedly most beneficial, when cold water is used. Persons who are delicate may perhaps find the shock of absolutely cold water too



violent and depressing for their vital powers, and may modify it by the addition of one or two pails of warm water till the temperature of the bath is raised to  $70^{\circ}$  or  $75^{\circ}$ , adding less warm water day by day, till at last cold immersion can be borne with benefit and pleasure. Another plan is to use tepid water of a temperature from  $80^{\circ}$  to  $92^{\circ}$  on first entering the bath, and then by the gradual addition of cold water to excite the reactionary powers of the patient.

It may be well in this place to add a few remarks upon the *tepid-bath* (temp.  $86^{\circ}$ ,  $92^{\circ}$ ). Except as a substitute for the warm bath—when this is indicated but cannot be borne—the tepid-bath can hardly find a place as a remedial agent in “sea-bathing.” Its action is neither pleasant nor agreeable, and if prolonged for any length of time, a sensation of chilliness gradually pervades the body. The only way in which any degree of stimulation can be obtained from it, is by having one or two pails of cold water (or water of as low a temperature as can be borne) dashed over the body, whilst the glow of the tepid-bath continues and before the cold clammy feeling comes on. This should of course be followed by vigorous friction with rough towels and brushes, as already described.

For the majority of cases, we cannot but regard the shallow-bath, administered according



to our instructions, as a very much superior method of obtaining the benefits of sea-bathing than the use of the tepid: it is applicable under so many circumstances, affords such marked benefit, and is capable of adaptation to conditions which are so constantly varying, that it may be allowed to take precedence of the tepid bath, and indeed may altogether replace it, except in those cases where the tepid seems to be specially indicated.

3. *The Spinal-bath* is another means of applying sea-water rather as a therapeutic remedy in the treatment of disease than as a hygienic agent in the renovation of health. In its effects it bears a resemblance to the pail-douche, except that the refrigeration is local instead of being general. The following will be found the most convenient method of using it. A piece of board is placed across a Sitz bath or the narrow part of a shallow bath, on which the patient sits with his back towards the bath, whilst an attendant either bathes the spine with a towel, which is constantly dipped in a bucket of sea-water, employing meanwhile moderate friction; or, pours a stream from a can along the spine till three or four pails are used. The bath should last from three to five minutes, according to circumstances, and should be followed by the usual friction with rough towels and brisk exercise afterwards.



As a modification, the spinal wash may be thus used as an adjunct to the ordinary morning sponging bath, and instead of employing an attendant, copious affusion down the spine may be practised by squeezing a large saturated sponge at the nape of the neck, and continuing this process till the requisite refrigeration of the part is attained. This bath appears to exert a powerful influence upon the nerves in this region, which is communicated through them to the nerve centres generally, stimulating especially digestion and the various functions involved in this process.

4. *The Douche*.—We have lastly to speak of what may be justly regarded as the most powerful of the artificial methods of employing sea-water. In a work of this kind we could hardly omit all reference to it, although there are few watering-places which possess the requisite appliances for its administration; indeed, it is only in baths of very recent construction that the douche finds a place. In those magnificent bathing establishments which are found at various stations along our coast, no form of bath is omitted, and to visitors at these places some description of the douche will be acceptable.

It consists of a jet of water, which is discharged through a tube attached to a cistern or tank about 20 ft. from the ground. The force



of the stream is regulated by the diameter of the tube through which it is projected. In this country douches of one inch, two inches, and two and a-half inches in diameter are commonly used. The stream is directed either over the body generally or to some part in particular, especial care being taken that it does not fall directly on the head or the stomach. The body is slightly inclined, so that the force of the stream is diverted obliquely and its violence moderated; the parts which generally receive the douche being the lower two-thirds of the spinal column and the extremities alternately. The duration of the bath should not extend beyond two or three minutes.

From this brief description it is manifest that the douche is an agent of very great power. In addition to the refrigerating effect of contact with constantly changing particles of water, there is the stimulant excitement of the violent impact of the ever-descending stream. The circulation is quickened, the nervous system is aroused, and a burning tingling in the skin ensues, which is a sign that the full benefit to be derived from the bath has been attained. Should it unhappily be further prolonged, all the symptoms of faintness and collapse before described quickly supervene.

We have already pointed out in a previous chapter, when speaking of open sea-bathing,



the beneficial influence communicated by the dashing of the waves upon the body, and in this respect the douche is greatly superior, inasmuch as the impulse is not intermittent like the former, but continuous with the duration of the bath itself. The popularity of open sea-bathing, however, is so well established, that it is placed beyond the region of competition ; but the douche, though it cannot compete with it, may advantageously be substituted for it on those boisterous days when sea-bathing is absolutely dangerous or impossible.

It is in the treatment of surgical cases that the use of the douche is most frequently resorted to, and its beneficial effects are here most conspicuous. In former times when cold affusion was considered necessary in the treatment of any affected part, the patient was recommended to "pump upon it;" then when water companies came into existence, and the water was what is called "laid on," he was ordered to "turn the tap on it;" but nowadays it is the douche which has supplanted all besides, and has come to be regarded as a surgical remedy of first-rate excellence.

The douche is an agent far too powerful to be trifled with, and a word of caution may not be out of place here. Its use presupposes the possession of a considerable amount of reactive power and constitutional energy, and where



these are either absent or even deficient, the douche should be strictly forbidden.

In surgical cases not less discrimination is needful in the employment of the douche, or the most serious consequences may follow; an old inflammatory affection may be kindled afresh, and mischief long since dormant may be excited to renewed activity. We do not hesitate, therefore, to say most emphatically that the douche ought *never* to be used as a surgical remedy without professional advice.

As a hygienic luxury it may be enjoyed by those who are in vigorous health; but it is safer even for them to be guided first of all by medical opinion, lest some latent disease, of which they are themselves unconscious, should render the employment of the douche at best but a dangerous experiment.



## CHAPTER V.

SEA-AIR—ITS INFLUENCE UPON THE HUMAN SYSTEM—ACKNOWLEDGED SALUBRITY—THE ATMOSPHERE OR COMMON AIR—ITS COMPOSITION—IMPORTANCE OF OXYGEN—RESPIRATION—CONTAMINATORS OF THE AIR—SEA-AIR POSSESSES GREATER DENSITY—MORE OXYGEN AT THE SEA-SIDE—INFLUENCE ON COMBUSTION—EFFECT OF CONSTANT AGITATION UPON THE SKIN—GREATER UNIFORMITY OF TEMPERATURE—MILDNESS OF SEA-COAST EXPLAINED—GREATER HUMIDITY—INFLUENCE ON LUNGS AND SKIN—MORE ABUNDANT OZONE—ITS RÔLE—IMPREGNATION WITH SALINE PARTICLES.

THE superior salubrity of sea-air seems to be so universally acknowledged that it would be idle to question the opinion which the general experience of mankind has formed respecting it. It must be acknowledged that there is unmistakably a something in the air of our sea-coast which gives new life to the invalid, and to those who are well-nigh worn out by excessive mental and bodily toil; it revives their drooping energies, expands their lungs, quickens their pulse, arouses their appetite, soothes the irritability of their nerves, and awakens new hopes of a life of happiness and usefulness yet to be enjoyed. Scarcely a family circle can be found of which some member or other has not a grateful tale to tell of health renewed, vigour restored, and life prolonged by a timely sojourn at the sea-



side. Oftentimes, when all other remedies have failed, and all hope of recovery is apparently gone, and sometimes too when even the coastwise journey itself seems more than the exhausted invalid can survive, no sooner is the sea-side reached than signs of amendment begin to appear. First there is the delicious balmy slumber, induced by the sea-breeze, which, alleviating pain and weariness, is the harbinger of returning health. Next comes a relish for food, and enjoyment of all that before was distasteful, or swallowed only with difficulty and loathing. Increasing appetite brings with it improved digestion, better assimilation, and as a result we have a richer quality of blood and generally improved nutrition. Now it is that a delightful consciousness of "getting better" steals over the invalid, and the possibility of living to be "quite well" again is realised and cherished as an almost accomplished fact. What wonder if such a state of mind produce buoyancy of spirits? How can it be otherwise? The incubus of sickness and disease is progressively removed, and the consequent elasticity and cheerfulness of temperament follow in the wake of returning health and vigour as naturally as the shadow accompanies the substance. Such is a brief outline of the beneficial action of sea-air upon the invalid.



Nor is the benefit less real, though it may not be so conspicuously evident in those who, worn out by the harassing cares which accompany the struggle for competence in this country, seek rest, refreshment, and repose at the sea-side. Seldom indeed is health sought thus in vain, unless its laws are deliberately transgressed or carelessly disregarded, as sometime happens, by those who profess to be engaged in the pursuit of it. There is every reason to believe that in many cases the indiscretions thus committed proceed from imperfect acquaintance with those fundamental laws of life which must be obeyed by all who desire to possess health, or to regain it when lost.

In a future chapter we shall consider this subject more in detail, and to lay down some principles for the guidance of valetudinarians and others at the sea-side.

Having thus briefly alluded to the acknowledged salubrity of sea-air, we proceed in the next place to inquire to what this quality is to be attributed. What are the factors which combine to impart such health-giving properties, and how and in what respect does sea-air differ from common or inland air? In order to comprehend this matter clearly, it will be necessary for a few moments to consider the elements which enter into the composition of the atmosphere. Surrounded as we are by it



at all times, and never free from its influence for good or evil, any deviation from its normal constitution cannot but have a beneficial or injurious effect upon health. The composition of the atmosphere, or common air, is a matter of great simplicity. Two gases are mixed together in definite proportions, viz., oxygen twenty-one parts and nitrogen seventy-nine parts in one hundred, and the resulting compound is the air we breathe. The nitrogen is really of little use except to dilute the oxygen and restrain its too energetic action upon the human frame, just as we use water to qualify the potency of alcohol as a beverage. It is the oxygen alone which is the all-important constituent of the atmosphere, and upon its presence in sufficient quantity health very much depends. Let us observe its behaviour when taken into the lungs during the act of breathing. With every inspiration an absorbing surface, estimated at many times greater than the exterior surface of the body, is exposed to the influence of the air inspired, and oxygen is freely absorbed into the blood-vessels and conveyed by them to every part of the body. Thus all the structures of the human frame are brought into contact with oxygen by means of the blood, and in the course of its circulation the oxygen seizes with avidity upon the hydrogen and carbon of the body, forming in the one



case water, and in the other carbonic acid, both of which are removed by the act of expiration. In both instances the process of oxidation is accompanied by the development of heat, and in this way the animal warmth is maintained.

If, then, the presence of a definite quantity of oxygen in the air be necessary to maintain that equilibrium of the vital processes which we call health, it is manifest that any deviation from the normal proportion must interfere with the due performance of those functions upon which healthy life depends, and become a powerful agent in developing that condition of ill-health which we call disease. Now the chief contaminators of the purity of the air are carbonic acid gas and the emanations from decaying animal and vegetable matters; and by how much these are present by so much is oxygen absent, and the air rendered unfit for respiration. In large towns, where masses of human beings are crowded together in small space, the carbonic acid given off by them, and by countless chimneys and gas jets, etc., poisons the air, lowers vitality, and contributes largely to the production of disease. Hence the high death-rate of the manufacturing districts as compared with rural areas.

Let us now proceed to examine the prevailing condition of the atmosphere at the sea-side,



and see wherein its difference from common air consists.

In the first place, on the sea-coast we inhale more oxygen and less carbonic acid in a given volume. This will be self-evident if we for a moment bear in mind that the pressure of the air at the sea level—regarded as the standard of reference—is estimated at fifteen pounds to the square inch, and that the lower strata of the air have to bear the superincumbent weight of the strata above it. From this it is manifest that air so circumstanced is more compressed or condensed, and as a necessary consequence contains in the same volume more oxygen than the superimposed strata above it. On the other hand, this density of the air diminishes with increasing altitude, and that very rapidly, so that, according to Mr. Graham, at 2,705 miles above the sea—to take an extreme example—the air would expand to double the volume that it occupied at the sea level; in other words, would be more rarefied and contain less oxygen in a given quantity.

Again, the more oxygen we consume the more rapidly do those changes in the tissues of our bodies take place which are dependent on the combustion of carbon; the old materials are more quickly disintegrated and removed, whilst the demand for new is satisfied by the increasing appetite. Thus the human frame is



regenerated and renewed, without conscious effort of ours, by the silent influences of the sea-breeze.

In the next place, if constant agitation of the air be needful to maintain its purity, this condition is almost always persistent on the sea-coast, where the wind blows with varying force as a necessary concomitant of solar heat. Let us see how this happens.

On a hot summer's day the sun's rays fall equally upon the land and sea, but with very different results. The earth and everything on it very quickly gets hot, as is evident to the touch, but plunge the hand into the sea and its waters feel deliciously cool. Both have been subject to the same influence, only the earth absorbs heat more readily and parts with it more rapidly than the sea, so that at night it is the land which is colder than the water. The result is that the air immediately in contact with the heated earth becomes heated also, so that it is made lighter and ascends, whilst the colder air overspreading the sea streams in to occupy its place, and thus creates the cooling sea-breeze. After sunset the land parts with its heat so readily that the air overlying it is chilled and rendered colder than that which covers the sea; hence the conditions of the day are reversed, and a cold land breeze flows out to sea during the night.



Again, this constant agitation of the wind favours cutaneous exhalation; by always surrounding the body with renewed currents of air the functions of the skin as an excretory organ are more energetically performed. We shall refer to this subject again in a future chapter when discussing the advantages of sea-bathing.

Thirdly, sea-air may certainly lay claim to greater uniformity of temperature than obtains in places removed from the coast. From what has been already said it is evident that the proximity of the sea must have a controlling influence in determining the ranges of temperature of any locality. It has been seen how the law of the mutual diffusion of gases causes the heated atmosphere of the land to be replaced by the cool breeze from the sea, and *vice versa*. Thus the heat of summer is moderated and rendered enjoyable. In obedience to the same law the temperature of the coast-line in winter is raised by the admixture of the warmer air from the sea with the colder air of the land; for the heat which is stored up in the water is very steadily maintained by the Gulf Stream, and imparts to the air in contact with it a temperature of at least ten or fifteen degrees above that of the terrestrial atmosphere. The two commingling equalise their respective temperatures, and bestow a mildness and geniality



upon the sea-coast which are unknown in the interior.

Nor is this all. The warmer air from the sea holds a large amount of invisible aqueous vapour in suspension; as this mixes with the colder air of the land it is condensed, gives out its latent heat, and becomes visible in the formation of clouds especially at sundown, and thus that radiation of heat from the earth's surface into space which always takes place in clear cloudless nights is prevented.

It may therefore be safely assumed that the mean temperature of the sea-coast is neither so high in the summer nor so low in the winter as that which prevails in the interior, in places removed from the benign influences of the sea. This assumption is borne out by the meteorological records of the principal Continental cities, but it would occupy too much space to reproduce them here. Let us rather proceed to the consideration of the next distinguishing feature of sea-air, its great humidity.

The moisture of the atmosphere is not a fixed and definite, but rather an ever-varying quantity regulated by the temperature of the air. We have seen that a certain amount is always present, and when the air can hold no more in suspension it is said to be saturated; but if now the temperature be raised a few degrees, the capacity of the air for moisture is thereby



increased, and it greedily absorbs the products of saturation at a lower temperature, and fogs and mists fade away into thin air. In like manner this capacity for moisture is diminished by lowering the temperature. Now the sea is the great source from whence most of the vapour of the air is drawn by the process of evaporation; and the land adjacent to it participates very largely in that humidity which is greater upon the ocean than anywhere else. It is impossible to over-estimate the importance of the dryness and moisture of the air to health; and the two organs which are especially concerned are the lungs and skin. When the air is very dry it speedily robs the body of its moisture in the act of respiration, and every one is familiar with the discomfort and bronchial irritation which attends a drying east wind. On the other hand a hot moist wind already sufficiently saturated absorbs but little vapour from the lungs, and the cooling of the body is performed by the skin in the act of perspiration. In the one case the air of the sea-side affords the moisture which drying winds would abstract from our bodies; and in the other the constant agitation of the atmosphere promotes the transpiration by the skin of that moisture which the humid air cannot remove by the lungs. Hence the faintness and oppression so often observed in hot, close valleys, and large towns where the



air is stagnant and generally impure, are but rarely experienced by the sea-side.

Ozone is another constituent of the atmosphere which is found in abundance on the sea and adjoining coast. Schönbein, its discoverer, believed it to be naturally formed out of atmospheric oxygen by the electrical discharges constantly taking place in the air. It is a most powerful oxidising agent, so destructive to organic miasmata, that when ozone is present the absence of the latter may be inferred. It is more abundant by the sea than inland, on mountain tops than in the plains, in windy than in calm weather, and with S. and W. winds rather than N. and E. winds. In consequence of the irritating qualities of pure ozone upon the mucous lining of the air passages, it is believed by some to be the cause of epidemics of catarrh, influenza, and the so-called "hay-fever." The popular opinion is that the climate of any place where ozone is found in abundance must be healthy and exhilarating; and this is somewhat confirmed by the fact that ozone is never found in impure air. According to Schönbein and Moffat a proper admixture of ozone and atmospheric air is indispensably necessary to the due accomplishment of all the vital functions, and to the relief and modification of disorder and disease. On the whole, however, it must be fairly admitted that the present



state of our knowledge does not furnish absolute and undeniable evidence of the influences of atmospheric ozone upon health ; and until further data have accumulated it will be impossible to assign to it its proper position as a climatic factor. Nevertheless, its presence as a natural constituent of sea-air must be regarded as undeniable evidence of its purity.

Lastly, there are the ingredients which enter into the composition of sea-water, and impart to it its peculiar saline character, such as chloride of sodium, iodine, and bromine. These are largely derived from the soil of the earth by the solvent action of rain, and are conveyed into the ocean by countless rivers ; whilst marine plants and animals also furnish no small proportion. The peculiar "briny" smell is familiar to every visitor at the sea-side, but it is at low water, when the marine plants are exposed to the evaporating influence of the air, that the distinct odour of iodine is most pronounced. Perhaps, however, the sea-air is never so strongly impregnated with saline particles as during a gale of wind, when the waves thunder upon the beach, and the salt water, in the form of the finest atomised spray, is freely inhaled with every breath that is breathed. Indeed, with every return of the tide, but in less degree, these saline particles are wafted on the breeze from the crests of the rising



waves ; the skin tastes salt, the clothes likewise, and in fact the spray saturates everything. Of late years the inhalation of the atomised spray of various chemical solutions has become a recognised method in the treatment of various affections of the throat, larynx, windpipe, and air passages generally. It would be difficult to conceive means better adapted to the end than the inhalation of the naturally atomised spray of the sea ; but we shall have occasion to enlarge upon this subject in a future chapter.

One other point remains to be mentioned, viz., that inasmuch as the sea-coast must of necessity be open sea-ward, it is impossible for a resident at the sea-side to be *surrounded* by a pernicious atmosphere ; consequently, by how much the exhalation from impurities is less, by so much is the air rendered purer. The importance of this to health cannot be exaggerated.

We have thus briefly described the peculiar characteristics of sea-air, and have shown wherein it differs from common air ; and have indicated the sources of those properties which have endowed it with such acknowledged salubrity. It only remains to consider hereafter the beneficial effects of sea-air upon the human body under various conditions in disease.



## CHAPTER VI.

SEA-AIR AND SEA-BATHING AS REMEDIAL AGENTS IN DISEASE—FUNCTION OF EXCRETORY ORGANS—PROMOTED BY SEA-BATHING—OVERWORK—CONSTITUTIONAL DISEASE—STRUMA OR SCROFULA—RICKETS—ATONIC DYSPEPSIA—NERVOUS DISEASES—ST. VITUS' DANCE—HYSTERIA—NEURALGIA—CATARRH—ASTHMA AND BRONCHITIS—RHEUMATISM AND GOUT—DISEASES OF WOMEN—LEUCORRHEA—AMENORRHEA—MENORRHAGIA.

It is no exaggeration to say that most of the sea-bathing at our watering places is a farce, neither beneficial nor enjoyable, destitute of all intelligent aim and object, and calculated rather to induce pernicious and mischievous results than to promote health and well-being. If this account be true of sea-bathing employed as a hygienic measure simply—and no physician resident at the sea-side will question it—how much more disastrous must be the effects which follow its improper use in disease? In the preceding pages we have already laid down the principles upon which the use of sea-bathing should be based, and these, it is hoped, will be found a sufficiently trustworthy guide to its judicious employment in the treatment of disease.

It would be impossible, and obviously out of place in a work of this kind, intended for



general reading, to enter upon a description of the minute details of treatment appropriate to every case for which sea-bathing may be deemed a fit and proper remedy. The space at our disposal does not permit us to do more than enumerate briefly those complaints in which it has been found by experience to be beneficial. But inasmuch as the influence of sea-air and sea-bathing is expended immediately and directly upon the lungs and skin, it will be instructive, before proceeding further, to consider the mutual relationship and almost interdependence which exists between these organs, and to compare the functions which they respectively perform in the animal economy.

*Office of Excretory Organs.*—The lungs and skin are two of the so-called *excretory organs*—the kidneys being the third—whose office it is to convey from the body the waste products which result from the very act of living itself, viz., water, carbonic acid, and urea.

It is remarkable that organs apparently so very dissimilar should yet resemble each other in the elimination of the same products; they all agree in giving off a good deal of water, but most carbonic acid is exhaled by the lungs, and most solid matter is excreted by the kidneys. The skin, moreover, absorbs oxygen and gives off carbonic acid just like the lungs,



whilst it excretes saline matter like the kidneys; and if by any chance the function of the latter should be interrupted or suspended, the skin endeavours to make up the deficiency by its own increased activity, and *vice versa*. It has been estimated that in twenty-four hours the amount of water exhaled by the lungs of a healthy adult is about 9 oz., and carbonic acid 12,000 grains, whilst the skin gives off in the same period as much as 18 oz. of water, 400 grains of carbonic acid, and about 300 grains of solid matters.\* Seeing then the amount of work which these organs have to perform, it is of the highest importance to health that the integrity of their functions should be maintained in perfect working order, and nothing contributes to this end more satisfactorily than the hygiene of the sea-side.

In speaking of the application of sea-bathing in disease, our remarks must be understood to apply to the treatment of chronic cases generally, for though it oftentimes proves a most useful remedy in the tedious convalescence which sometimes follows acute disease, it is for the most part inapplicable in the acute stage itself.

1. *Overwork*.—Now, short of actual disease, there is a numerous class of cases, very common by the sea-side, frequently coming under

\* Huxley.



treatment, comprising the victims of overwork in its varied forms ; whether it be excessive mental application, or inordinate bodily toil, in combination with the increasing anxiety and care which are inseparable from the fierce competition which characterises modern life. In the struggle for supremacy every man taxes his powers to the utmost, and frequently even exceeds this limit ; he draws so repeatedly upon the reserve-fund of nervous energy, with which we are endowed for extraordinary need, that at last the time comes when this capital is utterly exhausted, there is no longer any response to such appeals, and the man is bankrupt in health, shattered in constitution, and altogether unequal to the discharge of his ordinary duties. In this, as in other instances, it is the pace which kills ; incessant wear and tear and inadequate intervals of rest leave their mark even upon the strongest constitution, and speak in warning tones, which ought not to be misunderstood.

Generally the heart is the organ that first shows symptoms of failure, when the nervous energy of the system is exhausted, by irregular action, palpitation, and faintness upon even moderate exertion. Then the stomach and digestive organs follow, food is neither digested nor assimilated properly, the blood is consequently deficient in nutrient properties, and the



body begins to waste. Meanwhile, irritability, restlessness, and despondency supervene, and finally inability to sleep fairly wears out the overwrought patient, and compels him to abandon all work before it be too late, and to seek rest and refreshment in change of scene.

Such, in brief, is the condition of many who come to the sea-side in the hope that a few "dips in the sea will soon set them on their legs again." This is a delusion. To send persons in this condition into the sea would be the height of folly. We have already seen that for sea-bathing to be beneficial it must be accompanied by healthy reaction; and how this is possible in persons who are worn out and prostrate with fatigue and overwork, and whose hearts give indication of failing propelling power, we are at a loss to perceive. Such a procedure tends rather to further exhaust the enfeebled system, favours congestion of the internal organs, and the development of latent disease.

The treatment which is proper for this class of cases is somewhat as follows. For the first few days nothing should be done in the way of bathing, but most of the time should be spent in the open air either in carriage exercise or in lounging on the beach. Then a warm salt-water bath may be taken every other day for a week, followed by friction with the



dripping-sheet and dry towels. In this way the functions of the skin are restored, and the following week a tepid bath with a pail-douche of cold sea-water on rising from bed may take the place of the warm bath. If the reaction be satisfactory and sufficient, cold sponging and the pail-douche may now be substituted in the early morning, and on alternate days a plunge in the sea may be safely indulged in without risk of disastrous consequences. Thus reaction is gently promoted, strength steadily renewed, and health permanently re-established.

*Constitutional Disease.*—In the diseases of constitutional origin which manifest themselves in childhood and youth, the beneficial effects of sea-air and sea-bathing are very striking. This is especially evident in the strumous habit of body, so common in our country, and the change which is sometimes wrought is little short of marvellous. Everything depends, however, upon the judicious application of the remedy, and its employment should be adapted to the peculiarities of every individual case. Struma is so essentially a disease of debility, want of tone, and vital power, in ever-varying degree, that an un-deviating line of treatment suitable to everybody is impossible.

*Struma or Scrofula.*—The most common forms



of scrofulous affection which occur in sea-side practice are in children presenting large and projecting heads, contracted chests, tumid abdomens, and enlarged joints, with feeble pulse and languid circulation, and nearly always cold extremities; the bowels are generally irregular and disordered, the appetite capricious, and the little patients have an *old* expression of face which is seldom wanting. Such a description applies to all those in whom the strumous constitution exists—in a passive or dormant state—simply. Sometimes it exhibits greater activity, and in addition to these signs there are swellings of the joints, or enlargement and suppuration of the glands of the neck, and indolent or cold abscesses of the skin; occasionally troublesome eruptions of the scalp, ears, mouth, and nose; oftentimes ophthalmia, most difficult to cure; enlarged tonsils and affections of the bones and joints; and finally consumption itself.

In many cases this habit of body or constitution, as it is called, is hereditary, and is the natural result of the ill-assorted marriage of unhealthy, weakly, or scrofulous parents. In other cases it is artificially developed by “bad bringing up,” by the administration of improper and indigestible food, by the want of fresh air and exercise, by insufficient clothing, and the neglect of all that relates to hygiene.



Infants "brought up by hand" upon unsuitable nourishment oftentimes fall victims to this disease during their childhood. Most frequently, however, it originates from the combined effects of these pernicious influences in impeding and perverting healthy development.

In the way of treatment nothing is more efficacious than a prolonged residence by the sea-side, and the frequent use of sea-bathing. But inasmuch as strumous children have in general a thin semi-transparent skin, very sensitive to cold, as well as a feeble heart, great care is needful that the temperature of the bath be not at first too low, or the reactive power of the patient will be overtaxed, and the shock will be hurtful instead of beneficial. In every case the first immersion in cold water should be brief and sudden, followed by rapid friction and gentle exercise. But with delicate children it is better to begin with a bath of high temperature, reducing this day by day till cold water can be borne with comfort and benefit. After warm baths friction with hot flannels will be found very grateful to the little patients; but after the cold bath the use of the rough bathing sheet is to be preferred.

We must protest against the senseless and cruel practice of bathing children shrieking with terror in the open sea. The agony of



fright does more harm than the bath can do good. Better far that such timid ones should use cold sponging in the shallow bath at home, than the open sea with such mental suffering.

When this line of treatment is aided by suitable regimen, digestion improves, better blood is made, nervous energy revives, and increased activity of the capillary circulation follows; thus the healthy nutrition of the body is permanently established, and in some cases the constitution itself completely renovated.

*Rickets.*—Rickets is another disease of childhood, closely allied to the preceding, in which the benefits of residence by the sea-side are even more marked. The characteristic appearance of a rickety child is so well known that a minute description is unnecessary; the bones are bent and distorted in varying degree, particularly the collar-bones, the ribs, and the long bones of the arms and legs. This condition appears to be due to the retardation of the deposition of those earthy matters which impart firmness and solidity to the bony structures, and they consequently remain soft and yielding. Hence it is that when the child begins to raise itself upon its arms, and to “feel its legs,” the bones bend beneath the weight of the body, and assume the appearance called “bowing.” Although this disease is so formidable in its effects,



its causes are sufficiently simple and not far to seek; bad air, bad ventilation, and defective nutrition are the chief factors concerned in its production. There can be no doubt that the custom, unfortunately becoming so prevalent in these days, of bringing up infants entirely or even partially upon artificial food, at best but ill-suited to their digestive powers, contributes in no small degree to the development of rickets; and the practice cannot be too strongly condemned.

The *treatment* is obvious; remove the causes. It is not often that cases in the early part of their career are seen in sea-side practice; generally the disease is advanced before even the friends are aware of its existence, and it is the increasing distortion which attracts their attention, and leads them to seek advice. This is a malady upon which sea-air seems to exercise a marvellous influence for good; and a recent writer,\* in recommendation of it, says, that "even where marked deformity has already taken place, amendment will be sure to follow." This is entirely in accordance with our own experience. The little patients, however; should live altogether in the open air, except at meals; and should sleep in rooms with open windows. A prolonged residence by the sea is absolutely necessary,

\* Dr. West.



say for six, nine, or twelve months, or even two years, if permanent benefit be desired; shorter periods are useless. Generally the deformity of the upper extremities completely disappears, but the legs having to support the weight of the body, seldom lose their "bowed" appearance. With regard to the use of sea-water, the mode of application suggested for struma is applicable here; except that it should not be employed so early in the treatment as in the former case, sea-air alone being sufficient at the commencement of residence.

*Atonic Dyspepsia.*—Atonic dyspepsia—or that impairment of the digestion which is characterised by failure of functional power—is of very common occurrence in those conditions of depressed vitality which follow upon continuous overwork, in combination with anxiety and mental worry. It is marked by a feeling of weight, discomfort, and flatulence after food, and great irritability and depression of spirits. The malady is generally chronic, inasmuch as it is struggled against as long as possible before advice is sought; then, with the aid of drugs, the patient continues for a little while to do work for which he has long been unfitted. At last the jaded system is obliged to yield; the nutrition of the body has become so impaired that the machinery is almost



brought to a standstill, and rest from toil is indispensable.

The treatment of cases of this nature should be entirely restorative and tonic. Our object is to improve the quality of the blood by suitable diet and regimen, and also to create a demand for food by the careful removal from the system of the worn out and waste products. Change of scene is always beneficial, and the sea-side is to be preferred; for sea-air is probably the best tonic in these cases, whilst sea-bathing is a most powerful promoter of tissue-change. A dry chalky or gravelly soil should be selected. Moderate exercise, short of fatigue, may be taken as augmenting, in marked degree, the digestive power. Tepid salt-water baths, with the use of the flesh-brush, will generally be found the best mode of using sea-water, until sufficient reactionary power has been acquired to enable the patient to venture into the open sea. Thus the skin aids the lungs in the oxidation of the tissues, a better quality of blood results, and improved nutrition soon renews the vital energy of the system at large. In some cases, where the skin is dry and inactive, it will be necessary to begin the treatment with warm sea-baths, or no improvement in the patient will be manifested.

*Nervous Diseases.*—In the class of nervous diseases much may be said in favour of sea-



bathing. We shall confine our observations, however, to those minor affections which have been found to yield most readily to this remedy, or to have benefited by it.

*St. Vitus' Dance.*—In chorea, or St. Vitus' dance, we have an instance of the nervous system running riot, the influence of the will no longer controls muscular action, and the unfortunate patient is distorted by convulsive and irregular jerking of the limbs, and by ludicrous grimaces which he is utterly unable to control. Generally, but not always, these movements cease with sleep. This malady affects children of all ages, from seven years and upwards, and in girls is common about the age of puberty; it is nearly always associated with constipation, disordered digestion, and sometimes worms; the irritation is reflected from the spinal cord to the muscles, and occasions these spasmodic contortions.

After any exciting cause has been cleared away by a brisk purgative, no agent exercises such marked control upon these movements as sea-bathing. In excitable subjects the dripping-sheet will be the best form of bath to begin with; then the shallow bath and pail-douche; and, lastly, the open sea bath. If this treatment be adopted perseveringly, the shower-bath will be unnecessary, and the improvement will be rapid; but the cure is oftentimes



expedited by the administration of some preparation of iron in full doses, with an occasional aperient.

*Hysteria.*—Hysteria is another form of nervous affection in women, exhibiting a variety of phenomena most troublesome to deal with, generally associated with debility, and in these days largely on the increase. This is probably due to the modern method of education of girls—too much mental and too little bodily exercise,—whilst the emotions are unduly excited by the worthless novels of the day. Hence the frequency with which hysteria presents itself on the slightest provocation.

In close relationship are loss of taste and smell, and particularly loss of voice, which is perhaps the most common of all hysterical affections.

The treatment of hysteria must of necessity vary according to circumstances. But generally speaking, cold affusion, such as the tepid-bath, followed by the cold pail-douche or the dripping-sheet, two or three in succession, is the best commencing treatment for ordinary cases, and as soon as possible the cold plunge should be resorted to; the object of course being to strengthen the nervous system by the healthy shock of sudden cold applied to the surface of the body. In every case friction with flesh-brushes should be continued till reaction is completely established.



*Neuralgia.*—Neuralgia, or nervous pain, as the outcome of debility, however induced, whether by overwork, mental anxiety, prolonged lactation, exhausting discharges, or defective nutrition, is a most refractory malady to treat. In sea-air and sea-bathing, however, we possess a combination which seldom fails to effect a cure even in the most obstinate cases. The warm sea-water bath will be found the most grateful to neuralgic patients, and this should be taken three or four times a week till the acute sensitiveness to pain is subdued; then the tepid bath, and finally the cold plunge in the open sea, may be taken with advantage, till the full tonic effect of the remedy is manifested.

*Catarrhal Affections.*—In catarrhal affections, and all those complaints produced by vicissitudes of temperature, or by prolonged exposure to cold, no remedy is superior to sea-bathing as a preventive measure. It not only strengthens and invigorates the skin, and accustoms it to sudden changes of temperature, but also fortifies the system generally, and enables it to resist the injurious effects of cold. As we have elsewhere remarked, the combined influence of sea-air and sea-bathing is expended upon the very organs liable to be affected by external impressions, viz., the skin and the air passages. It is only necessary to add that when the sea-



bathing season is over, the "morning tub" should be continued throughout the winter, remembering that "prevention is better than cure."

For the same reasons it has been found an excellent remedy in the intervals of bronchitis and asthma, in preventing a recurrence of those complaints. The testimony of one who was himself a victim to asthma, is quite to the point, and is as follows: "I think it is a law, without an exception, that nervous affections are less prone to occur in proportion to the general bodily vigour, and what, for want of a more definite term, we must call the *tone* of the nervous system. Anything therefore that invigorates renders asthmatics less prone to their attacks. In this way sea-bathing is often of great service to asthmatics. By raising the standard of the general health, it tends to prevent those humoral derangements which are often the exciting cause of asthma." \*

We must not, however, omit the caution that immersion should be very brief, and on no pretext prolonged beyond two or three "dips" and out again, lest the remedy, by inducing congestion of the air-passages, should promote the development of disease.

In those cases of chronic bronchitis, characterised by general want of tone, in which the secretion from the bronchial membrane is

\* Hyde Salter.



persistent, nothing is so beneficial as a prolonged residence at the coast, where the climate is dry and bracing, and the atmosphere is saturated with the naturally atomised spray of the waves. For, according to the observations of Beigel and others, the inhalation of the atomised spray of various fluids, is a most efficient mode of treating affections of the air-passages; and those liquids are found to be most useful for the purpose whose constitution largely partakes of the saline character of sea-water.

In certain cases of debility where the skin is perpetually perspiring, and the surface is cold and clammy, sea-bathing, on account of its tonic properties, is a most reliable agent.

*Rheumatism and Gout.*—In chronic rheumatism, rheumatic gout, stiffness of the joints, and muscular contractions, few remedies can show such satisfactory results as *warm* sea-bathing. In all these cases the bath should be taken on alternate days, and friction with flannels or flesh-brushes should be practised during immersion; and, in short, the directions already given in a previous chapter for the administration of the warm bath, should be carefully observed.

*Diseases of Women.*—As regards the diseases peculiar to women, those which are most commonly prevalent, viz., leucorrhœa, amenorrhœa, and menorrhagia, are peculiarly amenable to treatment by sea-bathing, when they are



dependent on constitutional debility alone. In addition to the general tonic effect which this agent produces upon the system at large, it exercises also a beneficial local action. Thus, in leucorrhœa, the cold bath largely determines the blood to the skin, and so relieves the congestion of the internal organs which generally obtains in this complaint. So also in menorrhagia, especially at the "change of life," the use of the cold bath, if it does not effectually control the malady, at any rate keeps it in check, and affords the greatest comfort to the patient. In amenorrhœa, dependent as it so often is upon defective hygiene, want of air, exercise, and proper food, and too sedentary a life, the influence of sea-air and sea-bathing is almost unparalleled. But when this disease is of organic origin, sea-bathing is no longer a specific, but a simple remedy for improving the general health of the body.

In all these maladies the hip-bath or shallow-bath, followed by a pail-douche, with water at first tepid and then cold, will be the best method of treatment. A dripping-sheet at bedtime may also be used. Then, when a good reaction is established, the cold plunge in the open sea will complete the cure. It is better to err on the side of caution, than to be indiscreet in resorting to the open sea prematurely, before the patient has recovered sufficient energy for



the shock. In leucorrhœa much benefit will follow the daily administration of an internal douche by means of a Higginson's syringe, and we cannot speak too highly of this simple mode of treatment. After every bath reaction should be encouraged by friction with flesh-brushes or rough-towels or bathing-sheets, till a genial glow pervades the body.



## CHAPTER VII.

IS SEA-BATHING EVER INJURIOUS, AND WHEN?—IN ACUTE DISEASE—INFANCY—OLD AGE—PLETHORA OR “FULL HABIT”—ORGANIC DISEASE—HEART DISEASE—CONSUMPTION—SKIN DISEASES—PREGNANCY AND MENSTRUATION.

To many minds the question with which we begin this chapter may seem superfluous and unnecessary. But we ask it advisedly, because there is a wide-spread belief that sea-bathing can never do harm, and it is within our knowledge that much injury does sometimes result from reckless indiscretion in this matter. We purpose, therefore, in this place to point out those conditions of the system in which sea-bathing cannot but be attended with danger, or at any rate with the risk of danger, and should therefore be forbidden, or only used with extreme caution under medical advice.



This warning is all the more necessary in these days of excursion trains, for almost the first thing an "excursionist" does when he gets to the sea-side, is to take a "dip" in the sea quite regardless of his condition at the time ! Then, on the principle that "one cannot have too much of a good thing," and probably after a heavy meal and a day of much fatigue, he takes another "dip" before his train starts homewards, and oftentimes he carries with him the punishment of his folly in the shape of some incipient disease or other. Some extreme cases have also come under our notice in which death has quickly followed immersion in the sea, in consequence of the existence of some latent mischief in the system of which the unfortunate victims were entirely ignorant. The wonder is, however, not that these accidents occur at all, but that they do not happen more frequently, considering the vast amount of indiscriminate bathing which goes on throughout the season in every watering-place around our coast.

*Acute Disease.*—It may be laid down as a general rule, without exception, that nobody suffering from *acute* disease in any form should bathe in the sea unless under medical direction.

*Infancy.*—Again, it will be obvious to most people that neither the very young nor the



very aged are fit subjects for sea-bathing. We have elsewhere expressed the opinion that all the benefit which is derived from sea-bathing in infancy can be obtained just as well from the use of sea-water in baths at home, without the agonising fright which is almost inseparable from immersion in the open sea, and the risk of injury which such terror may produce.

*Old Age.*—In the aged, besides the wear and tear of a long life, there are certain structural changes incidental to advancing years taking place in the various organs of the body, which render them less and less able to withstand any sudden strain that may be thrown upon them. Hence, the shock of sea-bathing may drive the blood from the surface with such force that some vessel already structurally weak (*e. g.* in the brain), yields to the impulse of the stream and is ruptured, and we call this apoplexy. Or, again, the cold may cause the blood so to stagnate in the minute vessels of the lungs, that an attack of congestion follows, which is sometimes fatal. In old people, too, disease, which may have existed for years in some organ or other quite unperceived, is readily excited to deadly activity when some unusual demand is made upon the diseased organ to which it is quite unable to respond. Hence the importance of forbidding sea-bathing to all who are



advanced in years. A tepid or even warm bath is better adapted to their state, with friction afterwards to aid the failing activity of the skin.

*Plethora.*—Sea-bathing cannot be recommended (and by this term we mean, of course, bathing in the open sea) to persons of what is called “full habit,” or to those with any tendency to “blood to the head,” or bleeding from the nose, or giddiness and swimming in the head. In such cases there is always a predisposition or facility favourable to the congestion and engorgement of important internal organs, which is so greatly aggravated by sea-bathing as sometimes to induce fatal results.

*Organic Disease.*—In organic diseases, or those maladies in which the structure of an organ becomes involved—as well as in aneurisms, in cancerous and fungous growths, and also in induration, chronic inflammation, or obstruction of the internal organs—sea-bathing is altogether inadmissible.

*Cardiac Disease.*—Neither is it to be allowed in affections of the heart, especially where valvular obstruction exists. From the frequency with which this ailment follows rheumatic fever, we recommend all persons who have suffered from this disease to be assured by their medical adviser that the heart is sound before venturing into the sea. Where there is reason



to suspect a thin, dilated heart, the same prohibitive caution is necessary.

*Consumption.* — The question is frequently asked whether it is right and proper for consumptive people to bathe? No question requires greater discrimination in answering than this, for the consequences involved are weighty and serious. As a general rule, when consumption is once developed, sea-bathing can only do harm by exhausting the already declining strength of the patient, causing congestion of the affected lungs with possible hæmorrhage, and accelerating the fatal termination of the disease. Indeed, we go so far as to say that the sea-side is by no means the place for cases of *advanced* consumption. Sea-air is much too stimulating for them, and occasions such rapid oxidation that they burn out, so to speak, more quickly than they would in more sheltered positions. To use a familiar illustration, it is very much like placing a lighted candle in an open window; the free current of air causes it to be consumed much more rapidly than it would have been in the still atmosphere of the apartment.

But when only a delicacy or predisposition to consumption exists, with no actual manifestation of the disease itself, there can be no possible objection to sea-bathing, provided only that there be sufficient reactive power in the



patient. On the contrary, sea-bathing is much to be recommended in these cases as a hygienic agent likely to be beneficial in every way, improving the nutrition and health of the body to such a degree, that oftentimes the very tendency or predisposition itself is eradicated.

The precautions and directions given in a previous page must, however, be rigidly observed; and great pains must be taken, by rapid friction, to induce a good reaction, otherwise the bath is a failure, and will probably prove injurious. In all cases of doubt, or where any cough exists, it is better, for obvious reasons, to seek medical advice before rather than after sea-bathing.

*Skin Diseases.* — From what has been previously said regarding the influence of sea-bathing in promoting the functional activity of the skin, it may be supposed that it would prove an excellent remedy in skin diseases, attended by eruptions upon the surface. In former times this opinion was entertained by many, who believed that the disease was in the blood, and that it was better that it should "come out." Now, sea-bathing certainly has the effect of bringing an eruption "well out;" but this is really due to an aggravation of the malady, and by no means curative. The composition of sea-water renders it too irritating an



application in cutaneous diseases, and it may therefore be regarded as inadmissible in such cases.

It must, however, be allowed that certain forms of skin disease are so closely allied with general debility and impoverished blood, that when we cure the latter the former will vanish; and our treatment should clearly be directed to this end. But it must always be a question for medical opinion whether, in any given case, sea-bathing should be one of the tonics employed or not; and unless such sanction be obtained, it is better to abstain.

*Pregnancy.*—With regard to sea-bathing in pregnancy, there can be no doubt that, for the majority of women, it would be an unsafe proceeding to venture into the open sea at such a time. The shock would probably be too great, and might possibly occasion a miscarriage. Some few cases have come under our notice where ladies have continued a course of sea-bathing through the greater portion of their pregnancy, not only without harm but with positive benefit; but such a practice we cannot recommend—on account of the risk incurred—for general adoption. On the other hand, nothing conduces so much to general health, or braces up the system and wards off the tendency to miscarriage so much as sponging the body with sea-water, at first tepid, and then cold, gradu-



ally lowering the temperature till it can be endured without discomfort.

*Menstruation.*—Finally, during the monthly periods, sea-bathing should on no account be allowed.



## CHAPTER VIII.

THE AILMENTS AND DISCOMFORTS WHICH SOMETIMES ACCOMPANY A COURSE OF SEA-BATHING—BILIOUS ATTACKS—CONSTIPATION—DIARRHŒA—IRRITATION OF SKIN—BOILS—NETTLE-RASH—CONGESTIVE HEADACHE—FAINTNESS AND VOMITING—CATAMENIA.

NOTWITHSTANDING the immense amount of enjoyment which most people contrive to get out of their holiday by the sea, a very large proportion of them have to undergo certain trifling discomforts which seem to be almost inseparably connected with sea-side life, and which certainly do, whilst they last, interfere considerably with personal gratification. In some respects these little ailments are nearly akin to the miseries experienced by those who “go down to the sea in ships” for the first time, and whose enjoyment of a yachting trip only begins when they have found their “sea legs.” In like manner, many persons suffer a



good deal at first at the sea-side, until they become, as it were, gradually acclimatised.

*Bilious Attacks.*—Now the commonest ailment of all at the sea-side, with which everybody is more or less acquainted, is that which is popularly known as a “bilious attack,” manifesting itself generally about four or five days after arrival at the coast. The history of every case is almost identical, and runs somewhat as follows: For the first few days the freshness of the sea breeze seems to quicken all the functions of the body, a larger quantity of oxygen is inhaled, and combustion proceeding more rapidly, creates a demand for more food to supply the waste of the tissues. Hence the increase of appetite, and the growth of that feeling of constant hunger which it is so difficult to appease—always eating and never feeling satisfied. The digestive organs do their best to get rid of this superabundance of food, but in vain; it continues to accumulate, and at last a sharp attack of bilious vomiting relieves them and the system together.

The explanation of this class of cases is sufficiently simple. Most invalids suffer from capricious and failing appetite, which nothing can tempt, to the great dismay of anxious friends. As soon then as a change to the sea creates a longing for food, everybody welcomes the returning appetite with delight, and friends



and relatives vie with each other in procuring dainties with which to satisfy it. But they forget that there is a limit to digestive power even in the strong, much more in those who are weakly and ailing; and they indiscreetly enough endeavour to hasten the patient's recovery by indiscriminate feeding, till the occurrence of a "bilious attack" warns them of their error. If at the same time sea-bathing be practised, the disturbance of the system is so much the greater; but it is rare indeed to observe bilious vomiting after legitimate bathing *per se*, whilst it is of frequent occurrence in conjunction with over-indulgence of the appetite in the matter of food.

Even those who, not being in search of health, may be regarded as pleasure-seekers, sometimes suffer from attacks of this kind from similar indiscretion in diet. They eat freely of salads and shell-fish of all kinds, and at all times of the day, till the stomach "strikes," and for a time rejects all food.

We have laid down in another place the "dietary" which we consider most suitable for the sea-side, and its careful observance is recommended to all who desire to escape the miseries of a "bilious attack."

In the way of treatment little is needed beyond a wholesome abstinence from solid food. The blinding headache and coated



tongue, and disagreeable taste, will all disappear after an aperient dose at bedtime, followed by a seidlitz powder in the morning. As a beverage, equal parts of soda water and milk will be found very grateful to the patient, but all stimulants should be avoided, unless taken under medical direction in special cases. It is hardly necessary to add that sea-bathing should be suspended till all feeling of indisposition has subsided.

*Constipation.* — Constipation, as a consequence of sea-bathing, rarely occurs later than the first week. If it takes place at all it is generally after the first few baths, before the system has become accustomed to the shock of the cold water. It seldom happens to those who bathe judiciously and sensibly, and do not prolong their stay in the sea beyond what is reasonable; whilst the most frequent victims are furnished by those who have been tempted to remain so long immersed that their reaction, if any, is of the mildest character. The continued application of cold produces temporary congestion and stagnation in the vessels of the liver and intestines, and this sluggishness occasions a suspension, or rather a retardation of the usual functional activity of these parts, and costiveness is the result. On the other hand, when used rationally, sea-bathing, by quickening the circulation throughout the



system generally, promotes the removal of morbid accumulations of effete matter in the tissues; in other words, intensifies functional activity, and renders constipation a remote possibility.

Not so very long ago, the internal use of seawater was regarded as an infallible cure for this complaint, and it was customary to prescribe as much as half a pint for a dose, once or twice in the day, according to the effect. It is stated, on good authority, as a curious fact, that by the continuous employment of seawater as a purgative, although for a short time it produces emaciation, yet its secondary effect is to promote obesity; and if it cannot be regarded as a purgative of much power, yet in some constitutions it operates when no other cathartic will take effect. It must be allowed, however, that it is rather a drawback to learn that when it fails to purge, which it does in some habits, it produces fever of a low kind, accompanied with purple spots on the skin.\*

It is difficult to imagine a compound more nauseous, or a remedy more unpalatable to the mass of mankind—for most bathers have experienced a briny mouthful at times—and we can hardly conceive that a patient could be induced to take the dose, even if a physician

\* Thomson.



existed in these days eccentric enough to prescribe it.

A less disagreeable remedy, and equally efficacious, will be found in the Hunyadi water, a wineglass full every morning for a week, and then repeated on alternate mornings for another week; or a dose may be taken every night at bedtime, consisting of four grains of aloes and myrrh pill, and continued for a week. In very obstinate cases it may be necessary to combine both plans before the constipation yields. It rarely happens that one or other of these remedies fails to produce the desired effect. Other simple agents suitable for the purpose are the lenitive electuary at bedtime, or Carlsbad salts, seidlitz powders, or Friedrickshal water in the morning, according to circumstances.

*Diarrhœa.*—Diarrhœa is an ailment of much more frequent occurrence during a course of sea-bathing, and appears to be a natural result of the increased activity with which the vital processes are performed when the system is fully under the influence of this stimulus. In other words, the interchange of waste and repair is carried on so rapidly under these circumstances that the excretory organs have as much as they can do to remove the worn-out particles from the body in order to make room for the new, and occasionally the bowels are called upon



to assist in the work, and a sharp attack of diarrhoea is the result. It rarely lasts more than two or three days, and it is seldom necessary to do more than suspend sea-bathing till it ceases. If, however, it should be persistent and accompanied with griping pains, it will be advisable to seek medical advice, especially if the appetite fails and a feeling of faintness and exhaustion arises. Our remarks are intended, of course, to apply solely to those cases which are attributable to the salutary influence of sea-bathing simply, and not to those which are clearly due to errors in diet or to some chill from exposure to wet and cold. In the one instance it is Nature's own method of reconstruction, of bringing about what has been aptly called "the renewal of life," and should not be interfered with without good reason; and in the other the sooner appropriate medical treatment is resorted to the better.

*Irritation of the Skin.*—Irritation of the skin, though a trifling, is sometimes a very troublesome result of sea-bathing. The narratives of shipwreck furnish us with abundant evidence of the cutaneous suffering experienced under constant exposure of the body to the action of sea-water, and from its chemical composition this is no more than might be expected. In some constitutions, however, the intolerance of it is so great that even the



transient immersion of the bath is sufficient to cause much personal discomfort. The skin becomes rose-coloured, sometimes scarlet, with elevated points scattered over the surface, giving rise occasionally to groundless alarm; and there is much burning, tingling, and itching, particularly at night, or when the body is warmed by exercise. But these unpleasant symptoms gradually subside as soon as the skin has become accustomed to the bath, and no further inconvenience is experienced.

*Boils and Nettle-rash.*—Every now and then, however, and probably in consequence of the increased work which the skin as an excretory organ is called upon to perform during the progress of a course of sea-bathing, the cutaneous irritation is so great that a crop of boils springs up on the surface, or a nettle-rash makes its appearance. These inconveniences are generally to be regarded as beneficial and affording much relief to the irritability of the system at large. In all such cases sea-bathing should be discontinued for a time, and in the majority a little cooling laxative medicine is all that is necessary in the way of treatment.

*Headache.*—Sometimes congestive headache comes on either during or after the bath, and is not seldom due to protracted stay in the water, or to the habit of diving and remaining beneath the surface too long. Occasionally it



results from bathing too soon after a full meal, or in the heat and glare of the mid-day sun. In some nervous persons the very anticipation of the bath is sufficient to cause throbbing pain in the head, which immersion in the sea only intensifies. In such cases an effectual preventive will be found in the precaution of thoroughly wetting the head and making it perfectly cool before entering the water. In the other instances prevention is readily effected by avoiding the obvious causes.

We must observe here, however, that when, from undue prolongation of the bath, congestive headache of severe character ensues, it is almost invariably accompanied by the complete absence of reaction. No amount of friction suffices to produce even the smallest glow, or to change the "pinched" expression of the sufferer. Under such circumstances, recourse should be had to the hot foot-bath. Let the patient's feet be placed in water so hot as can be borne for ten minutes and then be rapidly dried, and a brisk walk taken till reaction is established and the head relieved. The efficacy of the bath may be increased, if desired, by the addition to it of two tablespoonfuls of mustard.

Occasionally, though perhaps rarely, the collapse from this cause is so pronounced as to cause great alarm, and more energetic measures



are necessary for the restoration of the patient. Let him be placed in a warm bath for ten minutes or a quarter of an hour, having previously swallowed a glass of hot brandy and water, and be well rubbed with coarse flannels or flesh-brushes (according to the instructions given in the chapter on "Warm-bath"), and recovery will speedily follow. Food might now be taken with advantage and gentle exercise allowed afterwards.

*Faintness and Vomiting.*—Faintness and vomiting after bathing are very seldom observed in men, but in anæmic and delicate women they are sometimes met with, and most commonly when the bath has been tried before breakfast, or after too long abstinence from food, when the system is not sufficiently fortified to withstand the shock of immersion. A glass of wine and rest in the recumbent posture will obviate the distressing symptoms; but common sense dictates that the bath should never be attempted when the body is exhausted and the circulation lowered by the want of food.

*Catamenia.*—From what has been said with regard to the powerful influence of sea-bathing in promoting and quickening the performance of function generally throughout the body, it will be readily understood that few agents, if any, are so efficacious in correcting any



absence or irregularity of the catamenia. It is unnecessary, however, to say more on this subject in a work of this kind, but merely to add the caution that when the "period" makes its appearance sea-bathing should be immediately discontinued.

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## CHAPTER IX.

THE GENERAL HYGIENE OF A TEMPORARY RESIDENCE AT THE SEA-SIDE, WITH REMARKS ON CLOTHING, FOOD, EXERCISE, ETC.—CLOTHING—WOOLLEN UNDER-CLOTHING—LINEN—CALICO—CHEVIOT SUITS—SERGES AND HOMESPUNS—FOOD—TIMES OF EATING—REGULARITY—QUANTITY—KINDS—DIET-TABLE—CAUTIONS—EXERCISE—NECESSARY FOR ALL—IMPORTANCE TO HEALTH—MODERATE RATHER THAN VIOLENT—WALKING—RIDING—ROWING—SWIMMING—BEST TIME FOR EXERCISE—CAUTION—REST AND SLEEP INDISPENSABLE.

IN the preceding chapters we have endeavoured to point out the benefits which sea-air and sea-bathing are capable of conferring upon the community in general, and upon invalids in particular; and we have also given practical directions for the pursuit of sea-bathing under the constantly varying conditions of the human system, both in health and disease. It remains for us to consider in this place the mode of life



which, in our opinion, should be followed by all who desire to experience as much benefit as possible from a temporary residence at the sea-side. If there be a total disregard of, or careless indifference to, those hygienic laws upon which our well-being depends, it is but little that sea-bathing can do for us in the way of renewal and restoration. The transgression of the primary laws of health, or of the conditions necessary to be observed to ensure health, entails certain evil consequences which sea-air and sea-bathing cannot entirely avert, though they may perhaps modify and lessen them.

There is good reason to fear that many persons, especially the inhabitants of large cities, diminish in marked degree the benefits which they would otherwise derive from their sea-side holiday by following the amusements and excitements with which they are only too familiar at home. It is a noteworthy feature of the age that in some of our fashionable watering-places it has been found necessary to introduce balls, concerts, and music halls as indispensable to the daily life of the visitors, in order to beguile the *ennui* of their existence! It partakes somewhat of satire that persons professedly seeking health should shun the life-giving sea-breezes for the heated and unwholesome atmosphere of such places of amusement!

But there are many others who in their



anxiety to regain lost health are honestly willing to submit to any regimen, however strict, in order to attain the desired end. These good intentions not seldom yield most unsatisfactory results from the lack of the simplest physiological knowledge to guide and direct the efforts of the patient aright, and much valuable time is lost before experience teaches the proper course to be followed. Many things are done most prejudicial to health, in the innocent belief that they are conducive to it.

To those of our readers who have felt the need of trustworthy information upon such topics the following observations, we venture to think, will not be unacceptable.

*Clothing.*—Nothing is more important for the welfare of visitors to the sea-side than this subject of dress. The question, “What clothing shall we take?” is the very first that suggests itself to materfamilias when the annual holiday is definitely settled. Now in a changeable climate like ours clothing must of necessity vary with the vicissitudes of the seasons, etc. It is true, that in the summer less danger is to be apprehended from this cause than at any other time, nevertheless the circumstances of life by the sea-side render caution in the matter of dress at all times necessary.

As a general rule everybody should wear woollen under-clothing, no matter what the



season of the year. During the heat of summer nothing is better than a thin merino, or fine Welsh flannel vest next the skin; and as colder weather advances heavier and stouter varieties may be substituted. It should be borne in mind that the warmth afforded by these under-vests varies according as they fit the body closely or loosely, the former being best adapted for winter wear, and the latter for summer.

Linen next the skin is very objectionable, for being a good conductor of heat it allows it to radiate from the body with undue rapidity; and when perspiration ensues a sensation of chilliness prevails, and the risk of "catching cold" is greatly increased.

Calico conducts heat rather less rapidly than linen, and is consequently much warmer; moreover, it absorbs moisture in larger quantity. It is therefore less objectionable than linen for under-garments, but vastly inferior to wool. Wool, on the contrary, is a great absorber of water, but a bad conductor of heat, its texture is much warmer, and not easily penetrated by cold. As affording protection against sudden changes of temperature, or prolonged exposure to keen winds, woollen under-clothing is greatly superior to either linen or calico, and should be worn by all who have any concern for their health.



Persons with hot dry skins, who seldom perspire, may wear calico with safety, but those who perspire readily on slight exertion require woollen clothing to avert liability to cold.

For similar reasons woollen stockings are preferable for those who perspire freely, or who take much walking exercise, the absorbent property of woollen materials affording the greatest amount of personal comfort whenever the perspiration is profuse, but for others cotton may suffice.

With regard to outer clothing for the sea-side, nothing is equal to woollen fabrics, whether for men, women, or children. What can be better for the former than the loosely-woven Cheviot suits of "all wool," neither too hot nor too cold, but affording ample protection, under ordinary emergencies? Or can anything be better adapted to the exigencies of sea-side life than the light homespun and serges now happily becoming so fashionable with ladies? Or what is superior to the navy and other serges for children's wear? These fabrics are both warm and cool (as distinguished from cold), readily cleaned, and do not present the draggled appearance of starched dresses, when subjected to the action of the spray on the shore or to a sea-fog.

There can be no objection to these lighter



materials for evening wear or in the house, but for out-of-door recreation woollen is to be preferred.

Extra woollen wraps should always be used by invalids and others when reclining for lengthened periods upon the beach. This precaution is especially necessary at the close of a hot day, when after sun-set the sea breeze, cooled down by contact with the water, streams in landwards, and robs the body of its animal heat with extraordinary rapidity, unless adequately protected. Such exposure is not unfrequently the origin of many serious illnesses.

It is well, also, to remember that wet garments should be changed as soon as possible for dry ones, the body having previously been well rubbed with rough towels.

*Food.*—And first, as to the times of eating. It is a matter of some difficulty to fix definite hours for meals at the sea-side, for the temptation to prolonged enjoyment out of doors is so great, that they are apt to become very “movable feasts” indeed. It has been estimated that there should be an interval of five or six hours between each meal, in order that food may be thoroughly digested, and the stomach enjoy a brief period of repose to enable it to recover its tone before it is called upon to resume its functions. So long as this excellent



rule be observed, the precise hours may be fixed according to circumstances.

Breakfast should be taken about half an hour or an hour after rising, say at eight o'clock or nine at the latest. The appetite is now keen; for every part of the system needs materials to repair the loss sustained during the long night's fasting, and the process of absorption proceeds at this time with extraordinary rapidity. The meal, therefore, should be substantial, and eaten leisurely, to ensure perfect digestion.

Five hours later—say, at one or two—the next meal will be longed-for, and the only question to be decided is, whether it shall be dinner or luncheon. Now, for most people in search of health, and for invalids unquestionably, the best time for dinner is the middle of the day, especially during the summer months when the days are long. At that hour the body requires rest from the exertions of the morning, whilst the reviving appetite craves a very substantial meal to satisfy the wants of the system. Moreover, the heat out of doors is now most intense, and exercise not to be recommended. To dine at this time, then, seems most rational, as being not only most in accordance with the dictates of Nature, but also as the most economical method of utilising the hottest portion of the day till the sun declines. In the spring and autumn, when the days are



short and evenings long, it may be well to dine late, so as to secure as much time as possible for out-of-door recreation.

The third and last meal should be taken at seven or eight o'clock, and never later than two hours before retiring to rest. It need not be more than a light meal, for digestion is not so vigorous as in the morning, and the waste occasioned by exercise after dinner is probably not so great as that which followed the exertions of the earlier part of the day. In the case of invalids, it may be necessary that some light food or other in addition should be taken at bedtime, and to this there can be no objection. Persons, also, with slow and weakly digestions may require food in smaller quantity at shorter intervals; but for the majority, we believe the hours recommended above to be best adapted to the requirements of the system and the preservation of health.

Having fixed the times of eating, it is very important to observe them with regularity. Everybody must have experienced the inconvenience and personal discomfort which result from disregard of this wholesome rule. The human body is much given to periodicity, and the stomach is such a creature of habit, that the appetite returns with almost tidal regularity at the accustomed hour; but if the usual time be passed, the appetite fails, a disagree-



able sensation of emptiness and indifference to food succeeds, and this is generally followed by indigestion. Regularity therefore is worth cultivating.

With regard to quantity, it is to be feared that most people transgress in the way of excess, and at the sea-side this is especially likely to happen, when a vigorous appetite, enticing food, and abundant leisure, all combine to tempt. It was an old-fashioned maxim, that we should rise from table with some appetite still left; but without insisting on such Spartan training, we would certainly advise no one to eat until the appetite is fully satisfied, for this is to produce satiety, which is excess; but rather to desist when the stomach says *enough*, and when the pleasurable feeling of satisfaction which sufficiency of food imparts is *first* perceptible. By observing this maxim many dyspeptic troubles, constipation, and a variety of little ailments, will be avoided.

As to the kinds of food, the simplest are the most wholesome and the best; but some little variety seems to be needful to meet the varying changes of the appetite, and to gratify our tastes. In framing any dietary it is necessary to remember that both flesh-forming and heat-giving foods, in due proportion, are essential to health, and that neither should be entirely excluded. Every member of these two classes



produces results in the system characteristic of the class to which it belongs, and by substituting one for the other, we obtain the variety which pleases the palate, whilst the standard of nutrition is in no way impaired by the change.

The digestibility of different kinds of food varies very greatly, and those in search of health will do well to avoid not only what is difficult of digestion, but also what is slow of digestion. In either case the powers of the stomach are overtaxed, and the food passes out of the body before all the nourishment is extracted from it, or else the stomach is deprived of that interval of tonic rest which appears to be indispensable to the perfect digestion of the next meal.

Hence shell-fish, such as crabs and lobsters and scollops, as well as pork and veal, and all salted or pickled meats and fish, should be avoided by those who do not possess robust digestions.

All dietary tables must be general, and it is impossible to conceive one of universal application. Nevertheless we venture in this place to sketch a bill of fare, which with slight variation will meet the requirements of those who seek health rather than the momentary gratification of the palate.

*Breakfast.*—This may consist of fresh fish,



such as broiled soles or whiting, fat broiled bacon, and new-laid eggs. When much exercise is to follow, a mutton chop may be substituted for the two latter. Bread and butter of course, *ad libitum*. It is rather remarkable that fat broiled bacon agrees best with what are called "bilious" subjects, and this fact coincides with the observations of Dr. Beaumont, that the presence of bile in the stomach facilitates the digestion of fat and oily aliments. As a beverage, cocoa nibs, or cocoatina, with abundance of new milk, is best; but when coffee or tea are found to agree better, they may be taken in moderation. Dyspeptics should avoid much fluid.

*Dinner.*—This may consist of good plain soup in small quantity, or boiled white fish. These may be taken alternately. Beef, or mutton, or game, or poultry, roast, boiled, or stewed, according to circumstances, with vegetables, such as sea-kale, asparagus, spinach, cauliflower, young cabbage, peas, French beans and potatoes, according to the season. Farinaceous puddings of rice, vermicelli, sago, macaroni, cornflower, etc., with stewed fruits, are the most digestible; but all rich pastry, dumplings, and creams, should be carefully avoided. Good sound claret may be taken either alone or with soda-water or Apollinaris-water. The evening meal may be



regulated in accordance with the dietary for breakfast.

It should be borne in mind that in youth vegetable and farinaceous foods are more easily digested than in after life; that soup and vegetables are generally productive of much flatulence in the dyspeptic; that rich cakes, and puddings and pastry, belong to the same category of "things to be avoided;" and that spirits of all kinds are unnecessary, and not to be taken except under medical direction.

*Exercise.*—This is essential to health, and is only second in importance to food itself. Indeed without exercise the demand for food would be reduced to a minimum, and the body would lose in bulk and vigour. In youth it promotes growth, and in middle age contributes to the maintenance of health. When the body is in motion breathing is both accelerated and deepened, the circulation is quickened, combustion proceeds apace, perspiration follows, and vital action is intensified; as a result of all this wear and tear digestion is stimulated, appetite increased, more food is taken, and thus the old structures are worn out and removed from the body by the excretory organs (as explained in a previous chapter) and are replaced by new. The more completely these changes are wrought in the system, the more perfect is the state of health, and *vice versâ*.



Many persons who have been active in youth cease to take much exercise after forty, consequently the eliminating functions of the body are very imperfectly performed, and effete matters, which should have been removed, are retained within the system, and give origin to many complaints which are incidental to this period of life. This is especially the case with the professional, trading, and mercantile classes of the community, whose occupation is of a sedentary character, and whose need of active recreation is therefore the greater. A holiday at the sea-side without well-regulated exercise confers but a moderate degree of benefit upon any one, but daily exertion means daily increase in strength and vigour, and a buoyancy of spirits which the enjoyment of perfect health alone can impart.

All exercise to be beneficial should be moderate and gentle in character, and anything like violent, sudden, and rapid muscular efforts are quite unnecessary for the maintenance of health. Such exertion is always injurious to the weakly and delicate in constitution, by throwing too great a strain upon the vital organs, and should be carefully avoided. Slow and steady exercise is what is needed, with occasional intervals of rest, that the muscles may recover their tone, and the system may not be distressed. In this, as in other things, it is the pace which kills.



*Walking.*—Of the various kinds of exercise walking is that which is perhaps the most widely useful, as giving the largest amount of motion to the greatest number of muscles, whilst, at the same time, the lungs are expanded by the deepened inspirations. The distance to be walked daily must vary of necessity with the circumstances of individual cases, but it is better to err on the side of doing too little than too much, and exercise should always stop short of absolute fatigue and distress. It is a very old rule, and one that is worthy of obedience, that those who desire health should perspire freely once a day at least, "*semel die motu incallescere.*" When this point has been reached, it is evidence that the beneficial action of exercise has been attained.

*Riding.*—Riding is better adapted to those who require exercise without fatigue, and whilst giving free play to most of the muscles, the motion through the air exercises an exhilarating effect upon the whole system, and quickens the circulation in the cutaneous vessels. Hence the heightened colour and buoyancy of spirit which succeed the morning's ride.

*Rowing.*—Rowing is the exercise, *par excellence*, of the sea-side, and it does no doubt give much work to the arms, shoulders, and loins, and expands the chest; but it is one that especially requires careful and cautious training. As a rule, few people use the muscles of the



upper half of the body, in daily life, so much as they do those of the lower half—we speak of course of the classes composing the bulk of the visitors to the sea-side, and not of labourers; and in rowing these unused and untrained muscles are suddenly called upon to undergo violent, rapid, and prolonged exertion, without previous preparation. In many cases this exercise is foolishly pushed to the verge of fainting, and is followed by prostration which is but slowly recovered from. Rowing also throws great stress upon the heart and large vessels; and where any weakness in these organs is suspected, such exercise can only be injurious, and may be dangerous. Judiciously followed, however, as a means to an end, viz., the restoration of health, it may well alternate with walking or riding, but it should be practised gently and slowly with short intervals of rest when becoming “blown;” and under such careful training the “staying” powers will certainly increase, and the whole muscular system be strengthened.

*Swimming.*—Swimming gives exercise to almost all the muscles of the body, and may be practised by those who are strong enough to take to the open sea, as we have already said elsewhere.

The proper time for taking exercise must depend upon the seasons and the requirements



of the invalid. The robust and strong may take a short walk in the early morning, but those who are below par, had better just be fortified with a good breakfast. About an hour or two hours after a meal is the best time for exercise, and it should terminate so as to allow a sufficient interval of rest to intervene before the next meal. When this precaution is neglected, the invalid comes to the table with all his nervous energy used up, has none left for the digestion of his food, and suffers in consequence all the miseries of indigestion.

Similarly, exercise after a full meal not only occasions great personal discomfort and distress, as everybody knows, but it diverts from the digestive organs the blood and nervous energy which the process of digestion absolutely demands for its perfect performance. Here again food is not assimilated, and the system is taxed with the extra work of freeing itself of the ill-digested mass, whilst the blood is impoverished because not replenished by new and properly elaborated materials.

One word of caution:—All emulation in exercise should be avoided, as likely to lead to over-exertion. Our object should be to promote health, and not to perform this or that feat within a given time better than somebody else. This is the rock on which so many young men make shipwreck.



*Rest and Sleep.*—These are both needful for the removal of fatigue, the restoration or renewal of the body, and the maintenance of life. Prolonged exertion causes muscular exhaustion, and rest is essential that the waste may be repaired. After exercise the body should be placed in that position which affords the greatest ease and comfort. Thus the legs should be raised to lessen the tension of the column of blood in the distended vessels, and the whole body should recline as nearly as possible in the horizontal position. This gives rest to the heart by relieving it of the extra work which is requisite to propel the blood perpendicularly, *e.g.*, to the brain; whilst the recumbent posture has also the effect of reducing the frequency of the pulse, and so giving further relief to the heart. This comparative rest is all the more important because during active exercise the heart is the organ upon which the greatest strain falls. It has been estimated that “when sitting at rest the beats of the heart may be 64 per minute; walking at two miles per hour 80, at three miles per hour 90, and at four miles per hour 110 to 120.”\*

As regards sleep, it is an old saying that “one hour’s sleep before midnight is better than two afterwards.” However this may be, there can be no doubt that those who desire

\* E. Smith



health should go to bed early. The valetudinarian at the sea-side should retire at ten, and those who are stronger not later than eleven. But when should they get up? It is generally believed that eight hour's sleep is sufficient for all adults, and rather more for children and old people. If adults require nine hours it is generally because they are more weakly than their neighbours. To lie in bed after the body has been sufficiently refreshed, is not only to waste time, but also to lose health and vigour; the second sleep is never so refreshing as the first, and should not be indulged in. Let those who retire early rise early, and they will greatly increase the benefit derived from their holiday by the sea and add considerably to their personal enjoyment.

In conclusion, a holiday well and intelligently spent not only affords us rest when wearied with toil and care, but also refreshes and strengthens for future labours, and greatly tends to prolong life.



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