

Hygienic Value of Water.

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Hygienic Value of Water.

Since water is such a common compound and occurs almost everywhere in nature in some form, but few people realize its value both as to hygiene and its use in maintaining health and life.

In all cases of disease, it is the duty of the physician to restore the patient to health by the simplest means in his power. Water is least expensive, but this does not need to lower one's estimation of its value. It is also a simple means to use in restoring health. Prof. W. Parker says, "Hygiene is of far more value in treatment of disease than drugs."

In order to understand the relation of water to the system, we must first become acquainted with its physical properties and all other facts relating to it.

Water in its liquid form, constitutes the ocean, seas, lakes, rivers, and springs, covering three-fourths of the earth's surface.

It also occurs disseminated through-out the rocky strata which constitutes the earth's crust. In the solid state, it covers the polar regions and high mountainous districts permanently, and the temperate regions periodically, appearing as snow, ice, glaciers, and icebergs. In the state of vapor, it is always contained in the atmosphere, and gives rise to clouds, fogs, mist, rain, dew, snow, and hail. It is a constituent of many minerals.

It was long before any definite law could be laid down concerning its composition. The Hindoos and Egyptians considered water the element from which all other bodies were formed. Among the Greeks, the idea was the first or primal element, that from it all other substances were produced; that even plants and animals owed their origin to it. Aristotle regarded water as one of four elements. In eighteen-hundred and five, Humboldt and Gay-Lussac determined the ratio of its constituents, hydrogen and oxygen, to be as two is to one.

Water is formed whenever hydrogen or combustible bodies containing hydrogen are burned in oxygen, atmospheric air, or any gas capable of supplying oxygen. It is one of the products of most forms of combustion for heating and lighting purposes; also of the combustion which occurs in animal life and fermentation. It is also produced in many cases when bodies containing hydrogen are heated with easily-reducible metallic oxides or salts capable of yielding oxygen under these conditions.

The properties of water vary under different conditions and temperature. Between 32°F and 212°F , under the ordinary atmospheric pressure, water is a limpid liquid. When pure, it is entirely free from smell and taste, and has neither an acid nor an alkaline reaction. It is colorless in small quantities, blue when viewed in mass. The density of water in the liquid state is about seven hundred and seventy times that of the atmosphere, and is greatest at about forty degrees Centigrade. Water is slightly elastic. Its specific

heat is greater than that of any other substance. It is a very poor conductor of heat and electricity. Even though it may not be the best conductor of heat, it conducts more readily than air, and communicates its heat readily to other bodies. At thirty-two degrees Fahrenheit, or zero Centigrade, water becomes solid, freezes, crystallizes and expands considerable at the same time.

One of the most powerful properties of water is that of dissolving. These properties are nearly universal, thus making it an excellent cleansing agent and valuable as a means of aiding nutrition by distribution and circulating nutritive elements required for the sustenance of the body, and washing away from the tissues the waste products resulting from their action.

Water produces different effects on the system which are due to the mode of application, internal or external, age, sex, and physical conditions. It effects the system as a dilutant, by its solvent

properties, and by modifying the general or local temperature of the body. In order to quicken the circulation it is necessary to supply the blood with sufficient quantity of water. With the exception of air, water is the most transient of all compounds received into the body. It is eliminated by the lungs, liver and intestines. By its solvent action, it dissolves the various poisonous products of the tissues of the body.

The increased amount of excretory matter in solution is brought in contact with the various depurating organs, producing the following results,

1. Water assists in increasing urinary excretion.
2. Water assists in increasing cutaneous material.
3. An increased action of the liver.
4. Increases the action of the intestinal mucous membrane.

Water is boiled in the kitchen for two distinct purposes: first, for the cooking of itself; second, for cooking other things. The boiling or cooking of such

water effects more or less completely a removal of its mineral impurities. Other waters contain such mineral matter as salts of sodium and potassium. These are not removable by mere boiling, being equally soluble in hot or cold, aerated, or non-aerated water. Next boiling water for its own sake, comes boiling as a medium for cooking other things.

By hygiene, we mean the art of preserving health. To do this, we must use every means available. One of the simplest is the use of water, both externally and internally, the former applied in baths and the latter with medicine or alone as in injection.

There is no reason why all American cities should not avail themselves of the very best experience of the world, adapting it to local conditions. One can hardly estimate the importance of a system of public baths in our large cities. By a public bath is meant, "An establishment where a hot or a cold water bath may be had the year round."

The health of the body depends largely upon the well-being of the skin. There is a close relation between health and cleanliness. People cannot develop in the right direction morally if they are obliged to live in unwholesome conditions. They cannot be clean when the water supply is small, and, as in most tenement houses, is obtained from one faucet. When people learn that cleanliness of body means less discomfort from heat and cold, public baths will be maintained at municipal expense. Europe is the place to see these baths. It has scarcely occurred to our cities that it is economy to wash, and that every person who bathes lessens the demand on the health department. It is not for the "well-to-do," but for the poor that we need these facilities. They should be available at all seasons and nearly all hours, and should be near the people.

Baths are divided into six classes, namely, cold, cool, temperate, tepid, warm and hot. The cool or cold water applied to any

part of the body causes an instant contraction of the small arteries of the part to which it is applied. So long as the application continues, this contraction is continued, and the parts become nearly bloodless. If the water is very cold the tissues will become frozen, and if moderately cold, and allowed to remain so for some time the blood vessels will remain somewhat contracted and the blood supply will be lessened and remain so for some time. The effect of cold upon the pulse has a uniform effect of diminishing the frequency of the heart's action from ten to twenty beats per minute.

The effect of cold water upon the temperature of the body is to reduce it proportionally with the action of the heart. The rational effect of cold water is to lessen the flow of blood in parts where the water is applied, and also to decrease the heat of the body.

A cold bath of short duration merely excites to vigorous action the nerve centers and produces heat, and also acts as a stimulant.

The results obtained from the use of a hot bath differ from those of a cold bath in that it is used to increase the circulation of the blood to the part to which it is applied. A hot bath applied to the whole body increases the action of the pulse and also the general temperature of the body.

The rational effects of a hot bath are,

1. Increased quantity of blood circulating through the parts where it is applied.
2. Increased vital action, increasing the amount of heat.

The warm bath produces less tonic effect than cold, and less stimulative than hot.

There are various modes of administering baths, as for example the spray, douche, shallow bath and full bath. The effects of these vary. The first three named have a more cooling effect than the last one because there is evaporation from the surface, and in the full bath the patient is submerged in a medium of equal temperature.

"Cold water as a physiological tonic

has the advantage over medicinal tonics of all sorts, in that it awakens nervous activity without the imposition of any extra burdens upon any vital organ, and without hampering the activity of any function. The cold bath employed in such a manner as to produce tonic effects accomplishes its results by increasing vital resistance to the causes of patho-logical processes, by making the wheels of life run more smoothly, by lifting the whole vital economy to a higher level."

In hydro-therapeutics we study the remedies and different purposes to which water may be applied. It may be classed as one of the most useful of known remedies.

Dr. Frothingill says, "Personally, I believe that the practice of hydro-therapeutics when rescued from quackery, and under proper profession, will form one of the most universal remedies of the future."

Some physicians declare that they would abandon the practice of medicine

if they were deprived the use of water. It furnishes an immense resource as a curative agent. Water as a refrigerant, diminishes bodily heat, and has a tendency to restrain inflammation. As such, it should not be used in fevers, like scarlet.

Many drugs will produce the same effect as water, but this is not the only thing to be looked to. The aim of the physician should be to accomplish the most good with the least expense of vitality.

The history of hydro-therapeutics is not modern. In Egypt, we find that baths were practiced to a considerable extent. The ancient Persians valued them so highly that they erected fine public structures devoted to bathing, and their modern descendants still continue the use of water as a medical agent.

The Greeks, Romans and Arabians have erected buildings to be used exclusively for baths.

"It seems to be a fact that baths are neglected by the most civilized races today, and that it is most universal by employed by the less advanced."

The modern medical use of water has taught the more thoughtful class to resort to its use, and the study of hygiene and physiology and progressive medicine has gradually brought to the general intelligence the high merits of the use of water.