

And, secondly, it was apparent that all our water supplies—lakes, streams, springs and wells—were directly dependent upon the fall of rain and snow, and therefore there was a very close relationship between the annual precipitation of a district and the volume of water which might be available for a water supply.

There are two properties of water that must be referred to, if only briefly, in order that we may intelligently consider the various classes of water that are suitable and wholesome for domestic use—its solvent power and its carrying power. Water is known as the universal solvent. It is because of its ability to dissolve gases and solid substances, whether they be inorganic (mineral), or organic, and the constant exercise of this power that in Nature there is no such thing as pure water—that is, chemically speaking. Pure water, as formed in the laboratory, consists solely of oxygen and hydrogen. All natural waters then, contain dissolved matter, some more, some less, and, speaking broadly, the nature of this matter—whether injurious or harmless to health—and its amount, will be determined by the character of the rock or soil it passes over or passes through. Thus we have soft waters from the Laurentian districts because the gneisses and granites are not easily soluble and impart but little mineral matter to the water; and we have hard waters in limestone districts, because the water with the aid of the carbon dioxide it has taken from the atmosphere is capable of exerting a very considerable solvent effect upon such rocks and contains as a result more or less lime in solution. Next to the sun, the soil is Nature's greatest water purifier, for it can remove by oxidation and filtration impurities in solution and suspension, but if the soil is choked with filth then the water in passing through it will dissolve such and be rendered foul.

The carrying power of water is secondary to its solvent power in this consideration of natural waters for drinking and household purposes. The descending rain, the storms, the spring freshets and floods, wash the surface of the land and carry much which they find there to the nearest stream or lake. Similarly the banks and channels of streams are eroded—even rocks may be slowly worn away and the detritus, the debris, borne in the turbid waters, perhaps hundreds of miles, to be deposited as their velocity is checked. In this way deltas of clay and silt and fine sand mixed with organic particles are formed at the mouth of great rivers, and areas of vast size and of extreme fertility built up. Since turbid waters, those with clay and silt in suspension, are not desirable for supplies, they must be subjected to filtration. If such waters possess no organic filth, the filtered and now clean water will be quite satisfactory.

(To be continued.)