

Epilogue

In the earliest days of the human race, water was taken as found. It might be pure and abundant, plentiful but muddy, scarce but good, or both scarce and bad. To get more or better water, man moved to other sources rather than transport better water to his own location or try to improve the quality of water at hand.

Man's earliest standards of quality were few: freedom from mud, taste and odor. When after many centuries watertight household vessels became available, water could be more or less fully clarified by storage in containers or by exudation through the pores of the receptacle, leaving sediment behind. After the lapse of many more centuries it was discovered that sedimentation could be aided by adding a precipitant or coagulant. Before this, probably, it was found that "bitter" water could be "sweetened" by placing in it some vegetable or mineral agent, the latter often given the generic name "salt." With the development of the culinary art, it was observed that certain vegetables and flesh cooked better and were more palatable in some waters than in others, and that this was attended with less or more incrustation on the vessels—that is, that soft waters were preferable to hard. The terms "hard" and "soft," however, were not applied nor was much use made of softening processes until comparatively recent times.

Filtration for the removal of turbidity, either through fibrous or finely granulated material, was known in ancient times, but little used. A process akin to filtration was one of the earliest and most effective means of obtaining water free from suspended matter, but it was very time-consuming. This was the utilization of capillary action, employing a thread or piece of cloth, to remove water from one vessel to another, leaving suspended matter behind. Siphoning by atmospheric pressure, workable on a large scale, was used at an early date to remove supernatant liquid from a settling vessel and leave the sediment undisturbed. Much later came distillation by artificial heat, an adaptation of Nature's immense-scale, constantly working method of evaporating and condensing the water of streams, lakes and oceans.

depositing them again in highly purified form. Artificial distillation, like wick-siphonage, was limited in scope. For centuries it was employed chiefly in laboratories. Then its use was extended to freshening salt water, chiefly for use on ships, and, very rarely, to highly objectionable marsh water where no other could be obtained on shore.

These were the chief methods of improving the quality of water until recent times. Their use was confined to the household and the factory until the last two centuries. For municipal supply they were employed hesitantly and on a small scale until the first half of the nineteenth century in Europe and well toward its close in America.

In the last sixty years, with advances in the arts and sciences, including the acceptance of the germ theory of disease and of water as one of the chief means of spreading cholera and typhoid, standards for the quality of water have been raised. Most notably, they now include bacterial limitations. With the raising of standards of quality there have been devised many and various mechanical and chemical agencies for their attainment. Decades ago, the late Professor William T. Sedgwick noted the advent of the water refining age. Great as was his vision it is unlikely that he foresaw the advances in water purification that have since been achieved.

Although the purification of city water supplies was not undertaken until the latter part of the eighteenth century, and by then only haltingly, the earlier and isolated methods of treatment used during the previous three thousand years have also been reviewed. They illustrate man's never-ending quest for pure water. They foreshadow things to come, and they show what might have come much earlier if the demand for pure water had kept pace with increasing knowledge of means for its acquisition.