

May 15, 1913.

Sawdust is used to absorb moisture in building walls that are exposed to water. In the manufacture of cheap wallpaper and artificial flowers it is used in the form of a fine dust. Other uses are for cementation in steel mills, for cleaning purposes in the production of gas, in the manufacture of calcium carbide and carbonundum, and, in foundries, for pickling.

Everybody knows of its application in the manufacture of powder and explosives. Further uses are for floors in gymnasiums and riding schools, for the manufacture of paper, for slippery streets in winter, and for bedding in stables. Sawdust improves soil mechanically, and, when saturated with stable manure, it also works chemically on the soil and so improves it. Sawdust is also used in sawdust mortar (for moist places) and in horticulture to protect hotbeds, etc. With proper manipulation a good wood soil, so valuable in gardening, can be obtained. In the manufacture of soap for washing and cleaning purposes sawdust is also employed.

Very promising is the manufacture of sugar and alcohol out of waste woods; but these processes are not yet far enough advanced to be of commercial value and to justify large expenditures at the same time. Finally, sawdust is the only material now used for a cheap production of oxalic acid.

DISADVANTAGES OF CHEMICALLY PURE WATER AS A BEVERAGE.

Word comes of investigations carried on by a number of French naval surgeons into the use of chemically pure water as a drink, which may be of interest to some of our readers.

To make water chemically pure it has to be distilled, and the continued use of distilled water as a beverage reduces the strength of the physical organism, because, while it is free from all germs, it contains nothing but oxygen and hydrogen. The mineral salts are left behind during the process of distillation, and the mineral salts are really indispensable.

"As long as life persists in the body," these surgeons declare, "the elimination of mineral salts goes on, and this means the rapid demineralization of the organism."

Demineralization, it is explained, leaves one's system in such a state that the natural tendency is to become tubercular. It was found that there were numerous cases of tuberculosis among the young sailors of the French navy, and this was, after long investigation by the surgeons of the navy, attributed to the demineralization of the water.

The distilled water was used in the belief that it was best for the sailors, and the naval authorities were anxious to make every condition as healthy as possible. Just now the surgeons are studying the best means of treating the distilled water used aboard the ships with mineral matter. Of course, pure water is wanted, but as conditions are now it is held that ordinary drinking water would be even better than the chemically pure, if the latter was responsible for the increase of tuberculosis in the navy.

Few people continually drink chemically pure water, and for this reason the dangers could not well be learned until this discovery was made. There are a number of ways in which the germs in water may be eliminated and at the same time the mineral salts left in the fluid. Distilled water is scarcely palatable at the best, as it is these very necessary mineral salts that make it really palatable.

An effort is being made to provide further proof of the dangers of chemically pure water as maintained by the surgeons of the French navy by means of experiments on animals.

USES AND ABUSES OF WATER FILTRATION.

At the meeting of the New England Waterworks Association, Mr. G. H. Pratt, chemist of the Rhode Island State Board of Health, read an article on the above subject, an abstract of which we give below.

In connection with the uses of filtration of water, the author would first mention a few of the conditions which call for such treatment. For many years a town or city may have been using some water of comparatively good appearance as a supply, when suddenly there appears an unusual amount of typhoid fever among the people. Investigation demonstrates that it is the water supply which is common to these cases, and bacteriological tests prove that the water of the stream is polluted. Further investigation shows that there have been some cases of typhoid in a small village upstream, which has no sewage purification, and the excreta from these cases has found its way into the water supply of the down-stream neighbor. This experience—such a common one in the case of cities and towns taking their supplies from streams which have an increasing population on the watershed—leads to a full appreciation of the need of purification, and the resulting improvement in the supply with attendant betterment of the health of the community serve as evidence of one use to which filtration is put.

Another city may be enjoying an exceptionally good health record, especially as to typhoid fever, but the presence of a large amount of organic matter, giving the water a high color and a vegetable taste, causes criticism of the supply, and, regardless of analyses as to its sanitary purity, a large number of citizens persist in the contention that the supply is not what an up-to-date city should be furnishing, until finally it is decided to filter the water by mechanical filtration in order to get a water of better appearance. The criticism above referred to immediately ceases, and the people receive a practically colorless water with comparatively no taste in place of the old familiar "organic brew." Thus æsthetic reasons may in many cases be sufficient cause for filtration, and the resulting output certainly justifies its use in these cases.

Similar to the above instance, the presence of different algae may be the cause of disagreeable odors and tastes which demand filtration by methods which, in such cases, usually require aeration in conjunction with either double slow sand filtration or mechanical filters.

Some cities or towns and numerous small private supplies have been troubled, in cases where the supply is from driven wells, by the presence of iron in the water. This iron often exists in the lower state of oxidation or ferrous condition and upon contact with the air separates from the water as a "brick dust" sediment. Such supplies as this can be purified by methods involving aeration and oxidation of the iron before filtration or in the case of smaller supplies this has been successfully done by the use of a patented double filter which utilizes sand and animal charcoal.

Many industrial processes, especially bleaching and dyeing, require water of good color, low in iron, and free from turbidity. This requirement has resulted in the installation of a large number of filter plants, and the use of filtration for these purposes has been invaluable to numerous mills of this and other countries.

A great many times filtration is resorted to largely, if not entirely, to remove turbidity from the water. This is true of many western waters.

Having thus brought out different conditions which call for the use of filtration, the author will now cite certain concrete instances of illustrations which have been made for the different reasons above mentioned, and will present results