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BOOK REVIEWS.

Water Supply. By William P. Mason, Professor of Chemistry, Rensselaer Polytechnic Institute, Troy, N.Y. Published by John Wiley & Sons, Inc., New York; Canadian selling agents, Renouf Publishing Co., Montreal. Fourth edition. 495 pages, 6 x 9 (Reviewed by R. O. ins., cloth. Price, \$3.75. Wynne-Roberts, consulting engineer, Toronto.)

One sure proof of the popularity of this book is that the fourth edition has just been issued. The subject of water supply is here discussed principally from a sanitary standpoint, and abundant information is presented for the use of the engineer, and all who are interested in the question of pure supply of water. The book is divided into eleven chapters with three appendices. The introductory chapter deals with many interesting historic examples of water supply and it is instructive to note what precautions were adopted in early times to safeguard the health of the people. Hippocrates who lived about 2,300 years ago even then advised the boiling and filtering of a polluted water before using it for drinking.

The importance of a good supply of water was appreciated by Romans, Egyptians, Singhalese, Chinese and others many centuries ago, and as the population to-day is vastly greater than it was in those days and the dangers of serious pollution have increased, such a book as this one serves to guide us in our efforts to procure a supply which shall be as immune as possible from the lurking and potential troubles of impurities.

The second chapter deals with "Drinking Water and Disease." Peaty water is supplied to many cities, often without treatment, and whilst the coffee color is disagreeable to the sight it is not found to be unwholesome. Mr. E. H. Richard points out that peaty waters which "are found unwholesome may owe their toxic qualities to the presence of materials other than the brown coloring matter." The notion, which is common, that hard waters are not as good as soft waters, is not confirmed by health statistics, for the average annual mortality per 1,000 inhabitants is much alike whether the water is soft, moderately hard or hard.

The great question is that of sewage pollution, and this Prof. Mason discusses in a very agreeable manner. The opinion held by many that water possesses the capacity for self purification is one which should be studied carefully, because so many factors have to be considered. A rapid stream may carry the pollution for several miles without removing the danger of causing disease, whilst a sluggish stream may deposit the sludge in pools and eddies until a flood occurs and washes the filth downstream. Detroit suffered a serious epidemic of typhoid in 1892; the cause was found to be the disturbance of the filth from Port Huron which had deposited in the Black River (page 229). The city of St. Louis sued the authorities of Chicago for polluting the water supply and yet the distance between these cities is 357 miles. A study of the bulletin of the Illinois State Laboratory of Natural History, by Stephen A. Forbes and R. E. Richardson, shows that the river is polluted for a long distance below Lockport. The question is whether water once polluted with sewage material can again be used for human consumption. Prof. Mason deals with the matter in an excellent manner.

The influence of pollution on the health of the consumer is dealt with very fully. Reference to several outbreaks of typhoid fever are made and these are worthy of careful perusal. In the State of Connecticut the typhoid statistics for the past 43 years show a continual improvement which must be due, at least in part, to the abolition of old private wells for new and better water supplies. The number of deaths (for the entire State) from typhoid per 100,000 population fell from 83 in 1865-9 to 14 in 1910-12. In Massachusetts the typhoid death rate fell from 79 in 1859-68 to 38 in 1878-89 because of better water supplies. Whilst it is acknowledged that the excrement of human beings is a source of serious pollution, Dr. Rideal states that "we have yet to learn that the excrement of healthy, much less diseased, animals and birds is altogether harmless to man," (page 64).

The longevity of the typhoid bacillus in water is another subject of grave importance. Houston maintains that "uncultivated typhoid bacilli die much more speedily in raw river water than their cultivated brethren." Percy Frankland stated that "the longevity of these pathogenic bacteria was inversely proportional to the bacterial population in the waters into which they were introduced." Hence we see that a relatively pure stream, if a rapid one, might carry infection over long distances (page 69). Tavel points out that although B. typhosus does not live long in the water of streams and lakes; yet it can exist for considerable periods in the mud upon their bottoms and sides, and he asks attention to the consequent danger possibly lurking in the "blind" ends of water pipes (page 73). Owing to an outbreak in London, Eng., investigations were made by the medical officer with the result that suspicion fell upon "dead ends" and these were after-