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## STUDENT NURSES SECTION

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### There were “Pure Water” Rules 4,000 Years Ago

By

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Man can live without clothes, without shelter and for some time without food. Without water, however, he soon perishes. It is not surprising therefore that from the earliest period of man in geological history, evidences of human habitation have been closely associated with rivers, springs, wells or other primitive sources of water.

Throughout history, it has been said, “after the passion of love, water rights have caused more trouble than anything else to the human species.”

As time went on, the search for water for survival was gradually paralleled by an equally persistent quest for “pure” water. For thousands of years, people increasingly demanded a more satisfactory water for drinking and other purposes.

Through the centuries, to be sure, definitions of purity varied, as users became more sophisticated in understanding and in demands.

Criteria of purity became more complex, more quantitative and more rigid as the scientific principles of water-borne diseases were elaborated, as aesthetic requirements became more refined and as industrial processes matured into major significance.

These changes were slow, at least in the first few thousands of years of the search for pure water.

In the last century and in many countries, but unfortunately not in all, the search has been intensified with overwhelmingly fruitful results within economic attainment.

Today, the consumer in these countries need not use dirty water or one biologically unsafe, or chemically objectionable, or even unsatisfactory to the taste or to the smell.

To trace the practice which made these accomplishments possible, through almost 4,000 years, would require many volumes. It is possible, however, to cull from the history of these years important eras and to list at least a few of the relatively unknown individuals to whom society owes a debt impossible of repayment.

Who were these great “hewers of wood and drawers of water” to whom Joshua gave immortal prestige?

By the early nineteenth century in England, pure water already had caught the popular imagination sufficiently to justify the following lines on the water carts from which water was sold in Monkwearmouth:

“It’s limpid and clear from all mud,  
This water I sell for the public good;  
Its excellent virtues no mortal can tell,  
So sweet is the water from Union Well.”

Poor poetry, it is true, but it challenges us to find who brought this desire into public acceptance and made its fruition increasingly possible.

“It is good to keep water in copper vessels, to expose it to sunlight, and filter through charcoal” is a dictum not out of an engineer’s report in 1954, but presumably from a collection of medical lore in Sanskrit of a probable date of 2,000 B.C.

From another Sanskrit source of the same period more comprehensive and remarkable modern water puri-

fication suggestions appear in the following terms: *"Impure water should be purified by being boiled over a fire, or being heated in the sun, or by dipping a heated iron into it, or it may be purified by filtration through sand and coarse gravel and then allowed to cool."*

From ancient times to about the seventeenth century processes for improving the quality of water appear in the literature of Egyptian customs, of Biblical lore, of Greek and Roman practice, of devices in Arabia and Persia; all showing remarkable empirical forerunners of the scientifically elaborated techniques of the eighteenth to twentieth centuries.

Great engineers and great philosophers contributed to these dicta and arts during thousands of years, most of them unknown and many unsung! As records became clearer, the names of Vitruvius, Hero of Alexandria, Pliny, Hippocrates, Frontinus, Avicenna, appear as the reporters and even builders of works for transport and purification of waters.

From the late eighteenth century on, the work of Amy, Smith, Cuchet, Montford, Ducommun, Mallet, Fonvielle, Souchon, Puech and Chabal deserve permanent recording.

In England, Scotland and the United States the nineteenth and twentieth centuries marked the great sanitary awakenings in both the understanding of the broad relationships of pollution of water to disease and the development of large-scale efficient and economical processes of water purification.

In this progress, England and Scotland deserve primary honour for the early pioneer work in filtration and

chlorination.

One of the lasting contributions to water safety was in the development of cheap but effective equipment for applying accurately small and large quantities of chlorine to water. Without such equipment control procedures would have been delayed for many years.

Undoubtedly the inventions of Major C. R. Darnall in 1910, of George Ornstein in 1912 and of Wallace in subsequent years promoted water chlorination to an unprecedented degree.

