

ON THE EFFICIENCY OF POROUS PORCELAIN FILTERS.

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The purification of water supplies by filtration is by no means a latter day invention. It is mentioned by Pliny as used in his time. Avicenna refers to it, and both of these authors speak of wool as the filtering agent. The variety of filtration apparatus, however, which we discuss to-night can claim a still higher antiquity in its essential features, for the ancient Egyptians used, not indeed porous porcelain, but the nearest approach possible to it, porous pottery, to improve the turbid waters of the Nile.

This was certainly before the germ theory of disease had been suggested, although a recent writer on the "Malarial Germ" notices that Lucretius—95 B.C.—had ascribed the fever of the Pontine Marshes to a micro-organism. Within the last fifty years about everything new in science has been hailed as a resurrection of the ideas of Lucretius, whether rightly or wrongly we will not here consider, but simply remark that the object in view in old systems of filtration was probably clarification alone. Since the proof, however, that some diseases are caused by micro-organisms and the possibility that these micro-organisms may obtain access to water supplies, and hence to the human system, the public have demanded more of a filter than simply a power of rendering turbid water bright. I have elsewhere said: "A filter is essentially a sieve, and the organisms that it must stop in their passage are in the neighborhood of $\frac{1}{1000}$ of an inch diameter. A filtering material sufficiently close grained, or tightly enough packed to prohibit their passage, must necessarily deliver water somewhat slowly in comparison to filtering surface. The fallacy of employing a little metal sphere a couple of inches in diameter, loosely packed with sponge or charcoal and screwed to a faucet, the water of which it will deliver almost as fast as it will flow is therefore apparent, and yet