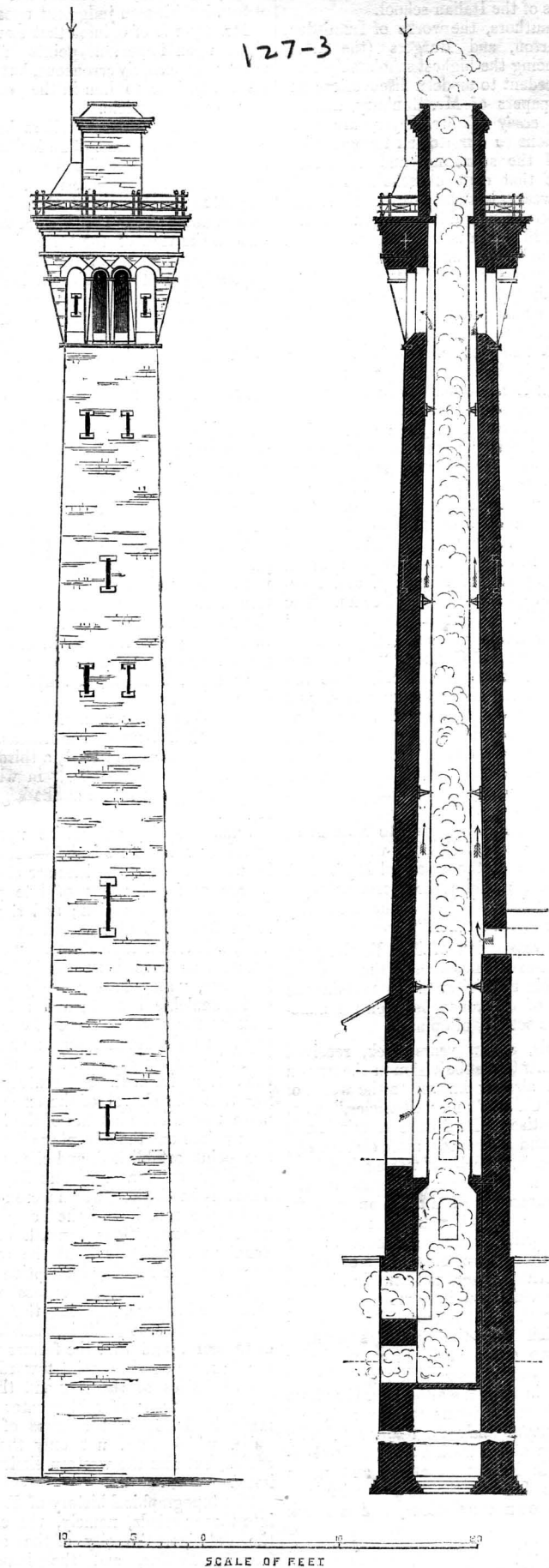




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FURNACE CHIMNEY, MANCHESTER.—MR. WORTHINGTON, ARCHITECT.

Purifying and Filtering Water.

As the period is now approaching when greater necessity exists for the filtration of water than during the winter season, anything new on the subject deserves attention. We learn by a late number of the *London Engineer* that A. P. Malard, of Paris, has recently secured a patent for the employment of prepared wool-shearings as a superior material for the water to pass through to be filtered. He employs any common filter, such as the portable kind so well known in our cities, which have a perforated false bottom, or a supporting shelf of wire gauze on which the filtering material is laid. The wool-shearings employed by M. Malard are prepared in such a manner as to render them very durable, and not so liable to rot as the fibrous filtering diaphragms commonly employed. He first boils his wool-shearings for one hour in a solution of alum and cream of tartar, then takes them out, and exposes them to the air until they are quite cold. After this he boils them for an hour in a solution of nut-galls and acetate of iron, then in a weak solution of the carbonate of soda, after which they are taken out, washed perfectly clean, dried, and are ready for use by placing them in a stratum on the false bottom of the filter, and allowing the water to percolate through them into the recess below, when it is drawn off clear and limpid for domestic use.

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As hard water cannot be employed for washing without wasting considerable soap, a simple method of rendering it soft will be useful to many of our readers. Take about a pint of fresh slacked lime, stir it in a gallon of water, and allow the sediment to settle; pour off the clear water, and bottle it tight for use, because if the air is not excluded, it will absorb carbonic acid from the atmosphere. Half a pint of this lime water is added to a gallon of hard water, stirred, and the whole allowed to settle, after which the clear is filtered through a diaphragm of Canton flannel, and is ready for use, being rendered quite soft. Those who reside in limestone districts, where the wells contain hard water, will find this method of treating it (the water) very useful for washing purposes. If they wish to use this softened water for drinking purposes, a little lemon juice or cider added to it will greatly improve its taste. In the magnesian limestone regions of Ohio, and other places, where the water of the wells, in warm dry weather, is liable to cause cramps and chills when drunk, especially to strangers; the method described for treating it will prevent such results. The fresh slacked lime water unites with the carbonic acid of the lime in the hard water, and the whole lime held in solution falls down in the state of fine chalk, leaving the water clear and soft.

The oxalate of ammonia also softens hard water, but it is not so easily managed as the caustic lime. It is made by saturating oxalic acid (a poison) in liquid ammonia, and for this purpose the oxalic acid should be ground fine, and stirred among the ammonia with a glass rod. A quart of the oxalate of ammonia will soften thirty gallons of hard water. It is

stirred among the water, the sediment allowed to settle, and the clear filtered. For drinking purposes, this water also requires a little lemon juice or cider to render it pleasant to the taste.

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Impure water is oftentimes the cause of disease. The impurities consist either of organic or inorganic substances. It is believed that the foregoing processes are capable of removing both kinds of such impurities.