The capacity is entirely based upon the super area of filtering media to be dosed; and should not represent more than 2 gallons per super yard of filtering area. In other words, should not exceed a 1/2-inch of rain fall over the surface. Fig. 10 shows a simple form of measuring value by means of which the discharge can be regulated.\* The size of the tank shown, 28' o" × 14' o" × 1' 6", together with the

base; special drain pipes can be obtained for this purpose at a slightly greater expense than ordinary tiles.

Pipes are provided radiating from the centre of each bed to the outside, giving free access of oxygen to the body of the media. The circumference walls may be built of honey-combed hit and miss brickwork. If economy is desired, then by means of rough rubble walls, built up with outlet channel from liquefying tank 30' × 2' 0" × 1' 6" will large cubes of the filtering media itself. As many open air



give a capacity of 678 gallons, capable of dosing the area of | filtering media required.

## Continuous Filters.

Figures 11 and 12 show plan and section of the usual type of continuous filter supplied. Their total filter capacity should bear the proportion of a cubic yard of media to every 168 gallons of sewage per 24 hours. In this case with 120,-000 gallons of sewage per day divided by 168 equalling 715 gives the cubic capacity required in cubic yards.

Three filters 36 feet diameter with 7'6" depth of media would equal 846 cubic yards. As it is well to be over the mark, these are the sizes here advised. The filtering media should be of any hard indissoluble matter graded so that the



## SECTION

top layer may consist of cubes from 4 to 5 inches, the centre layer of finer material of about 1-inch cubes, while the lower or draining layer should be of about 3-inch cubes. The author has found these grades of media to give splendid results with domestic sewage. The floor of the filter should be underdrained with ordinary tile sub-soil pipes made on the concrete

\*Messrs. Mather & Potts' patent, Manchester, England.

spaces in the walls as possible should be provided consistent with strength. It should be noted that the walls have no water pressure upon them whatever, and have merely to support the media, which is practically self-supporting once it has settled.

The method of distributing the sewage, is by means of automatic sprinklers. The sewage is discharged from the dosing tank by means of iron pipe arms fitted with valves, so that any filter may be put out of use on occasion. The dosing tank outlet being above the level of the sprinkler, the head of sewage is exerted on a turbine centre, through which it passes and is carried into perforated arms, which revolving, spray the sewage in fine particles over the whole The outlet surface of the filter bed in an even manner. channel surrounding the filter at the base receives the nitrified effluent.

## Effluent.

The effluent from the above may either be discharged direct into a stream, or if desired used for irrigation purposes. Such an effluent will be incapable of causing any nuisance or undergoing further putrefaction. But if it is desired to obtain absolute purity from a biological point of view, that is to make it immediately safe to mix with a drinking water supply; it should be further treated by means of fine sand filters, as are in vogue for water supply filtration.

## Silt Beds.

There is still the silt from the screening chamber and liquefying tanks to be dealt with. This consisting principally of mineral, indissoluble matter will be necessarily mixed with a proportion of organic matter.

The general plan and section, Fig. 13, shows silt beds simply dug out of the ground with a layer of broken stone