Clinical and other Notes.

FILTERS AND FILTRATION.

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The term "overcrowding" has always been used with reference to the occupation of buildings, and has been synonymous with air vitiation. Where camps are concerned, unsatisfactory disposal of refuse gives rise to overcrowding or ground vitiation. Till this campaign it was an axiom that the longer a camp site was occupied the more unhealthy it became, the reason for this being solely due to the methods of refuse disposal. The old general rule "to burn what you can and bury what you cannot burn" has probably gone, to be replaced by "burn all solids and filter all fluids." Refuse disposal, whether reckoned as vitiated air, which requires removal by dilution, or other waste products that need to be dealt with, can all be brought down to the elemental physical conditions of gases, fluids and solids.

In camps, air vitiation is dealt with by ordinary routine methods, and will not be further referred to. The disposal of solid refuse by incineration is well recognized; so many papers have been published on the art of incineration that it is unnecessary to here refer to incinerators except to recognize their full value. The subject under review, therefore, is the disposal of fluid refuse, which is readily grouped under the following headings:

(A) Grease water from cook-houses.
(B) Ablution water, from ablution and bath-houses.
(C) Urine from latrines.
(D) Storm water.

Filtration is essential and not "trapping."

Two forms of filter are here described, their exteriors only varying with ground sites.

Plan I, which is headed "Cook-house drainage," is so called because the complete outfit for filtration only is shown. This plan is divisible into three parts:

Part A consists of a sloped cement floor with gully channel leading into a drain. For accessory it has a metal funnel which fits easily into the drain, and is for coarse filtration. This funnel takes the place of the old-time grease trap, and is divided into funnel and collar, at the junction of which is a perforated metal strainer. The funnel is filled with straw.

Part B consists of three concrete chambers, the first chamber acts as follows: The baffle is placed as near the second chamber as possible,
and in the latest types of installation reaches the bottom of the pit where it is perforated with holes to a height of six inches from the bottom. The action which occurs in this pit is, therefore, that solids heavier than water fall to the bottom, whilst solids lighter than water are kept back by the baffle plate. The lighter solids form a scum and assist in filtration by mechanical means. From Pit 1 the purified water passes into Pit 2, a coarse filter which is downward in its action; the substance used for filtration being fine road metalling or when available washed gravel. Having reached the bottom of the downward filter, water then passes into Pit 3, which is filled with ashes or fine coke. Here filtration is upwards, and from Pit 3 the effluent passes on to Part C.

Part C consists of a pit 8 feet deep and 6 feet square connected with Part B by a 4-inch drain pipe which is led down to two-thirds of the depth of the pit. The pit is filled with burnt tins for 6 feet 6 inches, the upper 1 foot 6 inches being filled with road metalling. An overflow channel 4 inches below the inlet pipe level is provided. This channel is let in for the purpose of allowing the overflow of filtered water from the pit in cases where absorption would cease. The reason for running the inlet pipe down to 2 inches from the bottom allows of ample further upward filtration when excess can be run over the ground surface. This outlet pipe is not shown in the plan. In the case where buildings are situated on a slope the filters should invariably be placed on the lower side to allow of water running away from the outlet, should this be necessary. Where no slope exists and there is no possibility of surface irrigation, drain pipes are led down to within 6 inches of the bottom of the pit, so that when necessary the pit can be pumped out and water removed in barrels. It is hoped that the diagram is clear enough not to require further description of detail.

The reason for dividing the plan up into Parts A, B, and C is the following:—

The complete system A, B, C is required for a cook-house, and a further accessory is a lean-to over the concrete slab, which is fitted up with washing bench, plate rack and hooks for holding mugs. The complete system without a lean-to costs about thirty francs to erect.

Parts B and C are necessary for ablation and bath-houses, whilst Part C is used for urine from latrines or for rain water. No soakage pit is ever used for both sullage water (including urine) and for rain water. To prevent the entrance of rain water a ditch is dug around the area of the pit, as otherwise there is danger of sediment gaining access and gradually clogging it up.

Plan II shows the necessary plant for sites where owing to a high subsoil water level it is impossible to dispose of water into the ground.

The various parts consist of A, a funnel as previously described, B a cresol drum fitted up with a baffle, and a perforated tin, C, to hold chloride of lime; this tin is placed so as to have its lower margin below
Cookhouse Drainage.

Plan

- Cement cope
- Cement lining
- Deposit pit
- Perforated zinc
- Scum board or baffle plate
- Sump
- Ditch
- Filled with tin cans up to 18 from top. The remaining 1.6" to be filled up with good metal.
the level of the exit pipe. D is a wooden barrel painted inside and out with crude oil and well caulked; the overflow pipe passes from B to within 6 inches of the bottom of barrel E.

Both barrels are filled with filtering material as indicated in the diagram. F is the overflow pipe which is led off into a stream.

The size of the barrels must be varied according to the amount of water which has to be dealt with. No scum forms in the barrels owing to the use of chloride of lime. This filter in contradistinction to Plan I is a mechanical filter only, whereas that shown in Plan I is a biological as well as a mechanical filter. It may be stated that the above two kinds of filters have been in use for over six months at one base, as the only methods of sullage water disposal.

The sedimentation pits require cleaning out once a week. The solids removed, consisting for the most part of grease, are disposed of by burning.

In conclusion, it is only fair to state that the whole of the work entailed in the building of these filters has been carried out by Staff-Serjt. T. Eastwood, R.A.M.C., and the non-commissioned officers and men of the sanitary section under my command.

A SIMPLE, RAPID AND ACCURATE METHOD FOR LOCALIZATION OF FOREIGN BODIES SO AS TO INDICATE TO SURGEONS THE POSITION OF THE PATIENTS WHEN SKIAGRAPHEd.

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LATELY during the battle periods it has been found impossible to cope with the increased amount of work owing to the difficulty of obtaining plates, and the fact that the routine method of plating incurred