SUMMARY.

A method of grading men according to their physical performance is described. The results obtained in the case of 238 men in Category A1 are presented. Five main grades and five intermediate grades are suggested, based on the results of three tests. The method is simple and could be readily applied to large numbers. If, after a more extensive trial, the results were found to be reliable, it is suggested that the physical grade would be of considerable value in determining the branch of the Service to which a man should be posted.

DISPOSAL OF SULLAGE WATER IN EGYPT.

BY LIEUTENANT-COLONEL A. M. CRITCHLEY,
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WHEREVER troops are encamped the disposal of sullage water becomes a problem which, if not successfully solved, gives rise to a nuisance. This problem is especially important in a country like Egypt where collections of water assist the breeding of insect pests and become definite menaces to the camps and their neighbourhood. The following article briefly describes some of the methods employed to deal with the sullage water both in the arid desert regions and in the highly watered Delta district.

The vast increase in the number of troops stationed in this country has led to the erection of many new camps which, owing to the military situation coupled with the needs for stringent economy in supplies of engineering materials, have not always been ideally sited or constructed so that the most efficient method from the sanitary viewpoint could not be employed invariably.

MAIN DRAINAGE.

In some of the barracks the solution of sullage water disposal has been to discharge into the municipal sewerage system and this has been adopted whenever practicable.

DISPOSAL INTO IRRIGATION CHANNEL.

A few camps, situated near cultivated land but not near dwellings, have been piped and the sullage water passed through a sedimentation tank in which chemical treatment with ferrous sulphate and lime has been carried out prior to discharge into an irrigation channel. Provided the first thirty or forty metres of ditch after the outflow are kept cleansed, this method has proved satisfactory.

SOAKAGE PITS.

Temporary camps have utilized this method of disposal but it is a method which has not been successful in semi-permanent or permanent camps. Contrary to common belief, sand will not absorb unlimited supplies of water so that the pits block up and flood. This failure of absorption may be due to several causes. Thus, faulty supervision of grease traps or high atmosphere temperature fails to remove grease which coats the sides of the pits, rendering them practically impervious. Again, sand contains a high proportion of clay or plaster of Paris according to the area and the action of the water reduces its powers of absorption quickly.

EVAPORATION PANS.

This method so often employed in hot climates has proved eminently suitable in many camps. A series of pans is fed in turn with sullage water which has previously passed through grease traps. The water evaporates rapidly and by the time the pans have been filled, the first one is ready to receive water again. The water is run in to a depth of 6 inches and, if not entirely free from grease, this is left as a hard deposit on the surface of the pan and is removed by scraping and incinerated.

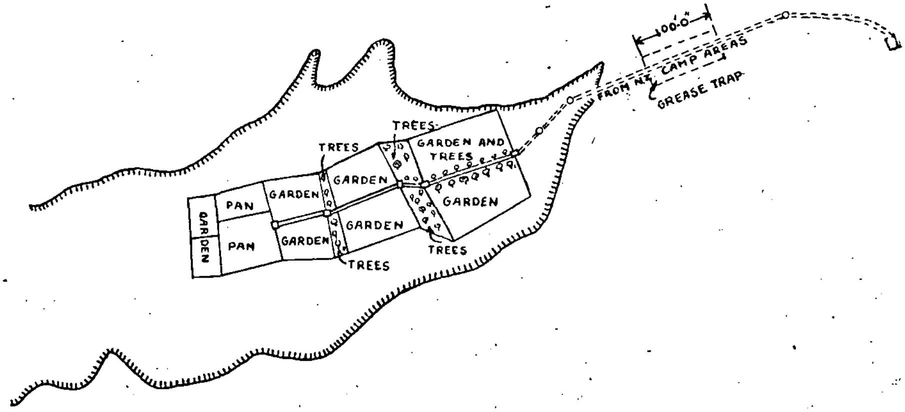

Diagram 1

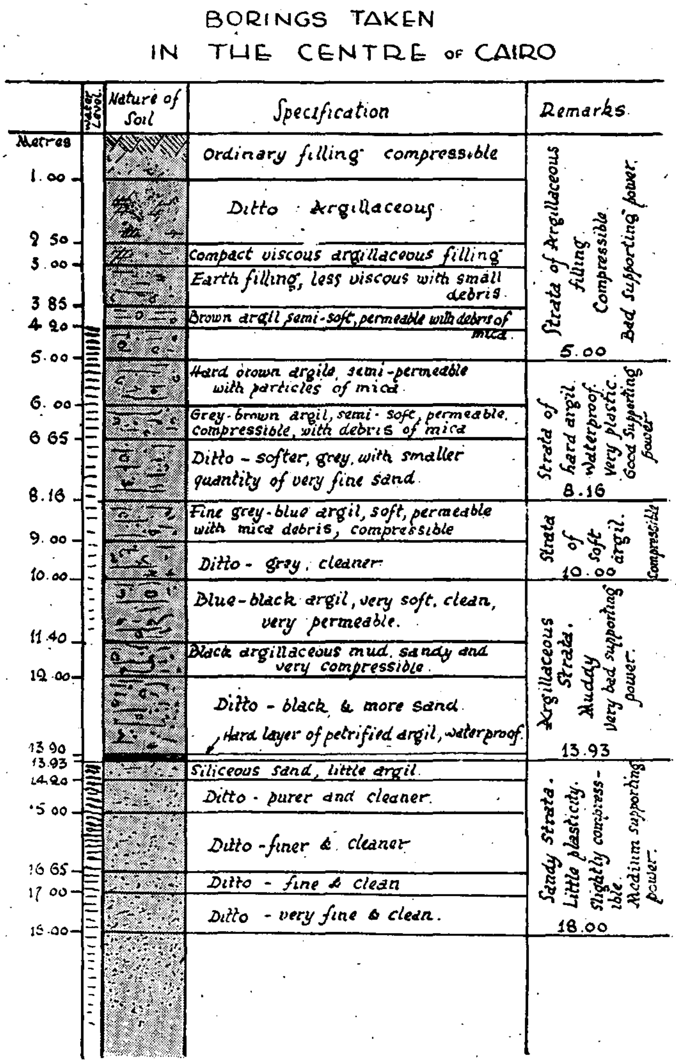

Diagram 2

The above method was used at the beginning but it is now modified in that each pan is cultivated. Crops of varying character are grown, such as peas, beans, cabbages, tomatoes, maize, loofah, eucalyptus trees, etc. Far from interfering with evaporation it is found to assist it and the Desert blossoms forth into useful crops for the use of the neighbouring troops or hospitals. The greatest measure of success is when a very large grease trap, 100 feet long, is employed but, even if grease does come through the pans, it does not interfere with evaporation or become a nuisance provided it is dug in about every month. If the attendants are careless and fail to keep the irrigation channels free from vegetation there is some breeding of mosquitoes but the danger is non-existent when the pans are properly looked after.

The grease trap recommended in the Manual of Military Hygiene has had to be modified for use in Egypt. The modification is simply a prolongation of the second chamber which assists the separation out of the grease.

The sketch (diagram 1) represents the plan of an evaporation-plant for treatment of sullage water.

Sullage Tube System.

In the Delta region the problem of sullage disposal is rendered difficult by the high level of the subsoil water which varies according to the rise and fall of the Nile. At the time of the Nile flood (August and September) the water level in this region is rarely more than a few inches below the surface and may, in fact, cause flooding through seepage. Soak-away pits and evaporating pans are absolutely useless under these conditions so that a much more elaborate disposal system has to be installed.

The sullage water must be passed through sedimentation tanks, followed by filter beds to extract as much grease as possible, before the water is run or pumped into Swallow tubes. These Swallow tubes, 6 or 8 inches in diameter, are sunk to a depth of at least 100 feet to reach the gravel stratum beneath the coarse sand (diagram 2).

During Low Nile these tubes will dissipate large quantities of water by gravity, but during High Nile the water level in the tank rises and the sullage water has to be forcibly pumped down the Swallow tube.

My thanks are due to Major R. W. Walker, R.E., for his helpful criticism and notes.

ICE HOUSE.

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The idea of the experimental ice house described below arose from a discussion on the scale of issue of ice and the necessity of obtaining the maximum benefit from it.

The main points of discussion were :—

(1) Shortage of ice and difficulties in supplying an adequate quantity—according to scale.
(2) Difficulties in the supply of ice chests to units.
(3) Wastage of food consequent on (1) and (2).

Arising from the above it was decided to construct an experimental ice house. The factors considered as governing the construction were :—

(1) Availability of materials.
(2) Simplicity of construction.
(3) To be capable of construction by unit labour.