HINTS ON CAMPING ARRANGEMENTS FOR SANITARY OFFICERS.

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(Continued from p. 638.)

PART IV.

DETAILS OF SANITARY METHODS.

There are many methods of dealing with excreta, refuse, &c., in camp, but only those are described which do not involve the use of appliances, and which have been tried in England and found satisfactory.

The following is given as a type of sanitary instructions to be issued before the camp is occupied.

SANITARY INSTRUCTIONS.

(a) Latrines will be 3 feet long, 1 foot broad, and not deeper than 1 foot. The space between each trench will be 2 feet 6 inches. Trenches must be arranged as far as possible in one line.

When filled in, the next series of trenches may be made in the 2 feet 6 inches interspace. The turf must be removed carefully, and the excavated earth put behind each trench; this earth must be well broken up.

Trenches must be carefully and solidly filled in and the turf replaced.

Some kind of implement (e.g., an empty tin or a spade for at least every three trenches) must be kept behind each trench for replacing earth. (See fig. 1.)

(b) Urinals.—Dig a pit 4 feet square and refill loosely with earth; from the pit dig two shallow trenches 12 feet long, 2 feet wide, and having a fall of 1 inch for each foot of length towards the pit. Place some stones in the trenches, and when foul fill in and make fresh ones. Cover the pit with brushwood and earth. (See figs. 2 and 2A.)

(c) Urine Pit (for Contents of Urine Tubs).—Dig a pit 5 feet deep by 4 feet square, and refill loosely with earth to 1 foot from the top; add a little fresh earth daily.

(d) Urine Tubs.—These must not be placed in the lines, but along the streets and flanks, and marked by whitewashed posts upon which lights are to be hung at night. At least four will be placed close to the canteen. Tubs will be emptied at 10 p.m. and at réveillé.
(e) **Drinking Water.**—Stand pipes and taps. Excavate an area of ground around each pipe or under each tap, size 4 inches deep and 3 feet square. From the centre of this square dig a trench 2 inches wide along the fall of the land to a small soakage pit. Fill in the square and trench (and pit, if in an exposed place) with small stones and ram down, refill the soakage pit loosely with earth. (See fig. 3.)

(f) **Camp Refuse.**—All camp refuse is to be burnt. Suitable crematories are shown in figs. 4 and 5.

(g) **Greasy water** must be strained through bracken or heather before entering a soakage pit. A simple form is shown in fig. 6. Refill the soakage pit loosely with earth to 1 foot from the top, and add a little fresh earth twice daily.

(h) **Empty tins** must be burnt in the crematory and then buried.

(Rough diagrams of the following figures should accompany the orders.)

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**Fig. 1.**

- Turf
- Earth

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**Fig. 2.**

- Pit
- Screen
- Direction of the next trenches
FIG. 2a.

Covered pit.

Screen

Trench with stones

Loose earth

FIG. 3.

Soakage pit

Drain

Filled with loose earth

FIG. 4.

Air inlet

1:6

FIG. 5.

Bracken

Drain

Loose earth

3

4'

FIG. 6.
Camping Arrangements for Sanitary Officers

SHALLOW TRENCH LATRINES.

Size.—3 feet by 1 foot by 1 foot, arranged in one line, and with a 2½-feet interspace.

Number.—It is usual to allow five for every 100 men, but 500 men can do very well with 3 per cent., i.e., fifteen trenches.

Time Trenches Last.—As a rule only one day; if space is limited and the trenches are not filled in one day, dig fewer. A trench can be made to last longer if the contents, which tend to get heaped up in the centre, are levelled off, and if the earth for covering is finely broken up.

Depth.—1 foot is the ideal depth, but if ground is limited they can be dug deeper, to 2 feet. These deeper trenches should last two days. A regiment, 500 strong, had twenty-five trenches 2 feet deep, it was in camp for thirty days, and each trench lasted four days. Another regiment, 550 strong, used fifteen trenches 1 ½ feet deep, each trench lasted two days, the camp was for eighteen days, and the trenched ground was 20 yards by 10 yards. Another regiment, 440 strong, used ten trenches 1 ½ feet deep, each lasted two days, the camp was for seventeen days, and the trenched ground was 20 yards by 15 yards.

Interspace.—2½ feet is a convenient breadth; it allows plenty of room for another trench to be dug in it; men using the second trench have 9 inches of firm ground for each foot, and there is an economy of space. A 3-feet interspace has the advantage of allowing more room between trenches, but it entails a longer frontage, more than exists with a minimum camping ground, and it also requires a greater length of screening.

Method of making Trenches.—Suppose B is the base line of the camp, that trenches are to be dug to the rear, that the number of men is 200, and the probable length of occupation is thirty days.

Two hundred men require ten trenches (at 5 per cent.) with a frontage of 12 yards (2 by 6, see Part I.).

Thirty days' occupation will require a depth of 20 yards (30 by 8, see Part I.).

From B, and at right angles, measure off 20 yards, B-C, and drive in a peg at C. From C take C-D, parallel to base of camp, and 12 yards long. C-D equals line of first row of trenches. From C, along C-D, measure off 1 foot and 2½ feet spaces alternately, marking the spots with a spade till there are ten 1-foot spaces. To do this it is convenient to use a stick which is 3 feet long and marked at 1 foot and 2½ feet, or a cord looped at one end and marked by pieces of coloured rag.
From C measure 3 feet, C-E. From E and parallel to C-D mark off alternate spaces as before, and join up. This outlines the first row of trenches.

Remove the upper sod of each trench in one piece as far as possible, and put it about 3 feet behind the trench.

Excavate the trenches till they are 1 foot deep, keeping the sides vertical, and placing the excavated earth immediately behind the trenches. This earth should be finely broken up.

Surround the trenches with a canvas screen, the back being 3 feet behind and the front at least 6 feet in front of the trenches. The entrance should be in the centre of the front and have a 6-foot overlap. The length of screening necessary for 1,000 men on a 5 per cent. basis will be 130 yards; if twenty-five trenches are used, they will require 70 yards.

On the second day fill in the trenches with the remaining
excavated earth, replace the sod, and tread and beat down firmly. The advantage of the large upper sod is obvious.

Dig the second day's trenches in the interspaces of the first row. On the third day, dig a row of trenches similar to and parallel with the first row, and 1 foot in front. Move the screening forward so as to surround them properly.

**Articles for covering Excreta with Earth.**—Small G.S. shovels are the best, one for every two trenches. If shovels are not available, grocers' scoops answer the purpose very well. Improvised articles, such as empty food tins, scoops made of tins with wooden handles, &c., can be provided, but one per trench is required. An article of some sort must be provided, and pushing earth into the trench with the boot is most undesirable.

**Supervision of Latrine.**—Considerable supervision is required until the men become accustomed to straddling the trenches and covering their excreta immediately with earth.

It had been found useful, at first, to police the latrine by a man who remains on duty until he finds another man neglecting to cover his excreta. This, however, soon becomes unnecessary, and it is found best to police the latrine by a man of the sanitary police, who is on duty during fixed periods not exceeding two hours at a stretch.

**Paper.**—Paper should be kept in boxes fitted with lids and attached to the front screen inside the latrine. Unless the men cover the paper with earth immediately, it is very apt to be blown about the latrine and even gets outside.

**Seats.**—I am not in favour of seats for the men, and when used for officers and N.C.O.'s they should be separate and in the form of half-seats.

The seats should have a covering and be placed across the trenches, with the front of the seat only about 6 inches behind the front of the trench, otherwise there is much fouling at the back of the trench.

After the latrine has been prepared, examine the slope of the land, and, if necessary, dig a shallow drain to divert surface water from the trenches, taking care that it does not flow on to the ground in front of the trenches, which will have to be used later on. This also applies to urinals.

**Deep Trench Latrines.**

Size, &c., see Part 1.

Two inches of the driest earth available must be thrown over the contents of the trench at least twice daily. When the contents
are within 2 feet of the top of the trench, fill in and heap up the earth over the trench. Lime should be sprinkled in front and rear of the trench, as well as inside it twice daily. Keep the pole seat clean with hot water and soda, or cresol solution applied daily. Dig a shallow surface drain on the higher side of the trench.

Urinal.—The urinal previously described (fig. 2) is suitable for a regiment of full strength (1,000), but if two arms are not enough make another. For a small detachment make a smaller pit with a single short arm.

It is important to have the arms or trenches at least 2 feet wide, and to have stones in them, as it helps to prevent fouling of the ground. Should the ground get foul, sprinkle lime on each side of the trenches as well as inside them; I have not found this necessary, but it might be so in very hot weather.

The ground around a urinal should be burned when another has to be dug or the camp evacuated.

Every two or three days look into the pit to see its condition and add a little fresh earth.

The position of urine tubs and the urine pit for the contents of the tubs has been described. Stands for the tubs are easily improvised with empty boxes filled with earth. If only required for one night, dig a shallow trench for each half-company and hang a light by it.

Greasy water.—Water from cook-houses and from the washing of cooking utensils must be strained. Straining material may be bracken, heather or gorse, or even grass, hay or leaves. It must be in small pieces and packed down pretty firmly into the straining pit and across the outlet. The material must be removed and burnt twice daily. The straining pit (fig. 6) is convenient and simple, but a coarse strainer adds to its efficacy. A coarse strainer may be improvised with a box and a biscuit tin.
Care must be taken that the straining pit is not deeper than the drain from it, and the pit should be close to the cook-house. The drain should be narrow and have an even fall; if traffic has to cross it, it should be filled with large stones.

Refuse Incinerators.

(1) The best incinerator, especially when sods can be obtained, is a square or cylinder 3 feet high. It is not suitable in peaty ground. If iron bars are obtainable they should be placed across the inside valve, the air inlets to form a grating.

![Fig. 10.](image)

(2) If in peaty ground, or if there is not time to build (1), employ the low cylinder shown in fig. 4.

(3) The horse-shoe mound (fig. 5) acts well in any soil.

All these incinerators are improved by facing the inside with puddled clay.

All indectructible refuse, e.g., tins, must be moved from the incinerator every morning and buried.

Water.

A method of preparing ground beneath taps has been described. The V-shaped ablution bench is much better than the ordinary grating; the ground around should be drained, and the ablution water must be disposed of as in Part I.