

APPENDIX No. 12

SANITATION ON THE WESTERN FRONT¹

I. CORRESPONDENCE RELATING TO THE FUNCTIONS OF SANITARY SECTIONS

Memorandum dated 12th March, 1917, from Adjutant-General, B.E.F., to Armies. "In order to maintain continuity of sanitary work in Armies, it has been decided to withdraw Divisional Sanitary Sections from their Divisions, and to constitute them as Army Troops units. . . . Orders for the movement of these Sections between Armies will be issued by G.H.Q.; orders for movements within Army areas being issued by Army Headquarters."

The Australian A.D's.M.S. were strongly opposed to the change; their arguments were presented to the D.D.M.S. I Anzac Corps in the following letters:—

"D.D.M.S.,
1st Anzac.

"Considerable difficulty is being experienced in controlling sanitation in the Forward Area under the system and areas at present in operation.

"Two Sanitary Sections divide the 1st Australian Division area between them, in addition are responsible for a very elongated tract of country in rear extending over two Divisional areas as far back as Mametz and Fricourt—a distance from the front line of 14 miles.

"Even assuming that it is only occasionally necessary to visit this back area, its inaccessibility must cause considerable waste of time in travelling and time taken in travelling cannot be judged by distance as the congestion on roads very often hinders travelling tremendously. This time is urgently needed for placing the Sanitation of the newly occupied territory on a sound basis. Further the detachment of Sanitary personnel in this back area seriously weakens the section and hinders its work of construction and supervision.

"Again the partitioning of a Divisional Area into separate sanitary controls does not tend to uniformity of sanitation and complicates the provision of fatigues for conservancy work by the Division occupying that area.

"The close personal knowledge of Divisional Staff of the work being done by the Sanitary Section has been lost. Personal acquaintance with Sanitary Officers and officers of the Division and the personnel of

¹ See pp. 587 et seq

the Sanitary Section with the personnel of Battalion Sanitary Details has been lost to a very large extent and thus the progressive training of Units in Sanitation interfered with.

"It is considered that more efficiency would be obtained in Australian Units under the old system of Sanitary Section working entirely with their Division. If this cannot be done it is suggested that Sanitary Areas should be shortened and made to conform more approximately to Divisional Areas.

R. B. Huxtable, Colonel,
A.D.M.S. 1st Aust. Div.
Divisional Headquarters, 23rd April, 1917 "

"D.D.M.S.,
1st Anzac.

"I am of opinion that the present arrangements for sanitation are unsuitable for this Division for the following reasons:—

"1. The A.D.M.S. is cut off from intimate association with the S.O. and therefore misses many opportunities of discussing sanitation and suggesting improvements.

"2. The S.O. is unacquainted with the C.O.'s of units or is not so intimately acquainted with them as under the Divisional arrangements, and therefore his personal influence is much reduced if not lost.

"3. In sanitation it is men not Areas that call for intimate knowledge of the S.O. and if he influences the C.O.'s the improvement of the Area is marked. No loss of continuity of policy need occur when a Division leaves an Area as it has always been our custom to hand over spot maps.

"4. Since the inception of the present plan of sanitation I have lost touch with the S.O., and am not so well acquainted with the state of the Area occupied by the Division as when I saw the daily reports sent in by the men of the Sanitary Section to the C.O.

"5. The Sanitary Area may embrace Areas occupied by two or more Divisions hence divided counsels and uncertainty of administration.

"6. The present plan is not popular with Units or Sanitary Officers. The S.O. is looked upon as an outsider and his counsel carries no weight. Indeed, if it be persisted in, I have reason to believe that great difficulty will be experienced in filling the office with capable men.

Alfred Sutton, Colonel,
A.D.M.S., 2nd Aust. Div.,
Headquarters, 21st April, 1917."

"D.D.M.S.,
1st Anzac.

"Sanitary efficiency is likely to suffer owing to detachment of the Divisional Sanitary Section.

"Formerly I had a complete grasp of the Sanitary Condition of the Division, by means of daily reports from the C.O. Sanitary Section compiled from reports forwarded to him by his personnel attached for that purpose to the Brigades. By this means defects could be immediately

remedied, and defaulting Units brought to book without delay. I was also quite sure that every unit of the Division was under supervision.

"Under present conditions I have not got this staff at my command, and I cannot get the daily reports which are so necessary.

"Such reports as I receive often arrive after the Unit has moved out of the locality mentioned, perhaps into the area of another Sanitary Section

"As the Sanitary Section has a huge area to inspect, the Divisional area cannot be inspected as it should, and what is most important, delay occurs, and delay means increasingly bad sanitation.

"The Divisional Area rarely seems to coincide with the Sanitary Area and I may have to deal with one or more Sanitary Sections, or the O.C. Sanitary Section with as many as three A.D's.M.S.

"The present arrangements might be fairly satisfactory under Peace conditions, or during Trench warfare, but when Divisions are mobile it is most unsatisfactory.

"I am of opinion that Sanitary Sections should remain with their Divisions. Sanitary work outside Divisional Areas could be carried out by L. of C. Sanitary Sections.

"The co-ordination of the work of Divisional Sanitary Sections would be simply an easy matter of organisation.

G. W. Barber, Colonel,
A.D.M.S., 4th Aust. Division.
April 22nd, 1917."

"D.D.M.S.,
1st Anzac.

"In reference to the disposition of Sanitary Sections, I have to report that the present plan of localising a Sanitary Section in a fixed area, independent of the Division is resulting in a very definite loss of that close relationship between the Sanitary Section and the Division, which counts for so much in the maintenance of a high standard of efficiency.

"Units get to know their own Sanitary Section and the Sanitary Section to know the difficulties as well as the shortcomings of the units, the triers and the non-triers, with the result that much can be achieved on the basis of mutual understanding which is hopelessly lost under the present system.

"Cases have occurred in my own Division when an Infectious case has been notified, instructions to disinfect the dugout, etc., have been sent to the Sanitary Section controlling the area in which the unit is located, the Sanitary Officer discovers that though the Headquarters of the Unit are in his area, the hut, etc., occupied by the man is in the next area under the control of another Sanitary Officer, obvious chances of friction or of delay thus occurring.

"Early in the present year, the G.O.C. this Division, in pursuance of a policy for raising the standard of Sanitation as high as possible, in addition to sanctioning the employment on water point duty Six (6) Regimental A.A.M.C. Water Details, authorised the attachment of 6 men from Battalions to the 5th Sanitary Section for instructional purposes, thus largely increasing the efficiency of the Sanitary Section and at the

same time providing a means whereby, through the periodical changing of these men, the education of the units in Sanitation would be soon brought to a high level.

"Under the present method of fixing the Sanitary Section in a definite area, with consequent separation from the Division on moving out, it can scarcely be expected that the Divisional Commander will permit this very definite help to continue.

"It would appear to me that all the benefits of the present system could be obtained by Sanitary Section keeping records and maps and carrying out a system of 'handing over' similar to that adopted by Divisions and Battalions when taking over a new area or section of line.

"Knowledge of a new area can be quickly acquired; to get to know and gain the confidence of the personnel of a Division is a vastly more difficult matter.

W. W. Hearne, Colonel,
A.D.M.S., 5th Aust. Div.
21/4/17."

II. THE METHODS OF SANITARY² TECHNIQUE FAVOURED IN THE A.I.F. ON THE WESTERN FRONT

The following note on the technique of "sanitation" is complementary to the general study made in *Chapter XIX* and concerns the "direct" method of preventing gastro-intestinal diseases due to infection. Its purpose is to illustrate the principles adopted, not to serve as a synopsis of the various methods in use. The several procedures are described in accord with their place and sequence in the mechanical cycle of transmission of faecal matter from man to man.

The material agents concerned in the biological process of gastro-intestinal infection are—1. excremental matter (faeces and urine); 2. transmitting agents, (a) hands (b) flies, (c) dirt and dust, (d) surface and subsoil water; 3. immediate vehicles—food and drink.

Factors in the problem

The "sanitary" measures employed were designed to attack the cycle, infective individual (case or carrier)—susceptible individual, at these three points and are conveniently described in relation to each.

1. *The infective material: disposal of faeces and urine.* This was by far the most formidable problem of sanitary scavenging. The alternatives were—(a) disinfection; (b) incineration; (c) burial.

(a) *Disinfectants.* Used as fly deterrents, the cresols and heavy oil had a definite if a limited field of usefulness.

(b) *Incineration* was used in the larger medical stations, C.C.S.'s, General Hospitals, and Convalescent Camps; sometimes in occupied towns and villages; when the height of the subsoil water forbade the

² This term is used here, as commonly in the A.I.F., as, in effect, synonymous with "scavenging."

use of pits; and when burial might lead to the infection of the water supply.

(c) *Burial* was the general means of disposal of faeces and urine. Apart from aesthetic considerations the purpose of burial was to prevent the dispersal of faeces, as by the feet of man or of flies, or as dust and "dirt."

In effect the technique of faecal disposal by burial resolved itself into (i) the shallow trench 3ft. by 2ft. by 1ft., straddled; (ii) the single or double "fly-proof" seat, over a deep pit or a pan. (i) was universal in rapid movement. In stationary or semi-stationary warfare, the fly-proof seat, improvised or official, over a deep pit was the most favoured procedure.

The common practice at the several military levels can be stated thus:—

(i) The trenches: fly-proof box-seats over biscuit tins; or oil drums with individual self-fitting lid-seats. Faeces buried or deposited directly in shell-holes or shallow trenches in rear.

(ii) Support areas. Fly-proof box-seats over pit, pan, or biscuit tin. If the latter, burial in shell-holes or pits.

(iii) Back areas. Fly-proof box-seats over deep pits for camps; short shallow trench-system for troops on the move, or in camps until fly-proof boxes can be obtained; pan system and incineration for C.C.S.'s and for hospitals and other permanent institutions; fly-proof boxes over deep pits for villages, for troops billeted therein. The commendable French method of roofed pits with squatting holes was sometimes seen.

*Some Constructional Notes. Latrine seats.*³ The most economical and easily made latrine seat is from a biscuit box. It can be fitted over deep trenches, is easily transported, and if desired can be made "fly-proof" and with self-closing lid.

"*Construction*: top and bottom are removed, projecting ends of stay battens sawn off. Two slats 2-in. wide are planed and rounded off at the inner edge and nailed, one along each side of top of box. Lids are made of spare boards or, preferably, only a framework is made for lid and a sheet of tin is nailed on the framework. A piece of tin is also nailed on inside of front of box to direct urine into pit. Hinges are of leather or webbing. Back rest is nailed on two slats nailed to sides of the box and inclining [preferably] backwards. The lid is therefore *not* self-closing.

"*Reasons*. (1) Slats are used instead of an oval hole in the seat because it is more easily made and does not require a key-hole saw; men cannot defaecate on the back of the seat even if standing up on seat; more easily kept clean and free from vermin. (2) Tin lid instead of wood and so not torn off for firewood. (3) Back rest sloping back and lid not self-closing—because soldiers will not put up with self-closing lids and always wrench off such lids. Compromise is necessary."

2. *Transmitting Agents* (a) *The hands: Ablution*. Agents of disease contained in faecal matter and urine may be passed direct from man to man, as by the carrier-cook. There is much, if indirect, evidence that on the Western Front this was the most important mode of convection. Some sanitary officers believed that, in France, all other modes of infection were negligible. However this may be, it is certain that *soap*,

³ See plate at p. 581.

hot water, disinfectant solutions for the hands and the ablution bench were in the first order of importance as implements in the sanitary campaign.

(b) *Flies*. Rightly or wrongly, an enormous amount of energy was devoted to preventing transmission of infection by flies; in particular, to controlling their breeding in manure and kitchen refuse

Manure. Burning is mentioned only to be condemned. Never used in the A.I.F. *Spreading*—as on distant farm land. The purpose of this was to dry the manure—the larva of *musca domestica* requires moisture. Found "satisfactory." *Heaping* to promote fixation of ammonia and bacterial disintegration—the primitive biological cycle essential to continued soil fertility. This was favoured. (a) The manure was simply "dumped" at a distance from camp. (b) The fresh manure is stacked on the ground or a platform; the manure as stacked was packed down and covered with earth. By this procedure the larvae are killed or are forced to the edge by the heat of internal combustion and may be trapped or oiled

Food and Other Refuse. The official procedure of "incineration" replaced dumping or burial of food, in order to check the breeding of *musca domestica*. It was tedious, laborious, unpopular, but universal behind the support areas

Incinerators. A great variety of gadgets were used to promote combustion by creating a "draught"; from a simple cone as of coiled wire in a shallow pit to an elaborate destructor used for faecal disposal; "home-made" by the engineers, or portable as the "Horsfall."

Improvised Types. The "pit" incinerator figured on page 587 appears to have been developed in the A.I.F. from the Welsh two-pit incinerator used by the 5th Australian Division at Tel-el-Kebir in 1916. "Very good. Burns well. Requires minimum of material, merely some iron bars for the bottom."

The open type built up of biscuit tins or oil drums filled with earth and wired together. Four sheets of corrugated iron wired together.

"An incinerator which requires the tins to be dug out each morning will always be late in starting the day's work."

In fixed camps incinerators were adapted (a) to heat water for ablution, (b) to provide the heat for drying rooms.

Disposal of Greasy and Soapy Water. Kitchen slops contained grease and bred flies; soapy water—as from ablution bench or "baths and laundries"—might pollute the water supply or make a bog. To promote disposal by soakage the "grease trap," improvised, as for kitchen use, or made by the engineers, was in universal use; in baths and laundries in conjunction with sedimentation, as by lime. Whatever the form the principle was the same—to pass the water alternately under and over a series of baffle-plates, so that solids sank to the bottom, grease congealed at the top—if the trap, box or pit, was large enough. For baths and laundries a double set of baffled pits was found desirable, each large enough to hold one day's ablution water.

(c) *Dirt and Dust*. Infective dust was not a major problem in France.

(d) The medical aspect of the water problem has been dealt with fully in the text.

3. *The Immediate Vehicle, Food and Drink.* (a) *The supply dump.* "Too much attention cannot be given to the sanitation of dumps and the method of holding food in dumps. The construction of dumps is important. They should be 3ft. 6in above the ground so as to allow of the tailboard loading. Bread, etc., must be kept clear from water, mud and dirt. Meat must be cut up on proper blocks which must be scraped and cleaned daily. It is possible to erect dumps with fly-proof screens for perishable articles, and all food should be properly protected from flies. It is the duty of the O.C. Supply Unit, and dumps should be inspected by the D.D.M.S., Corps and the A.D.M.S., Division."⁴

(b) *The Kitchen.* Various standard types of improvised fly and dust-proof kitchen safes were in constant use. Facilities for cleanliness varied greatly. In the best battalions the cooks got a fair spin. In some they did not.

(c) *Distribution.* The efficiency of a battalion might be gauged by the way the men were fed. In the A.I.F. cooking by company and messing by platoons was almost universal. The food was thus received hot, clean, and expeditiously.

(d) *The Mess-tin.* In some units regimental funds were used to obtain extra boilers for providing hot water.

(e) *The Cooks.* When all is said for "sanitation" it may be proposed that the last word lay with the cooks.

⁴From a lecture on "Supply in the Field" delivered by Major C. J. Goddard, O.C. Australian Corps Troops Supply Column, at the Australian Corps School for Medical Officers, Jan 1918.