

SANITATION IN BILLETTS AND CAMPS.

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CAMPS.

THE presence of bodies of troops in canvas and hut camps raises many points of sanitary interest. Under such conditions of life we have a reversion to an essentially primitive mode of existence. The inhabitants of the camp are removed from the immediate sheltering care of more or less benignant sanitary authorities, the sanitation of the area which they are, for the time being, inhabiting is under their own jurisdiction, and the degree of sanitary perfection which is obtained largely depends upon the initiative which is displayed by those in command of the unit or brigade and upon the advice given to those responsible commanders by their accredited medical advisers. Here it may be well to emphasise the fact that so far as sanitary effort is concerned the medical officer's duty is solely advisory, and that, of course, all executive authority resides in the hands of the combatant commanding officer. But it is also necessary to state that the vast majority of commanding officers are only too ready to avail themselves of, and to follow the advice given them by, their medical officers, so that the sanitary perfections or imperfections exhibited by individual camps reflect largely the amount of interest which the medical officer takes in matters hygienic.

General cleanliness and smartness of appearance are insisted on in the individual soldier as a matter of discipline, and a similar cleanly state as regards the camp area should be rigorously enforced. No scraps of any kind should be allowed to lie about or to be cast upon the ground, and since there must be a certain amount of casual litter to be disposed of, it is essential that receptacles should be provided for its reception and temporary storage till it can be dealt with in the camp incinerator. Such receptacles may take the form of small boxes or tins obtained from the quartermaster's stores, or they may be made from lengths of wood and wire-netting, after the pattern of those found in public parks. In the latter case the most convenient shape is that of a cylinder, approximately 3 feet long and 1 foot in diameter. These receptacles should not be too numerous in any camp area, the right proportion being about one receptacle to each row of huts or tents. Each receptacle should be nailed to a post at a convenient height from the ground.

It is not always easy to convince camp commandants of the necessity for the provision of these receptacles, and in the case of camps which are obviously tidy their presence need not be insisted upon; but in instances where paper and other oddments are to be found about the camp ground and when one is told that such littering of the ground is impossible to prevent, the provision of such receptacles may be advocated as a remedy.

Waste Water.

In large canvas camps where a sewer connexion cannot be obtained the disposal of waste water from kitchens, ablution places, baths, &c., is often a difficult matter. The problem we are here confronted with is that of the removal, without the help of sewers, of sullage water for a population of

somewhere in the neighbourhood of 4000 men, a number of inhabitants equal to that contained in many of our smaller towns.

There is nothing else which so mars the appearance of a camp as an inefficient system of waste-water removal. In addition, a faulty disposal system produces water-logging of the soil and fouling of the ground surface, and this often to such an extent as to cause grave nuisance and probably injury to health. For these two reasons it is absolutely essential that the system of disposal should be as perfect as circumstances will permit.

In the first place, we must remember that in the majority of schemes we are going to depend upon the porosity of the ground for the removal, and it is therefore necessary that the camping ground should consist of porous soil or that, at all events, it should be possible to reach a permeable stratum at a reasonable distance from the ground surface. It will therefore be apparent that when a camp site is being selected due attention should be paid to this matter, and that, when tactical considerations permit, sites which are likely to present difficulties in this direction should be ruled out as being unsuitable. Even if a stream is available in the neighbourhood of the camp it is unlikely that, in the case of temporary encampments, with the means of purification at our disposal, we should be able to produce an effluent which it would be permissible to pass directly into a water-course.

Preliminary Treatment of Waste Water.

Laying aside, as being generally impracticable, direct passage into a stream, we may say that there are three principal methods by which, either alone or in combination, we can dispose of waste water. These three methods are surface irrigation, subsoil irrigation, and disposal into soakage pits.

Before the waste is in a state fit to be disposed of by any of these three procedures it must be treated in order to remove from it as much of its added impurity as possible and, in particular, any contained material which will increase the difficulties of disposal. The principal ingredients which come under the latter category are grease and soap, the former predominating in kitchen waste and the latter being in excess in the case of water coming from ablution places. Both these constituents militate against the success of any scheme by clogging up the interstices of the soil, and in the case of surface irrigation they have the additional disadvantage that they produce an unpleasant smell and an unsightly appearance of the ground. In addition to the grease and soap, all gross impurities such as particles of meat and vegetables must be removed, and over and above this, it should be our aim to extract as much as possible of the finer suspended matter.

A greater degree of purification than that outlined above it will seldom be possible to attain to, and it will therefore be apparent that our final effluent must be a highly impure fluid quite unsuitable for passage into a water-course. Anything in the nature of actual purification of the waste cannot be expected. The ancient myth that gorse or bracken will act as an efficient grease and soap retaining medium is now happily exploded, and although in the case of the type of camp of which we are at present speaking it is eminently desirable to have the sullage water disposal system as simple as possible, it is little short of flying in the face of providence to rely on anything so childish as the typical gorse grease trap which has

obtained the sanction of usage but certainly not the blessing of success.

The unsatisfactory results which are obtained with this and with other similar primitive forms of trap led to the initiation of experiments, which were attended by varying degrees of success, with various combinations of coke-breeze filters and sedimentation pits. One has found that the end result which is obtained is influenced greatly by the character of the water as regards its degree of hardness, by the methods adopted in the cleansing of cooking vessels (whether much or little water is used in the operation and whether soda is employed), by the size of the filter chambers, by the character of the filtering medium used, and by the capacity of the sedimentation pits.

Methods of Disposal of Waste Water.

The following is a rough description of a system which was suggested by Captain J. M. Hamill, and which was installed in some of the camps occupied by troops belonging to the 59th Division.

The waste water from the ablution benches and kitchen wash benches is led into a coke-breeze or sand filter grease trap, thence through a sedimentation pit, and finally through a second coke-breeze or sand filter. Before it reaches the first trap the waste is passed through a sieve made of perforated corrugated iron in order to keep back gross particulate matter. The filter traps are chambers made of wood well tarred and pitched, or of bricks set in cement or puddled clay. Their approximate size is 4 feet long by 2 feet 6 inches broad and 3 feet deep. They contain a cross partition so placed that the trap is divided into two compartments, one being 3 feet long and the other 1 foot long. This partition reaches only to a point about 6 inches from the floor of the chamber, so that the two compartments communicate at their lowest points. Both chambers are filled to within 6 inches of the top with coke-breeze or sand.

As regards the ultimate disposal of the waste after its purification, the simplest method is undoubtedly that of turning it into soakage pits. These pits should be made from 4 to 6 feet square, their depth being mainly governed by the distance from the surface of the ground at which a permeable stratum is reached; for if these pits are to work properly, and to be prevented from becoming mere stagnant and more or less permanent collections of waste water, it is essential that a porous stratum should be actually cut into. The principal advantages of efficient soakage pits are that they take up little surface space, and that if they become fouled they can be filled in and fresh pits dug.

Surface irrigation and subsoil irrigation are specially useful as adjuncts to a soakage pit. Their great disadvantage is the comparatively large amount of land which is required for their efficient working. This disadvantage is most evident when either of these systems is used alone. When they are used to take the overflow from soakage pits the disadvantage is not so apparent, as in this case a large proportion of the waste is dealt with by the pit, and only a relatively small amount remains to be dealt with by the complementary system.

When a sufficiency of sloping ground is available, either surface or subsoil irrigation can be applied with advantage, the trenches or drains, as the case may be, being made to follow the contours of the irrigation area. These trenches or drains should have a depth and breadth of from 12 to 18 inches, and in the case of drains the channel should be

filled in with tins which have been passed through the incinerator or with fair-sized pieces of hard and well-fired clinker. The tins or clinker will allow passage for the waste and at the same time will support the replaced turf.

Food Store and Kitchen: Disposal of Refuse.

In all camps the food store should be a separate and distinct structure from the kitchen. In too many cases the one is only a part of the other. The store should be placed as far as possible from latrines and urinals, but conveniently near the cookhouse. Special attention should be paid to adequacy of space, to absence of damp, to lighting, and to ventilation, and means should be taken to prevent the access of flies to the food. In the case of hut camps this latter end can be secured by the provision of fly-proof gauze over the windows, but in the case of tents freedom from flies is not so easy to obtain. However, much can be done by keeping the food as long as possible in its original packing and by covering exposed food with muslin or similar cloth.

The means for cleansing cooking and eating utensils and for washing vegetables are often found to be markedly defective. At least some form of bench, no matter how simple, should be provided for this purpose, and washing and cleansing should be allowed to be done only at the place appointed. If possible, water should actually be laid on to this bench, and the waste should be run into a grease filter trap of the form described.

In most camps kitchen refuse, which it would be wasteful to burn, is removed under contract, and for its reception pending removal, and also for the temporary reception of garbage which is to be burned, there should be provided suitable receptacles. These should be cylindrical in shape, constructed of metal, watertight and covered. In a recent memorandum it was recommended that camp kitchen refuse should be classified under four heads—i.e., waste bread, bones and meat waste, cookhouse and table refuse, tins and tea leaves, &c.; so that at least four such receptacles will be needed. Frequent inspections are necessary in order to ensure that garbage which should be incinerated is not placed in receptacles meant to hold otherwise disposable material.

All waste material which it is not profitable to retain should be burnt in some form of incinerator. Most of the incinerators described in the various text-books give good results, but the one which is most generally useful in the average camp is made in the shape of a square pit 4 feet high and 4 feet square. There should be an opening about 15 inches square at ground level on each side, and just above these openings some simple form of fire-grate to support the burning materials should be inserted. In canvas camps these pits are best made of dry brickwork backed with turf, but in the case of hut camps the incinerator should be of a less makeshift type and should be constructed of 9-inch brickwork set in cement.

Disposal of Excreta.

Under camp conditions the methods which may be adopted for the disposal of fæces and urine are three in number—viz., water carriage, the use of bucket latrines, and the adoption of some form of immediate earth burial.

In hut camps where a sewer connexion can be obtained water carriage should be installed, the form of apparatus adopted being some variety of trough closet. In hut camps in which for any

reason it is impracticable to adopt water carriage bucket latrines should be used. In this case the building intended to house the buckets should have a concrete floor which can be readily cleansed, and great pains should be taken to make sure that efficient ventilation is provided. This is best secured by the provision of adequate openings situate under the eaves. In canvas camps the excreta-disposal system may be in the form of a bucket latrine, or some form of earth burial may be installed.

Bucket Latrines.

In the case of bucket latrines great care must be exercised in their method of use and in the manner in which the buckets are cleansed and emptied if these latrines are to be prevented from becoming an intolerable source of nuisance. The buckets should be of convenient size to be placed under the seat of the latrine, they should be of metal, and water-tight. In order to reduce the risk of faecal matter being deposited on the ground, there should be not more than one inch of clearance between the top of the bucket and the seat of the latrine, and, in addition, there should be some form of guard or stop to hold the bucket accurately below the aperture in the seat. If at all practicable, the buckets should be provided with covers which can be clamped on, as then the buckets can be removed when full to the place where the excreta are to be disposed of instead of their being emptied into some form of cart in the immediate neighbourhood of the latrine itself. Frequently, however, the buckets are not provided with covers and their immediate emptying takes place into a tank cart which is used for the transport of the excreta from the latrine to the place of ultimate disposal.

Before being placed for use each bucket should be well smeared over on the inside with crude mineral oil, and there should be placed in it cresol solution (strength 1 ounce to the gallon of water) to a depth of 3 to 4 inches. The object of these procedures is to discourage the presence of flies and to facilitate the emptying of the buckets. No bucket should be allowed to become more than about half full before being taken out of use, and the provision of buckets should be on a scale sufficiently liberal to make this possible. After emptying, the buckets should be swilled out with cresol solution. Buckets or tubs used as urinals should be treated in the same manner as that outlined above.

The Trench Latrine System.

One great objection to the bucket system is that the bucket itself is, of course, merely a stage in the scheme, for the buckets have to be emptied either in the vicinity of the place of use or elsewhere, and there is a considerable risk of spillage taking place during this operation. The alternative system, that of immediate earth burial, has few of the disadvantages inherent to the bucket system, and, in addition, there is no difficulty with regard to the ultimate disposal of the excreta, for the place of ultimate disposal coincides with the situation of primary deposition.

There are many varieties of the immediate earth burial or trench latrine system, but the two most important are known respectively as the deep trench and the short, shallow trench. The principal difference between these two varieties is that, in the case of the first named, the trench is anything upwards of 2 feet wide and 2 feet deep, and as long as the ground available will allow and the requirements demand; while in the case of the last

named the trench is from 1 to 2 feet deep, 1 foot broad, and 3 feet long.

From practically all points of view the short, shallow trench is much the more satisfactory of the two varieties. In the case of the deep trench it is practically impossible to ensure that the excreta will be covered with earth immediately after the act of defaecation, whereas in the case of the shallow trench it is comparatively easy to ensure this. There is therefore less risk of nuisance from smell and of the carriage of disease by flies when shallow trenches are adopted.

In addition, ground which has been the site of shallow trenches can be re-used as a latrine area within a measurable time, whereas the deep trench leads to a more or less permanent fouling of the ground. In other words, when using the shallow trench we are utilising the services of nature to the fullest extent, for, as has been shown by Dr. George Reid, county medical officer of Staffordshire (lately divisional sanitary officer of the 59th Division), and others, faecal matter deposited in the shallow trenches is rapidly dealt with by the organisms of the ground and cannot be recognised as excrement at the end of a period of time which varies for different soils, but which can be stated as being, on the average, about six weeks.

The rate of disappearance of the faeces varies roughly inversely with the depth of burial, and at a certain depth disappearance does not take place at all, and the faecal matter remains more or less in its original state for many years. The best results are obtained when the trenches are made not deeper than 15 inches, and the working rule generally adopted is to adhere to a depth of 1 foot. When this specification is acted upon even paper, if of suitable texture, disappears in the same time as that required for the dissolution of the excrement. The 1 foot of breadth is postulated as being a convenient space for a man to straddle over, and, moreover, this comparatively small space makes it as easy as is possible for the user of the latrine actually to cover the faeces with earth.

In the digging of these latrines great care should be exercised to ensure that the turf is removed in one piece and that all edges are made sharp and straight and all angles clean-cut. The earth should be finely broken up and placed at the end of the trench, so that after each act of defaecation the user may cover the dejecta with earth. Small wooden scoops or small tins should be provided for this purpose, and it should be impressed upon all concerned that the efficient working of these latrines depends greatly upon the degree of conscientiousness which is displayed in the gradual filling in of the trench with earth. When the contents of the trench reach to about 4 inches from the ground surface the remaining earth should be filled in and the turf then replaced.

Provision of Separate Urinals.

Where trench latrines are installed, distinct and separate urinals must be provided, as these latrines cannot be used for the disposal of urine. Many of the urinals which are described in the text-books do not give satisfactory results, but the following is a description of a type which has adequately answered the purpose for which it is intended.

A pit is dug 4 to 6 feet square and of such a depth as it is necessary to go in order to reach a permeable stratum. The depth required varies, of

course, in different localities, but it is generally possible to find a convenient situation in the camping ground at which porous soil can be reached within 10 or 12 feet of the surface. This pit is filled to within, approximately, 2 feet of the ground level with burnt tins, large stones, or coarse clinker. Four 9-inch drain pipes, one at each corner, are inserted so that their lower ends project some distance into the collection of tins and their upper ends protrude above the surface of the ground to a height of 18 to 24 inches. The remainder of the pit is then filled in with earth and the surface re-turfed. When the work is completed only the four projecting pipes are visible. The pipes should be treated daily with crude mineral oil, as in the case of latrine buckets.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE WEEK'S SUBSCRIPTIONS.

THE subscriptions to the Belgian Doctors' and Pharmacists' Relief Fund received during the week have been as follows:—

| | | £ | s. | d. | | | £ | s. | d. |
|--------------------------|---|----|----|----------------------|------------------------|---|----|----|----|
| Pharmacists' V. T. C. | | | | | Mr. A. Chapman | 0 | 11 | 11 | |
| Camp (collected at), | | | | | Mr. A. E. Mills | 0 | 7 | 2 | |
| per Commandant E. A. | | | | | B. M. A., South Indian | | | | |
| Atkins | 4 | 11 | 6 | Branch (per the Hon. | | | | | |
| Dr. A. E. Causton | 2 | 2 | 0 | Treas.) | 5 | 6 | 10 | | |

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

NATIONAL HEALTH INSURANCE.

Insurance Practice During War.

A CORRESPONDENT of the *Leeds Post* complains with some justice of the hardship imposed upon medical men carrying on insurance practice for themselves and for others in circumstances of severe strain by the clerical work which such practice necessitates. He states that the secretary of the North Riding Insurance Committee has been instructed to insist upon "all records, &c., being done as correctly, or even more correctly than in peace time, and to threaten that the patriotic absentee shall not receive his payment unless these records are kept." He adds that since war broke out it has been made compulsory that a patient should be seen on the day on which his certificate is given, so that a medical man may have to travel several miles in order to sign a certificate even though he may have had to visit the patient on the preceding day. The writer, who signs himself "One of the Absentees," makes two points with regard to these matters, urging, firstly, that it is not much encouragement to practitioners who enter the service of the Crown to know that they may lose their money for insured patients, not through their patients being neglected, but through the records sent in with regard to them being defective, while those doing the work are also hampered in performing it; and, secondly, that medical men are being compelled to carry out strictly their part of a bargain which is not being fulfilled with equal exactness by those with whom they made it. He urges in this connexion that practitioners are not receiving under the Insurance Acts the immunity from bad debts which was held out as one of the merits of the insurance system and as one of the inducements to them to serve on the panels. Strictly speaking, the term "bad debts" is hardly applicable to the delayed payments made in instalments by Insurance Committees in view of the temporary financial circumstances which affect them. No doubt the money owed by the Insurance Committees will in all cases be paid in full in

the end, and though a business man might describe such debtors as "long-winded," he would hardly treat their obligations as "bad debts." Undoubtedly, however, prompt settlement was looked for when panel practice was instituted, and at any other time but the present it would rightly be insisted upon. After the war the question will properly be raised if steps are not then taken to ensure the punctual receipt of fees, which in no cases are excessive in view of the work done in earning them. With regard to the keeping of accurate records referred to above, it is fair to the Insurance Committees to point out that these are generally necessary with a view to the adjustment of the fees which will have to be paid in respect of the work done.

The Certification Agreement in Ireland.

The Insurance Commissioners have now issued to medical men who have signed the agreement with them as "medical certifiers" a memorandum of instructions which, as was promised, modifies in important particulars certain of the clauses in the agreement itself. The instructions in the memorandum are declared to be instructions issued under one of the clauses of the agreement, and thereby binding on medical certifiers. The most important modification, from the point of view of medical ethics, is concerning the duty of a certifier who is asked to examine and certify for a person who is under the care of another medical man. It is now definitely laid down "that a medical certifier *must refuse* to examine any such person if the certifier knows that he is being treated by another medical certifier, unless the latter has refused to issue a certificate." The exception stated in the last-quoted clause is intended to permit a member to ask a second medical man for a certificate in case he should think that his own medical attendant has unfairly refused to issue a certificate. Moreover, "a medical certifier would also be justified in refusing to examine or issue a certificate to an insured or exempted person if he is satisfied and is able to satisfy the Commissioners that such person is the patient of a doctor who, though not a medical certifier, is prepared to issue free of charge such certificates as may be required." The Commissioners appear to have taken pains to satisfy legitimate professional demands on this point. In the event of a certificate being refused from any cause the certifier must forthwith notify the Commissioners. With regard to complaints against certifiers, the Commissioners may either deal with the matter by correspondence, refer it to a Local Medical Committee, or investigate it at a special inquiry. In any case the final judgment rests with the Commissioners. The extreme penalty for an offence will be termination of the office held by the certifier, but the Commissioners may inflict a monetary penalty for lesser offences, no fine, however, to exceed £5. Examples are given of the offences the Commissioners have in mind. A paragraph is devoted to explanation of the difficult term "incapacity for work." In the case of short illnesses and during the earlier stages of prolonged illnesses, incapacity on the part of the insured person to follow his ordinary occupation would be the test of title to benefit according to the present general practice of Approved Societies and to the practice of Friendly Societies in the past. In the case of prolonged illnesses other considerations arise, and it may be necessary to think of the possibility of the member taking up some other remunerative occupation, which could reasonably be regarded as open to him, having regard both to the state of his health, his previous experience and training, local conditions, and other circumstances of the case. The decision in such cases remains one of considerable difficulty. On the whole, the memorandum is helpful, and is evidently framed with a desire to work the new system fairly to all parties.

BRIGHTON AND THE INDIAN WOUNDED.—It is officially known that no more Indian wounded are to be accommodated at Brighton. Kitchener's Hospital, occupying the original Poor-law institution on the Race Hill, has already been evacuated. The patients have been gradually removed to the Royal Pavilion Hospital and discharged from there on convalescence. Extensive alterations are now being made at Kitchener's Hospital with a view to adapt it for British wounded. In round figures some 5000 Indian wounded have been treated at the Brighton Hospital, and the very small percentage of deaths speaks volumes for the work of the distinguished medical staff.