Royal Army Medical Corps, Rouen Medical Society.

The fifth ordinary meeting of the Society was held at No. 11 Stationary Hospital, Rouen, on Saturday, March 13, at 3 p.m., Colonel B. Skinner, A.D.M.S., Rouen, occupying the chair. The Honorary Secretary reported that inquiries had been instituted with regard to renting rooms for the accommodation of the Society, but that the buildings so far investigated were quite unsuitable, both as regards rent and accommodation. It was resolved, therefore, that the Society shall meet at No. 11 Stationary Hospital until further notice.

SANITATION IN WAR.¹

By Major R. B. Ainsworth.

Royal Army Medical Corps.

The sanitary officer is merely a very small link in a very large chain of defence, and without the assistance of every officer in the R.A.M.C. our whole line of defence against preventive disease breaks down, and breaks down hopelessly. I propose to deal with my subject under three distinct headings, viz.:

1. The condition of affairs from a sanitary point of view under which our Army is serving now.
2. The conditions you may have to tackle should our sanitary precautions fail.
3. Our line of attack—because to defend you must attack.

My work is rendered very difficult by the fact that whilst many of you have as much experience of sanitation in the field as myself, there are, unfortunately, many more of you who have had no previous experience at all of this subject, and it is to these officers that my remarks are mainly directed to-day.

This is the first campaign in which sanitary officers and sanitary sections have been employed with the British Army in the field, and it is exceedingly gratifying to be able to state, after the first six months of the War, that we have not been found wanting, and that these appointments are not only essential, but that as our Army grew it has been necessary to considerably increase our sanitary staff, and from a personnel of half a dozen sanitary officers and two sanitary sections that we started with in August we have more than doubled the number of sanitary officers, and found it necessary to appoint a sanitary section to every

¹Paper read at meeting of the Rouen Medical Society, March 18, 1915.
division in the field, in addition to employing at least one at each base and camp of concentration; but the creation of sanitary officers and sanitary sections has by no means solved the problem of prevention of disease in an army, it has in a way created fresh difficulties, for as soon as a sanitary officer appears in a district a large proportion of military medical officers consider that their duties in connexion with sanitation are finished—so please, gentlemen, get that idea out of your head. Sanitary officers are there to help you over your difficulties, to advise you on those rare occasions when you require advice, and by means of their chief—the A.D.M.S.—to bring pressure to bear on other departments when you find it difficult or impossible to get defects remedied or improvements carried out. Every officer of the R.A.M.C. is (or at least should be) a sanitary officer in his own unit; he is the sanitary adviser to his chief, the officer commanding the troops. He is there to help him with well-considered advice on all matters concerning the health and welfare of the troops of which he is for the time being in medical charge, and he should do even less crabbing than the special sanitary officer does, because it is only very young and very inexperienced sanitary officers who have that unpleasant habit. Now, gentlemen, let us consider for a moment the conditions under which our Army is serving from a sanitary point of view, and in connexion with these conditions are you, all of you, doing your share to prevent the occurrence of infectious disease? You must realize that it is impossible for me to give you definite figures to support my statements, but you can take it from me that we have here a very large number of troops, and a large floating military population with daily influxes from two infected centres—namely, the British Isles and the Front. Then we have an enormous civil population—a population of over 125,000, amongst which most of the infectious diseases are endemic, and the health of which is seriously menaced by the introduction of our military population—the French military sick and wounded, and a large number of refugees. In addition to this a considerable portion of our military population here is actually billeted in the town, and there is free intermingling with the civil population. We have for our water supply two available sources, the best of which is, to put it kindly, not above suspicion, and a climate which combines sufficient sun and moisture in the summer to form an ideal breeding-ground for flies. I think you will agree that it is unnecessary for me to go any further (and perhaps hurt other people’s feelings), but can you picture a more ideal situation for the development of almost every known form of epidemic disease?

These remarks apply with very little modification to all the bases our Army is occupying, and with even greater force to our troops at the Front, but I am unable to speak from first-hand knowledge of the latter. Now what are the conditions you may have to deal with should our sanitary precautions fail? The future reputation of our Corps depends on the success we attain in the campaign against preventive disease.
I think you will allow that the conditions under which our Army is fighting, the sanitation of the country in which they are fighting, and the climate of that country, are all far more suited to the development of epidemic disease than was ever the case during the South African War, and if we fail—that is, if all our sanitary measures fail—what will be the result? In the South African War we had over 100,000 cases of enteric fever, simple continued fever, and dysentery to deal with, during a war of approximately two and a half years' duration; now with double the army that ever was put in the field there, we have had only just over 500 cases of enteric fever (625 to be correct) in the first six months of this War; a little simple calculation will show you that if conditions approximating to those of South Africa during the first six months of this War had prevailed, we should have had from 20,000 to 30,000 of these cases to deal with. The figures are really higher, but I prefer to take the lowest possible as I am unable to give you the exact figures.

With the Army we now have in the field a big epidemic will upset, aye even break down the whole of the medical arrangements. I doubt very much if your splendidly equipped and well-organized hospitals could stand the pressure; the staff cut down by sickness and by our having to hastily improvise new hospitals, hospital clothing and beds failing, the laundries unable to cope with the work, and then as a reward for all your work—the end of all things—a Royal Commission.

You probably think I take too gloomy a view of the possibilities of the future. I appeal to those of you who served in South Africa, particularly in Bloemfontein, during the epidemic of enteric there, to support me: and remember, with regard to inoculation against enteric fever, that by inoculation we only raise the protective power of the individual against that disease; he is not immune, as you all know, and with sufficient doses of the infecting agent, the protection obtained will be overcome.

Our line of attack may be summed up under two headings, attention to details and unity of action: only by attention to every detail, whether it be in hospital, camp, or in billet, can we hope to obtain any measure of success. Dirt breeds disease, which may be translated into dirt breeds flies and flies breed disease.

Sanitation is the science of preserving health, and you as medical men know that health is preserved by attention to the thousand details of life, details of clothing, of food, and of ventilation. It is not necessary for me to mention all these items in detail, and I do not propose to do so, but would beg of you officers who are in medical charge of troops here and elsewhere to devote a very considerable proportion of your day's work to the sanitation of those camps, and remember that your duties are not confined to the examination of drafts and attending to the morning sick.

Go round your camp at least twice a day, visit the kitchens, the
latrines, the dining-rooms, see to the men’s tents and attend to every
detail in that camp; remember that attention to clothing and food is a
very important part of your duties, equally so the removal of refuse
and what are described as waste products.

Having by now, I hope, convinced you that I am not here with
malicious intent, may I mention a few of the sanitary defects that I
have noticed.

Investigation into a few recent cases of enteric fever has shown me
that in spite of two recently published orders, unboiled milk is a common
article of diet in several units, and watercress is quite popular. A well
constructed grease trap is supposed to fulfil two purposes: to arrest
the grease and to be inaccessible to flies; I have seen several which fulfil
neither of these purposes. How many officers in medical charge of
camps here realize that the civilian appendages to those camps—the
Y.M.C.A. and other allied institutions—are also under your charge, and
how many of you personally satisfy yourselves that the drinking water
supply to your camp and unit is sterilized?

It is most extraordinary how divergent are the results obtained in the
burning of excreta in different units; in some it appears that the wind is
always in the wrong direction.

And lastly, with regard to anti-typhoid inoculation, I know of
a medical unit in which only fifty per cent of its personnel has under-
gone this very necessary protective procedure.

These are only a few instances which show lack of attention to detail,
and I thought perhaps they might interest you. If you ask me for further
advice I would concentrate your attention on the following.

Make it a point that every officer and man serving in the same
unit with
yourself is inoculated against enteric fever. Regard every case
_of-
_infectious disease that occurs in your unit as a possible cause of a large
epidemic and take every precaution immediately on its occurrence; do not
wait for advice on the subject.

Take it for granted in war that all water supplies are contaminated
and should be sterilized; you have a very simple and very efficacious
method at your hand in chlorinated lime, get acquainted with the details
and see that those serving under you do the same.

Regard the presence of the common house fly as a danger signal, the
greatest danger signal to an army in the field. Make it your chief duty to
locate and remove any possible fly breeding source in the neighbourhood
of your camp or hospital. The fly has been aptly described as the filthiest
creature on God’s earth. Born and bred in fecal matter it spends its
existence alternately visiting the latrines and kitchens.

Musca domestica, or the house fly, has learnt from natural instinct
that heat and moisture are essential for the development of her progeny,
and this she knows is most easily obtainable in the numerous varieties
of excreta and there she lays her eggs; these after twenty-four hours
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develop into larvae and then into pupae, from which finally the fully grown house fly emerges after a total period of generally ten to twenty-one days, the duration of the whole process varying considerably and depending mainly upon heat and moisture. As a fly breeding material any variety of excreta is suitable, whether it derives its origin from a horse, a cow, a pig, a dog, a chicken, or a human being, and it is only when these sources are wanting that the female fly betakes herself to the fermenting refuse heap to deposit her eggs.

Now let us consider for a minute the various methods by which a fly may carry infection.

Firstly, direct conveyance by the fly alighting on infected excreta and returning to an article of diet. Secondly, infection by means of flies born and bred in infected material, that is to say, flies which have spent their larval and pupal stages in infected material and have had to depend on that material for their only available source of food supply. And lastly, infection by means of the crop. The fly leads a very precarious existence, and not having been provided by nature with teeth has to depend upon other methods for tackling solid articles of diet, and so it is essential for her to first of all seek out some form of liquid with which to fill the crop; this being accomplished, she later alights on some solid and appetizing article of food and proceeds to feed on this by means of regurgitating the contents of her crop; and, provided she is not disturbed, leisurely proceeds to repeat this several times and finally takes back as much as she can. If you consider the many and varied visits that this insect has paid during the day and that the process of swallowing and regurgitation is continually taking place, you can well imagine the highly infected state of articles of diet exposed to the visits of hundreds, perhaps thousands, of flies.

Whether we shall ever be able to entirely limit the breeding of house flies is a matter of doubt, but I can assure you of this, that we can entirely prevent the breeding of those flies which chiefly concern us, we can by making our latrines obnoxious to flies greatly lessen the prevalence of these insects there, and by incineration of excreta we entirely prevent the breeding of these insects in what may be highly infected material.

I have not gone further into this subject, for I understand that my colleague, Captain Marett, will deal more fully with preventive measures.

What do I mean by unity of action? We progress in sanitation chiefly by education, a slow and laborious process, which had, however, attained a high level in the British Expeditionary Force as it existed last August; now we are dealing with a new Army and it is up to us to inculcate the laws of health among those new men at every possible opportunity.

I suppose no man in the British Army meets with more opposition than the sanitary officer, new ideas are never popular, and particularly so with old soldiers, and before any progress can be made it is necessary
to convince whoever may be in command of that particular unit that one's suggestions are not only sound but absolutely necessary; it is in this matter that I ask for your loyal assistance.

I do not wish you to subordinate your views to mine, and am only too ready to discuss any suggestions with you, but once having committed ourselves to a certain policy let us unite loyally and give it every support. Quite recently in trying to get anti-enteric inoculation carried out in a certain unit I met an officer of the R.A.M.C. who was opposed to this procedure as a preventive measure against enteric fever. There are no doubt several of you who do not agree with me that more enteric fever has been spread by flies than has been caused by water, and there are many of you who still believe that it is impossible to burn human excreta in camp, though the number is already less than it was a short time back. I spend half my day, frequently in vain, trying to convince distinguished combatant officers that various sanitary procedures are not only practicable but essential: one will not believe that the urine will soak away in the subsoil, another will not drain his camp for fear of setting free the virulent organisms contained in that subsoil, a third tells me my incinerator is wrongly built and a fourth that you cannot burn excreta in it—and when he is proved to be wrong, tells me the smell will be so bad that they will have to vacate the camp. That is why I ask for your help and for unity of action; if you are not convinced yourself, study the question in dispute, discuss it with me if you like, but once having been convinced of its practicability and necessity then go like myself and preach the gospel of hygiene. In conclusion you will probably say what have I brought to your notice that you did not know before? I hope nothing, for if you have already grasped the seriousness of the subject, and have made up your mind to tackle it, then my work is accomplished. Attention to detail, unity of action, loyalty to ourselves.

Two great duties are asked of the R.A.M.C. in war time. To evacuate the sick and wounded as quickly as possible and to see that the Army is physically fit to fight. To attain this end no detail is too small, if we fail in that we fail entirely, and all the skill and ability of the surgeon and other distinguished men will not put the R.A.M.C. together again.