Health memoranda for British soldiers in the tropics.

HEALTH MEMORANDA FOR BRITISH SOLDIERS IN THE TROPICS

INTRODUCTION.

King's Regulations say that the Commander of a unit is responsible for measures to preserve the health of the unit.

This does not mean only the Officer Commanding; it means every N.C.O., and even senior soldier, who may sometime be a Commander.

Each must therefore be able to look after himself and those under his charge.

These Memoranda are written to help every man and to serve as a text for instruction on healthy living in the tropics.

HEALTH MEMORANDA.

We have all undertaken to serve in the Army. It should be up to each one of us to keep ourselves fit to carry out that undertaking.

We have an Empire, which extends right round the world, and our service may be, and often is, in many queer and uncivilised countries. Our job is to be fit, and keep fit to serve and to fight anywhere at any time.

In civilised countries, such as our own, we have to think little about the various matters which affect our health; because such matters are arranged and carried out for us by special departments and personnel.

But as soon as we start serving abroad in tropical countries, we meet conditions in which we ourselves have to attend to such matters or suffer from the consequences.

From the time each one of you joins the Service, you are taught methods for the care and preservation of equipment and of arms; and many are taught the methods of care and management of animals. But teaching the art of healthy living for men is often forgotten.

The special work of the Medical Services is the preservation of health, but this can only be done properly if each one of you gives his help. This you can only do by learning thoroughly the simple rules of health; by learning how diseases may be caused; and by learning how we, in the Army, set about preventing those diseases.

THE CAUSES OF DISEASE.

Nearly all the diseases which affect us in the Army are caused by germs, and are preventable, if only we know how.

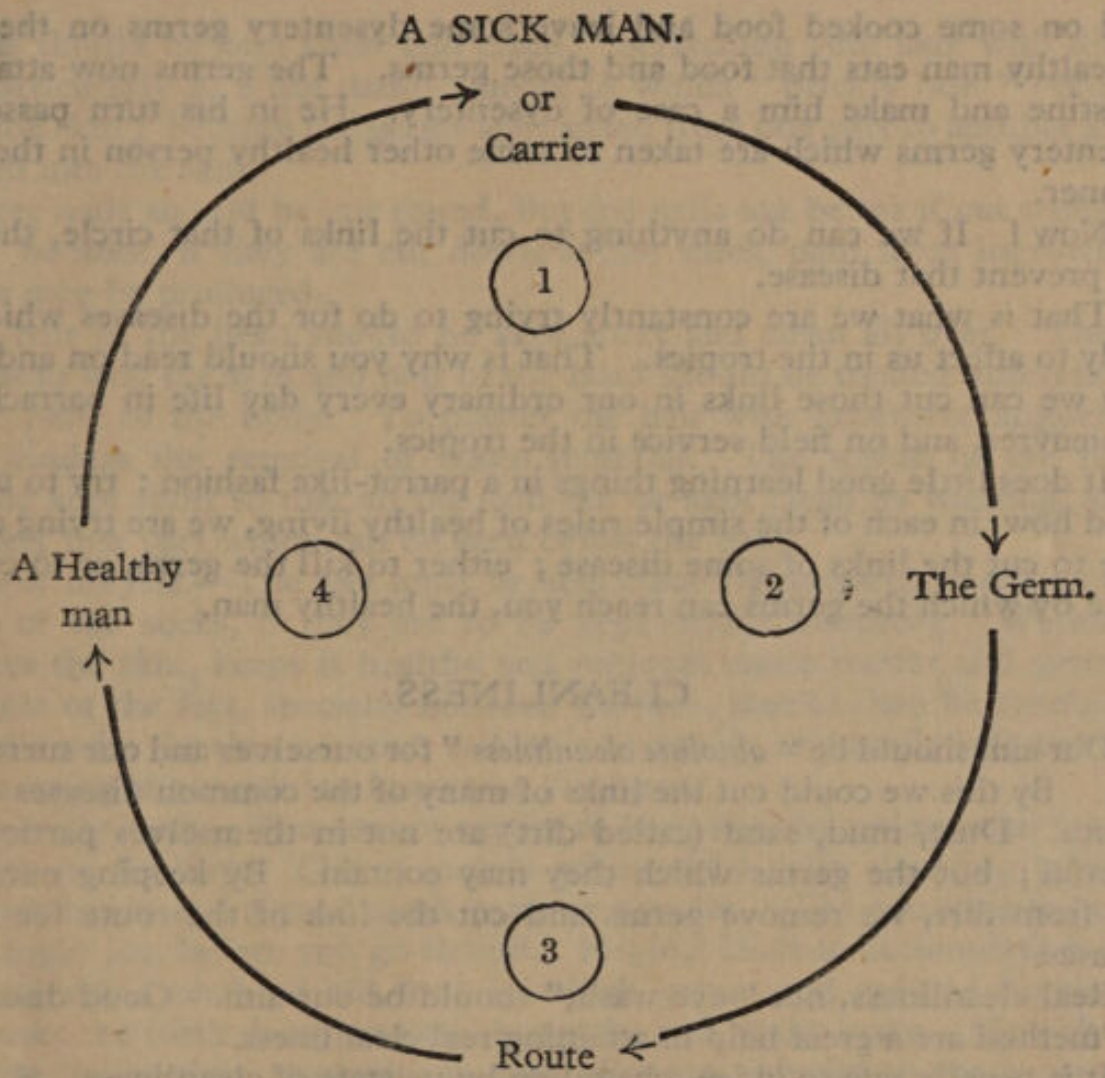
Certain special diseases, such as heatstroke and frostbite, are not caused by germs, and we can consider methods for their prevention separately.

But the majority are caused by germs, and we can most simply think of them, and understand how to prevent them, under the words :—

THE LINK-CIRCLE OF DISEASE.

By this we mean that no germ-disease starts afresh of itself; but that the germs, which produce the disease in any particular person, have come to that person from some other person, who is already sick from that particular type of germ.

If you study the diagram, this should be made clear to you. Actually it is not a real circle, but a spiral; because the healthy man, who becomes sick, is a fresh man in each case.



Water, Food, Air, etc.

Follow the diagram and see what we mean.

We start *always* with a sick man or carrier. We will explain " carrier " a little later. He has the germs of a particular sickness in him. These germs, passing out of the sick man or carrier, go by some route (water, food, flies, dust, air, clothes, skin or hands) to a healthy man, and, attacking him, make him into a second sick man.

The germs from this second sick man can also go by a similar route to another healthy man, who becomes a third sick man, and so on, time and again, on and on and on from one to another.

Now, the *carrier* is a man who has the germs of a disease in him : but either has not had time to become a sick man, or is sufficiently strong not to become a sick man, or has been a sick man and is convalescent or has recovered, but still has the germs in him.

Unfortunately, in the tropics, we live amongst people many of whom are " carriers " of certain common and important diseases. These carriers are all capable of spreading their germs to healthy men near them, if the right route is available.

For example, follow a case of dysentery round the circle. The dysentery germs leave the sick man in his excreta (urine and dung). Flies feed on the excreta and pick up some of those dysentery germs. The infected flies

feed on some cooked food and leave some dysentery germs on the food. A healthy man eats that food and those germs. The germs now attack his intestine and make him a case of dysentery. He in his turn passes out dysentery germs which are taken to some other healthy person in the same manner.

Now ! If we can do anything to cut the links of that circle, then we can prevent that disease.

That is what we are constantly trying to do for the diseases which are likely to affect us in the tropics. That is why you should read on and learn how we can cut those links in our ordinary every day life in barracks, on manœuvres, and on field service in the tropics.

It does little good learning things in a parrot-like fashion ; try to understand how, in each of the simple rules of healthy living, we are trying all the time to cut the links of some disease ; either to kill the germ, or to cut the route by which the germs can reach you, the healthy man.

CLEANLINESS.

Our aim should be " *absolute cleanliness* " for ourselves and our surroundings. By this we could cut the links of many of the common diseases of the tropics. Dust, mud, sand (called dirt) are not in themselves particularly harmful ; but the germs which they may contain. By keeping ourselves free from dirt, we remove germs and cut the link of the route for many diseases.

Real cleanliness, not " eye wash," should be our aim. Good discipline and method are a great help in attaining real cleanliness.

It is usually safe to judge a battalion by its state of cleanliness. A clean battalion or company is usually efficient all round : while a dirty crowd shows that they are slovenly, inefficient and badly disciplined. In each case, the health of the men concerned depends largely on their condition of cleanliness.

PERSONAL CLEANLINESS.

The living body forms certain waste matter. This waste matter is a favourable breeding place for many kinds of germs.

We must therefore get rid of this waste and germ-filled material frequently, if our living body is to keep healthy.

Let us take the various parts of the body and see how the links of possible disease can be cut.

The *Skin* is a protective covering and gets rid of waste heat, water and certain impurities in the sweat. Exercise increases the action of the skin, and more waste matter must be removed.

Daily bathing, particularly of the sweaty parts, should become a habit to keep the skin healthy. Hot water is usually available at least twice weekly.

A good hard rub with a rough towel increases the flow of blood in the skin and keeps it healthy.

The hands should be washed before meals. Several diseases are carried directly by the infection of food by dirty hands.

Nails should be kept short and clean. Scratching your skin with dirty nails, particularly in a hot damp climate in which "prickly heat" occurs, infects the skin; because the germs are carried from one part to another and scratched into the skin.

Finger nails should be cut round, but toe nails are better if cut straight across; because, if they are cut down at the sides, pain from ingrowing toe nails may be produced.

The hair of the head should be kept short and clean all over. There is no reason why the skin and hair of the head should be treated differently to other parts of the body. To plaster the hair with expensive unguents merely hinders the removal of waste material. The whole of the hair should be kept short so that all the skin can be kept clean by washing, and not merely that part which can be seen below the hat.

Care of the feet.—The feet must be kept clean by frequent washing and by care of the socks, if they are to be kept fit for marching. Washing stimulates the skin, keeps it healthy and removes waste matter and germs. The whole of the feet, specially between the toes, should then be carefully dried, otherwise the skin becomes sodden and smelly, and easily infected by germs, causing the condition known as "toe-rot."

Care of the teeth.—You cannot expect to keep healthy unless your teeth and gums are healthy. This is mainly achieved by daily cleansing with a good tooth brush and a good tooth paste or powder. The brushing is best done at night just before you go to bed. Neglect leads to accumulation on and between the teeth of old food in which germs and poisons develop. These make the teeth decay and also enter the rest of the body. Here they may cause indigestion, rheumatism, joint diseases, injuries to the heart or other diseases.

The work of your teeth is to chew your food and make it ready for digestion. If the teeth are bad they cannot properly do this chewing and much of the value of your food is lost. So keep your teeth clean and report to the medical officer at once any decaying or painful teeth.

CLOTHING.

If you keep your skin clean and then cover it with fouled and dirty clothing, you will lose all the benefits of cleaning the skin.

Sweat, dirt and waste matters, including germs from the skin, are absorbed into the clothing, and make it unhealthy and unpleasant. The skin, covered by such fouled clothing, is irritated and infected. Ventilation is reduced, and increased sweating is produced in the covered parts, and the skin tends to become sodden and unhealthy. This applies particularly to the feet, the crutch and under the arm pits. Therefore frequent change and washing of underclothing should be the rule in tropical countries. In nearly all stations frequent washing of clothes can easily be arranged.

For night wear separate clothing, shirt and drawers, if worn, should be arranged. This can be done by keeping a spare set clean for this purpose.

Socks get dirty and sweaty very quickly and require frequent washing. Two pairs should be kept in use for morning and evening. For games, spare socks or stockings should be provided, and washed whenever they become dirty.

If socks or stockings shrink, it will pay you to get new ones. Tight socks cramp the feet, make them sore and uncomfortable, and lead to serious trouble, such as hammer toes and ingrowing toe nails.

One point to which you should pay attention is the cleaning of the jacket collar. If drill jackets are worn, weekly washing will ensure cleanliness; but if serge is worn, the jacket collar, which receives much sweat, is often allowed to go uncleaned for months. The serge jacket collar should be washed with soap and water at frequent intervals, if you want to keep your neck free from boils and sores.

There are occasions when washing of clothing cannot be done. Brushing, shaking and exposure to sun and air will help considerably to keep the clothing healthy.

Boots are a most important part of the clothing, and on them will depend the ability to march. Our regulation boot is the best of its kind in the world. But it needs care and proper treatment. It must be kept soft and clean, inside as well as out. The inside should be well exposed to the air after use.

To soften the leather, the boot should be well soaked in water, then dried with a cloth and afterwards smeared with grease or dubbin and placed to dry off in the sun or *at a distance* from a fire.

Wet boots should not be dried close to a fire.

Boots with cracked or patched uppers should be discarded. They always lead to sore feet and inability to do a full day's march.

A soldier's boots, socks, and feet require as much attention as his rifle, if he is to be fit to carry that rifle.

FRESH AIR.

We cannot live without breathing, and to keep healthy we require plenty of fresh air, especially at night. The fresh air, which we breathe in, supplies us with oxygen. The air, which we breathe out, carries away from our bodies water, impurities and many germs. You can see this water in your breath on a cold winter's day. If there are several men in a closed room, these impurities, water, and germs, are rapidly increased, and the men repeatedly breathe this fouled air into their lungs. The air becomes stuffy and unpleasant, unless the room is properly ventilated.

A simple test as to whether a room is properly ventilated, especially at night, is to enter suddenly from outside and notice whether there is any sense of stuffiness or unpleasant smell inside.

Many of the common diseases which affect us (colds, sore throats, influenza, bronchitis, pneumonia) are due to the spread from one person to another of the germs of the particular disease. This spread from one to another is, naturally, more likely in a closed and badly ventilated room than in any open room, in which the breathed air is washed away by fresh air from outside.

When we breathe or cough or sneeze or laugh or talk loudly, small droplets of saliva (or spit) from our mouths float out into the air. In these droplets are many germs from the mouth and throat.

If there is a sick man or a carrier of one of these diseases present in the room, then the germs of the disease are carried out in these droplets and are breathed in by others in the room, and the link circle of disease is completed and the disease is spread. These diseases are therefore known as droplet infections.

These droplets can spread 5—6 feet by ordinary breathing or snoring, and as much as 20 feet by sneezing and coughing.

There are two ways by which we can cut the links in this case.

Firstly, we can space men out beyond the range of infection. This is not possible to the extent of 20 feet; but we can, and do, space out beds so that there is at least 6 feet between head and head, when men are sleeping.

Secondly, we can wash the infected air out from the room, with plenty of fresh air from outside, by good and plentiful ventilation. This is the reason why we should insist on open windows and good ventilation, especially at night.

Another place, at which droplet infection is often spread, is round the fire on cold evenings, when men sit close hobnobbing over the fire. Faces are then certainly not 6 feet apart and droplets, carrying germs, are readily spread from one to another.

You will see from this how important is this question of proper spacing of beds, of avoiding crowding together, and of really good and proper ventilation at night, both for yourself and all your friends in the barrack room.

You should help to cut the links of this kind of infection by following these simple rules.

OUR FOOD AND THE CARE OF FOOD.

Bread is called the staff of life, but it is on the ration as a whole, including all the extras, on which we depend to keep our bodies fit, to supply the energy for our work, and to replace the waste products from the body.

The present ration with its extras is an excellent one, and should easily supply all our wants, unless it is spoiled by mismanagement. Over-cooking meat and vegetables is a common fault.

Absolute cleanliness is required in preparing, cooking, and serving the food. By absolute cleanliness we mean such cleanliness as will cut the possible links of diseases.

At the ration stand, kitchen, and dining room, all fittings such as tables, shelves, cooking utensils and mincing machine must be clean. The cooks and any native servants must have clean clothing and hands. Clean dish-cloths should be available.

Above all flies should be kept away from all food. They are a very definite link in the spread of many diseases. They carry the germs of diseases such as typhoid fever, dysentery, worm diseases, and cholera from human fæces in the latrines straight to our food. They carry the germs on their feet and in their stomachs.

Whatever they touch they foul.

Certain worm diseases, which have very serious results, are caused by eating infected meat. Infected meat, such as this, is found in badly kept private refreshment rooms in the bazaars. It may seem nice, and even

thrilling, to go off to some outside bazaar refreshment place for a Friday or Saturday night " blow out," but it is not worth while, if the result is worm-infection or a dose of typhoid fever.

Fruit and vegetables require special care. Unripe or over-ripe fruit is liable to produce diarrhœa, and definite infection can be carried by vegetables, which have not been cleaned or cooked properly.

In barracks all these points require attention and this is done by means of supervision, inspections, and the messing committee ; but in private refreshment rooms, in the city or even in the bazaar, there can be little real control, and the danger of infection is very great.

Avoid these unnecessary risks and keep yourself free from these food-borne diseases.

DRINKS AND DRINKING.

When our bodies are called on to do any exercise or work, the work is done by our muscles. In doing this work heat is produced, and must be removed from the body. Unless this is done, the body temperature will be raised.

We remove this unwanted heat by means of sweating. On a 15-mile march on an English summer day we would lose about 2 pints of water as sweat. This loss we must make good by drinking more water.

In the tropics the amount lost and the amount to be replaced is much greater. Railway coolies have been seen to drink as much as two gallons a day.

Water is the important and essential part of all our drinks. Drink plenty of clean pure water, especially in dry dusty places. If you are placed in charge of other men on the march, or who are doing heavy work, remember that each man must replace the amount of water he loses from the body, if he is to continue to march or work well. In many units there is a mistaken idea that drinking during a march should not be allowed. For real efficiency replacement of this lost fluid should be allowed at halts on a march.

The question as to the use of alcoholic drinks is always a source of argument. Small quantities of alcohol, under certain circumstances, undoubtedly help us to take and digest our meals. They undoubtedly give us a sense of " well being," and so are beneficial for the time. It is, however, by the excess of alcohol, or its use at the wrong time, that trouble is caused. Alcohol should not, as a rule, be consumed until the evening, especially in the hot weather. It is better taken with rather than between meals.

It is, however, a mistake to suppose that alcoholic drinks *are necessary* for healthy men. In most cases men are better without them.

Water, although it is essential to life, is also one of the common routes on the link circle of several diseases, typhoid and para-typhoid fever, dysentery and cholera. It is for this reason we take such pains to purify our drinking water supplies in cantonments and in camp.

In the tropics in military stations a piped supply may be regarded as a safe water, but anywhere else, on the march or in the field, *all water* should be regarded with suspicion, and should be made safe before drinking.

It can be made safe by boiling for 5 minutes. This is the great advantage of drinking tea. Or it may be treated with chlorine or other chemicals.

Properly chlorinated water is safe, and should have no taste or smell of chlorine.

The chlorination of water has not the slightest effect in making men sterile, as some people think.

Aerated waters sold in authorised refreshment rooms may be regarded as safe. In bazaars and unauthorised places they may be distinctly dangerous.

MIND AND HABITS.

Mind.—A clean mind and clean thoughts are essential, if you really wish to keep yourself fit. Fellows, whose thoughts are governed by unclean sexual desire, are soon led to the risk of infection with two serious diseases, or, even worse, to immoral and unnatural practices which not only undermine the character but involve other persons.

Promiscuous sexual intercourse is bound to bring certain risk of infection with syphilis or gonorrhœa (clap). It can be taken for granted that any native woman who solicits your attention is, or has been, infected with one or other, or both, of these diseases.

Syphilis is a very serious infection, which affects the whole body and destroys the most vital parts, causing misery and shortened life. The disease wrecks a man's constitution and even after years he can infect his wife or transmit the misery to his children.

Gonorrhœa (clap) is even more difficult to cure than syphilis. The infection is readily passed on to wife or children. Seventy per cent. of blindness in children is due to gonorrhœa transmitted from the parents.

Remember that, if the risk of infection with these diseases has been run, it is *possible* to prevent actual infection. For this purpose P. A. rooms have been installed. *But* these are only effective *provided full precautions* are taken as directed *immediately* after exposure ; and provided the man is mentally and physically capable of carrying out the directions properly.

It is better and safer *to avoid all risk of infection* than to try to destroy the infection after it has taken place.

Smoking.—Although a common habit, this cannot be considered other than harmful to the young, or to those undergoing training. If you have not started the habit, it is better for your health, and your pocket, not to do so.

If you have started the cigarette habit, look at your fingers, which hold the cigarette. See how stained they are with nicotine, which is a poison. If your fingers are in that state merely from holding the cigarettes, imagine what is the state of your throat and lungs, which take in their smoke.

Cheap cigarettes are the worst form of tobacco and have many kinds of rubbish added to them.

If you really wish to smoke, stick to a well kept pipe and good tobacco. It is quite possible to smoke a pipe in the tropics, even though some will tell you otherwise.

Spitting.—This, at all times, is a filthy habit, and should be prevented in all barracks. It is one of the methods of spread of tuberculosis (consumption). The object of the saliva or spit is to keep your mouth moist and clean, and to help in the digestion of certain sweet foods. It is an insanitary habit to cast it about on the floors as a spreader of disease germs.

Regulation of bowels.—Chronic constipation is a cause of many troubles.

Try to cultivate a regular habit of clearing the bowels once daily. The work of the bowels is not only to discharge the waste material from the remains of the food, but to get rid of certain poisonous matters, which are emptied from the body into the bowel. If these are not removed daily by clearing the bowel, some of them are re-absorbed and slowly poison the whole body.

The early morning, after rising, or after the first meal, is the best time for this ; because during the night these waste matters are passed down to the bowel, by the intestine, ready for clearing away as soon as active movements of the body commence and help the bowel to this clearance.

Vegetables and fruit in the diet help this regular clearance of the bowel.

A large glass of plain cold water, first thing in the morning, helps this regular habit ; and to those who may be slightly constipated, is often quite enough without any medicines. Medicines for this purpose should be avoided, if possible ; because soon the bowels will not act without them, and they become a regular necessity. Instead of medicines, rely rather on a proper diet, exercise and regular habit.

Tropical conditions and diseases requiring special consideration.—In stations, or cantonments, routine life is very much as we know it already, except that changes have to be made to meet the conditions of heat and the primitive customs of the country.

Outside cantonments, conditions are even more primitive and we must be able to look after ourselves and our health.

Several diseases and conditions, which are uncommon at home, are very common amongst the population, wherever we go. In our daily life we are surrounded by native personnel, many of whom are carriers of those diseases.

Therefore each one must know the methods by which we can cut the links of disease and keep fit in spite of them.

The special diseases which concern us are :—malaria, sandfly fever, typhoid group fevers, dysentery, and the effects of heat.

Malaria is caused by a parasite which is conveyed to man by the bite of a mosquito (anopheline). These parasites are present in the blood of patients suffering from malaria fever, or who carry the parasite in their blood after their attack of fever, and when mosquitoes suck this infected blood they become infected themselves and pass on the infection by biting healthy individuals.

Mosquitoes breed in collections of water in wells, pools, swamps, holes in trees, old tins, flower vases, etc. They usually hide in cool dark sheltered places by day and come out to feed after sunset.

Malaria causes headache, fever, shivering and sweating and in the commonest type the attacks come on every other day except in first attacks

when fever is usually continuous for several days. Any one who gets an attack of fever should report sick at once and on no account should take quinine before he has seen a doctor.

The following precautions should be taken in the prevention of malaria :—

1. Prevent mosquitoes from biting by sleeping under a mosquito net; by not wearing short sleeves, shorts or kilts after sundown; by applying anti-mosquito cream to the face and hands when on guard or other night duty; by avoiding bazaars at night as these swarm with mosquitoes and are full of malaria *carriers* among the local population.

Mosquito nets should be kept in good repair and tucked in all round the mattress to prevent mosquitoes entering. The interior of the net should be searched for mosquitoes before going to sleep and for this purpose an electric torch is very useful.

2. Prevent mosquitoes from breeding by emptying all collections of water at least once a week whenever possible and when this is not possible by treating the water with oil or Paris green; by draining swampy ground, cutting away vegetation from the banks of streams and ponds and clearing undergrowth and weeds round barracks.

3. Killing adult mosquitoes by trapping and by spraying barrack rooms, etc., with pyrethrum mixture.

Sandfly fever.—This very common and wearying disease is spread by the bite of the sandfly; a small whitish hairy fly, with rapid jumping movements and an irritating bite.

The sandfly breeds in broken brickwork and cracks in broken and damp ground. It is so small that it can get through the mosquito net.

Prevention is difficult.

Plenty of anti-mosquito cream on the skin of exposed parts will keep it away.

Clearing all broken rubble and smoothing out broken ground may lessen the breeding round barracks.

Sleeping under a fan, in a breeze in the open, or on the roof or second storey will help in keeping us free from sandflies.

Typhoid Group Fevers.—These are caused by germs, which are swallowed with food or drink. The germs are passed in the excreta (dung and urine) of a patient or carrier, and the route of the circle is water, hands, flies and food.

Milk and water are the commonest route, and the most dangerous times are when you are on a journey.

The methods of cutting these links have already been shown to you, if you think back to the paragraphs on food and water.

There is one other method of cutting the link; that is by inoculation.

Inoculation strengthens the healthy man to resist the germ and if you are not inoculated in Eastern countries you not only endanger your own life, but that of your comrades.

During the Great War

In the British Troops in France there were

in 1915—31 cases of typhoid out of every 10,000 men	}	nearly 100 per cent. inoculated.
1917—7 cases of typhoid out of every 10,000 men		
1918—2 cases of typhoid out of every 10,000 men		

In French Troops in France

1915—2,658 cases of typhoid out of every 10,000 men	}	Inoculation was commenced in the middle of 1915.
1917—64 cases of typhoid out of every 10,000 men		
1918—28 cases of typhoid out of every 10,000 men		

You will see that protected British Troops escaped but unprotected French Troops were badly affected.

The modern T.A.B. vaccine affords even greater protection than that available during 1914–1918.

Only 1 case of typhoid occurred in the B.E.F. in France up to the time of the evacuation from Dunkirk. On certain figures available which take into consideration the entire British Army, the chances of contracting typhoid or para-typhoid are increased at least 18 times by refusing inoculation.

Dysentery is a disease of the intestines which comes on suddenly. There may be only diarrhœa at first but this is soon followed by the passage of blood and slime in the motions, with griping pain. The disease is very fatal to young children.

Flies are the chief means of spread, but food, milk, water and persons who are " carriers " of the germs may also be links in the chain of infection.

The chief measures for prevention of dysentery are protection of food, particularly milk and cold foods, from flies ; purification of drinking water ; fly proofing of latrines ; prohibition of persons who have suffered from dysentery from handling food or drink until they are proved to be free of infection.

Persons suffering from diarrhœa *should always report sick at once*, and this is most important where children are concerned. If proper treatment if started immediately symptoms of diarrhœa begin, the trouble will often be checked before the stage of true dysentery is reached. Prompt action in this respect may save a grown-up weeks in hospital, and certainly will save many children's lives.

Typhus fever.—This is a serious disease transmitted to man in its epidemic form by the bite of the louse. " Lousiness " is common among the poorer class of the native population in most Eastern countries and therefore it is most essential that particular care should be shown by all troops in regard to their personal hygiene, as lousiness is associated with dirt. It is quite possible to keep one's body clean with soap and even a small quantity of water. Underclothing and shirts should be changed regularly and should active service conditions make this difficult the seams of the clothing should be inspected daily for the small eggs or " nits " of the louse.

These eggs are also attached to the body hairs mainly in the armpits and to the pubic hair (crabs). No time should be lost in reporting to the medical officer should you be suspicious that your clothing has become louse infested, as apart from the fact that one louse may give you typhus fever, the one louse left on your clothing will in a short period of time increase in numbers to several hundred possibly, and until you and your clothing have been cleansed you will be a serious danger to your comrades.

Rabies is a disease which chiefly affects dogs and jackals and human beings can be infected by a bite or lick of a rabid animal. In human beings the disease is called Hydrophobia.

The signs of rabies in a dog may be very indefinite but if any of the following are noticed the dog should be tied up and medical or veterinary advice sought :—

1. A short illness ending in death.
2. Unusual behaviour, change in character of bark or peculiar appetite.
3. Frothing at the mouth or " bone in the throat."
4. Paralysis of the jaws and hind legs.
5. Unprovoked attack, especially if several people are so attacked.

If a dog appears to be suffering from a bone lodged in its throat the possibility of rabies should be remembered and on no account should any attempt be made to remove the bone with the naked hand.

If rabies is suspected the dog should not be killed but should be securely tied up so that human beings and other dogs cannot go near it and veterinary opinion sought. If the dog is alive and well in ten days it is not rabid, but if within this period the dog dies or is declared to be rabid any persons who have been licked or bitten by the dog within ten days should report to the medical officer who will arrange for anti-rabid treatment if necessary.

When any one is bitten by a dog or a jackal he should report at once to the Medical Inspection Room or hospital to have the bites thoroughly cleaned and cauterised. A lick on a cut, scratch or sore by a rabid animal may cause infection so that any one licked by a rabid, suspected rabid or unknown animal should apply at once for medical advice.

Plague is a disease of rats and is conveyed to human beings by the bite of the rat flea. An epidemic among human beings is always preceded by a high death rate among rats and therefore if it is noticed that rats or squirrels are dying in or near barracks the medical officer should at once be told.

Do not handle a dead rat but pick up the body with a long stick, drop it in a tin of cresol and sprinkle some of the cresol on the ground where the body lay. Take the body to the Medical Officer.

Snake-bite.—When going into the jungle, as on shooting pass, the risk of snake-bite should be remembered. It is therefore advisable to take a small bottle of permanganate of potash crystals or a snake-bite outfit which has a small knife at one end and a container for permanganate of potash crystals at the other.

Snake poison acts very quickly and prompt, bold and courageous first aid treatment is necessary and its value depends on the rapidity with

which it is given. The patient must then be got to hospital as quickly as possible for serum treatment, which must be given early to be of any use.

First aid treatment.—

1. Apply a handkerchief, belt or bandage round the limb above the bite, *i.e.*, between the bite and the heart, and tighten by inserting a stick under it and twisting it.
2. Make a cross shaped cut over the bite and squeeze it to get rid of the poison.
3. Rub into the cut some crystals of permanganate of potash to counteract the poison.

Effects of Heat.—The healthy body can resist great extremes of heat and sun. It is the body which is handicapped by some disease or unhealthy condition already present which suffers from the effects of heat.

The body has to hold a certain normal temperature to keep fit. Since the process of living produces internal heat, and all muscular work produces more internal heat, surplus heat must be removed, if the normal temperature is to be maintained.

This surplus heat is removed by radiation; by the air breathed out; and by evaporation of sweat. If air temperatures are higher than those of the body, we can rely only on the last method, evaporation of sweat, to keep our body temperature normal.

Now, if you think at all, you will see that, when air temperatures are high, anything which interferes with easy and plentiful evaporation of sweat, will also interfere with the removal of heat from the body. If this removal of heat is hindered, the body temperature rises, and we get the condition of heat-stroke.

Conditions which increase the heat or interfere with removal of heat are

1. Too much covering of the body; too many or too thick clothes, especially when doing hard work. The skin should be left free.
2. Unhealthiness of the body: constipation, chronic malaria, too much alcohol, dirty skin.
3. Dampness of the air, particularly still air, badly ventilated rooms; working in closed spaces; marching in close column.
   Days of heavy cloud in July and August are the dangerous times.
4. Direct action of outside heat on parts of the body; sunshine on the eyes.

By using common sense, applied to the facts given above, you can see what you should do to keep yourself, and those who are in your charge, fit in times of great heat.

Apply this common sense, particularly when on the march; for example, the topee is meant to shade the head and eyes from direct fierce heat of the sun which adds to the general heating of the body; there are times when the increased evaporation from the skin of the head, with the extra cooling

obtained thereby, fully justifies the removal of the topee ; *i.e.*, at the end of a long march as soon as the sun has lost its fierce heat.

Or again, in barracks, free ventilation and movement of air are more important than attempting to shut out the heat.

Chills.—Chills, with bronchitis, and pneumonia, are not at all uncommon during and towards the end of the hot weather. In some places there is a great drop in temperature at night. Care is required, if you have been sweating freely during the day, not to cool off under a fan, or in a draught, to the extent of getting chilled. If you must sleep under a fan, then put a towel, or some thickish covering, over your middle.

Worms.—Worm diseases are very common in all tropical countries. The route of infection is by food and water, or through the skin of the feet. Some are extremely dangerous, all cause great unfitness.

(*a*) *Schistosomiasis.* This is a chronic disease which is widespread in Africa and particularly amongst the native population of Egypt. It is caused by infection with a worm. The disease is contracted from canal or marsh water in which a particular variety of snail lives. Infected snails discharge into the water countless minute needle-like worms which penetrate the skin of a person who drinks, washes, bathes or wades in the water, and against which ordinary clothing is no protection. The normal methods of purification of water used by the Army in the field destroy this infective form of the worm and make the water safe for all purposes. The disease can therefore be avoided by good water discipline and in particular obedience of orders prohibiting bathing or wading in water in localities known to be infected.

(*b*) *Hookworm.* The linkis through the skin from infectede arth round dirty latrines. Prevention is by good sanitation and good well kept boots or shoes.

(*c*) *Tapeworm.* The link is infected food, found usually in bazaar refreshment rooms. Prevention is by avoiding the risk of infected food, particularly pork.

Personal points for field service.—Conditions are primitive and each man must do his share in helping the sanitation of the unit.

Tropical diseases are sudden and rapid, and cause more damage than enemy action.

Water.—Don't drink an untreated water, even for a great thirst.
Boil the water, and drink it as tea.
See that your water bottle is kept clean.
Fill it with good water or weak tea.
Do not drink it all at once. It may be required to last you for the day.

Socks and boots require special attention. Keep them clean, dry, soft, and properly repaired. The efficiency of each man depends on this.

However difficult conditions may become, always try to give them proper attention once a day.

Latrines and Urinals and refuse disposal.—Learn the proper camp methods and make a point of using them.

One man, fouling the ground with urine or fæces, may possibly not matter very much ; but, if each one thinks and does the same, then grossly insanitary methods, such as this, will certainly result in disease.

Do not urinate on the ground all round camp ; urine pits are required. Do not use the nearest ditch or bush as a latrine ; a trench latrine is required and excreta should be covered at once with earth. Do not dump refuse in the nearest convenient place ; incinerators are provided to burn this.

Cleanliness.—Keep the body clean as far as possible, whatever the hardships.

Lice and scabies (itch) soon spread rapidly from man to man under Service conditions.

It pays to insist on a very high standard of personal sanitation from every man. Every man must do his bit.

CONCLUSIONS.

A famous motto, which we might well adopt as our own in the army:

MENS SANA IN CORPORE SANO.

A sound mind in a sound body.

We cannot do our job, the job which we undertook, when we engaged for service, unless we keep a sound body and sound mind.

One of the main lessons of the Great War is that, when it comes to the final test, the troops, the men, who fight best and serve best, are those who are fit and sound in every respect.

It is to help you to be fit and sound in every respect that these notes have been given to you. But remember that little can be done unless every man, unless you yourself, learn the methods of preserving health and help in carrying them out to keep yourself fit for the job which you have undertaken.

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