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A.M. PAMPHLET 160

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SEPTEMBER, 1943

FOR HEALTH HINTS WARM CLIMATES



D.G.M.S. No. 2

HEALTH HINTS FOR WARM CLIMATES

FOR ALL PERSONNEL PROCEEDING TO THE
TROPICS AND SUBTROPICS

Issued by Authority of
THE AIR MEMBER FOR PERSONNEL
AIR MINISTRY

A.M. PAMPHLET 160

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1. Introductory	2
2. Preparation of Kit	2-3
3. Transit Aircraft	3-7
(a) General	3
(b) Food and water	3
(c) Malaria (i) Drugs	3-4
(ii) Dress	4
(iii) Nets	4-5
(d) Dysentery	5
(e) Venereal disease	5
(f) Yellow fever (i) Inoculation against	6
(ii) Spraying of aircraft	6-7
4. On the Troopship	7
(a) Sun-bathing	7
(b) Care of feet	7
(c) Purchase of foodstuffs	7
5. The Country to which you are going	8
6. General Health Instructions	8
(a) Water	8-9
(b) Salt	9
(c) Food	9-11
(d) Alcohol	11
(e) Bazaars	11-12
(f) Clothing	12-14
(g) Personal hygiene (i) Washing	14
(ii) Bowels	14-15
(iii) Rest	15
(h) Recreation	15
7. General Camp Sanitation	15-16
8. The Commoner Diseases of Warm Climates	16-23
(a) Abrasions and bites	16-17
(b) Bilharziasis	17
(c) Cholera, dysentery and enteric fever	17-18
(d) Heatstroke	18-19
(e) Malaria	19-20
(f) Plague	21
(g) Prickly heat	21
(h) Relapsing fever and typhus	21-22
(i) Sandfly fever	22
(j) Smallpox	22
(k) Snake-bite	22-23
(l) Worms	23
9. Summary	24

Health Hints for those going to Warm Climates

I. INTRODUCTORY

You are now about to go abroad to strange countries, among strange peoples who have strange customs. There you will encounter diseases and conditions of living with which you are unfamiliar. You will often meet nature in the raw. At home here, there are a great number of diseases and health hazards which, since your childhood days, you have gradually learnt to avoid by what is termed "common sense". It is now necessary for you, in a short period of time, to learn how to look after yourself in warm climates, so as to guard against ill-health and unnecessary discomfort. Life in warm climates is really no more dangerous than it is in temperate climates once you have learnt the rules and obey them. The danger of being bitten by a poisonous snake or of contracting disease in warm climates is no greater than the risk you run from traffic when crossing a street or road in this country. You have to learn to be moderate in all things—a regular daily habit, regular exercise, regular sleep and regular meals are essentials.

Travelling and campaigning are an art. The good campaigner is the man who keeps himself and those around him as fit, cheerful and comfortable as possible. He is not a "he-man" who boasts about his capacity to endure discomfort. The deserts, jungles and mountains of the tropics and sub-tropics are strewn with the bones of "he-men", who have scorned elementary precautions in the matter of disease. Such "he-men" as survive are an infernal nuisance to their companions: in peace time they may wreck an expensive expedition; in war they clutter up hospitals and communications. So above all things, do not try to be a "he-man" but read, mark, learn and inwardly digest the following hints.

2. PREPARATION OF KIT



Check your kit before leaving, and pack ready for immediate use

If you are going out by sea-route, you will be able to take ample tropical kit with you, on the authorised scale. Pack your kit so that the

items necessary are at hand for use as soon as you encounter hot weather. It is an advantage to have these things packed separately at the top of your kitbag.

Should you be travelling by air, you are limited to a total weight of 44 pounds personal luggage. It is essential that you take with you a topee or bush hat, tropical shirt with long sleeves, khaki slacks, mosquito boots, mosquito-net, slippers, anti-malarial cream, anti-glare goggles or spectacles, and an electric torch. You should also have with you a packet of 24 quinine or 15 mepacrine tablets to start anti-malarial treatment en route or in case you have to stay somewhere where supplies of these anti-malarial drugs are not available.

3. TRANSIT AIRCRAFT

Personnel travelling on troopships have time to become to some extent acclimatised on the journey; whereas, on transit aircraft, the Mediterranean is reached on the first day, and the west coast of Africa or the Middle East at the next hop. It is essential, therefore, for all those proceeding by air to be instructed in the care of health in warm climates before leaving this country. This should be done at your Unit or at the Personnel Despatch Centre. Moreover, tropical kit must be ready to hand in the aircraft for changing into before landing, which may be either in the heat of the day, when heat-stroke has to be guarded against, or at dusk, when it is necessary to be protected against the myriads of insects to be found in these climes.

(a) *General*.—Khaki drill shirts and shorts are worn during the day for comfort; and a topee must always be worn as protection against the sun during daylight. Since glare may prove troublesome and lead to headaches, you should wear tinted goggles or spectacles, preferably with Crookes' B2 glass as provided in the Service issue. Never walk about with bare feet in warm climates, as floors are likely to harbour the germ that causes athlete's foot, while minute worms in the soil may burrow into the skin and cause such infections as miner's worm disease (ankylostomiasis) or bilharziasis. Moreover, shoes are also a protection against scorpions and chigger fleas.

(b) *Food and Water*.—Never eat food from unauthorised non-Service sources, because such food is frequently contaminated with the germs of dysentery and typhoid. Always carry plenty of drinking water in your aircraft, and avoid consuming water outside Service establishments. If it is at any time necessary to drink water from a doubtful source, it should first be boiled for 5 minutes, or treated with the water sterilising tablets provided in the first-aid outfit for aircraft. Place one tablet in the water bottle and fill up with water: then shake the bottle well to dissolve the tablet, and wait at least 30 minutes before using the water to allow time for sterilisation to take place.

(c) *Malaria*.—The main danger to transit air crew or passengers in warm climates is malaria. The disease can be contracted through the bite of a single mosquito. If you can avoid being bitten by mosquitoes you will not get malaria. The captain of an aircraft is responsible for the observance of health measures by his crew. It is his duty, therefore, to take proper precautions and insist that his subordinates comply similarly.

The standard anti-malarial precautions are :—

(i) *Quinine*.—Take one 5-grain tablet of quinine daily (or half a tablet of mepacrine daily) preferably after supper, from the day of leaving the United Kingdom, and during the whole sojourn in malarious areas, and as long after as the medical officer advises.



The dawn patrol

(ii) *Dress*.—You should wear shirts with long sleeves and slacks at all times from dusk to dawn, when mosquitoes are on patrol. If flying involves both day and night activity, keep your slacks handy. In the early morning they can be worn over shorts and discarded after the danger period has passed. Conversely, at dusk they can be pulled on over the shorts until there is a chance to have a bath and change properly. When undressing or washing in buildings not screened against mosquitoes, do so as quickly as possible, and then, if you are turning in, get under your mosquito net immediately.

(iii) *Nets*.—Mosquito nets should be used whether buildings are screened or not, as you cannot rely absolutely on screening only, and as doors are left open at times by careless people. The bottom of the net should be tucked under the bed one hour before sunset. The net should be in good repair. If you find any holes, it is your responsibility to repair them. Be sure, after getting into bed, that you tuck the net in carefully under the mattress, and leave no gaps for mosquitoes to enter. Always look for, and kill, any stray mosquito inside your net before going to sleep. Try to sleep so that no part of the body

touches the net, otherwise mosquitoes will bite you through the meshes of the net.



See that no part of the body touches the net

(d) *Dysentery*.—Another common illness in warm climates is dysentery, the germs of which are frequently conveyed to food by flies. It is important, therefore, to protect all food, as well as feeding and drinking utensils, against flies. Again, dysentery may be spread by dust and the hands of natives. In this connection, buy only sound fruit that can be peeled, e.g., oranges and bananas.

Flies breeding in manure and rubbish nearby, also dust, and dirty hands, contaminate food with the germs of dysentery and typhoid

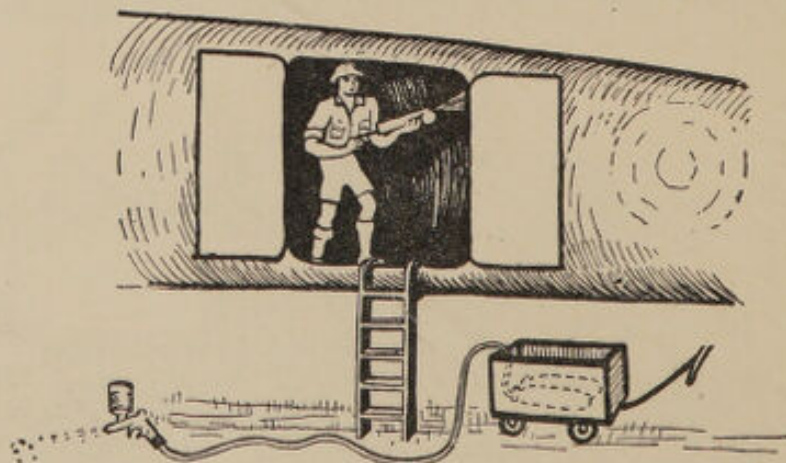


(e) *Venereal Disease*.—Remember that a very high percentage of native women in warm climates suffer from syphilis or gonorrhoea or both. Moreover, they may suffer from three other venereal diseases, so that the danger of being infected by such women is almost 100 per cent. The "safe" house is a myth.

(f) *Yellow Fever*.—This disease is transmitted to man by a breed of mosquito which is present in many places throughout the tropics and sub-tropics. Fortunately, the disease is limited to West Africa, part of the Sudan and Central America. It would be a catastrophe if yellow fever were spread to other areas, as would be liable to happen if infected mosquitoes or individuals were taken outside the present infected areas. The result would be an epidemic which might spread like wildfire. As an example of how mosquitoes can be carried by air, in 1930 the city of Natal, in Brazil, experienced the greatest epidemic of malaria the Western Hemisphere has ever known. This was due to the importation of an African species of malaria-carrying mosquito, which was previously unknown in Brazil. It had been accidentally carried across the South Atlantic from Dakar in aircraft of the French Air Line. The mosquito which transmits yellow fever can be just as easily carried by aircraft. You will appreciate, therefore, the great responsibility which rests on you. It is up to you to do all in your power to prevent the spread of this dread disease by observing the following preventive measures :—

(i) *Inoculation against Yellow Fever*.—If you are proceeding to or through a yellow fever area, you must be inoculated with a vaccine that gives protection against yellow fever for a period of about two years. The inoculation, which is trifling and has no ill-effects, must be done at least ten days before you are due to arrive in a yellow fever area. Make sure that you get a dated certificate, at the time of inoculation, as evidence that you have been inoculated against yellow fever. Always carry this certificate with you, as it may be demanded en route, and, if you cannot produce it, you will be re-inoculated and detained in quarantine for fifteen days.

Spray aircraft to kill mosquitoes



preferably by pressure sprayer

(ii) *Spraying of Aircraft*.—In order to prevent the carrying of infected mosquitoes, all aircraft must be sprayed with insecticide just before departure from the last airport of call in a yellow fever area and on arrival at the first airport of call in a yellow fever free area—this must be done before disembarkation of persons or unloading of cargo. The captain of the aircraft is responsible to see that it is done. Special staff and equipment are established at these ports of call to carry out this spraying

with high-pressure sprayers. Flit-guns are far less effective, but are nevertheless useful in helping to lessen the fly and mosquito nuisance in aircraft.

4. ON THE TROOPSHIP

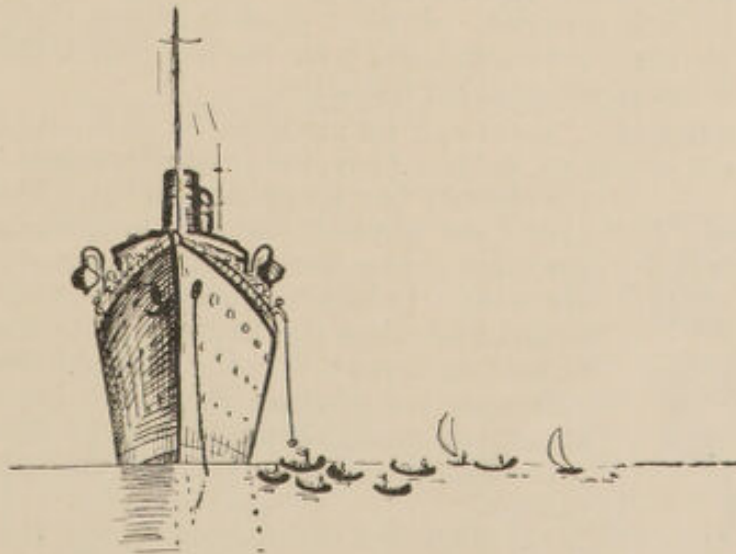
If you travel by sea-route you will have time to become somewhat acclimatised to warmer climates en route. In addition, you will be given a series of lectures on board by the medical officer on the care of your health overseas, with particular reference to the country to which you are going.

There are, however, in addition to the subjects dealt with in Section 3 on "Transit Aircraft", three important points on which you require advanced information, these are sun-bathing, care of the feet, and the purchase of fruits and other foodstuffs over the side of the ship.

(a) *Sun-bathing*.—It is dangerous to indulge suddenly in sun-bathing. You should gradually develop a tan by exposing the body to the sun for increasing periods day by day. A good rule is 5 minutes' exposure the first day and increase it by 5 minutes each day until the exposed parts are thoroughly tanned. Such controlled sun-bathing is healthy and stimulating. Remember that severe sunburn is really a self-inflicted injury. It is particularly dangerous to sun-bathe inside boats on deck where there is little or no breeze: such exposure to the heat of the sun together with the loss of body fluids by evaporation is apt to lead to heat-stroke, which may be fatal. Topees must be worn on board as instructed in Orders.

(b) *Care of the Feet*.—You should not wear sand-shoes for long periods on board, as walking about in them on the hard decks tends to cause soreness of feet and swelling of ankles. Ordinary leather boots or shoes are much kinder to the feet. You should wash your feet daily.

(c) *Purchase of Foodstuffs over the Side of the Ship*.—Do not buy fruit or other foodstuffs from native vendors in boats or on quaysides at ports of call. Such food is often contaminated with the



Do not purchase food over side of ship

germs of dysentery and typhoid fever. Fruit with thick skin such as bananas or oranges are safe, provided they are well washed in clean water before peeling (*see also* paragraphs (b) and (d) of Section 3).

5. THE COUNTRY TO WHICH YOU ARE GOING

It is very important to have a general picture in advance of the country to which you are going, its climate, its people, and its diseases, so that you can think over and gradually adjust yourself to conditions of living there. In this connection you have been, or will be, issued with an excellent booklet called "Service Overseas", which puts these matters before you briefly in an interesting and concise manner.

In this present pamphlet it is proposed to tell you a little more regarding health matters and diseases that are common in the tropics and sub-tropics.

6. GENERAL HEALTH INSTRUCTIONS

The efficiency of a Service depends to a great extent on the health and fitness of its members. Many a famous commander of bygone campaigns has suffered defeat in the field on account of disease, which he and his men might have avoided had they had the information available to you to-day. It is your duty to God, King, Country, Service and yourself to keep fit and healthy. The medical officer plays his part to maintain a healthy unit, but good results are impossible unless each one of you pulls his weight.

(a) *Water*.—Owing to great loss of body fluid by perspiration in warm climates, a much larger intake of water is necessary than in temperate zones. Water is a prime essential of life. You can live for days without food, but water you must have. The amount required for health depends on the degree of sweating, and varies between 2 to 8 quarts a day. Overseas, all water should be treated as unfit for drinking until after sterilisation. Many waters in hot climates contain the germs of cholera, dysentery and typhoid. You should never drink water or mineral waters from unauthorised sources. If you are likely to be absent from camp for several hours, take a filled water-bottle with you. If at any time it is necessary to drink water that may be impure, it should first be boiled for five minutes. A good plan is to use it to make fresh tea, drink what is required and pour the rest into a clean stoppered bottle where it will cool for use later.

Alternatively, water can be made fit for drinking by means of the water sterilising tablets provided in the overseas first-aid kits for aircraft (see (b) of Section 3). More than one tablet per water-bottle may be needed if the water contains many germs, as it often does in warm climates. In case of doubt see if there is a smell of chlorine when the bottle is uncorked at the end of half an hour: if not, then add another tablet and wait for another half hour before drinking. Cloudy or muddy water should be filtered through a handkerchief before treating with the sterilising tablets.



Note smell
of chlorine

If there is a shortage of water, then make the most of it by sipping. Do not put ice in your drinks, as the ice, unless supplied by the Service, is liable to contain the germs of dysentery and typhoid. Put your drinks on ice to cool if you like, but do not take long draughts of a cold drink as it is liable to cause colic. Sip it so that the chill is taken off in the mouth.

Mineral waters as sold by natives frequently consist of contaminated water through which gas has been bubbled. The same applies to the highly coloured and attractive fruit-drinks for sale by natives.

(b) *Salt*.—Sweat contains salt as well as water, and this salt lost from the body must be made good, otherwise the muscles are affected and you suffer, especially on exercise, from cramps in various parts of the body. These cramps may occur in the back as lumbago, or in the belly muscles and so make you think you have stomach ache: the prevention and cure is to take plenty of salt, particularly with your meals.

When in warm climates or when engaged in duties which cause excessive sweating, you should get into the habit of increasing your salt intake. In addition to taking plenty of salt with your meals, it is a good thing to add salt to your drinking water in the proportion of a salt-spoonful to a glass of water. In a hot country you need at least half an ounce of salt a day.

Remember also that, if salt lost from the body is not replaced, you may suffer from heat exhaustion or heatstroke. Even the most backward of peoples in hot countries have learned by experience the necessity for salt. In some places where the soil contains salt, the hot sun draws up the moisture, which on evaporation leaves the salt on the top of the earth: this salt is gathered and highly prized by the natives—whence comes the term "salt of the earth".



Salt is essential, particularly in hot climates

(c) *Food*.—The germs of bowel diseases are very prevalent in warm climates and are readily conveyed to food by dust, flies and the hands of natives.

At all times



protect your food against flies

Much of the human excreta here contains the germs of dysentery and typhoid. Flies lay their eggs in the excreta and, in the process, get coated themselves with these disease germs and may carry them to your food. Moreover, the excreta soon dries in the hot sun and is wafted far and wide as fine dust. It is for

these reasons, therefore, that camps should be sited as far away as practicable and to the windward of latrines and native habitations, and that you should be careful at all times to protect your food against dust and flies.

The toilet habits of orientals, particularly of the menial class, are such as to constitute a great risk of contaminating the food they handle. It is important, therefore, that you should never have food or drink in unauthorised places. No fresh salads or uncooked vegetables should be eaten, unless they have been grown under clean conditions and cleanly handled; even then it is advisable to soak all such vegetables in permanganated water for half an hour beforehand. These remarks are applicable also to fruits, except those with a good protective covering, such as bananas and oranges. Dates and figs sold locally are often picked up from the ground where they are very likely to have been contaminated. Melons are especially dangerous, as natives have a habit of soaking them in water to increase their weight and market value: the water is often polluted and being soaked into the melon contaminates it throughout. Never eat over-ripe fruit or that which has been damaged or cut.

Melons are frequently contaminated



It is advisable to eat freshly cooked food, as the cooking kills germs. The hot food may make you sweat somewhat but that is good for you, provided you take sufficient salt and fluid to replace the loss. All cold food should be kept under fly-proof covers or in clean boxes. Never leave half-eaten food about. Do not eat food "on the turn" or leave food in a tin, as it goes bad very quickly: tinned food should be emptied out of the tin when the tin is opened and should be eaten that day; what is not consumed that day should be disposed of. Never eat food out of a faulty tin or you will suffer from food poisoning. Any tin showing a puncture or a seam opened by crushing is faulty; so also are "blown" tins. The ends of a good tin are slightly concave, and if you tap it with your finger you will hear a dull sound; whereas a "blown" tin is not concave at its ends, and when tapped gives a hollow sound.

You should eat the rations provided for you as these have been carefully selected to ensure that you get a properly balanced diet for your particular locality. If you do not eat your ration you are

liable to become under-nourished and so more susceptible to disease. This means that you will lose your efficiency and throw extra work on your comrades and become a liability instead of an asset to your country.

(d) *Alcohol*.—Never drink alcohol until sundown is a golden rule in the tropics; then only in moderation. The imbibing of alcohol during the day or in excess after sundown predisposes to heat-stroke, by upsetting the heat regulating mechanism of the body, as well as making people careless so that they expose themselves unnecessarily to the sun. Moreover, over-indulgence in alcohol dulls the reason and may lead to undesirable sex adventures.



Never drink intoxicants until after sundown

(e) *Bazaars*.—On your first trip there is always the lure of strange places. A visit to a native bazaar will fascinate you. But remember, natives have many diseases to which you have little or no immunity and that they often have on their person fleas and lice, which carry such fell diseases as plague and typhus. Moreover, smallpox, dysentery and enteric fever are rife in most bazaars. You are strongly advised not to mingle with the crowds in bazaars.



Ices are particularly dangerous

If you do visit native bazaars do not buy or partake of any food or drink, as it is almost sure to be contaminated with the germs of cholera, dysentery, enteric fever or food poisoning. Ices are particularly dangerous. Sweetmeats may look very attractive to you but they are even more so to the millions of flies which inhabit bazaars. Remember that flies are hatched from excreta and during their lives journey to and fro between excreta and food, especially sugary foods.

(f) *Clothing* is of the greatest importance in the maintenance of health in hot climates, as a protection against the sun, heat, thorns, insects and snake-bites. Light clothing of a loose fit is best: the air in the space between the loose garment and the body acts as an insulator against the heat of the sun. The natives have discovered this fact by experience, and so have adopted loose flowing robes. You will appreciate, therefore, that full-cut slacks are as cool as shorts and that they have the additional advantage of protecting your legs against injuries from thorns and against the bites of insects and snakes. The fighting men of practically all nationalities, except the British, wear slacks at all times in hot climates—but, of course, we drive on the wrong side of the road! At any rate, if you do wear shorts, you must change into slacks at sundown as a protection against mosquitoes: in addition, you must don mosquito boots and long-sleeved shirts which must be buttoned up to the neck as long as you are up and about between sunset and dawn (*see (c) (ii) of Section 3*).



Loose garments protect the body against sun, scratches and bites, as natives know by experience

During the day, the head must be adequately protected against the sun by wearing a topee or a bush hat or other headgear as stated in local Orders. If you have to work in the open you may remove your shirt if you are sweating, but remember the danger of exposing the body to the sun before a good tan has been developed (*see (a) of*

Section 4). Clothing protects the body against excessive loss of fluid and salts by sweating, so that if you work without a shirt much of the sweat may evaporate without your notice: you must, therefore, be careful to replace this loss by copious draughts of water and a liberal salt intake (*see (a) and (b) of Section 6*).

A change of clothing just before sundown is important in hot climates, as the temperature usually drops sharply at this time, the sweat no longer evaporates from your clothes, and the dampness is liable to lead to a chill. Moreover, your sweat-impregnated clothing is apt to cause "Prickly heat", which is a very distressing skin condition causing considerable itching and inflammation, especially around the waist. You should, therefore, at sunset make a habit of washing thoroughly to remove the sweat and grime of the day, and changing into clean clothes consisting of slacks, shirt with long sleeves, and mosquito boots.

When dressing, you should get into the habit of examining and shaking all articles of clothing, boots, slippers and hats before wearing. Insects, scorpions and snakes may be found in such situations. In flea, louse or tick-infested areas clothing should be searched for these insects, particular search being made in seams and folds of the clothing. Likewise bedding should be inspected daily, and exposed for an hour to the hot sun, which is an excellent means of getting rid of such insects.

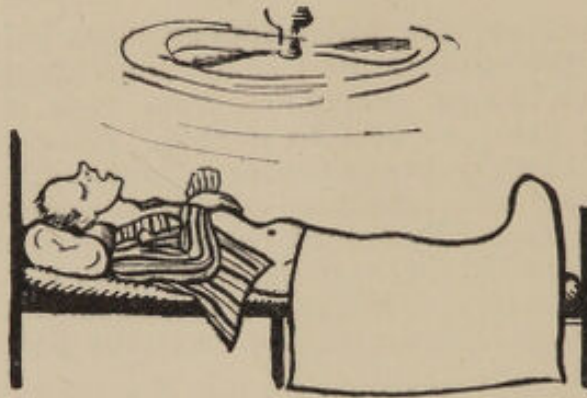


Examine all clothing before donning

When flying in hot climates there is a tendency to take-off thinly clad. Already there have been cases of frost-bite owing to failure to appreciate that, however hot it may be at ground level, the temperature of the air falls steadily with each thousand feet of height gained. There is also the risk of contracting a severe chill. So always make a point of donning your flying clothing before taking-off if the flight is likely to be above 15,000 feet: the clothing can be worn loose and done up as altitude is gained.

In warm climates it is dangerous to sleep naked or with the stomach uncovered, as the abdomen is particularly susceptible to chill resulting from the drop in the atmospheric temperature at night. It is especially dangerous to sleep with the draught of a fan

playing on the abdomen. Such chilling may lead to acute diarrhoea and so lower the resistance of the gut as to precipitate an attack of dysentery if the germs are present.



Keep your abdomen covered and never sleep in a direct draught

(g) *Personal Hygiene* : (i) *Washing*.—In countries where you sweat a lot it is a good thing to wash as frequently as possible, but you must dry yourself with the greatest care, otherwise you are liable to develop certain skin diseases as the result of infection from the floor or shoes or from dust blown against the moist surfaces of the body. Such infections include dhobie's, or washerman's itch, sweat rashes, foot rot and athlete's foot, all of which are due to fungi. It is particularly important to dry thoroughly the ears, armpits and crutch, also between the toes, as these moist places are the favourite sites for fungi to grow. Dusting with talc powder materially helps to keep these parts dry, while underclothes must be carefully washed and sunbaked to rid them of infection.

Do not walk about bare-footed at any time, but always have a pair of sandals or slippers beside the bath or shower for use as soon as you have thoroughly dried your feet. These sandals or slippers should be exposed to the sun for at least an hour daily to help kill off any fungus.

You should examine your armpits, crutch and toe-spaces when you dry them, and, if there is any inflammation or abnormality, you should report it to your medical officer. These fungus infections are most easily cured if treatment is started early.

If you have had discharging ears at any time you should consult your medical officer before indulging in sea-bathing.

Many fresh-waters abroad are infested with a minute worm which causes a disease called bilharziasis (Bill Harris), so you should only bathe in officially sanctioned waters, whether it be for ordinary washing purposes or for swimming. These waters will have been examined for purity and treated if necessary before they are authorised for use. There is no danger of becoming infected with bilharziasis from sea-water bathing.

(ii) *Bowels*.—Constipation is common in warm climates because much of the moisture that would normally keep the motions soft is lost in sweating. Do not let yourself become constipated, for if

you do, injurious decomposition products will be absorbed into your system and undermine your health, while the hardened excreta is apt to damage your gut and predispose it to infection with dysentery germs. There is always a plentiful supply of salts at the Sick Quarters or Medical Inspection Room for your use. Keep your bowels open and your mind easy.

(iii) *Rest*.—It is important to take life easier in warm climates than in temperate zones. The native has learned to conserve his energy, especially in the heat of the day. Do not rush about in the heat of the day. You should ensure that you get eight hours' sleep in every twenty-four to allow your nervous and physical powers to recover.

(h) *Recreation*.—Exercise and recreation promote health, both of body and mind, and obviate boredom. They are essential if you are going to give of your best, and if you are going to get through your tour abroad with the maximum enjoyment and the minimum discomfort. Exercise should be taken regularly. You may be lucky and have games organised for you; if not, then it is up to you to arrange your own exercise. Walking and swimming are the simplest and require no apparatus.

For your recreation there are various hobbies and other amusements. Some recreations come to you readymade, such as films and concerts given by others, but you will get more fun and benefit out of the recreation you provide for yourself. Hobbies are a great help, and include carpentry, metal working, model building, boat building, photography and sketching. If you have literary tastes you can use your leisure to read books that are worth while. Your Education Officer and Padre will always help and advise you in these matters. There are certain communal activities that are even more important than these. For example, concert parties, amateur dramatics and brains' trusts are most popular and useful. You will find others on your station with similar interests to your own. Search them out and get your own particular amusements going: the energy and push required will be well repaid.

7. GENERAL CAMP SANITATION

Never sleep on the ground if you can avoid it. This precaution will materially lessen the number of insect bites received. Rig up a bed or hammock suitably covered by your mosquito net.

Your bedding, supported off the ground, should be exposed to the sun for at least an hour daily to ensure freedom from bugs, fleas, lice and other vermin.

Tent curtains should be raised whenever possible to help air the tent and to prevent insects climbing up the canvas. Ticks and bugs delight in dropping on their victims.

Tent poles and guy ropes should be provided with guard cups facing downwards and smeared internally with grease to trap ticks and insects. These cups can be improvised out of paper or tins: they should be inspected daily, and any prey found in them removed and destroyed. Similar cups should be fitted to all legs of tables and beds. Any gap between the neck of the cup and its support should be closed with grease.

Do not let natives sleep in your part of the camp for they are sources of such infections as cholera, dysentery, enteric, malaria, plague, relapsing fever, smallpox, typhus and yellow fever. They should be

made to live well to the leeward so that the wind will tend to carry infected dust, flies or mosquitoes away from your camp.

Ensure that there is no litter. Empty or broken bottles, jars, tins, and lids are liable to collect water, even from tropical dews, in amount sufficient to act as breeding places for mosquitoes.

Burn all waste material and excreta, if possible, otherwise it should be buried to prevent fly breeding. An empty kerosene tin with a little straw or other combustible material in the bottom makes a good latrine bucket. Cover the top with a well-fitting lid to keep out flies.

Pass all urine into a soak-pit or some selected spot well to the leeward of your quarters.



Get well to the windward of natives, and never sleep on the ground

8. THE COMMONER DISEASES OF WARM CLIMATES

The main diseases from which you may suffer in the sub-tropics and tropics are those spread by insects and by contaminated food or drink.

As regards insects, mosquitoes transmit malaria, dengue or break-bone fever, elephantiasis or elephant leg, and yellow fever; sandflies carry sandfly fever, oriental sore and a long fever called "kala azar"; fleas spread plague and one variety of typhus fever; lice and ticks transmit relapsing fever and typhus; and the tse-tse fly, so called from the noise it makes, conveys sleeping sickness.

Food and drink are apt to be infected with the germs of cholera, dysentery, enteric (typhoid) fever, and food poisoning through the agency of dust, flies and fingers; while milk abroad, particularly that of goats, is often infected with the germs of undulant fever.

(a) *Abrasions and Bites.*—In temperate climates you may not bother to treat minor cuts, scratches and bites, but in warm climates they should never be neglected, however small, as they are liable to go septic and may even lead to blood poisoning or lock-jaw.

You can avoid many insect bites by sleeping under a mosquito net, wearing proper clothing, and shaking and examining all clothing, footwear and hats before donning (see Sections 3 (c) (iii) and 6 (f)). A well-known general once asked his medical officer

where he would look for bugs in a topee. The medical officer, taking off the general's hat, turned down the lining and said "Here, Sir, where these three are".



Make sure there are no bugs in your topee

(b) *Bilharziasis*, familiarly known as "Bill Harris", is a disease that chiefly affects the bladder and causes blood to appear in the urine. It is due to a small worm, less than a millimetre in length, which lives in many fresh waters in warm climates and can penetrate the unabraded skin or mucous membrane. Infection usually takes place from bathing or washing in or drinking contaminated waters. Rivers, canals and water at oases are often infected.

You should therefore only bathe in or drink water which has been officially approved. You can safely bathe in sea water. (See also Clause (g) (i) of Section 6.)

(c) *Cholera, Dysentery and Enteric Fever*.—These are all acute bowel diseases contracted chiefly from food or drink, infected by filthy flies and the fouled fingers of food handlers, especially cooks. The main source of infection is from the excreta of natives, who, though they may not be actually suffering from the disease at the time, harbour the germs in their bowels. In warm climates, natives use human excreta to manure crops, so that uncooked vegetables and fruits are particularly dangerous. Impure water is another common source of these infections.

Dysentery is the most prevalent of these bowel diseases and, in many campaigns, has killed or maimed more than have instruments of war. In fact it has been called the Scourge of Armies. At Gallipoli dysentery as much as the enemy led to our defeat; one description of that catastrophe was "With the Turk in front of us and the dysentery behind, we were between the devil and the w.c."

It is of great importance that you and everyone in your unit should take the utmost care in preventing the occurrence and spread of these bowel diseases. Be careful of what you eat and drink as already advised in Section 6. You should see that all excreta is inaccessible to flies by replacing the lid on the latrine as soon as used, or covering the excrement with earth, sand or sawdust. You should wage a continual war against flies—everyone

should carry a swatter and use it efficiently. Remember that each lady fly can lay 500 eggs a year, so become a lady killer—SWAT THAT FLY.



"Swat that fly"

You should play your part in the general sanitation of your unit. Help to see that cookhouse and dining-room doors are closed at all times to exclude flies, which in modern parlance are "mechanised manure". See also that the natives do not foul the ground of your camp by leaving their "visiting cards".

You should be inoculated against typhoid fever each year. This is a most valuable means of raising your resistance to this disease. In cholera districts you will be provided with an anti-cholera vaccine. Unfortunately, there is no suitable anti-dysentery vaccine available.

(d) *Heatstroke* is due to exposure to excessive heat or the direct rays of the sun, particularly in individuals who are below par. It is most liable to occur on a hot, still day when the relative humidity is high, as this interferes with the normal evaporation of sweat which is Nature's method of cooling the body.



Never fall asleep where you may be exposed to the sun later

You should, therefore, wear from sunrise to sunset a broad-brimmed, light topee or hat with aluminium foil lining, also a loose open-necked shirt and tinted spectacles. In addition, you should avoid constipation, fatigue, over-eating and alcohol. Pay particular attention to your water and salt intake. (See paragraphs (a) and (b) of Section 6.) Take care not to fall asleep in the shade in such a position that the sun may shine directly on to you before you awake.

(e) *Malaria* is the commonest cause of sickness in warm climates. The malaria germs are conveyed to man through the bite of a special type of mosquito. Mosquitoes breed in water. Natives are the chief reservoirs of infection of the mosquito. The danger period for infection is from just before sunset to sunrise.

The medical authorities continually strive to reduce your risk of infection as far as possible, but to attain success the active co-operation of everyone is essential. Good personal discipline is the key to this success—discipline regarding dress, use of nets, the taking of anti-malaria drugs, and water control.

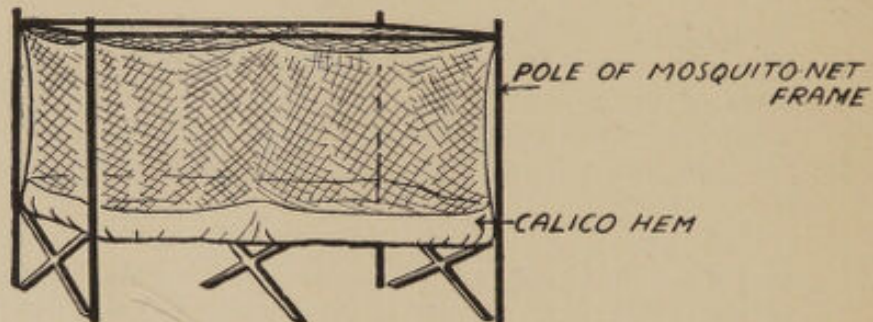
Therefore, see that after dusk you are always dressed properly in slacks, mosquito boots, and long-sleeved shirts well buttoned up at the neck and wrists. Do not stand or sit about in the open at night, but walk briskly to lessen the chance of being bitten by mosquitoes; above all do not visit native quarters as they abound with malaria infected mosquitoes.



Always sleep under a mosquito net, even in a mosquito-proofed house in a malarious area. Keep your net in good repair and make it your best friend. Repair a tear at once: a quick repair can be done with adhesive plaster.

See that the net is lowered and properly tucked in one hour before sunset. It will not only keep mosquitoes out of your bed but also snakes, scorpions, centipedes, bats and myriads of insects.

Get into the habit of sleeping so that no part of your body touches the net, otherwise mosquitoes will bite you through the meshes. A calico band, about 6 inches broad, sewn round the lower part of the net gives additional protection against bites. Always examine the inside of your net for mosquitoes on going to bed, and kill any you find.



Mosquito net erected on camp bed

If you are living in mosquito-proofed quarters, see that all doors are kept shut. Always close the outer door before you open the inner and vice versa. Be careful not to damage the wire netting by leaning objects against it. Report all damage at once to the N.C.O. in charge. Remember that mosquito screened buildings do not give absolute protection against mosquitoes, owing to the careless opening and shutting of doors.

The anti-mosquito cream issued to you, if smeared on exposed parts, will repel mosquitoes for about an hour. Re-applications of the cream are therefore necessary.

You will be provided with anti-malaria drugs as long as you are in malarious areas and for a definite time after, to help protect you against malaria by nipping the disease in the bud. For this purpose, if you are employed on ground duties you should take half a tablet of mepacrine or atebrine daily, while if you are a member of air crew you will be given a 5-grain tablet of quinine daily. It is very important for you to take these tablets regularly without fail. These drugs, together with the proper use of mosquito nets, are the strongest weapons we have in our fight against malaria (see also Section 3 (c)).

If you suspect that you have malaria, report sick at once, otherwise you may infect mosquitoes and your pals, as well as running the risk of developing black-water fever yourself. This disease is very serious and is apt to occur if malaria treatment is insufficient or irregular.

Last, but not least, you should do your share to prevent mosquito-breeding. See that all water containers are so covered as to exclude mosquitoes. Do not throw bottles, tins or lids about, as they will collect rain and tropical dews in sufficient amount for mosquitoes to breed.

(f) *Plague* is a disease usually spread to man by fleas from infested rats or other rodents, such as squirrels and bats. As rats desert a sinking ship, so fleas leave their dying host and seek shelter on other warm-blooded animals, usually either a rodent or man. Natives walk about bare-footed and often sleep on the floor, so that they are more readily infested than Europeans.

Your best means of protection against plague is to keep well away from natives and their quarters, and refrain from touching rodents. You should always search your clothes for fleas while in warm climates, and at least once a day wash your whole body thoroughly with soap and water. Try to avoid scratching an insect bite of any sort, as this rubs into the skin any infectious germs present. Always sleep off ground.



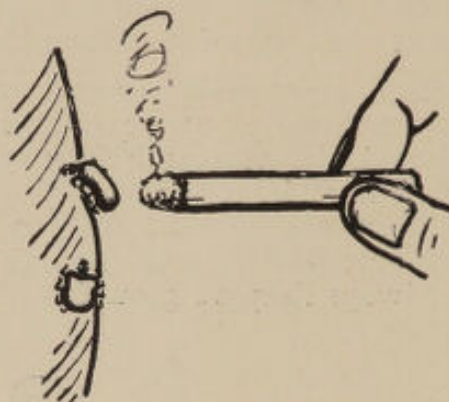
Fleas spread plague by leaving dying rats, as rats themselves desert a sinking ship

(g) *Prickly heat* is an irritable inflammation of the skin associated with excessive sweating. It frequently starts around the waist as an intense itching from numerous minute blisters.

It is best avoided by wearing clean, loose clothing, and by drying yourself thoroughly after washing, applying talc powder if necessary. Gradual sun-browning of the body will help to raise your resistance to prickly heat.

(h) *Relapsing fever and typhus* are both due to germs introduced into the body through the bites of lice and ticks. To avoid these infections you should keep away from louse and tick infested houses, tents and beds. Get into the daily habit of examining your clothes, bedding and person for these vermin. Ticks bury their heads in your skin to suck blood. Do not try to pull them off, for if you do they will break off at the neck, leaving their barbed mouth parts in your skin; this will lead to festering. Moreover, by gripping the tick you will squeeze the contained germs into the wound or over the surrounding skin and so increase the danger of contracting either relapsing, typhus or tick fever. To remove a tick, apply a glowing cigarette end to its back and wait for it to drop off; alternatively, apply a little petrol on cotton wool or on a handkerchief to its back, but in this case refrain from applying

a lighted cigarette or a severe burn will result. Apply soap or baking powder to the bite to ease pain or itching.



Never pull a tick off ; apply heat and let it drop off

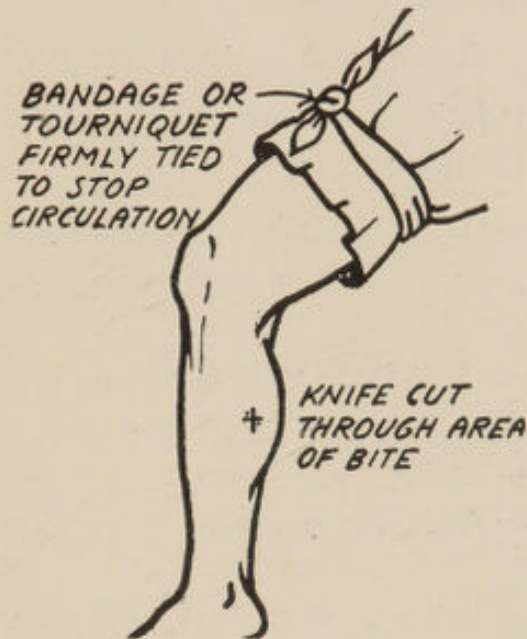
In louse-infected places you should lather your body thoroughly with soap each day, and search your clothing for lice, particularly the folds in your shirt and the trouser seams. You should also dust your clothing with the insect powder that will be provided. All clothing and bedding should be exposed to the sun as frequently as possible.

(i) *Sandfly fever* is a short, acute fever, conveyed to man by the bite of a tiny midge. Where sandflies abound you should "flit" your quarters each night at sundown and sleep under a sandfly net or a mosquito net which has been "flitted".

(j) *Smallpox* in severe form is prevalent in most communities in the tropics and sub-tropics, and is spread by contact with infected persons or clothing. Vaccination gives you almost complete protection against this disease, so get vaccinated before you travel abroad.

(k) *Snake-bite*.—Fortunately, the majority of snakes are non-poisonous. Snakes are usually nocturnal in habits ; they spend much of the daytime sleeping and in chilly weather may seek the warmth of a bed. They cannot get into your bed if your mosquito net is down and properly tucked in. In snake-infested country use a torch or lamp when walking in the dark. Snakes will not attack you unless surprised or cornered. A smart, heavy blow across a snake's back with a stick will usually kill it or so maim it that it cannot attack you. If you are bitten by a snake, at once apply a handkerchief as a tourniquet firmly around the *upper* arm or leg above the site of the bite to prevent the flow of poison into the system generally. As the circulation of the limb is stopped, the tourniquet must not be left on for more than half an hour. During this time the bite should be cut with a clean knife for about an inch in the length of the limb and half an inch crossways to ensure free bleeding. The wound should be sucked to extract the poison, which should be spat out. Black coffee is a good stimulant, but do not drink alcohol. Take action rapidly, as every second

counts in preventing the spread of the venom into the system. Get a medical officer as soon as possible, and if you can, take the snake with you for identification.



Treatment of snake bite

(1) *Worms* of various sorts which may inhabit the human body are plentiful in warm climates, especially in places frequented by natives. They gain entrance to the body, usually in a microscopic stage of their existence, through the individual eating uncooked vegetables or underdone meat, drinking impure water, or by bathing or walking barefooted in infested areas. If you follow the advice given in Sections 3 and 6 of this pamphlet you will not suffer from worms.

9.

SUMMARY

Life in warm climates can be as enjoyable as at home, provided you practise the dictates of common sense and obey the instructions given in this pamphlet. The main points for you to remember are :—

- (i) To wear proper clothing and to change frequently.
 - (ii) To avoid undue fatigue, excesses and chills.
 - (iii) To be cleanly in all habits.
 - (iv) To drink and bathe in officially approved waters only.
 - (v) To refrain from taking alcohol until after sundown, then only in moderation.
 - (vi) To eat freshly cooked foods and only fruits with thick skins.
 - (vii) To avoid bazaars, crowded places and native quarters where disease is rampant.
 - (viii) To take anti-malaria drugs daily and always sleep under a mosquito net when in malarious areas.
 - (ix) To wage constant war on flies, fleas, mosquitoes, sandflies, lice, bugs and rats.
 - (x) To have the available protective inoculations against disease yearly or in season.
 - (xi) That a very high proportion of native women have venereal disease.
 - (xii) To refrain from concealing disease and so spreading it to others.
 - (xiii) To keep the mind occupied with work and interesting hobbies.
 - (xiv) To keep the bowels open daily and the skin active.
- In short, to preserve a healthy mind in a healthy body.



Beware of sparkling waters, sparkling wines and sparkling eyes



