Guide to travellers on the maintenance of health in unhealthy countries / by Henry Cayley.

GUIDE TO TRAVELLERS

ON THE

MAINTENANCE OF HEALTH IN UNHEALTHY COUNTRIES.

HENRY CAYLEY, F.R.C.S., F.R.G.S.

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BY

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LONDON:

HORACE COX,

WINDSOR HOUSE, BREAM'S BUILDINGS, E.C.

1896.

LONDON:
PRINTED BY HORACE COX, WINDSOR HOUSE, BREAM'S BUILDINGS, E.C.

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MAINTENANCE OF HEALTH IN UNHEALTHY COUNTRIES.

THE following practical hints on some of the most important points to be observed and precautions to be taken in order to preserve health, and to ward off preventable diseases, are written for the guidance of sportsmen, explorers, detached parties of troops, or other travellers, when passing through or halting in unhealthy regions, and especially in tropical climates.

These short notes are merely a slight development of a letter of advice I gave to an officer in whom I was interested, on his being suddenly ordered for service in

Ashanti. They are intended only for people who are out of easy reach of the help and advice of a medical officer. They have nothing to do with the detection or treatment of disease, but are only directed to questions of personal hygiene; and, indeed, they aspire to be nothing higher than a few common-sense ideas, founded on general and, in great manner, on personal experience.

REASONS.

In order to make the advice more acceptable, I add a few simple reasons *giving the why and the wherefore*, which anyone can easily understand without special medical or technical knowledge.

MALARIA.

I may say, first, that an unhealthy climate, apart from any special local sources of disease, such as filth, overcrowding, and such

like, depends on the presence of what we call *malaria*—the poison that gives rise to a variety of fevers, of which ague or intermittent fever is the type, though malaria also causes fevers of a *continued* character, which may last for days or weeks. Malaria may also cause great deterioration of health without any actual fever. Malarial fevers are due to the presence in the blood, and in various organs of the body, of an extremely minute living organism, often called the *Plasmodium malariæ*, or, more simply, the "malaria bug." This can be seen in a drop of blood taken from the finger tip or any other part, but by means only of the most powerful microscope, and the utmost care and skill is required in preparing the specimens for examination. This microbe has not yet been found in the air, or soil, or water of malarious regions, although there can be no doubt that it does exist in such situations, but under some as yet unrecognised form.

The germ of the microbe, when present in the air, or in the soil, or in the water, seems to develop and to become much more virulent at certain seasons of the year, particularly during and soon after a rainy season, and, when possible, this unhealthy season should be avoided. As a rule, low-lying plains and valleys are much more feverish than higher hill tracts. Generally the most feverish localities are the swampy shores of lakes, ponds, rivers, or marshes, and especially lands that have been submerged and are afterwards drying up under a hot sun. Decaying vegetation seems to favour the development of malaria, but is not essential, and in some places dry, sandy, and rocky soils are highly malarious.

When camping out or bivouacing in a malarious country, the highest and driest sites should be chosen, and great care should be taken not to dig or turn up, or even level, the surface of the ground. The poison seems

especially to live in the upper soil, and to be set free when this is disturbed. The floor of a hut or tent, or the sleeping ground, should be covered with mats or a mackintosh sheet, or even with palm or bamboo leaves, and, if possible, the sleeper should be raised above the ground in a cot or hammock. Anyone can make a cot in a very short time with a few poles or bamboos and some string, and bamboo leaves, or any dry leaves or grass, make an excellent mattress. The cot being raised above the ground is a great protection against snakes and poisonous insects, and a bit of rag or tow steeped in paraffin or carbolic oil, and coiled round the legs of the cot, will quite prevent snakes or ants, or other noxious creatures, climbing up.

AIR.

The poison of malaria is present in the air of malarious regions, and especially so at

night, and it is taken in by *breathing*. The natives of India and other countries often cover their heads and mouths when sleeping with a cotton cloth or blanket, and this seems to have great power in warding off fever. The cloth probably acts as a sort of filter to the air. This is a useful precaution, and easily carried out. Also when marching in the evening or in the early morning a gauze veil or mosquito net over the head and face acts to some extent as a protection against malaria; it also keeps off mosquitoes and other insects, which in some countries are a terrible plague. The mosquito net, stretched on a sort of light framework helmet, will also keep off bees, which in some places are more dangerous (perhaps) than the arrows of savages. When exposed to an infected air it is also a good precaution to breathe through the nose and close the mouth as the membrane inside the nostrils has the power of arresting and destroying the germs of many diseases.

WATER.

Diseases are very commonly introduced into the system by water, and in a malarious country all drinking water should, if possible, be boiled or properly filtered. Boiling seems to make all water safe and wholesome. After being boiled or filtered, the water should not be allowed to stand in open vessels exposed to the air or it may again absorb the germs of disease from the air, or from dust and other impurities. An open vessel of drinking water should be covered over with a cloth or sheet of paper, or any such covering, which will keep out dust and microscopic germs.

The Pasteur and Berkefeldt filters are efficient in purifying water, but all the ordinary filters allow the subtle germs of diseases, such as cholera, enteric fever, and so on, to pass through them; but it is quite possible that even these imperfect filters may

bar the passage of the malaria microbe or poison, and general experience goes to show that they have this effect. Also they certainly will prevent the passage of the coarser impurities, such as the eggs or germs of many parasites, which are so prevalent in Africa and many other countries, as the various intestinal worms, ankylostomum, guinea worm, and many other varieties.

The larvæ or embryos of the guinea worm, after escaping from the mature worm in the human body, make their way into the body of a small fresh-water crustacean—the cyclops—and in its body they undergo one stage of development, and then become free in the water, and again get into the human body by being swallowed; possibly also they make their way through the pores of the skin when bathing.

The life history of the parasite that produces the diseases known as chyluria and elephantiasis is still more curious. The minute worm-like creature called the *Filaria*

sanguinis, that causes these diseases, and which is often present in the blood in countless numbers, especially at night, is sucked up by a mosquito when biting, and in its body goes through a further stage of growth. The mosquito usually dies in water (when it lays its eggs), and the minute embryos, which can only be seen with a powerful microscope, are swallowed by human beings, and again become mature, and give rise to elephantiasis and several other diseases of like nature.

For the purpose of stopping these parasites, the ordinary portable travellers' filters are useful; but the Pasteur filter is now made in a pocket form, and should be taken in preference. All filters should be thoroughly and frequently cleaned with boiling water, otherwise the filter itself may become the breeding ground of the germs of disease. A useful, rough way of purifying water is to add to a can or vessel of water a little powdered alum (about two grains to one pint) or quicklime

(twenty grains to one pint), or a few grains of permanganate of potash (from which Condy's fluid is made), two grains to one pint; stir this in the water, and let it settle for some hours. The substance, as it settles down in solution, carries with it many of the impurities, including even the minute germs of disease. The upper part of the water may then be drawn off for drinking use.

The addition of spirits to bad water does not render it wholesome, and has no power in killing the germs of disease.

These precautions with regard to water should be taken to prevent infection, not only from the malaria poison, but also from the germs of cholera, enteric fever, dysentery, and other infectious diseases. Water also may be made poisonous or unwholesome from absorbing foul gases, or from being contaminated by any impurities. Such diseases as dysentery and diarrhœa are frequently caused by bad water.

FOOD.

Food of all kinds, cooked or uncooked, milk, and other articles, especially sweetmeats and aerated waters, may convey and give disease in the same manner that water does. Food may be contaminated by earth from the floor of huts, &c., by dust in the air, by dirty hands, by being washed in impure water, by flies, which have been known to carry the germs of cholera, and probably of other infectious diseases, and deposit them in food and milk. Raw vegetables, as salad, cress, &c., if washed in impure water or grown on contaminated soil, may readily cause disease, and are a common way in which some parasites are introduced, especially round worms, and probably also the ankylostomum, which is so common in Egypt and India, and other countries, and is the cause of such serious diseases as chlorosis and pernicious anæmia, which are prevalent in

many countries. Raw vegetables and fruit do not of themselves cause disease unless contaminated, and washing them *thoroughly* with pure water will make them safe, and they are then very wholesome. When camping or travelling for any length of time, it is very important that fruit or vegetables should constitute a regular part of the diet, otherwise a tendency to scurvy is produced, which also makes people much more liable to other diseases.

Eating raw or underdone meat, or imperfectly cooked ham or sausages, &c., is the way by which the germs or embryos of tapeworms, hydatids, and some other parasites are introduced. If meat is *thoroughly* cooked, it is rendered safe from such diseases.

No substance is so easily contaminated by, or so readily absorbs, the germs of disease as milk. Milk has been known to cause outbreaks of cholera, enteric fever, scarlet fever, and other infectious diseases. Milk may be

rendered safe by boiling, or by keeping it at *nearly boiling* point for some time, which does not spoil its flavour, and then letting it stand to cool in vessels *closed from the air*. The best way of temporarily closing a bottle or other vessel with a narrow neck, is a loose plug of clean, dry cotton wool, which effectually filters the air passing through.

EARLY MARCHES.

When marching in the early morning in an unhealthy country, it is very important to take some *breakfast* before starting. A cup of tea, coffee, or cocoa and a biscuit or chapatti is about the best thing, or a bowl of oatmeal porridge, or anything that can conveniently be prepared.

QUININE.

There is very strong evidence that, when in a malarial country, a dose of about five grains of quinine every morning helps to keep off

fever. Quinine tabloids are a very convenient form. Pills are unreliable, as they get hard, and do not always dissolve in the stomach. The late Surgeon-Major Parke, when accompanying Stanley through Africa, found quinine in this way of the greatest value.

GENERAL DIRECTIONS.

In a hot country, men should not march in the sun or expose themselves much to its heat soon after a full meal, and especially they should not take beer or grog before going out in the sun and heat. When it can be managed, the most substantial meal should be taken in the evening, after the day's work is over, and no alcoholic drink should be taken before this, and, in a hot climate, the less the better. Wide experience shows that, under almost all circumstances, men can do more work and keep their health better who do not take any alcohol as a daily habit.

After an extra day's work or great exposure a little taken when the work is over, or in the evening *occasionally*, seems at times to do good, and is grateful and cheering.

CLOTHING.

In a hot climate, clothing should not be heavy; it should be porous, but warm. Flannel, light serge, or other woollen material, are more healthy than cotton or linen. The light woollen material prevents chills, and also keeps out the heat of the sun. A good sun helmet is essential; but for hard work and real use it should not be very large or heavy.

It is of importance to keep the skin clean and healthy by washing and bathing—when bathing water is procurable, and one can put on dry clothes afterwards. There is no danger from cold bathing *when hot*, if one does not first try to cool down. The proper plan is to bathe when the body is heated,

either by exercise or by exposure to heat, and when the circulation is vigorous, and not to wait till the surface cools and the blood is circulating less actively. If one first cools down, the bath is apt to be followed by a chill and fever. Staying long in the water has the same effect. In a Turkish bath one goes from a hot chamber and violent exercise (shampooing), and when in a profuse perspiration, plump into a cold bath, and thence into a cold room with the windows open in mid-winter, and this without any fear of catching a cold, or of rheumatism or internal congestions. One should never bathe in cold water soon after a full meal, and for anyone suffering from congestion of the liver, or with a tendency to dysentery or diarrhœa, cold bathing is unsafe.

CONCLUSION.

Physical training is of the utmost importance. When men are undergoing great

fatigue and exposure, and have to live on scanty and unsuitable food, and to endure hardships, such as often falls to the lot of the campaigner, the sportsman, or the explorer, the main factor in the preservation of health is to be in good training. This is accomplished by active habits, by hard exercise, by moderation in living, and by inuring oneself to fatigue and exposure. It is very important that men should prepare themselves beforehand so as to be fit at the start for the hardships they will have to undergo. A man in good training, in hard condition, may, with a few simple precautions, almost defy exposure to the sun, or to extremes of heat and cold. He may go through the longest marches, and do the hardest work, without exhaustion, and, if at times he has to put up with long fasts and short commons, he will only suffer temporary inconvenience. He may by the same means render himself almost proof against ordinary attacks of

illness, and, if he does fall sick, he is able to fight against it.

Health under such circumstances means happiness and enjoyment of life, however hard the life at the time may be, and the very hardships that have to be encountered often seem only to add an additional charm to the pleasure and excitement of travel or sport.