

EPIDEMICS



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AND
HOW

TO MEET THEM



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“Every person should have a knowledge of nature’s remedial agencies and how to apply them. Pure air, sunlight, abstemiousness, rest, exercise, proper diet, the use of water, trust in divine power,—these are the true remedies.”

—Ellen G. White, in *Ministry of Healing*, p. 127.

FOREWORD

SEVERAL years ago, while travelling by car in a rural part of southern India, I came around a small mountain almost directly on to what appeared to be a fairly large and populous village. Coming nearer, however, I observed that it was deserted. Even the large well-built houses stood empty. No children played in the streets. No cattle or other evidence of life appeared. The place was totally deserted.

Driving through the village and out through the fields beyond, I stopped to inquire of a cultivator the cause of this desolation. He stated that formerly he himself had been a resident of the place. Confidentially he explained, however, that the evil spirit of cholera had struck the village some months previously, and because so many people had died from its ravages, the survivors fled and were now living in temporary houses a mile distant.

Those with any acquaintance of Indian archeology and history know of old town sites now under cultivation. Acres of pottery and brick-strewn land, occasional old foundations, wells, and temple sites indicate the extent of some of these ruins. Tradition and history of the local community often tell of some great plague which swept away the people of the town, leaving this desolation as the only evidence of its former existence.

Records of early Indian history tell us of the extent of the havoc wrought by epidemics of various diseases, their victims running into millions. Coupled with frequent wars between rival states, the death-toll was so great that the population of India, estimated at one hundred million in the time of Akbar, was still at this figure at the beginning of the nineteenth century.

FOREWORD

It was about this time that attention was first given to public health. During the first half of the nineteenth century, the establishment of medical and public health services, along with the ordered political condition of the country, resulted in an immediate rise in the population. By 1850 it had risen to 150 million, by 1880 to 250 million, by 1900 to 300 million, and by 1931 to 350 million. Since then, with the rising standard of living, the extension of education, and the consequent improvement of health conditions, the population increase rate has been still further accelerated.

It may well be hoped that, with the spread of health education and the improvement of sanitation, India may ultimately be able to make these devastating epidemic diseases as rare as they now are in Europe and America.

T. R. F.

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Fresh air and exercise mean better health.

CAUSES OF DISEASE

PRIMITIVE and backward people of every land have believed disease to be caused by the ill will or the mischievous pranks of an offended deity or evil spirit. With this conception of the cause of disease, we are not surprised to see them resorting to measures intended to placate their gods or to ward off or bribe the offended spirit. The child, suffering with a persistent stomach-ache, can best be treated by applying hot irons or coals to the abdomen to put the spirit to flight. In the case of protracted illness, the family concerned may, with added harm to the patient, undertake arduous pilgrimages to some supposed holy place of healing.

The poor villager in the midst of a cholera epidemic continues to draw his drinking-water from the contaminated, open step-wells, or from the village tank, concentrating his therapeutic and prophylactic measures at appeasing the offended deity. The family, which is gradually dying off from the ravages of tuberculosis, continues to sleep in congested quarters and tightly closed rooms, little realizing the dangerous processes at work.

It is under such conditions as these that we expect to find the highest mortality among both young and old. These uninformed victims of disease are acting upon the only information they have at hand. As an ancient seer has said, "My people are destroyed for lack of knowledge." How true this is of India is well understood by every enlightened citizen of this country.

FOR every diseased condition there is a definite physical cause. The cause of some diseases is not yet known. These diseases, however, are rapidly becoming fewer as science uncovers the age-old secrets of these enemies of human health.

BACTERIAL CAUSES

Even as recently as one hundred years ago, very little was known of the causes of many of our more common diseases. It was Louis Pasteur in France, Koch in Germany, and Lister in England, who pioneered in the field of bacteriological research. It was the invention of the microscope by Leeuwenhoek, the Dutch lens grinder of some three hundred years ago, that made possible the remarkable discoveries of these scientists in the last half of the nineteenth century. Leeuwenhoek and others, working with the microscope, had observed minute moving particles under their lenses. None, however, thought to ascribe to them the malicious role of causing some of our most malignant diseases. In time, scientific research brought to light the part played by these microscopic organisms—known as germs—as the cause of a very large percentage of diseased conditions.

It is now common knowledge that typhoid fever is caused by a germ which centres its activities in the digestive tract, likewise that cholera is caused by a small, comma-shaped organism, throwing off a tremendous amount of poison as it grows and multiplies in the intestine. It is also common knowledge that the white plague, usually known as tuberculosis, is caused by a small rod-shaped, wax-covered organism, so small that one thousand of them would have to be laid side by side to cover an area as wide as the lead in your pencil.

To list some of the common diseases caused by germs, we would mention typhoid fever, undulant fever, diphtheria, plague, pneumonia, gonorrhoea, scarlet fever, erysipelas, boils, syphilis, leprosy, tuberculosis, meningitis, and many others.

VIRUS DISEASES

Another group of diseases, spread in somewhat the same manner as the above mentioned, is the virus diseases. The entire story back of these conditions, however, is not entirely known. The best information we have on the question at

present is that they cannot be separated out and studied in the same manner as the better known bacterial organisms.

Study of these diseases is being carried out by ultra-high-powered microscopic equipment which has magnifying power many times greater than the standard scientific microscope. By this means, and by filtration and culturing, knowledge is being extended in regard to the nature of the living forms responsible for these diseases.

Some of the more common maladies of this classification are smallpox, measles, chickenpox, and common colds.

FUNCTIONAL DISEASES

Another group of diseases, the ultimate underlying cause of which is not fully known at present, is thought of as of functional origin; or in simpler words, a diseased condition resulting from failure of certain organs of the body to function in a normal manner.

Perhaps one of the best examples of this would be the rather common condition known as diabetes, in which certain cells in the pancreas undergo degenerative changes, resulting in a failure of the body to properly utilize the sugars absorbed into the blood stream.

Sterility, impotency, some forms of indigestion, and other conditions would be examples which might be classified under this group.

DEFICIENCY DISEASES

The human body is able to utilize a vast variety of different types of food containing a large number of food elements, vitamins, and minerals. It is possible for the system to function for considerable periods of time without some of these common food elements. However, there are many elements in the food whose absence for any considerable period of time would cause the body to suffer in a very definite manner. The condition becomes more and more serious, often terminating in death itself.

Food substances, a deficiency of which may cause diseased conditions, are proteins, minerals, vitamins, and certain other substances, the nature of which is not yet fully known.

Some of the more common diseases resulting from such deficiencies are beriberi, pellagra, night blindness, rickets, scurvy, pernicious anemia, and other conditions of less certain determination.

DEGENERATIVE DISEASES

As other types of disease have been more and more eliminated, larger numbers of the human family are moving up into the higher age brackets. This has made more conspicuous a group of conditions referred to as the degenerative diseases.

Among the more common of these is the condition resulting from degeneration of the blood vessels, commonly referred to as arteriosclerosis. This degenerative change is often responsible for certain kinds of heart attacks, strokes, and other serious complaints. Certain kinds of arthritis result from bony changes, more common in old age than in younger years. These are often regarded as degenerative changes common to the advanced age group.

Senility, accompanied by mental changes, loss of sight, and other evidences of old age, is an excellent example of this class of diseases.

MALIGNANCY DISEASES (CANCER)

Other conditions often classified among the degenerative diseases in type are the malignancies or cancers. There are many kinds of cancer both as to degree of malignancy and as to the part of the body affected. There is scarcely a tissue in the entire human structure that may not be attacked by cancer.

While much more prevalent in the older age groups, cancer is also found in some forms even among children.

Cancer at the present time receives probably more attention in research than any other one disease.

EPIDEMIC DISEASES

Epidemic diseases are epidemic because of the manner of their spread from person to person and community to community.

We should first of all note the meaning of the word epidemic as opposed to other manners of appearance of diseases, such as endemic, sporadic, or other manifestations of disease. An epidemic is a condition in which a highly virulent form of disease suddenly begins to spread from individual to individual, home to home, community to community, until it has spent itself, or the conditions favouring its spread cease to exist.

As opposed to the epidemic manifestations of disease, there are places where certain diseases are always to be found, but in a less virulent form. Such areas are spoken of as endemic areas. For example, there are certain cities or districts in India where plague is always existent, though not in a serious form. In such areas plague is spoken of as endemic.

The more common epidemic diseases are cholera, plague, smallpox, typhoid fever, diphtheria, measles, influenza, scarlet fever, and the common cold.

As this book is given to the consideration of epidemic diseases, we will turn to the discussion of these conditions, noting their cause and treatment.



The sneeze is dangerous; it spreads disease.

THE COMMON COLD

The world's leading epidemic disease is the common cold. With its complications, it is estimated that it causes more loss of time from work, more days of illness, and accounts for more deaths than any other single disease. Whether or not this estimate is accurate, it is sufficiently true that we do well to give special attention to this frequent caller.

You may ask, Why is the common cold so dangerous? The common cold does not of itself kill the patient. It merely makes him very uncomfortable, and quite unpopular for a few days. Were this the end of the story, the subject of this chapter would not bear the criminal record which it does.

The common cold acts on the mucous membranes of the nose and throat, causing them to become spongy and edematous, and to secrete a considerable amount of fluid. Some colds pass off with only this superficial manifestation, doing little harm. More commonly, however, the membranes of the nose and pharynx, because of this congestion and moisture, become infected with a streptococcus germ which quickly spreads and causes soreness in this region. This is the sore throat accompanying many colds. It is not the cold itself but a separate condition resulting from the cold, and might be more accurately called pharyngitis or laryngitis, according to the part affected.

Because of the poisons thrown off by the streptococcus organisms, this stage of the cold is accompanied by fever, headache, and a general "all gone" feeling. This stage of the disease lasts generally for two or three days and then gradually clears up as the body builds up resistance to the invading germs.

Suppose, however, that the victim of this disease disregards his cold and goes on about his work; or going out,

becomes fatigued or chilled by exposure. This gives the virulent streptococcus a chance to expand its activities. The body resistance is lowered. When breathing or coughing, the patient draws bits of moisture containing streptococci into the bronchi or on out into the lungs. Here it attacks the mucous membrane lining the lung cavity, and in this weakened tissue the ever present pneumococci start to work,—and the patient has pneumonia. This is a very common occurrence, and is the course by which many people come to grief with pneumonia.

Many a case of tuberculosis has also been allowed to obtain its fatal hold in a neglected cold.

AVOIDING COLDS

The question of avoiding colds centres about two factors: first, maintenance of the body resistance in the best possible condition; second, avoidance of crowds as far as is possible.

Some people have more natural resistance to colds than others. This resistance or immunity is built up by the body at the time of a cold in the same way the body builds resistance to smallpox, either by having smallpox or by having a very much attenuated form of smallpox by what we call vaccination.

The immunity built up by the body by having a cold lasts for varying lengths of time. Some people develop a resistance which may last for a year or longer. Others unfortunately obtain immunity for as little as a few weeks or perhaps months. The natural immunity to colds appears to have some relationship to the general health and vigour of the body. The well-rested, well-nourished, and healthfully exercised person is less susceptible to colds than the overworked "shut-in" who never gets out into the sunshine for vigorous recreational exercise.



Keep the little fellow free from colds and thus avoid complications.

Cold vaccines are available and, in some places, widely used for increasing the natural immunity. There is, however, no proof that the cold vaccine increases resistance to the cold itself. This vaccine is made up on the basis of immunization against known secondary invaders, such as streptococcus, staphylococcus and pneumococcus. It may be understood from this that such immunization may be of considerable protection to some people against the serious complications of a cold.

TREATMENT

There is perhaps no disease so common, against which there is so little of specific medication as the common cold. Once started, it runs its inevitable course. One's problem is to do all possible to avoid complications. When one feels a cold coming on, he should, if possible, go to bed. He will thereby materially shorten its course. The bowels should be kept well open. If necessary, a saline cathartic or castor oil may be used.

The diet should be light but adequate. Heavy foods such as meats, fried, greasy, and rich foods should be eliminated. Light, easily digestible foods such as cereals and cream, rice, fresh, boiled or baked vegetables, buttermilk, milk, curds, broth, eggs, custards, fruits, especially oranges, papaya, and other seasonal fruits may be taken. There appears to be definite benefit in the taking of large amounts of lime, lemon, or orange juice. This not only helps the kidneys carry their extra load, but supplies an extra amount of vitamin C which may have special merit in upper respiratory infection.

Those who have a bad time with colds, who have very sore throats, tonsillitis, bronchitis, or who tend to have colds which "settle on the lungs," may be well advised under the direction of a physician to take a sulfonamide drug from the onset of the cold. Even three or four days of moderate dosage may save the patient much unnecessary illness.

Any further medication for colds should be purely symptomatic. Aspirin or aspirin compound will help to ease the discomfort of the cold, particularly the headache. Various ephedrine compounds are available as nose drops. These greatly reduce the nasal congestion, allowing greater comfort, and, in some cases, reducing the occurrence of secondary infection.

Remember that possible results of a neglected cold are pharyngitis, tonsillitis, laryngitis, bronchitis, pneumonia, and even tuberculosis.

SCARLET FEVER

SCARLET FEVER is a fairly typical epidemic type of disease. A community reports the presence of a case or two, and almost immediately there follows a crop of cases running over a period of several weeks. It is a comparatively serious disease, caused by a germ known as *streptococcus scarletina*.

The onset is somewhat similar to that of a cold, though there is early a very marked fever with a considerable feeling of prostration. This fever may run to 106° in children, and to a little less in adults. In severe cases it is often accompanied by delirium or convulsions in children and mental confusion in adults.

On the third or fourth day the breaking out of the rash gives the first positive clue to the diagnosis. This differs from other rashes in that it consists of a reddening of the entire skin surface, with a closely placed speckling of small superficial red eruptions, none of which break open. This rash is most marked over the waist and chest areas, though it is evident over the entire body. It usually clears after four or five days, leaving no mark of its appearance.

The normal course of the disease is from six to ten days, according to the virulence of the infecting organisms or the resistance of the patient.

The streptococcus organism is a potentially dangerous enemy at any time or place. It is one of the common causes of so-called blood poisoning. A form of it causes the very dangerous disease, erysipelas. In its many and varied forms it may cause crippling arthritis, peritonitis, tonsillitis, streptococcus pneumonia, or serious forms of nephritis. It is in this last role that it becomes dangerous in scarlet fever. Many ultimately fatal cases of nephritis may be traced back to a childhood attack of scarlet fever. For this reason, if for no other, this disease should be avoided, and if not avoided, very carefully treated.

TREATMENT

If the temperature rises high (above 103°), it should be controlled by cool sponging, cold sheet packs, or cooling enemas. These cases, as in all severe fevers, should be kept in bed and quiet for several days after the last fever.

Nutrition must be maintained. In young children, milk drinks and barley water, with no neglecting of orange juice, will all tend to keep the strength up to par. Older children and adults will do well on broth, thin soups, milk drinks, custards, and mild fruit juices. Only after the fever is well down should solid foods again be resumed. Plenty of fluids at all times will promote better kidney function, and aid in protecting these organs.

If proper medical aid is available, regular urine examinations should be made, to recognize as early as possible the onset of kidney symptoms. Home treatment of this kidney involvement will consist of giving plenty of mild fruit juices, preferably orange juice, holding the patient to a light liquid diet, and applying heat to the midback by means of hot fomentations or a hot-water bottle. The bowels should be kept clear with a daily enema of warm soda water.

In addition to this home care, the physician in charge will administer sulfonamide drugs according to the indications. These drugs now form a valuable weapon against all streptococcus infections, and no treatment of scarlet fever is complete without them.

Physicians are frequently asked about inoculations against scarlet fever. There are such inoculations available; however, their routine administration is not advised. It is better to give the scarlet fever test (Dick test). If the patient proves susceptible to the disease, proceed according to indications on the advice and under the care of the physician. Protection by these inoculations is of short duration, and they should be resorted to only in case of known danger.



Keep the patient in a cool, dark room.

MEASLES

CONSIDERATION of this disease is important not so much from the standpoint of the disease itself as from its frequent complications, some being of a serious nature.

Measles is one of the more strictly epidemic diseases. It runs its course in a community, attacking those whose immunity, at the time of its last visit, was such as to prevent their taking the disease. An attack of the disease in a neighbourhood usually involves the young children who were not present at the time of the previous epidemic, also some

older children and adults who, for some reason, either missed exposure or had adequate resistance to ward it off.

In onset, the disease resembles an ordinary cold, with running nose, headache, chilliness, and a general all-over aching feeling. There is early photophobia, or discomfort to the eyes in the presence of light. Children particularly are inclined to be nauseated and vomit. The temperature runs from 103° to 105° or more in some cases.

On the third day of the fever the eruption comes out. It is of scattered, irregular distribution, in slightly raised spots the size of a pea to a half inch or more across. These spots often run together in larger patches. The patient is not aware of discomfort proportional to the appearance of the eruption. After four or five days the rash gradually subsides, leaving no marks such as are seen in smallpox or chickenpox.

TREATMENT

The patient suffering from measles should be kept quiet. The less he moves about, the better. The principal consideration in this connection is the possible damage to the heart. In the case of a severe form of measles, the damage to the heart may be very considerable if the patient is permitted to move about. Likewise, the danger involved in permitting the patient to be up too soon after cessation of the fever, should not be overlooked. Even with good progress in convalescence after a moderate attack, it will be time well spent to keep the patient in bed for at least one week after the last fever.

Those suffering from measles, both children and adults, should be kept in a cool, dark room. If the fever runs over 103° it is well to bring it down by cool sponges, cold sheet packs, or even by cooling enemata. Not only is the patient more comfortable, but he will make better progress toward recovery with a lower temperature.

In this connection, it is important that the bowels be kept free. In case they need any encouragement, it is best

given by a mild soda enema, one teaspoon of ordinary baking soda to one quart of warm water.

During the fever stage of the disease, nutrition should be maintained by means of liquid foods. Adults should be given broths, thin soup, or fruit juices. Children may have milk fortified with malted milk, eggs, gruels, barley water, etc.

There is no specific medication for measles. However, as measles very frequently leads to pneumonia, and occasionally to empyema—infected fluid in the chest cavity—the disease should receive careful attention. As the cause of this pneumonia is either pneumococcus, staphylococcus or streptococcus organisms, it is advisable to give the patient a prophylactic dosage of sulfonamide drug during the acute attack, and a few days following. This must be given only by a physician who will know the dosage and plan of administration. The sulfonamide drug is not an essential to all treatment of measles, but in severe cases is an excellent prophylactic measure. It is important that plenty of fluids be given during the entire course of the disease, more especially if the sulfa drug is being given.

Should it be impossible to get a physician in attendance for the patient during the attack, his services should be obtained as soon as possible afterward, so that the patient may be thoroughly examined; this is with a particular view to learning the condition of the heart.



Every severe sore throat should be regarded with suspicion of diphtheria until proven otherwise.

DIPHTHERIA

THOUGH there is a general impression that diphtheria is a very dangerous disease, there is a widespread ignorance as to its nature. Little is generally known about its characteristics, and less of what to do about them. It is not uncommon for a doctor to be called to the home of a wealthy or educated person to see children who are in their second or third day of the disease, often beyond hope of his help.

The first symptom of diphtheria may be sore throat, or it may be the feeling of the onset of a cold which gradually turns to sore throat. Fever is also an early manifestation. In children there is likely to be nausea and vomiting, and in the more severe cases this will be true of adults also.

The local evidence of the condition centres in the formation of the diphtheritic membrane. This is the result of the action of the diphtheria organisms on the mucous membrane lining the throat cavities. It may develop on the back of the throat, on the sides over the tonsils, lower down in the larynx, or in critical cases there may be combinations of any or all of these. This membrane may become heavy and thickened before finally peeling off. The thickening of the membrane in the breathing spaces of the larynx gradually shuts off the air to the lungs, causing the heavy drawing for breath. If the process continues, the patient will ultimately be suffocated.

During this time, when the breathing space is limited, it frequently happens that a patch of this membrane partially breaks loose, and is drawn into the already limited air passage. This causes immediate death unless there is skilled help at hand to pass an air tube into the throat, or to cut the throat open and insert a tube from the outside.

These critical complications do not ordinarily appear until the second or third day, or later.

However these more dramatic, mechanical complications are only one of the ways diphtheria kills. Two other factors must be given due emphasis. First, the diphtheria germ gives off a very violent poison into the system which may endanger life before the throat complications attract serious attention. It is more directly to stem the production of and neutralize the poisons thus given off that the life-saving diphtheria antitoxin is given. The entire course of the disease is affected by this antitoxin, but it is this violent poison threatening the life that is the prime reason for the giving of antitoxin.

In addition to the above two dangers in the disease, there is also its possibly serious effect on the heart. In very severe cases this is so marked as to be the immediate cause of death. It is for this reason that the patient must be kept absolutely at rest. Under no condition should he be allowed out of bed for many days after the last fever. Preferably, this period of rest should continue for not less than two weeks, in any case, and as much longer as a competent physician deems necessary, according to the condition of the heart.

During the height of the attack, the patient should be kept flat in bed, as even the slight exertion of sitting up might, if not immediately fatal, be sufficient to further injure the already damaged heart structures. The doctor's instruction to keep the patient quiet must be taken seriously. It is sometimes, though not always, possible to determine by appropriate examination the degree of damage to the heart. If the doctor is not impressed that the patient has suffered any serious cardiac injury, it will probably be safe for him to get about very gradually after two weeks of quiet, following the last fever. If the doctor detects definite damage, however, it should be regarded as reason for keeping the patient quiet for a longer time as may be advised.



Exercise care in regard to his food.

TREATMENT

Every sore throat should be regarded with suspicion of diphtheria until proven otherwise. In the early stages of the disease, an accurate diagnosis can be made only by the microscope, or by culture. A physician should, however, upon clinical examination, be able to determine whether there is any dangerous condition present.

If diphtheria is known to be in the community, every severe case of sore throat, accompanied by fever, should be given the benefit of the antitoxin. This is not a serious procedure, and may be a life-saving one. The question of quantity of antitoxin to be given, and the time, will all necessarily have to be determined by the physician in charge.

There is definite benefit in keeping the throat painted at frequent intervals (two to three hours) with tincture merthiolate, metaphen, mereresin, or a similar antiseptic solution. In small children, this should not be done if much fear or emotional disturbance is involved in the process. It is well for the throat to be kept wrapped and warm. The patient should be kept comfortably warm.

Adequate food is important, and should be watched, especially in younger patients. In the case of moderate fever, milk, gruel, porridge, poached or soft boiled eggs, or purced food may be given. If the temperature is high, or the patient is more than moderately toxic, the diet should be confined to frequent feedings of milk, fortified with malted milk, gruel, egg, or similar food as tolerated. With the subsidence of fever, the diet may be pushed up to normal, as these patients usually call for a fairly good food intake.

The use of additional medications will be entirely at the discretion of and under the direction of the physician in charge of the case.



Gargling and painting the throat is often beneficial.

PREVENTION

With preventive inoculation for diphtheria so well developed, it is very unfortunate for any child or adult to go without this protection.

By means of the Shick test it may be determined whether a person is susceptible to diphtheria or not. Whether the Shick test is positive or not, every child should be inoculated against diphtheria. This should be repeated every three or four years in order to insure the greatest protection possible.



Be careful where you buy your food.

DYSENTERY

THERE are essentially two main types of dysentery, the bacillary and the amoebic. The bacillary form is caused by a rod-shaped germ not too unlike those causing typhoid fever. The other form springs from the mischievous activities of an amoeba-like organism many times larger than the other, and known as *amoeba histolytica*.

BACILLARY DYSENTERY

This disease which attacks all age groups, takes its greatest toll among infants and small children. It must be distinguished from simple diarrhea.

Diarrhea may result from too much food, from food which disagrees, or from food containing some irritating

material or mild infection. Its onset is usually sudden. There may or may not be cramping. In severe cases there may be a trace of blood, though this is not usual. The course of the attack is usually short, the condition clearing as soon as nature has expelled the irritating cause. A mild purgative hastens the elimination of the offending material and hastens recovery, which may be from a few hours to a few days. The danger in this simple diarrhea is that in children and infants the resultant bowel irritation may be sufficient to lower resistance, opening the way for something more dangerous.

True dysentery may start somewhat gradually or may appear with an abrupt onset, in which case the outlook is more dangerous. The usual case is, however, more likely to be several days in developing.

At first there will be simply loose stools, the purgation gradually becoming more marked. This is accompanied with fever of varying degree. There is early a feeling of considerable prostration. In the very young this is evidenced in the pinched expression soon observed. Within a comparatively short time, though it may be a few days, there is likely to be streaking of the stool with blood. This results from the action of the dysentery bacilli on the walls of the intestines. Bleeding of dangerous proportions may result. This condition should not be regarded lightly. Particularly is this true among infants and small children.

TREATMENT

The patient must be put to bed and kept quiet. One of the first considerations is to keep the abdomen warm. This may be done by applying a warm binder of outing flannel of some soft woollen material. In addition, heat by way of the hot-water bottle or other improvised means may be helpful.

The bowels should first be cleared out by means of a mild purgative such as castor oil, or a saline material. This

should be followed by some preparation to allay the irritation. Kaolin or bismuth is among the best. One or two teaspoonfuls with a little hot water should be given each two hours to children or adults, less to small children, and to babies in proportion. Other available medications should be given only under the direction of a physician.

Diet is important in this disease. No coarse or harsh foods should be given. Confine the diet to mild cereals, such as sujee, oats, barley, well steamed rice, also thoroughly purced vegetables. Soft boiled or poached eggs are a good source of protein. Boiled milk served hot should be used freely. Mild fruits may be given only in limited amounts. Mild orange juice is not only helpful but indispensable, particularly if the disease lasts any length of time.

It will be found best to feed these patients small amounts at frequent intervals of perhaps three hours, rather than on the conventional meal schedule.

These same general principles apply also to the treatment of infants. Feeding should consist of boiled milk with gruels, barley porridge or barley water, soft boiled eggs, and other foods well pureed, according to the age of the child. Orange juice must not be neglected. With improvement of the patient there may be a gradual return to normal diet, though this should not be so rapid as to cause a recurrence of symptoms.

It must be remembered that the stools of dysentery patients are loaded with dangerous infection. They should, therefore, be effectively destroyed, not thrown into the canal or river.

As in the case of so many diseases, bacillary dysentery is much more easily avoided than cured. Its germs occur in food and drink. It may, therefore, be readily determined what steps will help avoid this infection.

AMOEBIIC DYSENTERY

Like several other diseases, the dysenteries, though not strictly epidemic in type, do show tendencies to break out in

epidemic form. The dysentery infections, both bacillary and amoebic, are present in most parts of India throughout the year. This is more particularly true of the latter, which is one of the commoner diseases being treated in India's hospitals in any and all seasons.

Dysentery appears in all degrees of virulence. Some cases show only mild symptoms, lasting over many years; others are acute and dangerous, running a stormy course.

A common source of infection is from fresh vegetables, more particularly the root vegetables. The germ is taken into the body as an inactive spore. When it begins to multiply, it rapidly begins its destructive work, more especially in the large bowel.

There will be varying degrees of diarrhea, with short periods during which it may appear to clear up. The patient usually feels dragged down, weak, lacking in pep, tired out. He may observe a pain in the lower abdomen, more often on the right side.

As the disease develops, the diarrhea is more pronounced and often contains a bit of blood.

TREATMENT

General care, treatment, and diet in these cases are much the same as for bacillary dysentery, but, in addition, this disease requires specific medication. Arsenic and emetine are both effective in the treatment of amoeba. As these drugs are both deadly poisons, they should be given only under competent medical direction. Because of the dangers involved, this disease must be treated only by competent physicians, and preferably in the hospital.

There are dangerous complications accompanying amoebic dysentery. One of the most to be feared is abscess of the liver. As this condition often proves to be fatal, it will be seen that under no circumstances should amoebic dysentery be neglected.



Be careful regarding the source of your drinking-water.

TYPHOID FEVER

UNDER the heading of typhoid fever we will consider both typhoid and the paratyphoid fevers.

Typhoid is a dangerous and common epidemic disease of India. It is estimated that in 1943 there were nearly 100,000 people who died of this malady in India. Though this disease is found in practically every country of the world, because of certain erroneous ideas in regard to its cause and treatment, it occasions a particularly high mortality rate in India.

Typhoid fever is caused by an organism known as *bacillus typhosus*. It comes to its victims through food and drink. Because of the general disregard for principles of sanitation among village people in this country, epidemics of the disease carried through drinking-water are of fre-

quent occurrence. There is a common belief among many people that the soft water of the tanks is preferable to the water of good wells. The danger in this idea is obvious when one remembers that these tanks are filled with rain-water which has washed over grounds upon which large amounts of fecal matter have been deposited. As the germs of typhoid fever are capable of living several months, it will be seen that this water from tanks cannot possibly be regarded as safe. If tank water is regarded as preferable for drinking purposes, it should by all means be boiled before being used.

Another very common source of typhoid fever is food, including milk. This may be due to the direct contamination by flies coming from latrines and other places of filth. Unprotected and open food shops in the bazaars are a very fruitful source of infection for typhoid fever germs. The great increase in the use of screening in connection with food stalls, bakeries, and markets, is an indication of the progress of education in matters of sanitation.

The onset of typhoid fever is usually fairly rapid. It is characterized by a gradually rising fever, running up to 104 to 106 degrees, according to the reaction of the particular patient. The onset of the disease usually follows the exposure anywhere from seven to twenty-one days, averaging, however, about fourteen.

Diarrhea is usually present from the first, though there may be an alternation with constipation. The patient feels decidedly ill, in fact out of proportion to the apparent symptoms.

As the disease increases in severity, there is an onset of mental confusion, which in fatal cases runs into coma. The patient complains of dryness of the mouth and great thirst. This thirst is due to the considerable dehydration resulting from the diarrhea.

Aside from the clinical danger arising from the toxins and poisons thrown off by the germs themselves, there is the

ever present danger of hemorrhage in, or of actual perforation of, the bowel. Perforation usually results in peritonitis and is, ordinarily, fatal.

FOOD DURING ATTACK

With this picture of typhoid fever before us, let us notice the rational treatment which may be employed in fighting the disease.

Unfortunately, there have arisen many wrong conceptions in regard to the care of typhoid fever victims. Many a patient is brought to hospital in practically a hopeless condition, not because of the fever, but because well-meaning friends and relatives have withheld from him the much needed food and water, without which he cannot maintain the fight. Whenever water is being drained from the system in considerable amounts, it must be replaced in some manner or other. It may be given in the form of glucose solution directly into the vein, but this is, of course, a hospital procedure.

If the patient tolerates fluids orally, it is only reasonable to administer them by mouth in small amounts but at frequent intervals. During the first few days of the disease the food intake should be limited to fluids. Milk, buttermilk curds, raw eggs, custards, and thin gruels may be given in small but frequent feedings. They will usually tolerate the food well if given at about two hour intervals. Mild orange juice should be given daily. This may be given an ounce at a time, several times during the day.

As the fever comes down to normal, the range of food may be extended. Very thoroughly cooked cereals including rice may be given; also vegetables which have been run through a fine colander or sieve. In this way the green, leafy vegetables, well cooked potatoes, sweet potatoes, tomatoes, bringals, squash, and other vegetables may be gradually worked into the convalescent diet. Remember, the typhoid patient must be given a good intake of food and drink.

THE FEVER

Some typhoid cases come along without an unduly high temperature. If the fever rises to over 103 degrees, however, it will be helpful to attempt to bring it down by whatever means may be at hand. A wet sheet pack is one of the most satisfactory means for this purpose. A sheet may be wrung from cool water and placed directly on the patient's body. The evaporation from this sheet will have a very cooling effect. Additional water may be sprinkled on if thought necessary, or the sheet may be wrung from the cool water occasionally, to keep up the desired evaporation. By this means the temperature can usually be brought down in a short time.

The temperature should not be permitted to persist at high levels because of its deleterious effect upon the system.

GENERAL SUGGESTIONS

The typhoid fever patient should be kept absolutely at rest. Frequently such a person is allowed to move about the house until he is so weak that he has not the strength to stand, going to bed only when he is too weak to do otherwise. Any person who has a high fever should be in bed and not permitted to be about. This is particularly true in a typhoid fever case.

If possible, the patient should be kept in a cool, shaded room where the general situation is as pleasant as can be made. Someone should be in constant attendance upon him, making him comfortable, and among other things, keeping him constantly supplied with fluids.

Patients suffering from this malady should not be worried with affairs about the household, but should be kept mentally at ease.

Such sufferers will be much more comfortable if their mouths are rinsed frequently with fresh, cool water.

WARNINGS

It must be borne in mind that all the excretions of the typhoid patient are infected with virulent germs of the disease. Fecal matter should be disposed of in such a manner that others cannot possibly become infected with it. Both bed linen and clothing worn by the patient should be boiled before being sent to the dhobi. Articles about the room used by the patient should be kept separate from those of the rest of the family in order to prevent direct transference of the disease.

These precautions are of great importance in insuring that the disease does not spread to others in the family or community.

SMALLPOX

IN RECENT times, smallpox has been responsible for well over fifty thousand deaths annually in India. By this it will be readily appreciated what a real and universal danger smallpox is. Knowing something of the prevalence and the manner of spread of the disease, the layman may take certain useful preventive measures.

Differing from the bacterial germs which we have noted previously, smallpox is caused by what is termed a filterable virus, thought to be a germ so small that it cannot be seen or identified by any means of magnification yet known to science.

The disease is spread by direct contact. Any person who has smallpox is a potential danger to all those with whom he has any association, the most virulent source of danger being the discharge from the pustules. This discharge contains the infective agent of the disease, and, when deposited on the skin, it may or may not acquire entrance to the body. Even rubbing the material against the unbroken skin may be sufficient to plant the germs under the superficial layers.

Infection may be picked up from persons who have been permitted to travel on buses, in trains, or to sit about in public places. Even after the pustules have dried, the flakes of superficial skin which peel off the old scars will, for a few days, be able to carry the infection. When it is remembered that smallpox is found in practically every part of India and at different times of the year, it will be seen how important it is to protect oneself against this very dangerous disease.

Smallpox breaks out approximately fourteen days following exposure. At first the patient has much the same feeling as one coming down with influenza. He may become very ill and be in a dangerous condition before the eruption appears to identify definitely just what the disease is. The eruption comes on about the third or fourth day of the disease.

At first appearing as red spots, the rash quickly changes

to pustules which increase in size and soon break, discharging the dangerous infectious pus. The patient is most ill about the time of the appearance of the rash. The critical stage continues for several days following eruption, when the condition shows evidence of turning for the better or for the worse.

If the turn is unfavourable, the patient survives but a short time. Should the patient hold his own against the disease for three or four days following the eruption, there is good reason to hope for his recovery. The crisis is usually passed in that time. Following a favourable turn at this stage, recovery is usually quite rapid. This is also a most dangerous stage as it is a time when the patient is able to get about and scatter the infection to others.

In any community where smallpox is known to be present, every illness which starts off with fever, aching, much prostration, and mild throat and lung complaints, should be thought of as smallpox until proven otherwise. This attitude will give a head start in the treatment of the disease. The smallpox patient who thinks he just has the "flu" will usually keep going long after he should have been in bed receiving special care. At the first sign of illness these people should be put to bed and treated as smallpox cases.

PREVENTION

For well over one hundred years vaccination against smallpox has been a common practice. In Western countries the universal application of this preventive measure has nearly exterminated the disease. In India, the ravages of the disease have been greatly limited by the increasing public consciousness of the value of vaccination.

Every child should certainly be vaccinated before the age of one year. Many parents are fearful of carrying out the procedure at this early age, however this fear is quite unfounded. There are practically no complications of any significance which arise from this life-saving measure.

TREATMENT

For the patient who is critically ill with malaria we have several specific drugs which give immediate results.

For the pneumonia patient we have the sulfonamide drugs and penicillin. For the smallpox case there is no such good fortune. The patient afflicted with this disease is dependent upon his own natural resistance, fortified with good general care and nursing. Remember there is no specific medication for these people. This does not, however, mean that nothing can be done for them. Good nursing is the most important part of their care.

Since there is no specific drug to be depended upon, we concentrate our efforts on those factors which will yield best results, namely, strengthening the natural body defences. When the disease is first suspected, put the patient to bed in comfortable surroundings apart from the rest of the household. See well that the bowels are kept clean. Any good laxative at hand may be used.

Give him all the liquids he will tolerate. Fruit juices, especially orange and lemon, should be given freely. The patient's nutrition should be kept up with a good, light diet. Do not starve him because he has fever.

Since much of the danger in smallpox arises from the secondary infection in the pustules in the skin, also in the mouth and breathing passages, the sulfonamides may be of great help. Sulfathiazole or sulfadiazine, three to eight tablets daily by mouth, may be given under the direction of a physician. The sulfonamides should be given only if the patient takes an abundance of water. He should have a large glass of water or fruit juice for each two tablets of sulfonamide.

The pustules may be best treated by applying dressings of sulfonamide ointment.

The patient should be kept quiet for a week or ten days after the drop of the temperature to normal. Out of consideration for public safety, he must not be permitted out in association with others for at least two weeks after the pustules have dried.



Man may contact more than a score of diseases from rats.

PLAGUE

PLAGUE is one of the most widely known of India's epidemic diseases. There is scarcely a country in the Orient, particularly in the cooler areas, where its ravages have not been felt. Nor has its dread presence been confined entirely to the Orient. History records several occasions on which it has been transported to Europe, resulting in enormous loss of life. Known as the "Black Death," it has at times swept away as high as one-third of the population of Europe.

In India, the menace of plague is at present but a fraction of what it was a century ago, when nothing was known of its cause, and before modern health department measures resulted in bringing the disease more largely under control. Whereas it formerly swept away hundreds of thousands in this country annually, the total loss of life is now but a few thousand each year.

Plague is caused by a micro-organism which lives in rodents, rats, gophers, squirrels, bandycoots, and other small

animals. This is the natural home of this germ. The disease kills these animals the same as it kills human beings.

When dead rats are found lying about the house or in alleys in plague areas, they should be regarded as an immediate danger-signal. Fleas live on these rats and suck blood from them. Upon the death of the rat they leave this host to find shelter and food on other rats or upon human beings. Living on this new host, the flea again requires food, bites his host, thereby injecting the germs into the live tissues from where they are carried by the blood stream throughout the body. Multiplying rapidly, these germs quickly produce the symptoms commonly known to characterize plague. The time elapsing from the bite of the flea until symptoms develop may be anywhere from two or three days to two weeks.

The onset of plague is characterized by generalized aching, fever which may ultimately run from 103 to 106 degrees, dizziness, and extreme weakness accompanied by an expression of great anxiety. As the disease advances, there is the onset of delirium followed by ultimate coma which precedes death. Most cases show swelling or buboes in the groin or axilla. This may be expected anywhere up to about the fifth day after exposure to the disease.

Sixty to ninety per cent of untreated plague victims will not recover, the rate depending somewhat upon the economic conditions prevailing in the community involved. Sections with low standards of living and bad sanitary conditions are likely to have a higher mortality.

PREVENTION OF PLAGUE

This disease is more likely to be prevalent in the early parts of the cool season and early winter months. Precautions should, therefore, be the greater during this time of the year.

Houses which are kept strictly cleared of rats are less likely to be affected than those where rats are allowed free run. Rats should, therefore, be destroyed wherever found, whether the disease is known to be present or not. The maintenance of good sanitary conditions about the home will be helpful in holding down the number of rats in the vicinity. Rats thrive on filth.

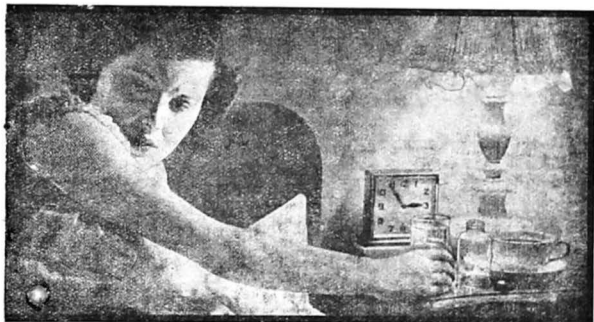
At the first report of the presence of bubonic plague, every person in the community, young or old, should be inoculated with the appropriate vaccine. Such vaccine gives almost complete protection for one to one and a half years.

TREATMENT OF PLAGUE

Treatment of this disease must be entrusted fully to the hands of skilled physicians who will carry out the procedures known likely to be of use.

All cases of plague should be carefully segregated. The instructions of the physician in regard to maintenance of this segregation should be carefully observed.

It should be emphasized that those individuals living in endemic areas should, upon the report of the presence of plague cases in the vicinity or upon seeing dead rats about the premises, at once proceed to have all members of the family inoculated against the disease. Preventive measures against plague are very effective, whereas treatment is not productive of much result.



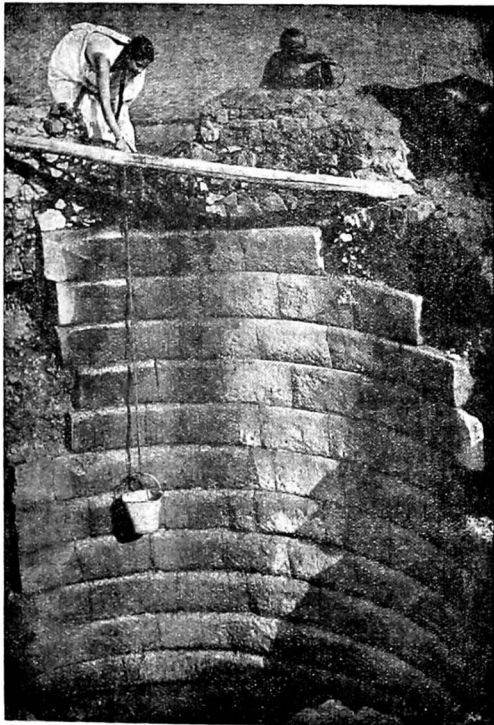
In cholera the patient needs plenty of liquid.

CHOLERA

THIS malady is somewhat related to typhoid only in that it is a bowel disease, carried and spread in more or less the same manner. It is taken in through the mouth in food or drink and develops very rapidly.

Symptoms begin from a few hours to three or four days following exposure. The early mild diarrhea rapidly turns to profuse, watery stools of a rice-watery appearance, with some cramping not only in the abdomen but also in the legs and other parts of the body. Later, vomiting of a material somewhat similar to the stools becomes a part of the picture. Because of these two processes the body is rapidly dehydrated.

Exhaustion of the patient is very rapid, the most noticeable evidence of the advancement of the disease being the shrunken, wrinkled appearance of the skin over all the body. This is due to the rapid loss of fluids. Death may ensue



Watch well the source of your drinking supply to avoid cholera
and some other diseases.

within a matter of hours, though as a usual thing the disease extends into a few days.

TREATMENT

Treatment of cholera centres more largely in stopping the loss of fluids and in replacing, as much as possible, the fluids already lost. Under proper hospital conditions intravenous fluids are very helpful, but in the absence of hospital care every effort should be made to get the patient to take whatever liquids may be tolerated.

There are a number of medications used with more or less effectiveness in dealing with this disease. A prescription made up with certain essential oils is usually available at most chemist shops and may be used according to the instructions given to the purchaser.

One teaspoon kaolin in one ounce of water, sipped in small amounts each few minutes, may aid in the control of the vomiting. In other cases, bismuth subcarbonate taken in hot water, one teaspoonful in one-third glass of water, may be helpful in controlling the vomiting. Occasionally plain carbonated water is better tolerated than fresh water.

In addition to the above, it is essential that the patient be kept as warm and comfortable as possible.

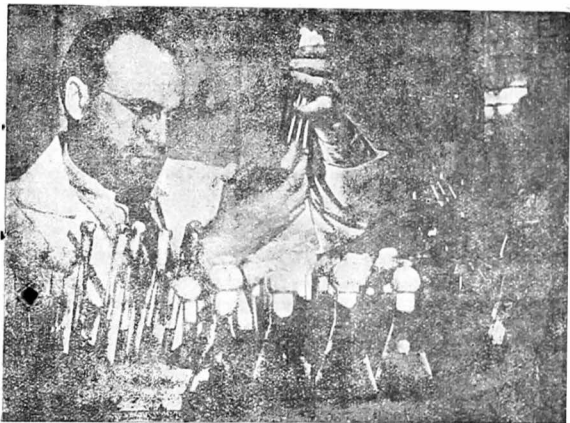
As soon as the acute stage of the disease is past, there should be a consistent attempt to get the patient again on to a mild, light food programme in order to build up strength. For this purpose, egg-nog, custards, and later, pureed vegetables, mild fruits, and cereals may be given.

Once the disease is well under control, recovery is likely to be fairly rapid and uneventful. As in the cases of other diseases, it should be mentioned that cholera is much better prevented than cured.

PRECAUTIONS

Cholera is more likely to be prevalent following the onset of the rains. At that time of the year special precautions should be taken in regard to the safety of one's drinking water. Anyone seriously interested in enjoying long life will refrain from drinking water from tanks and ordinary step wells. A properly curbed, deep well is the safest source of drinking-water under village conditions. In the case of the step well, people carry the contamination, loaded with cholera, typhoid, and other germs, directly to the edge of the water. There this contamination is washed into the well, dipped up into the pots, and taken home for the consumption of the family. The intelligent head of a family will not permit such a dangerous practice in his home.

In addition to the precautions mentioned above, there is an additional precaution which may be acquired by prophylactic inoculation available at most Government health centres. This inoculation gives an immunity estimated at from three to six months, and is an excellent precaution whenever it is known that the disease is about. Upon the first intimation that cholera is in the community, it is best to have one's entire family inoculated without delay.



Scientists are working hard to keep you in good health.

GREAT KILLERS OF INDIA

WE HEAR much about leprosy as the great scourge of tropical countries and of the hundreds of thousands of victims suffering in its cruel and relentless grip. We see much agitation for the extension of plans for the treatment of this condition, and from time to time read reports of progress in research work done on this disease.

Though public health reports of causes of death in India are generally recognized to be incomplete and often based on inaccurate diagnosis, yet the information contained in these reports gives a fairly accurate idea of the country's general health situation. Gleaned from health reports from the province of Bengal, the following figures will be of interest, and may be fairly representative of India as a whole:

For every death due to leprosy there are two by snake bite, four by measles, four by smallpox, fourteen by cholera, sixteen by dysentery, and two hundred and forty by malaria. The nearest available estimates for tuberculosis would place the deaths from this cause at about one hundred for each leprosy death. These approximate figures are not intended to minimize the danger of leprosy but to emphasize the role of malaria, tuberculosis, and other "fever" diseases in the health of India.

MALARIA

THERE is scarcely a community of tropical India where malaria does not exist in endemic form. Beyond this ever present endemic form of the disease, there is the occasional breaking forth of an epidemic of an especially dangerous type of malaria in localities where it sweeps off large numbers in its tragic path.

Such was the case in the recent epidemic in Ceylon, also Bengal. In the latter province there were 388,000 deaths in 1941 from malaria, several times as many as from any other one cause. We may not, therefore, regard malaria as merely a disease of discomfort and inconvenience. It is our No. 1 public enemy.

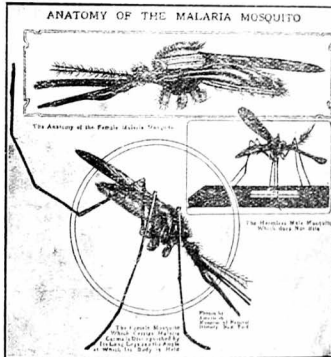
Malaria appears in several forms. The more common ones in India are, (1) the benign *tertian*, which is characterized by fever and chills on alternate days; (2) *quartan*, in which the chill occurs each third day; and (3) the malignant *subtertian*, in which the periodicity of fever and chills is variable, ranging from forty-eight hours on up, or it may be a constant unbroken high temperature with or without chills. Among the various malarial types it is this last, the malignant *subtertian*, that must bear the burden of guilt for the great majority of malarial deaths.

CAUSES OF MALARIA

Minute organisms, so small that scores of them could be contained in a microscopic red blood corpuscle, are the

evil germs which we call *plasmodium vivax*, *plasmodium malariae*, and *plasmodium falciparum*—all of them killers of many lakhs of India's population annually.

The disease is carried from person to person by a mosquito known as the *anopheles*. Not all mosquitoes carry malaria.



PREVENTION

If there were no mosquitoes there would be no spread of malaria, nor could any new cases occur. This gives us the lead for the prevention. There is first the possibility of preventing existing mosquitoes from gaining access to us. This may be partially accomplished by sleeping under mosquito-nets and by destroying the mosquitoes, as far as possible, in the daytime.

In a dry section of the country mosquitoes are bred in containers of water carelessly left around, pools beneath leak-



The fumes will aid in keeping mosquitoes at a distance, but this is not sufficient.

ing water-taps, drains from bathrooms or kitchen sinks, or in water-containers placed under the legs of meat-safes to keep out ants. All of these unnecessary water reservoirs should be eliminated. Small pools around leaky faucets should be filled with sand or soil. Those pools which cannot be eliminated should be covered with oil, one pint per thousand square feet. The unavoidable water-holders, such as

the dishes under the legs of the meat-safe, should be covered with oil. Satisfactory oils for this purpose are kerosene, petroleum oils, or certain commercially prepared oils available in large centres.

Houses should be screened when possible. Mosquito-nets should be used regularly in all places where malaria is of special danger. Every effort should be put forth to destroy mosquitoes which may have gained entrance to the house.

TREATMENT

Malaria is fortunately one of those diseases for which we have a specific remedy.

When the infamous Spanish expeditions under men like Pizarro invaded the interior of South America to plunder the historic Inca people, they paid a great price in life from the ravages of malaria. Little as we feel to sympathize with these adventurers, we are interested, scientifically, in one fact which they learned from the Incas. These inhabitants of the highlands of Peru were accustomed to chewing the bark of a certain tree by which they readily controlled their attacks of fever. Named after the wife of the seventh-century Spanish Viceroy of Peru, the Countess of Cinchona, cinchona bark was sent to Europe where a process was ultimately developed for the extraction of quinine, now so universally used.

At the first onset of fever, quinine therapy should be instituted. Five to ten grains, taken three times daily for seven days, followed by five grains morning and evening for an additional seven days, should clear up most cases of malaria. The exact dosage depends on the size of the person. A very slight individual of less than one hundred pounds should probably take only five grains three times daily, whereas a robust man of a hundred and seventy-five pounds will do well to take ten grains three times daily.

Atabrine, known also by various trade names, is a chemical substance with a very satisfactory anti-malarial effect. Prejudice against this drug, because of fear of unfavourable reactions, is largely unfounded. The taking of one tablet (gr. $1\frac{1}{2}$) three times daily for five days, followed by one tablet daily for five days, is usually adequate treatment.

There are certain cases of malaria, the dangerous and rapidly progressing malignant form of the disease, which often result in severe cerebral damage. These must be treated by more drastic measures. Ten grains of quinine hydrochloride, administered by injection by a competent physician, will often accomplish immediately what the conservative medication fails to do.

Aside from the above specific medications, the treatment of the malarial patient is merely a matter of carrying out those measures necessary to his comfort.



The patient should be placed in an airy room.

TUBERCULOSIS

A LARGE percentage of deaths reported in public health records as due to "fever" could admittedly be shown by X ray of the chest to be due to tuberculosis.

Even the diagnosed and reported cases of tuberculosis are sufficiently numerous to justify alarm over the prevalence of the disease. The clinical physician, however, realizes that one of the outstanding hazards to health in India to-day is tuberculosis. Whole families are being swept away by the disease, and altogether too little is being done to educate the public to its dangers.

A fact not generally understood in this regard is that, rather than being a disease of the poorer classes, it is found

more frequently among the middle and upper classes. The poor of India get out into the sunshine in the process of earning a livelihood.

The mental attitude which holds women indoors, which frowns on their participating in wholesome, physical activity and recreation, which takes the men of the home out in the evening for a walk or ride in the fresh air, leaving the delicate and anemic women to sit at home, is to a great extent responsible for this condition. One of the greatest health tragedies of India is the practice of purdah in the lower and middle classes. Among the rich, these women have the run of beautiful private grounds and gardens which allow of a reasonable outdoor life. However, for those unable to afford such comforts, the practice results in depriving them of vital sunshine, fresh air, and exercise. The consequence is a prolific harvest of tuberculosis victims among these unfortunates. Education alone will mitigate this condition.

CAUSE OF TUBERCULOSIS AND PREVENTIVE MEASURES

The disease is caused by a small rod-like bacillus so small that, laid side by side, it would require scores of them to cover an area as wide as a hair. It is transmitted from person to person in droplets of moisture coughed out by those afflicted. These droplets and the heavy expectoration of the patient, falling to the ground, dry and become part of the dust. Breathed into the lungs these dust-borne germs start to grow, and a new case of tuberculosis is initiated. Healthy, vigorous lungs are able to surround these germs with a wall of protection and ultimately destroy them. The anemic shut-ins have no such good fortune.

From the foregoing it will be seen that prevention of tuberculosis falls into two categories: keeping the body in a condition to ward off the infection, and preventing the spread of the germs.

Every cough which persists for over ten days or two weeks should be regarded with suspicion, and a careful ex-

amination made by a qualified doctor. Remember that everyone who carries a stethoscope is not necessarily a properly trained physician. Any quack practitioner can recognize a case of tuberculosis which is beyond hope, but skill and medical intelligence are required to detect the early case which may be treated successfully.



❖

He had tuberculosis of the spine; and the usual burning was resorted to for a remedy. No doubt the "cure" was so painful that it made him forget the disease for a time; but it only added to his trouble.

❖

TREATMENT

When it is first learned that a person has tuberculosis, he should be separated from the rest of the family. An open, airy room which can be closed off from the rest of the house,

an open veranda where the sun shines a portion of the day, or best of all, a small open house entirely apart from the home should be given over to this patient. Come hot season or cool season, his quarters must be wide open. When it is so cold that snow covers the ground, these quarters must still be kept open.

Allow no children to come into the sick-room. The patient must be kept absolutely at rest. His circumstances must be pleasant and undisturbed by family or household cares or noises.

One of the most important factors in recovery is that of food. Tuberculosis patients ordinarily have poor appetites. Three or four brewers' yeast tablets, three times daily, will be helpful. There are scarcely any of the more wholesome digestible foods which should be denied these sufferers. Forbidden should be hot chillies, fried or greasy foods, heavy meats and rich pastries. Those to be emphasized are: milk at least one quart daily, taken in any form; fruit, especially orange and other citrus fruits. All seasonal fruits are good if tolerated by the patient. Good cereals, custards, creamed vegetables, dahl, rice, wholewheat bread and *chapattis*, broths, and in fact practically all the customary foods should not be withheld.

To fortify the diet there should be added a good intake of vitamin as obtained in cod-liver oil or shark-liver oil. There are also good standard malt vitamin preparations which should be given two teaspoonfuls three times daily. Any additional medication should be under the direction of a physician.

In early cases, the above care will ordinarily restore the patient to health in from six months to a year. It should be emphasized that the feeling of the patient is not an indication of his condition. Only when his chest is pronounced clear on evidence of an X-ray picture should he be regarded as having recovered.