BETTER HEALTH

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CONTENTS

1. INTRODUCTION

A major enemy of rural people is DISEASE. It saps the vitality and must be fought. The battle has just begun.

The enemy we have to fight is sometimes a germ in the water we drink or a flea from a rat. Often it is the fly or the mosquito that buzzes in the dark. In other words, the enemy is all around us.

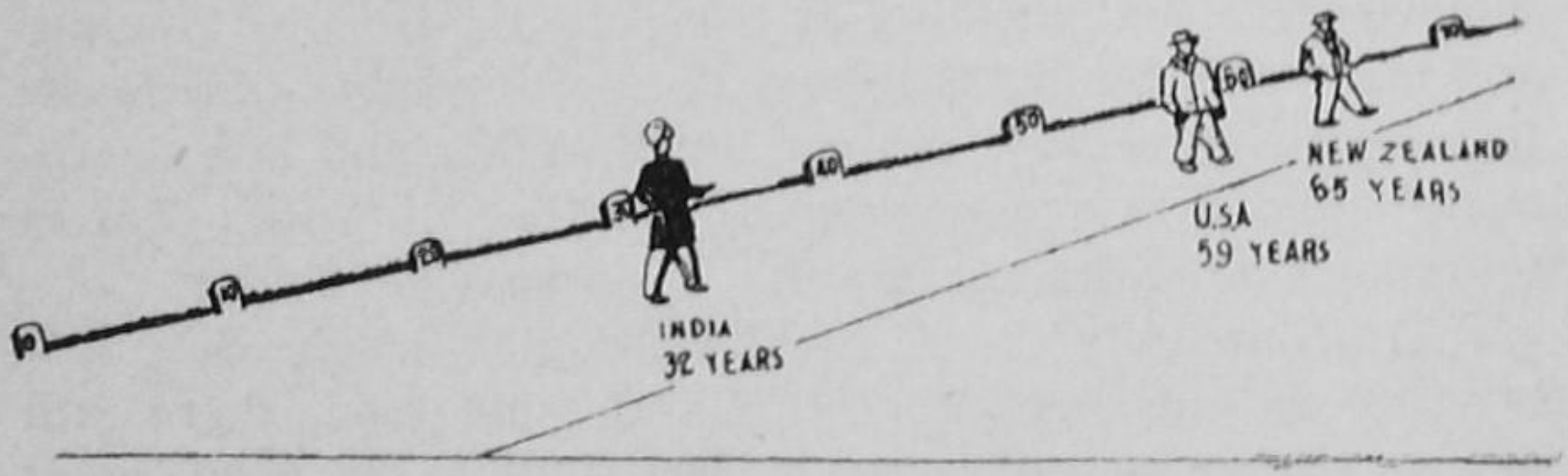
The battle is not fought only in hospitals and national laboratories. It must be waged in thousands of villages where the enemy takes heavy toll. Now it will have to be fought in the schools and in Parliament. When a well is dug or a tank is sunk with proper care, or when a malaria-infested area is sprayed with D.D.T., the war is on. When we drink polluted water from our sacred rivers or tanks where buffaloes wallow, the enemy is in our midst.

In the long drawn out struggle before us, we need the people's co-operation and participation. No nation can be healthy unless the people want to be healthy. In many cases it is man who is the main culprit. Before he gives his full co-operation he must know the nature of his enemy—disease. When he has done his bit, it will be the duty of the public health authorities who have to tackle other fronts like the supply of safe water, hygienic disposal of human waste, control of malaria and other diseases, welfare centres for mothers and children, good cheap houses and the education of the people in healthy living. These are the main fronts of our battle against disease.

2. OUR HEALTH

'Health is wealth' says an old proverb. What do we mean when we say a man is healthy? In the first place health does not mean the absence of illness or disease, but it means much more than that. It means a state of complete physical, mental and social well-being. Now in every community there are always three classes of people. Some are weak and victims of disease; others, who while they show no signs of illness, are so weak that their mental and physical growth is hampered. The third group is healthy.

What is the state of our people's health? The facts are revealing. Every year nearly ten lakhs people in India die of malaria and more than five lakhs of tuberculosis. Cholera accounts for more than one lakh deaths and dysentery and diarrhoea take a yearly toll of more than 2½ lakhs. One striking feature of this gloomy picture is that for every death there are many more people who are too weak to resist other illnesses.



Let us look at this picture from a different angle. In Canada only 10 people die for every thousand born, compared with 22 in India. Again, low health is reflected in the average span of life, which is 32 years in India, 65 in New Zealand and 59 in the U.S.A. Women and children are the worst sufferers. Children in their first year and women during pregnancy are exposed to ill-health. It is believed that every year more than two lakh women die in childbirth. And for every hundred persons who die, more than 50 are infants under twelve months. In England the number is 10.

Why do so many women and children die every year? In the first place, there are not enough doctors, midwives and dispensaries in the villages. Food is another factor. If people eat well, most of the illnesses disappear.

Why is the health of our people so poor? Before we go into details let us see what are the conditions which affect public health. In the first place, the surroundings in which people live must be sanitary. For example, one cannot remain healthy in a village full of mosquitoes. This is why one finds that after every monsoon our villagers are attacked by malaria. Unless your house and the street where you live and the entire area around you are clean it is difficult to be free from illness.

Food is the foundation of health. Good food—and by that is meant plenty of green vegetables, meat, fish, eggs, milk and fruit—are vital for health. Unfortunately, in our country many do not have a square meal. And the food of many more millions is poor or ill-balanced. Diet and disease are directly related to each other. Lack of vitamins and mineral salts in food gives rise to a number of diseases like beri-beri, scurvy, rickets and anaemia and is a contributory factor to a wide variety of other illnesses. Three-fourths of our ailments are due to lack of good food.

The human body is such a complex mechanism that in spite of clean surroundings and good food, there will nearly always be some trouble. Unless there are good repair shops—hospitals and dispensaries—the general health of the people will suffer.

Many of our illnesses may be due to any one or all of these three factors. India lives in villages, where the surroundings are not very clean. And the kind of food we eat reduces vitality and resistance. Moreover, doctors like to stay in the cities. A villager has at times to go miles and spend the best part of the day in order to see a good doctor, and even if there is one he often has no money for the fee.

India is a democracy where one cannot make a man well against his will! But he can certainly be taught and

persuaded to do the right thing if he wants to be well. Health education, therefore, must form an important part of education in schools. The problem becomes more complicated if we remember that, for every hundred people, eighty do not know how to read or write.

We have seen why our people are poor in health. We do not have enough good food to eat, we have not enough doctors and dispensaries and most of our people are illiterate and indifferent to ordinary rules of healthy living.

3. KNOW THE ENEMY

We started with the question "What is health", and now have some idea as to why so many people die of malaria, cholera and other diseases. Fighting diseases has been a long struggle for the experts. And if we know something about the causes of such common diseases, practical measures will help to check them.

This time we ask another question: "What is disease?" When our bodies cannot work properly we are ill. Or, put another way, illness means deviation from the normal state of health, enough to cause inconvenience.

What are the causes of disease? First, there are hereditary factors. We normally inherit the physical and mental traits of our parents and it is impossible to change them. For example, madness is hereditary in the sense that the child of a lunatic may have a similar tendency.

Once the child is born, it is subject to a number of outside influences. First the air, then the food it takes, also the water it drinks. Food is an important factor which can make or mar a person for life. Again, there is the danger of physical violence, blows, cuts or fractures, which make work for the doctors.

Then, we are surrounded by a multitude of invisible dangers—minute organisms which find homes in our bodies. Sometimes they live peacefully, but when the host is weak they multiply and produce disease, and if left unchecked they may bring their host to an untimely end.

These minute organisms are of three kinds—viruses, bacteria and protozoa. Viruses cannot be seen with the naked eye. Their exact nature is not known. They are the immediate cause of infectious diseases like measles, chicken-pox, smallpox and sometimes paralysis. An attack of one of these diseases gives permanent immunity against subsequent attacks. But in the case of the common cold and 'flu such protection lasts only three months.

Bacteria are minute plants and can be seen only through a microscope. Many of these bacteria live without harm on the skin and in the mouth. But if the body is weak they become active and attack the lungs through the nose or throat.

They are known by their shape. Some are circular and are called cocci and when in a bunch are known as staphylococci. They produce tonsillitis, scarlet fever and fever following child-birth. They are killed inside the body by the sulphonomide group of drugs. Another group, which is known as bacilli, is the cause of diseases such as typhoid, tuberculosis, diphtheria, dysentery, tetanus and leprosy.

The last group of these minute organisms is known as protozoa. They are larger than bacteria but are not visible to the naked eye. Most of them are common in tropical countries like India. Chemical remedies against these germs were discovered first, the earliest being quinine against malaria.

Besides these, there are animal parasites like hook-worm, beef-worm and pack-worm, as well as certain insect-carriers of disease, of which flies and lice are the best known examples.

How do these germs get into the human body? The most common way is by droplet spray. When one sneezes or

speaks, invisible droplets carrying these germs shoot out of the mouth to a distance of about twenty feet.

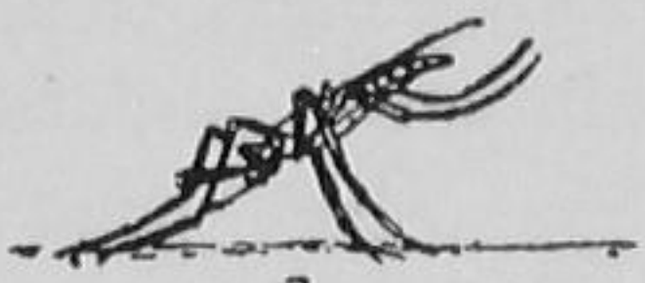
Again, there are a number of diseases in which the germs multiply in the bowels and pass out in the stool. From there they have an adventurous journey. Often they travel by water to distant towns or are carried by men. Flies also help them. Droplets, flies, milk and water—these are the carriers of such diseases. Cholera, typhoid and guinea-worm are important water-borne diseases. Milk is a special danger, and milk-borne diseases are very severe.

1

Rat flea carrier of plague

2

The hookworm



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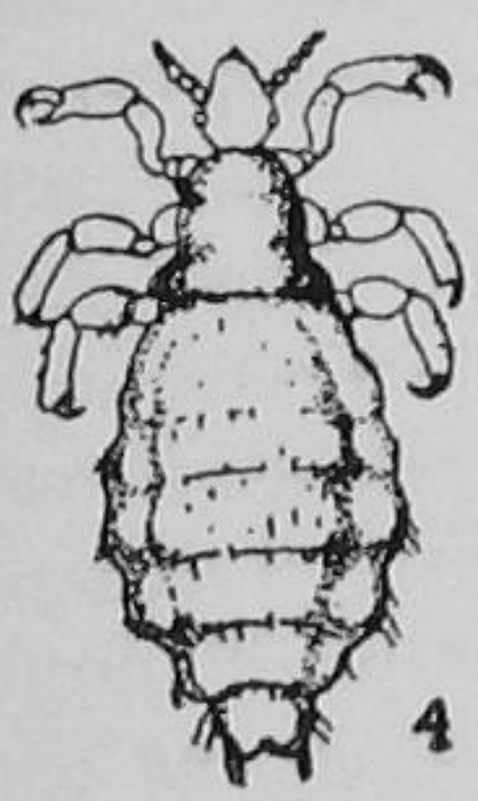
The malaria-carrying mosquito



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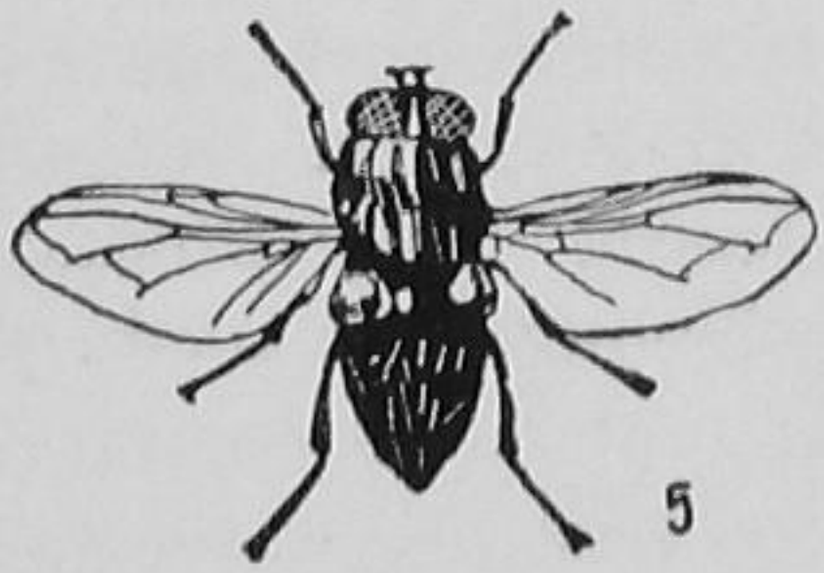
The body louse: carrier of typhus



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The house fly: carrier of typhoid and infantile diarrhoea

Rats carry plague germs. A rat epidemic precedes a human epidemic. Wipe out the plague rats and you have no plague. Insects like flies, mosquitoes and lice are important carriers of certain common diseases like malaria, dengue, filariasis, typhoid, relapsing fever, kala-azar and oriental sore. The house fly feeds on human waste and other filth and then contaminates food simply by settling on it. In other cases, the germs of the disease multiply in the insect, a typical example being the anopheles mosquito, which carries the malaria parasite from man to man.

There is yet another way by which diseases are spread

—by touch. Leprosy is mildly contagious and smallpox in its acute form is contagious, too. This means that they pass from one person to another.

What is meant by infectious diseases? Clearly, all diseases caused by germs are infectious in the sense that they pass from person to person. Ordinarily it means diseases caused by exposure, unless the individual is immune through a previous attack or has taken enough precautions. In the spread of such diseases man is the chief culprit. Tuberculosis and pneumonia are mildly contagious. On the other hand, measles, smallpox, whooping cough, diphtheria, influenza and the common cold are infectious.

This brings us to the battle of man against disease. Man fights infection partly by good health and partly by a specific defence against it. Suppose diphtheria germs enter our throats and pour poison into our blood; the tissues react and often form an antidote or anti-toxin against it, and the fight is over and the person is immune to future attack. Such protection or immunity may also follow an attack of typhoid or smallpox. Generally, this protection is given artificially by doctors. The story of artificial protection is the saga of medical science. It began with vaccination; then followed typhoid inoculation and diphtheria immunisation. Another interesting development has been the use of anti-toxins in treating diseases. The anti-toxin is produced by inoculating a horse with the disease. When defence bodies develop in its bloodstream the blood is drawn off and is ready for injection into human patients.

Finally, we come to two groups of diseases of middle age. The heart contracts 80 times a minute each day of our lives. Even the finest man-made machine cannot stand up to this for 60 years without an overhaul. The cause of heart-trouble is still unknown. With plenty of research, progress is slow and without decisive results. Cancer still remains the unconquerable disease of our times. But like Everest, it too will be conquered.

4. INSECT CARRIERS

Malaria

Malaria is enemy number one of the people in the villages. Every year one million people die of this disease and many millions more are left so weak that they fall victim to other diseases. Occasionally severe epidemics occur over wide areas, thus disorganising life and work in the community.

Malaria is caused by a parasite injected into the blood by an infected female anopheles mosquito. Once acquired, malaria causes high fever, which leaves the patient very weak. After a few attacks the spleen is enlarged and the patient becomes anaemic and weak.

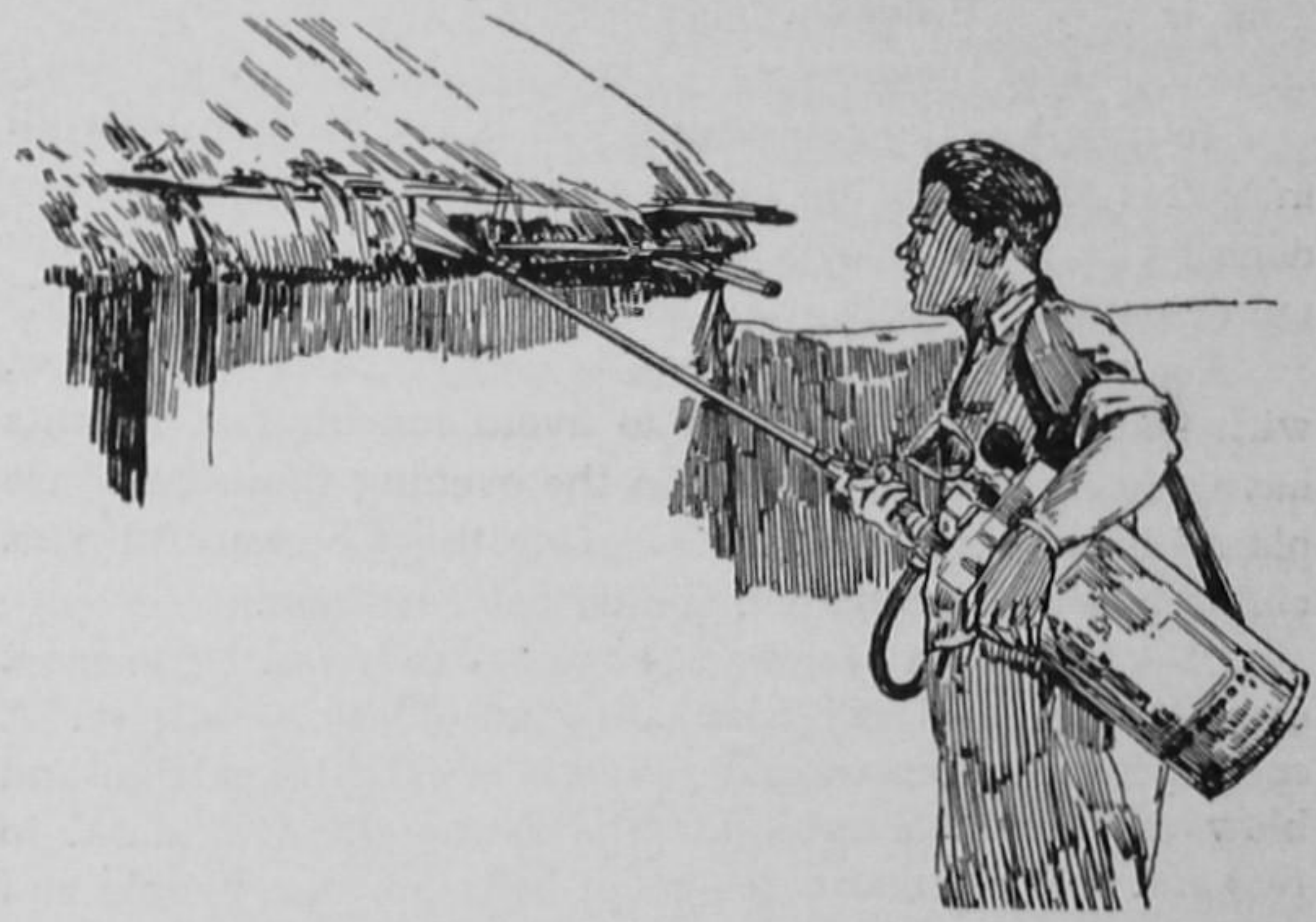
The life history of the malarial parasite is interesting. The female anopheles mosquito, while sucking the blood of the malaria victim is infected by these parasites, which develop and multiply in the mosquito. It may be noted that these parasites do not affect the mosquito. In turn they are injected into other human beings by the bite of this mosquito. In the blood the parasites go through various stages of development and cause fever, and they multiply with each attack of fever. Thus, there are two vicious cycles going on in a malaria patient. One, when the parasites causing the fever multiply; the other producing an embryo which infects the mosquito, which carries the disease to other victims.

Mosquitoes lay eggs on water. These eggs develop into larvae, larvae into pupae and from them come the adult mosquitoes. After many years of experience, it is now accepted that the best attack against malaria is to kill the larvae at their breeding-grounds.

The best method of malaria control is to do away with mosquitoes before they become infected. This is being done all over India by spraying five per cent D.D.T. suspension on the inside and outside of the houses where malaria is a problem. Nearly two hundred million people in rural

areas need such protection. Within a few years malaria is expected to be controlled completely.

Another way of controlling malaria is to do away with the breeding-places. Small pools, streams, wells and tanks are the favourite breeding-grounds of mosquitoes. The easiest way to kill larvae is to lay a film of crude oil and kerosene on the water. It is not, however, always economical to use kerosene on a large scale.



The next best method is to use residual insecticides to kill adult mosquitoes. Paris green in small quantities (one per cent paris green with 90 per cent chalk or dust) spreads easily. For wells it should be applied late in the evening. By morning all the larvae will have been killed.

Personal protection against malaria is of small value compared with malaria control measures on a large scale, but should not be neglected. Mosquito-nets are essential for comfort and protection.

For ordinary protection, quinine is the best remedy against malaria. But quinine is not generally used as a preventive drug in India. A dose of six grains once a week will kill the malaria parasites in the body. Above all,

people should be told the causes of malaria in order to enlist their co-operation.

Plague

Plague is essentially a disease of rats. That is why it is often said: no rats no plague. These rats are carriers of rat fleas. Fleas leave dead plague-rats and infect other rats. That is why one finds a large number of dead rats before an outbreak of plague.

To attack plague successfully it is essential to take all measures to reduce the number of rats and fleas. This is done by trapping and poisoning rats. While in the towns municipalities provide traps, in the villages there are few.

For baiting, the best poison is barium carbonate mixed with flour, care being taken to avoid touching it, as rats have a keen sense of smell. In the evening these baits are placed in corners or rat-holes. One must be careful that children and domestic animals do not eat them.

The next form of action is against rat fleas. The most common chemical for fumigating rat-holes is calcide. A special fumigator is available which grinds the calcide and blows it through a tube into the rat-holes. It is fatal to rats and fleas. Great care should be taken that people and animals are excluded from the house until fumigation is complete and all rat-holes properly sealed.

In case of an epidemic, prompt action is called for. People should be warned to give immediate notification about rat falls or plague cases. On receipt of a report, the house occupied by the patient and all the houses adjoining it should be thoroughly disinfected. All fleas in clothes, bed linen and furniture must be destroyed by exposure to the sun for the whole day.

Secondly, the surroundings should be baited and the rat-holes fumigated again. At this time every one in the village should have an anti-plague inoculation.

A difficult but essential task is to prevent the move-

ment of people from the infected areas to other villages or towns. A thorough check by anti-plague squads will reduce the spread of plague to other villages.

Elephantiasis (Filariasis)

Elephantiasis is quite common in many parts of India. This disease is caused by small worms known as filarae, conveyed by mosquitoes. It leads to a permanent swelling of the legs and certain other parts of the body. Besides, it causes frequent attacks of fever and inflammation of the lymphatic system. An attack of filariasis is not fatal,, but it causes a lot of suffering which can be prevented.

The best method of fighting elephantiasis is more or less the same as against malaria, i.e., an attack on mosquitoes. Culex mosquitoes cause this disease. Anti-malarial measures should, therefore, be aimed at killing culex as well as anopheles mosquitoes. The disease often persists in some regions while neighbouring villages remain free. A careful survey of the entire area will avoid duplication of effort and resources.

5. WATER-BORNE DISEASES

Cholera

Cholera epidemics often sweep through India in the hot weather. The disease is caused by a microbe which breeds freely in well water. These germs also occur in rivers, canals and village ponds. One contracts the disease only by swallowing water or food contaminated with cholera germs. Flies help to spread the infection.

Cholera is an acute infectious disease. Its early symptoms

are violent vomiting and diarrhoea. These discharges are highly infectious and, therefore, attendants have to take very great care lest they should also fall victim to cholera.

For personal protection it is necessary to boil drinking water. When pure water is not available—and that is common in many villages—water should always be boiled because it carries germs not only of cholera but also of typhoid, dysentery and other diseases.

When a village is infected with cholera, the co-operation of all the authorities and of the people of the village is of the utmost importance. Information of the first case of cholera should be sent to the health authorities or to the nearest police-station. The health officer should immediately visit the spot and disinfect all the wells with permanganate of potash the same day.

The next duty of the health officer is to inoculate all the people of the infected village and disinfect drinking water wells. This is a necessary safeguard where co-operation from the people will help a good deal to control the epidemic. The householder should be instructed to boil water and milk before drinking and to keep his utensils clean. The discharges of the patient should be disinfected with quicklime and should be buried away from the house. If the above methods are followed, a cholera epidemic can be easily controlled.

Typhoid

Typhoid is caused by a microbe that breeds in the human body, and is present in polluted water and stools. A good many patients who recover from typhoid are still carriers of this disease. Infection is also conveyed by contaminated water, milk and unwashed vegetables and fruit.

When a case of typhoid is being treated, it is essential that the attendants should be inoculated and take precau-

tions to protect themselves. Bed linen, vessels and everything touched by the patient must be disinfected and all discharges burnt or specially treated under medical advice.

For personal protection inoculation with T.A.B. vaccine is essential. With reasonable precautions and steady progress in general sanitation the number of cases will steadily decline. Yet the danger of healthy carriers is always present, and hence the necessity of such inoculations. The incidence of this disease in a community can only be reduced by ensuring a pure water supply, by healthy surroundings and by checking carriers.

Guinea Worm

Guinea worm is a very common disease in villages where there are step-wells. It causes much suffering and keeps the patient weak for months. It is caused by the female guinea worm, two or three feet long and very thin, which lives beneath the skin. A blister forms usually on the leg of the patient, and the worm ejects eggs in thousands. If a person in this state enters water or a step-well, the eggs are ejected into the water, where they are swallowed by cyclopes or water spiders. If the same water is swallowed by human beings, the cyclopes are digested in the stomach and the guinea worm is set free, from where it starts on a long journey, lasting about a year. Finally, the female guinea worm breaks through the skin and ejects larvae and thus the cycle is complete.

Guinea worm can be prevented by converting step-wells into draw-wells. For personal protection, water should be boiled before drinking. Quicklime or slakelime also kills these water spiders. To prevent all water-borne diseases, it is essential that wells should be constructed in a sanitary way. Education and propaganda about the causes of such diseases will help in securing the people's co-operation.

6. GENERAL INFECTIONS

Smallpox

Smallpox is one of the three major epidemic diseases of India. Every year thousands of people, mostly children, die of it. One of the serious results of smallpox is that those who recover from it may lose their sight partially or wholly. This is particularly disastrous for children with the prospect of a long life before them.

The virus of smallpox cannot be seen even through a microscope. Man is the only reservoir of this infection. Mild cases occur in those who have been protected partially by vaccination. Unfortunately, owing to superstition and illiteracy, there is a firm belief that smallpox is a punishment for sin and a visitation by an offended goddess.

As soon as there is a case of smallpox, the health authorities should be notified immediately. The patient should be isolated. All his utensils and linen, etc., must be kept separate and disinfected by boiling. All contacts not already vaccinated should be vaccinated immediately.

While general measures to improve public health may help, vaccination is the most certain method of preventing smallpox. Every new-born child should be vaccinated before it reaches the age of 6 months and re-vaccinated after 7 years. In case of an epidemic, it is better to be vaccinated .again. The health authorities give free vaccination. In every district there are vaccinators, and full advantage should be taken of them.

Tuberculosis

Tuberculosis is one of the most important health problems of India. Every year 5 lakhs of people die of it, and

for every death there must be at least five cases of acute unrecorded tuberculosis. Children are particularly susceptible to this disease.

Tuberculosis is a contagious disease characterised by the gradual onset of a low temperature, loss of weight, night sweats, coughing and a feeling of tiredness. It is common among people living in over-crowded, badly ventilated houses and who have poor resistance. It is primarily an urban disease.

The disease is caused by tuberculosis bacilli found in the sputum of the patient. Infection takes place through personal contact.

Early diagnosis and isolation of the patient are the first steps. The patient's utensils and linen should be thoroughly disinfected. He should be given a spittoon with a 5 per cent solution of carbolic acid, which kills T.B. germs. Where carbolic acid is not available, the sputum should be boiled after adding some water. Windows and doors must be kept open day and night.

All children or young adults up to the age of 20 should be tested with B.C.G. and those found susceptible should be given B.C.G. vaccination, which improves resistance to tubercular infection.

This vaccination is being carried out free in all the States of India. Tuberculosis can be prevented by isolating the patient, improving housing conditions and by a rich diet. There is widespread ignorance regarding T.B. and its infectious nature. This ignorance can be dispelled by efficient propaganda through talks and public lectures on cleanliness. The most effective method is through lantern slides and the cinema.

People should be warned against spitting and smoking. In the larger sphere, the general improvement of the community, which leads to a better standard of living, will improve diet and housing conditions and help to eliminate this disease.

Leprosy

Leprosy is widespread in India. Out of 5 million leprosy patients in the world, a million are in India. This disease is caused by a microbe very similar to the T.B. germ. It is not hereditary nor as contagious as many people believe it to be. Infection is conveyed from nasal discharges or open sores. Like tuberculosis, leprosy is definitely a housing and diet disease. Improvement in economic conditions will bring down the incidence of this disease.

It is obvious that the separation of the patient and disinfection of his belongings are necessary precautions. But it is not always possible to admit all the patients to hospitals, where treatment is very long. Leper homes should be built, where victims are given free board and lodging. This is not a fatal disease and the death-rate is not very high. Untreated lepers infest cities and there is not even enlightened public opinion against their mixing freely with the public. Many years of patient work, general improvement in sanitation, housing and economic conditions are the necessary factors for success.

Hookworm

Hookworm is common in India, but is not as spectacular as malaria. And that is why it is a greater menace. Acute diseases kill off the weak; but this disease affects both the strong and the weak. The total effect of this on succeeding generations is more important than the number of deaths. Hence the urgent need to eradicate it.

The disease is characterised by severe debility and rapid anaemia. It is aggravated by poor diet. In children it retards mental and physical growth. It is accompanied by abdominal pain and indigestion. The skin is pale and the patient often feels weak and depressed. This disease can be diagnosed only through examination of the stool. The main source of infection is the faeces of the infected person, which in turn contaminates soil. Lakhs of larvae eggs

are passed in the stools of such persons. These germs live in muddy water or damp earth for months until they come in contact with the bare skin. In Indian conditions infection takes place through the bare feet of people. These larvae enter the skin and, after a complicated journey, finally enter the small intestine, where they develop into adult worms. It is important to remember that moist soil becomes dangerously infective when polluted by hookworm patients. Well-constructed latrines, therefore, are essential. Particular attention must be given to keeping the surroundings dry and clean. Any of the sanitary latrines will prevent soil pollution. Another important step is to cure those who are suffering from hookworm, because they are a constant source of infection to others. In the villages, mass treatment can be carried out only with the co-operation of the health authorities and the people.

7. PERSONAL PROTECTION

Water

We have seen that a number of diseases like cholera, typhoid and dysentery are caused by impure water. The supply of safe drinking water, therefore, is vital to public health.

Where a proper and efficient pipe-water system is not available, which is the case in most rural areas, water should first be boiled. This method can easily be used in every home. This is the easiest way of preventing such diseases as cholera, typhoid, dysentery and guinea worm, and villagers should be encouraged to adopt this simple method.

For wells it is better to use chlorine in the form of bleaching powder, or potassium permanganate. Half an ounce of chlorine or a handful of potassium permanganate

to a bucketful of water is enough to make the water safe for drinking in a few hours.

Another method is the domestic filter. Care should be taken that it is efficient and clean. The only efficient filter is the candle type. It is an earthen pot where water passes through several 'candles' into an inner compartment fitted with a tap. Popular filters are the Pasteur-Chamberlain filter and the Berkifield filter. Care should be taken that the candles—special porous material through which even bacteria cannot pass—are washed, scraped and boiled twice a week to make filtration effective.

Swimming baths or pools are another cause of illness. Serious water-borne diseases may be spread through them. The water should be changed frequently and disinfected under the advice of a doctor.

Milk

Good milk is essential to good health. But milk is likely to be contaminated by flies, unclean vessels or by the addition of impure water. Nowadays, it is difficult and costly to get pure milk. This is the case not only in big cities but even in the villages.

It is better to have milk from a dairy under government or municipal control. Otherwise, it is good to keep a cow or a buffalo and have it fed and milked under strict supervision.

While milking, care should be taken to see that the milkman's hands and the cow's udders are washed. The milk pail must be thoroughly cleaned and covered after milking to keep off flies.

Finally, milk used for domestic purposes must be boiled and treated with all the care necessary for drinking water.

Clothing

It is said that cleanliness is next to godliness. Personal cleanliness is the sacred duty of every person. It is

no wonder that Hindus have incorporated personal cleanliness in their religion. According to the laws of Manu one should not start the day's work without washing properly. And a proper wash does not mean just pouring water on yourself, but a thorough cleaning of all parts of the body—skin, hair, hands, feet, eyes, ears, nose, mouth, etc.

Again, clothing should suit the weather. Tight clothes should be avoided. Underclothes and socks should be washed daily.

Exercise

Exercise is as essential as food for the body. Excessive exercise, however, is waste of energy. Even a simple walk in the morning or evening is enough to keep the body fit. Gandhiji was accustomed to take a walk both in the morning and evening. Of course, a farmer always gets some kind of exercise while working in the fields. Living in the open air is healthful.

General

Even very small injuries or cuts should be treated with care; otherwise poisonous germs may bring about dangerous illness. The use of iodine or a disinfectant will certainly prevent infection.

8. CARE OF MOTHERS

We have seen that the number of deaths of women in child-birth come to about two lakhs every year. The number of child deaths is 126 for every thousand births. This is not all. Ten times this number are left with impaired

health. Many of these deaths and much suffering can be prevented if action is taken by the people and the health authorities.

Why do so many women die at the time of child-birth? As you know, in most of the villages neither trained nurses nor doctors are available. Sometimes a *dai* is the only person present on the spot. In many cases sepsis occurs through the dirty fingers of the *dai*. Delay and difficult labour make way for such germs. Many of these deaths could be prevented if adequate medical help were forthcoming.

New-born children are in danger of contracting diarrhoea and dysentery. If the mothers know how to take proper care of their babies, many can be saved. Sometimes faulty feeding and unhygienic surroundings bring about illness in children.

The best method of tackling this problem is to open maternity and child welfare centres. These should, in the first instance, be set up in the Project areas. These areas, as you know, are part of the Community Projects Programme, which has now been launched all over the country. Later they may be extended to the surrounding villages.

These welfare centres should be staffed with health visitors, midwives and trained *dais*. They should work under a qualified doctor. The health officer must visit the homes of the people in the area. It will be her duty to attend when mothers and children visit the centre. She should examine every child, and slight ailments should be treated as far as possible with home remedies. Cases requiring more than home treatment should be referred to the hospital or private practitioner.

Apart from medical examination, classes can be arranged for mothers where instruction is given in methods of proper clothing and feeding of children, including lessons in sewing, personal and environmental hygiene and in baby-care.

The ante-natal clinic at the welfare centre should be conducted by the lady doctor, assisted by a health officer.

The expectant mother should visit the maternity centre, where she will be examined from time to time. If she is too weak to come to the centre, the health visitor should be asked to visit her at home. After the birth of the baby, the mother should be encouraged to regularly visit the centre later with the child for a check-up.

These centres should be so located that mothers can visit them often. The clinic should have proper furniture and be well-equipped with medicines and the surgical instruments necessary for thorough examination and medical care.

Family Planning

What do we mean by family planning? It is a method by which parents can space out their children and limit their number. It is no use having children if you cannot afford to feed, clothe and educate them.

Family planning helps mothers to regain health between pregnancies. Women with serious diseases can postpone pregnancies that may further endanger their health. This practice also does away with abortions, which impair the health of thousands of our married women. Again, it ensures the good health of babies. When there are no unwanted babies, the parents and the children have no emotional insecurity and there is a stable home.

Those who want to know about methods of birth control should consult a doctor or the staff of a Maternity and Child Welfare Centre, who will give them the required advice. The ideal method should be harmless, reliable and acceptable. It should be simple in application, readily available, convenient and cheap.

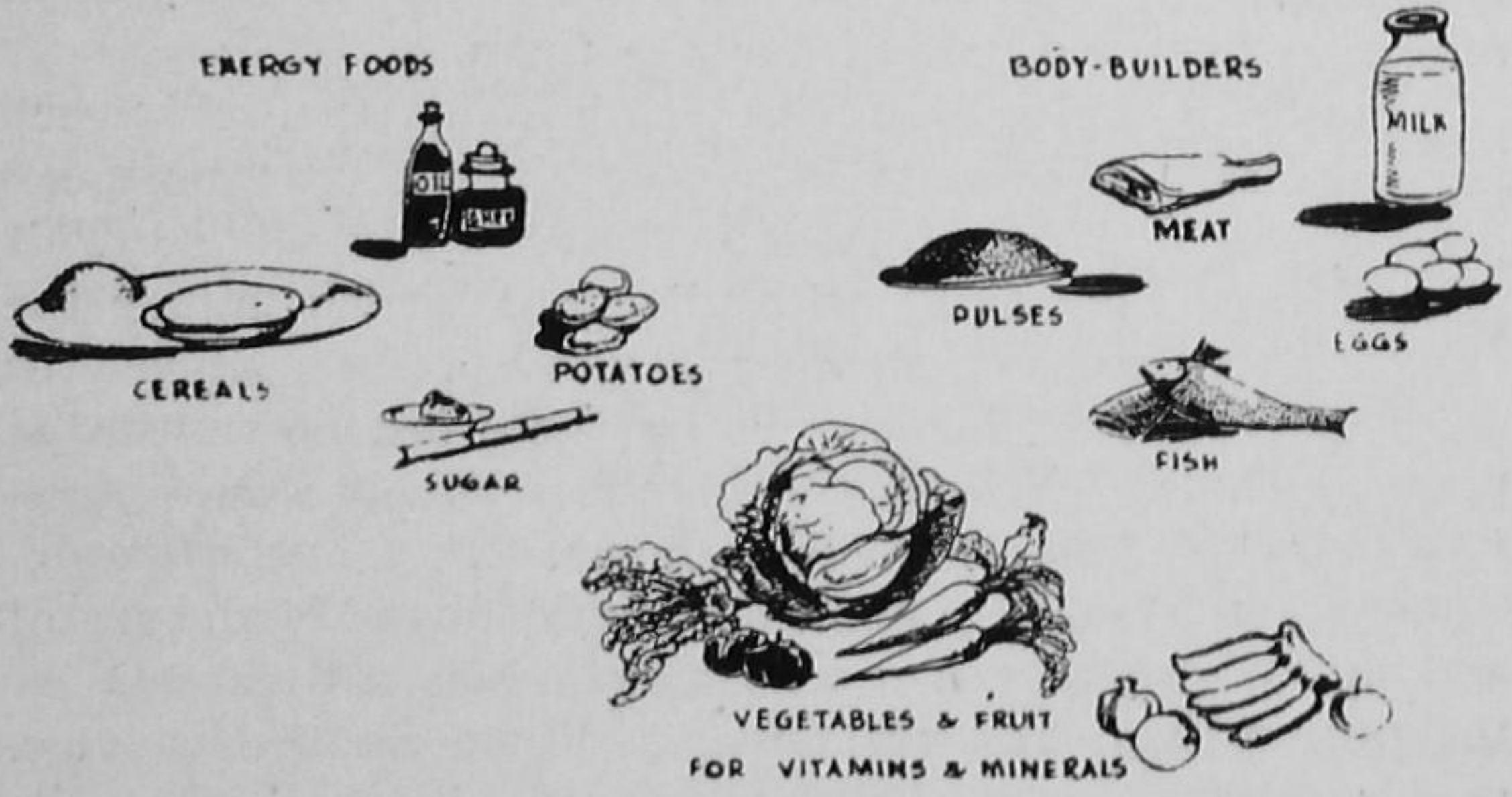
Knowledge about family planning and its technique is also essential in the interests of national welfare. Our food supplies do not keep pace with the needs of a fast-growing population. The position is the more acute because with the improvement in general sanitation there are fewer deaths.

9. FOOD AND HEALTH

We have already seen how important diet is for health and energy. If we do not eat good, nutritious food, we may get diseases like anaemia, beri-beri, scurvy, rickets, night blindness and many more minor illnesses. Doctors tell us that, apart from infectious diseases, three-fourths of our illnesses are due to faulty diet.

Now what is good nutritious food? You may have heard of the experiment carried out on a number of rats, which were fed on the Punjabi, Pathani, Gujarati, Madrasi, Bengali and other diets. The rats fed on the Pathani and Punjabi diets weighed the most. This shows that the food that all of us in different parts of the country take is not always nourishing, and needs change.

This brings us to our original question. What do we



mean by a good diet? The average man cannot afford to spend a great deal on food. But a sound diet is not necessarily more costly than a poor one. We all know, for instance, that milk is good in itself. It is good for the building of strong bones. For expectant mothers and young children it is vital. Hence, milk must always form an important item of our meals. Even if some families cannot afford milk, they can take butter-milk instead. People who

are non-vegetarian can eat meat, fish and eggs. These foods contain protein, which is important for growth and the repair of the tissues.

Sometimes we do not know the value of some foods for health. For example, white polished rice may adorn a menu, but hand-pounded rice is more nutritious. Similarly, whole-wheat flour should always be preferred to *maida*. Again, important health-giving elements contained in the husks of cereals are lost by refining or over-milling. Green leafy vegetables like carrots, tomatoes, spinach, lettuce, cabbage and radish contain vitamins that enrich the blood and are good for healthy development. These vegetables are not costly and can easily be grown in the garden. In summer, when green vegetables are not available or are very costly, sprouted pulses such as *channa* and *moong* can be included in our meals. Non-vegetarians can have fish with rice.

Fruit should have an important place in our diet. The banana, guava, amla, orange, pomegranate and mango are all very nutritious. They contain vitamins which are necessary for the proper growth and repair of the body. Without vitamins food is valueless.

Besides vitamins and proteins, we must take mineral salts. They stimulate the digestion, tone up the muscles and help the general growth of the body. For example, calcium and phosphorous are necessary for bones and teeth, and iodine prevents goitre. Mineral salts are present in the peel of fruit and vegetables. When we throw away these portions, health-giving substances are lost.

Well, now we know what to eat. But do we know how to cook food? Often the nutrient value is destroyed in cooking. Rice should be cooked with just enough water to be absorbed in cooking. We often cook rice with a lot of water and then throw away the surplus water which contains good nutritious elements. This is also the case with vegetables. The best method is to use a cooker, where all the vegetables, rice and *dal* are steamed without the loss

of any nutritious elements. A cooker also saves on time and coal.

Our health depends upon what we eat. It is, therefore, essential that we eat the right type of food, which gives us energy and health. Otherwise we fall victim to all sorts of ailments and diseases.

In other words, a good or balanced diet includes plenty of vegetables and milk, fish, eggs, pulses, cereals and fruit. The following may be included in the daily diet :

Cereals (rice, wheat, millets such as *jowar*, *bajra* and *ragi*)	14 oz.
Pulses	3 oz.
Green leafy vegetables	4 oz.
Root vegetables like potatoes, etc.	3 oz.
Other fresh vegetables	3 oz.
Fruit (ripe bananas, guavas, mangoes, etc.)	3 oz.
Milk	10 oz.
Sugar and *gur*	2 oz.
Vegetable oil, ghee	2 oz.
Fish and meat	3 oz.
Eggs	1 oz.

(Vegetarians can replace the flesh foods with more milk and milk products like *dahi and lassi*).

10. VILLAGE SANITATION

Why did Gandhiji always put stress on village sanitation? A clean village with good wells, latrines and houses is very important for the health of the people. If our surroundings are not clean, we are likely to get all sorts of

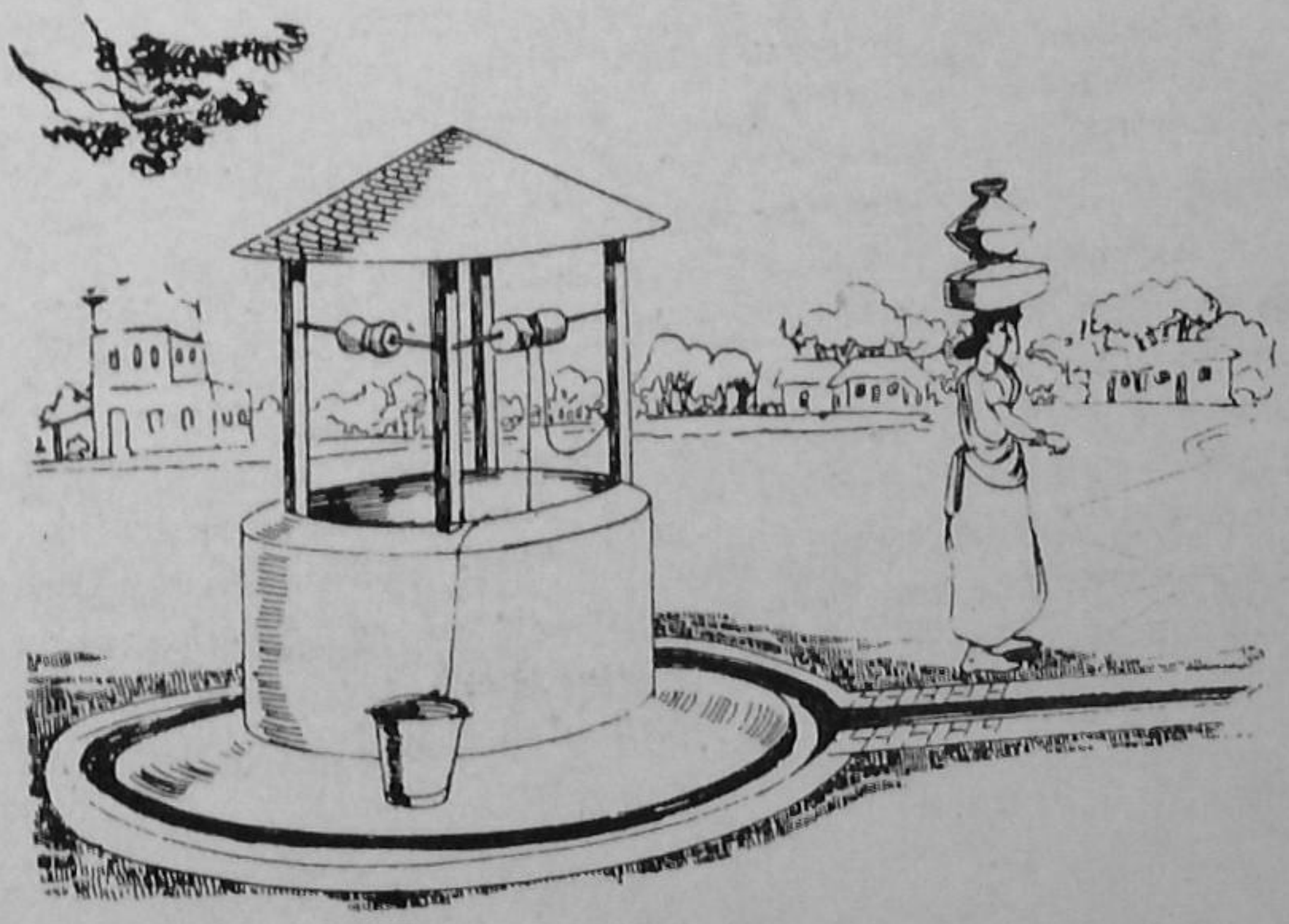
diseases, which we have discussed in the preceding chapters. Rural sanitation—and by that we mean safe water, sanitary latrines, improved houses and general sanitation—is very important to the health of our people.

Wells and Water Supply

It is necessary to make the villager understand that pure water in adequate quantities is necessary. Diseases like cholera, typhoid and dysentery are caused by impure water.

However, only in a small number of towns and cities do people get enough pure water. People in the villages get water from their wells. Most of these wells are shallow and are easily polluted by dirty ropes, vessels and foliage. Again, people bathe or wash their clothes near them. The dirty water drains down and pollutes the well water. Such dirty habits are largely responsible for the contamination of well water. Step-wells are the home of guinea worms.

How can we improve our wells? Shallow wells will have to remain the main source of drinking water in the villages. They must be treated with potassium permanganate. The area around a well must be kept clean, and cess-pools done away with.



If the area around a well is full of dirty water, it must be cleaned and kept dry within a radius of 50 yards. Washing and bathing in the vicinity must be stopped, and cattle should not be allowed near the well.

Lastly, the water must be protected. The lining of the well must be water-tight to the lowest level and there must be a cemented parapet to prevent surface water dripping back. Around the well-head a cemented platform should be built, with a gentle slope to allow spilled water to flow outside the area of absorption. Again, the well should have a suitable cover to prevent the breeding of mosquitoes.

Having built a well that is safe from pollution, every care should be taken to prevent people from using their dirty utensils and ropes for drawing water. A simple hand pump is ideal. But rarely is such a pump available and, where it is, there are seldom facilities for repairs if it goes out of order.

Tube-wells or deep wells which tap water under pressure have none of the dangers of pollution. But all places are not suitable for tube-wells, and they are costly, too. But the use of such wells should be extended as far as possible.

General Sanitation

Another important problem of village sanitation is how to dispose of refuse and nightsoil and provide sanitary latrines. Unless we solve this problem, it will be difficult to improve the health of our villages.

As you know, in most of our villages and towns refuse is not removed properly. All the dirty water after washing, bathing and cleaning finds its way into the lanes and finally ends up in an open cess-pool or village pond. During the rains all the filth of the village is washed into the drains, which often get blocked and overflow. These cess-pools and drains are the breeding-grounds of mosquitoes and often stink. Even in large towns there are open drains without a proper place for the final disposal of refuse.

For a small town of a few thousand people, the best way to dispose of sewage is to have a water-carriage system. But it is costly, and there are maintenance expenses, too. For an average village it would be better to pave the streets with bricks, as was done in our country a few thousand years ago. Such brick pavements should be sloping on either side, to allow water to flow down. Dirty water is carried outside the village and disposed of by sub-soil irrigation. If the houses are scattered, there should be a soakage pit for every house, with a handful of grass near the mouth of the pit to act as a strainer. After some time, when the pit begins to over-flow, it must be renovated by digging it up and filling it with bricks and stones.

Village Latrines

Unlike the cities, in the villages there are no latrines and urinals. As a result, the soil is polluted and, through the soil, water; polluted water is responsible for diseases like cholera, hookworm and typhoid. To remedy this it is necessary to construct a cheap type of latrine with the help of local labour and material.

A good latrine must require the minimum attention and supervision. It should be constructed in such a way as to make it easy to keep it and its surroundings clean. Again, the surroundings should be dry so as to keep out hookworms. The question of using human waste for manure should also be considered.

Now, all these conditions except the last are fulfilled by what is known as an aqua privy. This has been widely introduced in Hyderabad, Mysore and some villages in Bengal.

The principle on which this privy works is that human excreta is eaten up by a kind of bacteria. From the seat there is a pipe leading to a tank below, consisting of two inter-connected chambers. When properly constructed, such gas and water-tight latrines work with the minimum of attention. During construction, before the

chambers are covered, careful tests are necessary to ensure that they are water-tight. When completed, they are filled with water, and the latrine can be used at once. In a few days the oxygen of the air in the first chamber is exhausted and replaced by a mixture of gases which encourage bacteria. These gases digest human matter and the result of this digestion in water passes into the second chamber. In the second chamber, currents of air from the ventilating shaft encourage the bacteria to complete the digestive process. On one side of this chamber, there is a pipe from which water finally drips out. The drain may be diverted into a garden or a field. The chambers should be opened after three or four years and cleaned.

This type fulfils all the conditions for a cheap latrine. All that is necessary is that late in the morning one should flush the seat with water and see that the surroundings are kept dry and clean. After two or three years the chambers should be opened and the sludge removed. The loss of manure is compensated for by the advantages of cheapness and cleanliness and doing away with the clumsy, expensive bucket system.

The next best method is to have trench latrines. Shallow trenches, twelve inches deep, twelve inches broad and about twelve feet long should be made. The trench will receive all the night soil, which should be covered with earth. When half-filled it should be closed and sprinkled with lime and a new one dug for use. The old trench should be left alone for two years, after which it will be excellent soil for growing crops.

The final type is the ordinary *dehati* latrine. A pit about five feet deep lined with baked bricks and a strong fly-proof cover with an opening is all that is necessary. A superstructure may be built over it for privacy. Such a latrine will last for ten years. To take advantage of the manure, every time after use the night soil should be covered with earth. When the pit is almost full, it should be covered with earth and dug out after six months and used as manure.

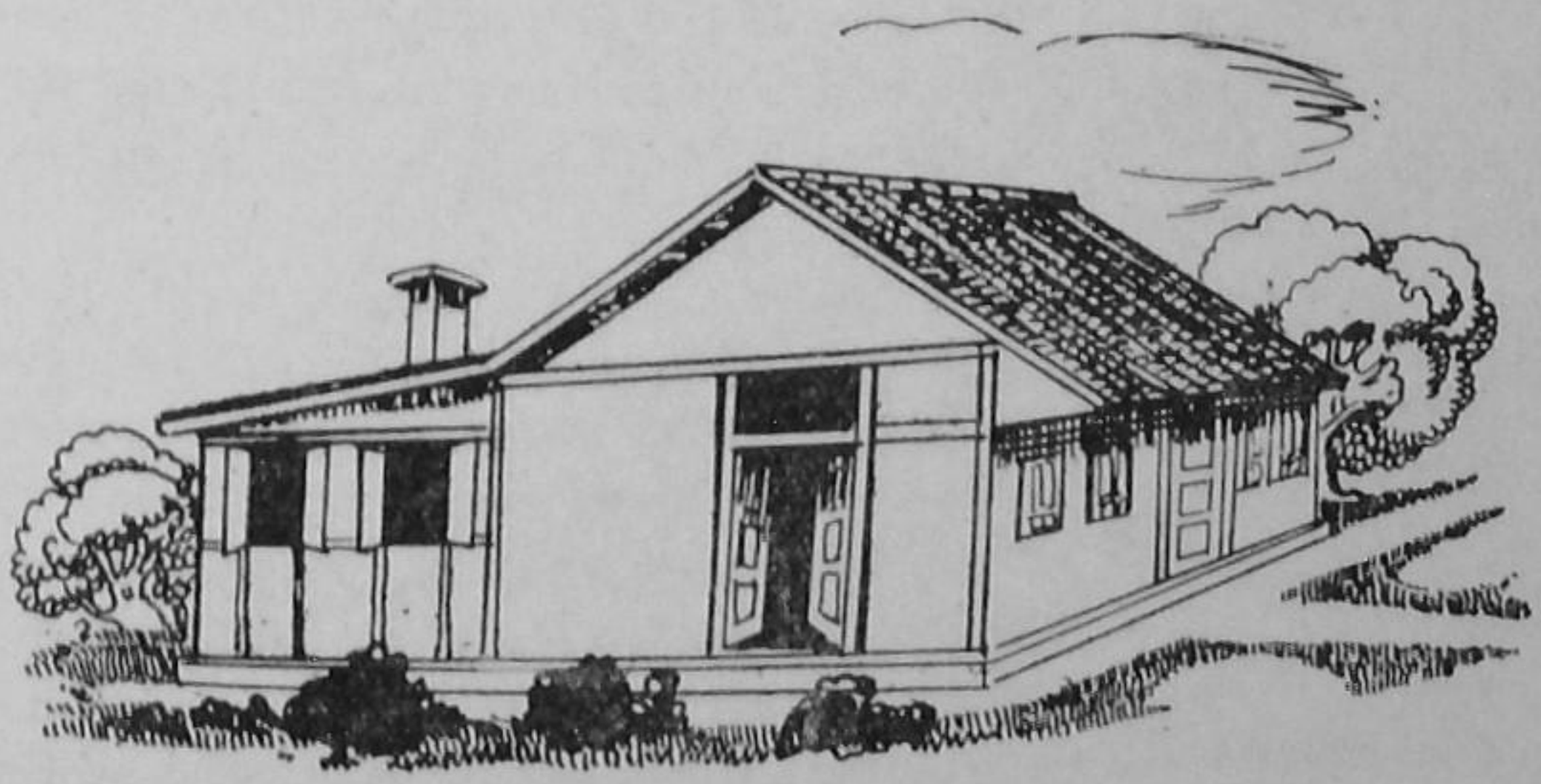
Rural Housing

But how can we keep good health if the houses in which millions of our villagers live are poor and without the minimum sanitation? Here we face the problem of town and village planning. This does not mean only having streets and buildings according to a plan. It also means the best possible use of land. The existing buildings should be improved. Finally, the towns and villages should be built from the point of view of their use, sanitation and artistic value.

In what sort of houses do our villagers live? The houses are built in a haphazard way, side to side and back to back, thus leaving no windows at the back and sides. And of course there are no arrangements for drainage and latrines. Sometimes cattle and other animals are kept under the same roof.

Housing is directly related to the health of the people. Bad housing leads to dirty habits, homes and streets, and to the pollution of water. Such insanitary housing is responsible for the high infant mortality due to infantile diarrhoea. Again, over-crowding is responsible for a number of diseases like the common cold, influenza, T.B. and typhoid.

What can be done to remedy this situation? In the first place, houses should be built according to a plan. They should be built on high dry ground or a broad high plinth



to avoid dampness. They should be built in parallel rows, not back to back. The lanes should be broad enough to allow two bullock-carts to pass abreast. Each house should have two living-rooms with windows, a separate kitchen and a courtyard to permit sunlight and air. On the other side, there should be a bath and a sanitary latrine. Adequate arrangements should be made for the disposal of sullage.

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