it, and he describes it in language almost identical with what might be found in a guide-book at the present day. He, however, ventures on the assertion that the rising of the sun can be heard as well as seen, and I do not think that even the most imaginative tourist in these prosaic days has ever ventured to make such an assertion.

Here is a paraphrase, almost literal, of the words of the famous Roman historian, and they will be interesting as perhaps the first notice of the Midnight Sun in literature—

"The glorious sun beneath that ocean dips
His setting orb scarce one brief moment; then
The stars are dimmed by pure celestial light,
And of his rising mighty sounds are heard
That echo loud along that ice-girt shore.
Then Gods immortal show their forms, their heads
Girt round with shining light, to mortals' gaze,
Who stand afar with trembling hearts and limbs.
The crags and hanging cliffs around that sea
Behold and fear. The mountains, too, are still.
Those last declining ruby rays, that shone
Full on their rugged face, now yield
To Dawn, fair golden Dawn, that comes with speed,
Arising from the trembling ocean's depths."

Before we leave the distinguished historian of early days, I may mention that there is one point on which the vast majority of travellers to Norway will distinctly refuse to accept him as an authority. I have mentioned at the beginning of this chapter that the sea which lies between the British Isles and Norway is not always quiescent, and that it is not by any means an ocean "whose breast" (to quote Byron) "is gently heaving like an infant's asleep." On the contrary, it generally appears like a very angry infant, and very wide awake at the same time. But hear the other side. Possibly it has not always been so. In the days of Mr. Tacitus, before steamers with their screws and other irritants destroyed its temper, the North Sea was a model ocean. Here is the Roman historian's opinion—

"The sea is sluggish and almost unbroken, so that it is even tedious to row upon it."

THE FOOT OF THE GLACIER.

Oh! that the days of Tacitus might return once more, for even three months in each year, is the wish of many a farer over the bright blue waters of the North Sea.

(*To be continued.*)

THE WORST OF ALL PLAGUES.

By "THE NEW DOCTOR."

We have just been looking through a microscope at a group of rod-shaped atoms of exceedingly minute size. And as we were looking, we mused at the ease with which nowadays we can demonstrate these atoms, which had baffled the minds of so many before us. And we asked a friend to look at them, and when she had seen them, she exclaimed—

"Oh, is that all?"

Yes, that is all, all that you can see; there is nothing more than those tiny rods. But to the existence of those rods, more than twelve out of every hundred of the human race owe their death long before they have reached their full term of years.

For those tiny atoms are the germs of tuberculosis, the most dreaded of all the scourges of mankind. And the particular specimen at which we were gazing was telling us its old story of misery and death! We will tell you whence came those germs, and what they mean. The patient is a young man of twenty-eight, who is married and has three children, all absolutely dependent upon him. Last month he had what he called "a cold," and he has had a cough since. There were signs in his chest which suggested that he had consumption, and the germs which we have just seen were found in his expectoration; and the presence of these germs means death to that man—in his case death in a few months at latest, and his wife and children will have to go to the workhouse.

And this is what we see every day, day after day, throughout the years that we practise medicine. Is it any wonder, then, that we should, from time to time, stir up the general public to help to quell this terrible evil?

It is about this germ and the work that it does that we wish to speak to you, and when you have read what we are about to tell you, you will not exclaim, "Is that all?" if ever you see the actual organism.

And first we must describe the germ itself: it will not take us long. It is a colourless, structureless stick, rather less than a seven thousandth part of an inch long, and about a thirty thousandth of an inch broad. It has no structure, and increases merely by breaking into two. It cannot even move about. Many germs can move freely, but the bacillus of tuberculosis is stationary. It does not even increase rapidly like most germs, it is slow, but very, very sure. Moreover, it is possessed of a degree of vitality which is positively surprising. The organism cannot be seen unless it is stained by an elaborate process, and it requires the highest powers of the microscope and special arrangements of light to see it at all.

And now as to what this germ does. It produces but one disease—tuberculosis (consumption). But that one disease kills more than one-seventh of the human race before the fortieth year of life. But it does more than this. Many as it kills, it cripples a far larger number, and in a minor way it renders the lives of very many of us a misery, for a time at least.

Although one-seventh of mankind dies from tuberculosis, fully three times that number are attacked by this germ, and this statement is based on the results of post-mortem examinations of persons who have died from every form of disease or accident. Think what this means! If you collect together everybody who dies from accidents by land and sea, everybody who comes to a violent death from any cause, and put them by the side of those who are killed by tubercle, the latter will outweigh the former in the proportion of nearly ten to one. If to the deaths from accident you add those due to all the acute infectious fevers, and all those due to cancer, the deaths from tuberculosis will still weigh these down.

And how comes this disease, and what causes it? It comes gradually, insidiously, often without warning of any kind. Indeed, it may progress to a stage from which recovery is hopeless without giving one single sign or symptom of its presence.

We have told you its cause—it is the bacillus, the little atom we have just described. All other factors are of little importance. It will, however, be necessary for us to tell you about the so-called predisposing factors which render the body less able to withstand the attacks of the germs should it, by chance, become neglected, and how the germ finds its entrance into the body. To detail to you the various predisposing factors which render the body less liable than usual to resist tuberculosis would be to describe all the causes and conditions which lead to general ill-health or to that condition of being "below par" about which so much is talked, and so very little is known.

In former days, before the bacillus of tubercle was known, the various items which we are about to mention were supposed to have a far more powerful effect upon this

terrible disease; but their influence has been grossly exaggerated, and the power of many of them is exceedingly doubtful.

Hereditary influence was looked upon as a very important factor, and some had gone so far as to state that it was the most important of the causes of this disease. But contrary to the opinion even now held by many, there is no doubt that the influence of heredity upon the development of tuberculosis is very slight, if indeed it exists at all. That the children of tuberculous parents do more often become the subjects of the disease than do the children of healthy people is unquestionable, but it is certain that the majority, if not all, are infected by their parents long after birth. The fact that people are practically never born with tuberculosis rather favours this view.

Whatever influence heredity has is probably dependent upon the shape of the chest. For abnormal chest developments are common precursors of tubercle, and are frequently hereditary.

Amongst the other factors which are supposed, or have been supposed, to cause tubercle, are chronic alcoholism, over-work, insufficient diet, and, of course, exposure to cold. But we much doubt whether any of these has any except the most remote influence. Injury is certainly a common predisposing factor to local tuberculosis.

There used to be a lot said about the so-called tuberculous, or, as it was more often called, scrofulous or strumous diathesis, by which was meant a physiognomy of a certain type, the possessors of which were supposed to be more liable to tubercle than ordinary mortals. It is unnecessary for us to describe this *facies*, for all persons, of every description of countenance, are equally liable to be attacked by tubercle. The so-called "strumous type" is, in reality, the expression of the patient who is suffering from tubercle, and not that of the person who is especially likely to become infected. And that all persons, of every build and age, are liable to be affected with tubercle, we could prove by direct evidence, for any day we could collect a hundred or more phthisical patients with very little trouble; and they would be of all ages, of both sexes, of all types, and of every height and weight and chest measurement.

We need not further dwell on the subject of predisposition to tubercle—it is really of little importance—so we will pass on to the most important consideration of all, namely, the ways by which the body becomes infected by this terrible pest.

The tubercle bacillus is not a normal inhabitant of our bodies, and those of us who succumb to it are infected from without. Now the tubercle bacillus is not found outside the bodies of men or animals suffering from tuberculosis, so that tuberculosis is an infectious disease caught mainly, if not entirely, from men or animals who have already got the disease. Now this is very important. Consumption, and all other tuberculous diseases, are infectious diseases, and the infection occurs mainly from person to person. Tubercle is far more infectious than most of the diseases which have to be notified as infectious; indeed, it is our belief that tubercle is the most infectious of all diseases.

The germ of tubercle gains its entrance into the body by two channels, the lungs and the alimentary canal. Let us see how it is spread.

The bacillus finds its way into the alimentary canal entirely by the ingestion of infected meat or animal products, notably milk. Tuberculosis is quite as common amongst domestic animals as it is amongst men, and consequently we all eat tuberculous meat. It cannot be helped—we all from time to time eat the meat of tuberculous animals. True, we ought not to eat the carcases of animals that have suffered severely from tubercle, for these ought to be destroyed, and the law insists upon their destruction. Still, we have personally carved a joint in which there were whole chains of tuberculous glands, and this on the table of one who paid the best prices for her meat, and obtained it from one of the best butchers in London.

Now although we cannot prevent ourselves from eating tuberculous meat, we can still do our best to kill the bacilli, and so render the meat innocuous. For the bacilli alone can cause tubercle, and they can only cause it if they are alive. Unfortunately this germ is, as we have said, very tenacious of life, but it can always be killed by heat, so that the way to prevent yourself from becoming infected from tuberculous meat is to have your food thoroughly cooked.

Far more dangerous than meat, as a way by which tubercle is conveyed, is milk. Children suffer chiefly from tuberculosis of their alimentary canals due to drinking infected milk. Cows suffer frequently from tuberculosis, and the milk from these cows is infective. Like meat, milk can be rendered harmless by boiling it.

But in adults tuberculosis most frequently attacks the lungs, producing that justly dreaded disease consumption, or phthisis. And in these cases the germs are breathed into the lungs direct. Now whence come these germs? They come from persons who already have tuberculosis, and mainly from their expectorations. The breath of persons with consumption does not contain the germs, and therefore is not infectious, but the expectoration of consumptive patients contains the germs in large numbers, and in a virulent condition, and it is the chief means by which consumption is spread.

The disgusting habit of spitting is fortunately not very common in England, but still it is far more common than it should be, and there is no excuse for it in health. But a patient with consumption must spit, because his lungs produce large quantities of secretion, and this must be got rid of.

A patient with a cavity in his lungs spits in the street, the secretion dries, and the bacilli are wafted about in the wind until they find another resting-place in somebody else's lungs, and there they start the dreaded disease afresh.

If you inhale one bacillus or even a fairly large number of them, it does not follow that you will get tuberculosis, for your body is capable of dealing with a certain number. But suppose that you inhale a very large quantity of the germs, your body will not get the better of them, and you will become consumptive.

And from what has been said above you will be prepared for this—that the development of tuberculosis and of every other microbic disease is the result of a pure accident, and no predisposing factor is necessary, but the disease is due to inoculation with the specific organism of the disease, and that it may attack anybody, in any state of life, at any time, whether she be strong or weak, healthy or unhealthy, and that the only difference made by external conditions and predisposition is the dose of the germs required to set up the disease.

This proposition is a staggerer we know. We, like you, have been taught wonderful tales about heredity and all the rest, but the fact remains that if a certain number of tubercle bacilli get into your frame at the same time, you will become tuberculous.

And that the inoculation of the body with tubercle is in most cases a pure accident is so obvious that we need not trouble ourselves in proving the fact.

Next time you cross the road you may be run over and have your leg broken, or you may inhale a mouthful of dust containing the tubercle bacillus, and so may get consumption. And the one is as purely an accident as the other!

And now it behoves us to say a few words about the prevention of this terrible evil.

Since, as we have shown, tuberculosis is derived mainly from eating infected meat or by inhaling dust which has been infected by the expectoration of phthisical patients, the two most essential points in the prevention of consumption is to stamp out the disease from our food-stock, and to prevent persons from spitting in the streets.

About stamping out tuberculous disease from the animals whose flesh we eat, there has been a good deal of discussion, and it seems clear that the only really effectual way to do it is to slaughter all animals with the disease and to burn their carcases. Whether such an extreme measure will ever be carried out is doubtful, for, as a race, we are mercenary, and such a procedure would cost us a tremendous sum.

As regards tuberculous patients spitting in the street and on the floors of railway carriages or omnibuses, etc., this could readily be put a stop to if the patients would only help a little to maintain the health of those who are more fortunate than themselves. At most hospitals where consumption is treated the patients are provided with small pocket spitoons containing strong carbolic acid. These spitoons are very portable, and can be kept quite clean. If every consumptive person could be taught always to carry about one of these pocket-spitoons, and never to spit in the street, the number of cases of consumption would rapidly decrease.

Tenacious of life as the bacillus of tuberculosis is, it is yet gradually killed by sunlight and fresh air. The recognition of this fact is of vast importance, for consumptives all do best when they remain out of doors all day, rain or shine; and those do worst who remain shut up in stuffy rooms. The insane fear of catching cold which is so constantly present in the mind of every Englishman, and which is so difficult to eradicate, is one of the most obvious reasons why so many of us die of consumption! It is fresh air that is wanted by us all to overcome and kill the stray disease germs which we are constantly inhaling. Remain out of doors whenever you can, never mind the cold or rain. They will do you little harm when compared with the stuffy germ-laden atmosphere of most rooms.

And if those that are healthy should remain out of doors as long as they possibly can, it is still more imperative for those whose lungs are diseased to do so. The function of the lungs is to breathe, and the fresher the air that you take into them the less work have they to do, and so they can give up more energy for the cure of the malady which is affecting them. And how seldom do we recognise this fact. How constantly do we remain indoors because we have a cough or a slight attack of bronchitis, when the presence of the complaint is all the more reason for us to go out!

We cannot further pursue our subject. If you have grasped the fact that tuberculosis is the commonest of all human diseases, and that it causes infinitely more deaths than anything else, and if you have understood its cause and its prevention, you will have learnt a lesson which will be of great value to you.

Remember that we have at last settled for good that tuberculosis, tubercle, consumption, phthisis, struma, scrofula, king's evil, lupus, white swelling, hip disease, etc., Pott's disease of the spine, brain fever, etc., etc., etc., are all one and the same disease—tuberculosis. All are due to the one germ—the bacillus of tubercle. Now are you ready to admit that the minute atom which requires such enormous magnification to render it visible, is the most malignant of every living organism?