

to make seemed to fall on deaf ears; Oscar König, she appeared to think, was the only person in the assembly worth talking or listening to. There was a something in her eyes and smile when she turned to Oskar which made Leo feel uneasy. Then he laughed at himself for being afraid of so very inferior a rival, then grew serious;

for, as he sagely reflected, Gertrud was a woman, and there was no madness too mad for a woman.

"This will not do," was the conclusion he came to. "I shall put an end to this comedy first thing to-morrow morning."

(*To be continued.*)

## THE RHEUMATISM MICROBE.

By "THE NEW DOCTOR."

YET another new microbe! How many new microbes have been announced during the last decade of the century? How many have failed to establish themselves amongst the select yet awful ranks of the factors of disease?

But the latest new microbe is one of vast importance, for it is credited with causing rheumatism, the scourge which stands next to tuberculosis in the number of its victims.

And, before we talk of the germ itself, it will be well to give you some idea of what rheumatism is, and to make evident to you for how much suffering and incapacity and death it is responsible.

There is scarcely anyone to whom the words tuberculosis and consumption do not convey some idea not very far removed from their actual meaning. But with rheumatism it is different. This name conveys to us a form of obscure and infective disease different from all other human ailments, and yet at times so closely resembling other forms of infections that to diagnose it correctly is beyond the power of man. To most of you rheumatism is another name for a pain in the joints.

Throughout this article by the term rheumatism we mean acute rheumatism or rheumatic fever. We do not use the term to cover the chronic diseases of the joints which occur in those that have passed their prime. Indeed there is much evidence to show that this so-called chronic rheumatism has not the slightest connection with the acute affection. Whether this is so we shall soon be able to say for certain, now that we know the cause of rheumatism.

Rheumatism is a disease of the young. It is common in the first few years of life; it is common in childhood; it is common in early adult life; it is common in the prime; but when once the meridian is passed rheumatism is rare.

And what does rheumatism do? We said that rheumatism is an acute disease, we said that rheumatism is a most fatal disease, and yet we add the apparent paradox that people do not die during acute rheumatism. They do not die during the disease, but they die from the legacies which the disease has left them, often weeks, months or years from the acute attack.

It would be idle for us to detail to you all the complex phenomena of this affection. It is a disease of the most varied character, scarcely ever affecting two persons alike, and differing in its symptoms from such a comparatively unimportant combination as a slight sore throat and a feeling of illness to a condition comprising severe inflammation of all the joints, a temperature of 106° F., and total disorganisation of the heart.

Yet the skilful physician can recognise in all the manifestations of rheumatism some feature common to all, and in the beginning of the new century the bacteriologist will demonstrate one common cause. The one symptom that is common in all cases of acute rheumatism, from the most trivial to the most severe, is the implication of the heart. It is scarcely too much to say that an attack of rheumatism, even one so slight that it produces nothing but a sore throat, affects the heart to a lesser or greater extent, and leaves that organ in a condition from which it seldom or never recovers.

It has been known since the time of Hippocrates that rheumatism affects the valves of the heart, and every physician has learnt in his student days that the valvular diseases of the heart in young persons practically always owe their origin to an attack of acute rheumatism. But modern research has brought to light the far more important

fact that the diseased valve is only part of a general disorganisation of the heart.

People do not often die from rheumatism, but they die by hundreds from the affections of the heart which the rheumatism has left behind. After tuberculosis of the lungs or phthisis, heart-disease is the most common cause of the death of Europeans.

The first questions which one asks when it is announced that a certain germ is the cause of a disease are, how does it obtain entrance into the body, and how may we destroy it or neutralise its effects? At present we must not speak too dogmatically upon this subject, for the organism itself has only just been discovered and has at present only just been recognised in those that have had the disease. Since this germ has not been demonstrated outside the body, anything that we may believe in regard to the method in which it is spread is a matter of opinion only, based upon observation and analogy. We cannot consider it as fact until we possess an accurate knowledge of the organism itself, its habits and its habitat.

It is just twenty years since Koch announced his discovery of the tubercle bacillus, and when we were writing upon tuberculosis we were in the position to tell you with absolute certainty the ways and means by which that germ enters our bodies. But it is scarcely twenty-five weeks since the announcement of the discovery of the organism of rheumatism, and in that short space there has not even been time to test the accuracy of the discovery. It will be many years before we know about rheumatism as much as we know of tuberculosis.

In the days when there was no science in medicine rheumatism, like every other disease, was said to be due to exposure to cold. In most diseases exposure has been proved to have no influence whatever in their production; but even the most sceptical of the modern school of medicine must admit that in rheumatism exposure is an element of importance. It so constantly occurs that a first attack of rheumatism can be traced to sleeping in a damp room, or on a damp bed, or that it follows after prolonged exposure to wet and cold, especially to remaining in wet clothes, that one is forced to admit that the influence of these factors is sufficiently established. Now how do they act?

There are three ways in which the development of rheumatic fever from sleeping in a damp room can be explained. We may say that the dampness of itself has caused the fever; we may say that the exposure to damp has reduced the vitality of the body and rendered it less capable than usual of resisting the invasion of the rheumatic germ; or we may say that the person has developed rheumatism from sleeping in a damp room, because the germ of rheumatism lives upon damp walls and has infected the sleeper during the night. Which of these explanations is the correct one?

It is certainly not the first, it is probably not the second. That exposure to cold itself could cause a disease like rheumatic fever is a theory which we cannot accept for one moment. Not only is it opposed to all modern teaching, but it is scarcely conceivable that a factor which acts for so short a time and in such a manner could itself be the cause of a progressive disease. The second suggestion is one that finds much favour. We know that injury of any kind and in any form reduces the resistance of the body against disease, and it is possible that sleeping in a damp room may render a person less capable of battling with the germ of rheumatism. But it is in the third possibility that we put our faith. Above the other two it takes in the whole of

the cause and will straight away explain everything that is necessary. If it is a fact, it is a most important one; and if it is a fact, it will be proved, probably within the present year.

Is rheumatism infectious from one person to another? On the surface it seems the easiest thing in the world to answer this question; yet, as a matter of fact, it is a most difficult problem. With such an affection as small pox, which is usually, if not invariably, inoculated from one person to another, and which, moreover, develops its symptoms a few days after infection, it is easy enough to demonstrate its infective character. But when a disease is sometimes, but not usually, infectious from one to another, or if the symptoms of the affection do not occur till some time has elapsed after infection, the proof of the infection becomes exceedingly difficult.

Tuberculosis, for instance, is always caught by one person from another person or animal suffering from the disease, though usually indirectly. Yet it is only lately that tuberculosis has been looked upon as an infectious disease, and the reason for this lies in the fact that the first symptoms of the disease do not occur for weeks or months after infection.

And what of rheumatism? Is it infected from man to man as a usual thing, directly or indirectly? Or is the disease always started by inoculation with organisms which until that time had not lived the life of a parasite? Or are both these means possible?

Rheumatism can be inoculated from man to animals which are susceptible. It is therefore exceedingly probable that it can be inoculated from man to man. Yet the majority of physicians are inclined to the belief that rheumatism is a non-infectious disease, and we cannot bring from our own experience or from the experience of others anything to show that there is the slightest danger in placing a patient with rheumatic fever in a general ward.

Is it possible to reconcile this with the statement that rheumatism is an infective disease? But the difficulty of reconciling these two statements is not great. Many of the infectious diseases are infectious only at one period of their course. Some, such as measles and lockjaw, are infectious chiefly before the symptoms have developed; whilst others, such as scarlet fever, are chiefly infectious when the acute stage of the illness has passed.

We have reason to believe that rheumatism is infectious in its early stages if it starts with a sore throat or other implication of the surface of the body. Rheumatism is one of the commonest causes of sore throat, and practically all sorts of sore throats are infectious from one person to another. Is it not probable that the rheumatic sore throat is also infectious? And we can readily understand how the germs may travel from one throat to another and yet would be unable to pass out from an inflamed joint or deep-seated organ.

A word or two about the organism itself before we pass to the last and most important section of the subject, the ways and means which we have at our command to prevent the spread of this most common complaint.

The organism which has lately been discovered to be the cause of rheumatism is smaller than any other germ. Unlike tuberculosis, which is rod-shaped, the rheumatic germ is a minute sphere, or what is termed a micrococcus or small berry; it is one-fifty thousandth of an inch in diameter, and usually appears in pairs or very small chains. This organism can only be isolated with extreme difficulty, and requires special methods to demonstrate it under the microscope.

We have frequently told you that the only form of water-filter that is of the least use is that form in which the water is forced through unglazed porcelain. The porcelain filters off all known disease-germs, with one exception—that is, the bacillus of influenza, which, on account of its extreme tenuity, is enabled to pass through a smaller aperture than any other germ. It will be interesting to find out whether the newly-discovered germ of rheumatism is or is not held back by the porcelain filter.

Having found the germ of the disease, the next duty of the bacteriologist is to discover how it may be killed or rendered innocuous, and the duty of the physician is to apply this knowledge to the suppression or mitigation of the infection which the germ produces. And it is the duty of the

public to make itself acquainted with the practical side of the question, and to help the scientist in his endeavours to suppress disease by doing all that lies in its power to carry out the principles of isolation and general management of the sick and of those exposed to contagion.

The general methods with which we are at present acquainted to stamp out rheumatism are by no means as numerous or as efficacious as we could desire. In future years when our knowledge of this new germ is more precise, it will be possible to lay down methods of preventing the spread of the disease by more potent means. But it is useless to dream of the future; we must do what little we can with our present knowledge.

And the point to which we wish to call your attention most strongly is to the prevention of the development of the more serious forms of rheumatic fever by attention to the treatment of sore-throat, which, as we have said, is so frequently the first chapter of a rheumatic attack. It is our belief that the germ finds entrance into the body by the throat, and the development of sore throat is an indication that the germs are congregated at that spot. It would therefore seem feasible to stop the rheumatic fever by killing the germs while they are still local and within the reach of germicides.

From a long and varied experience of diseases of the throat we are convinced that it is absolutely impossible to accurately diagnose the causes of sore throats in their early stages; and as treatment is never efficacious except at the very earliest periods of the affection, it follows that it is necessary for the physician to treat a sore throat long before he knows to what disease the symptom is due. All sore throats are due to the action of organisms, and all organisms can be killed by the same application on condition that it reaches them. Consequently we can treat all sore throats in their early stages by the same measure, and that measure is the local application of antiseptics. In this way we believe that many cases of acute general infection may be prevented. Sore throat is the first symptom of a very large number of ailments, and so the question of the local treatment of early sore throat is one of the most important items of preventive medicine.

The treatment for acute sore throat is simplicity itself. All that is necessary is to thoroughly clean the throat with some antiseptic. Any antiseptic of moderate strength will answer the purpose. We have obtained by far the best results from using a solution of chinolol in distilled water of the strength of one in five hundred. This application possesses marked germicidal powers, and is practically non-poisonous. Against it must be placed that its flavour is not particularly pleasant, and its composition is a secret.

But of more importance than the choice of the antiseptic is the way in which it is applied. Gargles are perfectly useless. Sprays cannot properly reach all parts of the throat. It is only by painting or swabbing out that the throat can be properly cleansed and all its nooks and crannies freed from germs. The best way to clean the throat is with a camel-hair brush or pellet of wool at the end of a probe or brush handle.

Anybody can paint her own throat if she possesses a small amount of nerve and a larger amount of patience. If you stand in front of a looking-glass and direct a light into your mouth and depress the tongue with a spoon-handle or some similar object, you can see clearly the greater portion of that part of the throat which usually becomes inflamed. When washing out the throat, wash it out thoroughly, taking ten minutes or a quarter of an hour over the process, using plenty of solution and applying it everywhere. Pay particular attention to the gutter that runs round each tonsil, especially at its lowest part, for it is here that germs congregate in the greatest number. The number of times that the throat is painted is of much less moment than the thoroughness with which it is done. To paint the throat once only but to do it thoroughly is worth much more than to do it half-a-dozen times a day in a slovenly manner. We have found that in most forms of sore throat, two, or at the most three, applications will stop the affection from progressing, and, if our theory is right, will stop the development of many an attack of rheumatic fever which, if the throat had been neglected, would have progressed to the end.