

scheme will entail considerable expense. And as this must necessarily be met by the fees of those who obtain its benefits, it is clear that all those who are not Members of the Association will be called upon to make some definite payment. Whatever this sum may be, those who have had the public spirit and common sense to join the Association early in its existence will be so much in pocket, placing aside altogether all the many other advantages they may have derived from membership, some of which are neatly summarised in a letter which we hope to publish next week.

As to the further details of the scheme no information is forthcoming. But in view of the wisdom of the course pursued by the Association, it is easy to believe that when the regulations for admission of future names to the Register are made public, they will be found to be eminently satisfactory in every particular.

### LECTURES TO NURSES ON ANTISEPTICS IN SURGERY.\*

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#### LECTURE III.

**I**N my last lecture I attempted to give you an idea of the changes which take place in a wound which was aseptic from first to last, and the differences which occur when wounds become poisoned by the presence of bacteria.

But you may very well say, at present we scarcely know what you mean by bacteria, nor have you given us any evidence that, provided bacteria do exist, and are to be found in wounds, they are in very fact responsible for the changes occurring there, and the downward tendency of these cases.

To-day, therefore, I propose to show you drawings, reproductions of photographs by a well-known bacteriologist, Crockwell, of the various kinds of bacteria, and then to describe to you the evidence, mainly due to experiment, upon which our belief and consequently our practice is based. Because, if you do not believe in their existence, or believing in that, have but a hazy or very doubtful belief in their evil effects, your practice of antiseptics must be half-hearted, therefore imperfect, therefore delusive; whilst if you are perfectly convinced in your own minds that what we are talking about is a very real and well-defined fact, you will necessarily act with more decision

\* As these Lectures will in all probability be reprinted in book form, revised by the author, the diagrams necessitating being printed in co'ours are omitted.

and certainty, and the results you will obtain will be more satisfactory, and at the same time far more conclusive.

The words bacteria or microbes are terms which are used to cover all the various forms of these organisms, of which, however, you will see there are four main varieties. Micrococcus, bacterium proper, bacillus, and spirillum. I mention their names, so that you may not be taken by surprise when they are spoken of by others. Micrococci are minute round bodies; bacteria are rod-like oval bodies; bacilli are also rod-like, but thinner and longer; spirilla are curved in a spiral form. But these differences are of little importance to you. Of far more importance is the fact that they occur under two conditions. One, the adult bacterium; the other, the egg or spore.

Now the bacterium, after development from the spore, and until its death, is living, requiring nourishment for that life, and consequently eating up the N. and C of the tissues with which it is in contact, and producing the poisonous material of which I spoke in the last lecture, and which is called "sepsin." But it is itself comparatively short-lived, and is pretty easily destroyed by various chemical and thermal means. On the other hand, a spore, like an egg, is in a state of potential or latent life. It does not require nourishment, consequently is not breaking down any tissue, and is producing nothing. It is peculiarly resistant to any destructive agency, and will last for indefinite periods. When deposited, however, on a fitting soil, and surrounded by a suitable temperature, it will develop into a living bacterium, and this will, of course, pass through all the phases of such an organism's life. These two forms, more or less, exist all around us, in dust, dirt, unboiled water, or clothes, furniture, in the air or bedding, &c.; but you will see that in dust, on clothes, &c., you are not so likely to meet with living bacteria; but you are very likely to meet spores, so that you have to do with these organisms in the condition in which they are hardest to kill, are, at the same time, the smallest, and so are the most likely to escape observation. Their coil effects, also, will not be seen at once, but will begin to be manifest when the spore has had time to develop into the living and active microbe.

Now as to the size of these organisms. It is difficult to appreciate such extremely minute bodies, but the accompanying figure may give you some idea. Of course, all the micro-photographs you have been looking at are immensely magnified. Bacterium termo, for instance, is  $\frac{1}{250}$  of a micro-millimetre long. A micro-millimetre is the two hundred and fiftieth part of an inch. An inch is divided into twenty-five parts. Each of these

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