

tion. When first the diplococci began to grow in the lungs they did so because the tissues could not neutralise their poisons, but with continued growth and discharge of their toxins, these last diffuse out of the lungs and act in the tissues elsewhere in less concentrated form, and these react, becoming educated until the moment is reached when the cells of the body produce sufficient counteracting poison to kill off the bacteria and to neutralise their toxins, which toxins it is that do all the damage to the system.

And here is the interesting and important fact—a fact I think too little realized by most medical men, although instinctively all strive to act up to it. It is not the lungs alone that are in action in destroying the germs of the disease and so bringing about recovery, it is not even the white corpuscles or leucocytes which, passing into the lungs, accomplish the good effects; the whole organism, or practically the whole organism, is actively engaged in the process. Do not think that by this that I mean that the germs of the disease are disseminated all through the body. In a case of pneumonia of medium severity, one that recovers in due course, the diplococci are confined to the lungs; we do not find them elsewhere, or at most they are few and far between. But, notwithstanding this, the whole body plays a part in the engagement.

You have all, I doubt not, heard much of late years about these white blood corpuscles or leucocytes; how they are, as it were, at once the main avenging army and the scavengers of the body; without doubt these play a great part. We can see them in various stages full of bacteria which they have taken up, and at times we can make out that bacteria are undergoing digestion and destruction. Nay, it is not difficult for any one to experiment on himself, as Leishman has shown,—to take a few drops of his own blood, separate off the white blood corpuscles and taking a drop of blood serum, holding these in suspension, add to it a number of disease-producing bacteria of one or other order; in fifteen minutes time, kept at the body temperature, each little leucocyte can be seen to have taken up, it may be a score or more separate bacteria. But here is another fact. This eating up of bacteria does not depend upon the white blood corpuscles alone. It depends, as Wright and Douglas have shown recently, upon a curious interaction between the cells and the fluid of the blood. And if you take the white corpuscles of a man who has not had a given disease and place some in the fluid of his own blood, and place some others in the blood serum of a man who has successfully resisted that same disease—who has recovered from an attack—you will find that these little white blood corpuscles will take up very many more of the particular bacteria causing that disease in the latter case than in