

## THE EXAMINATION OF THE BLOOD.

By A. KNYVETT GORDON, M.B., B.C., Cantab.,  
*Formerly Lecturer on Infectious Diseases in  
the University of Manchester.*

The first comment that I seem to hear from readers of this article when they see the title thereof is, "What on earth has it got to do with nursing?" That is what I propose to show.

In lectures on Physiology nurses are not, as a rule, told much about the blood except that it contains red and white corpuscles, and that the former carry oxygen from the lungs to the tissues, receiving carbonic acid gas in exchange, while the latter serve to destroy microbes and assist in the repair of the tissues after injury. This, however, is by no means the whole truth.

Of recent years a large amount of research has been done in various laboratories with the object of investigating the changes in the number and variety of the corpuscles which occur in disease. Much of this work has been of great clinical value, but is in some danger of being buried in scientific reports which are not read by the busy doctor or nurse. By many people, however, the pathology of the blood is thought to be of great importance and future value, and as I am strongly of that opinion myself, I think that a brief account of the bearing of these researches on the diagnosis and treatment of the actual patient may be of interest to readers of this JOURNAL.

Let us take for the moment a broad outlook on disease generally, and consider it as a fight between the patient and an enemy who is attacking him from without. If we would know what is going to happen we must first find out who the enemy is, in what numbers he has arrived, and of what units his force is composed. That is known as making a diagnosis.

In the case of diseases which are due to microbes, pathology is of service in enabling us to settle this question definitely by finding the organisms themselves in the secretions of the patient, as when we examine a throat swab for the presence of diphtheria bacilli, or sputum for evidence of tuberculosis. We also use the ordinary methods of clinical examination, or a surgical exploration, to discover the cause of the disease, and to estimate its intensity.

Until recently there was rather a tendency to stop there and to leave the assessing of the resistance offered by the patient largely to intuition. Very many older nurses were exceptionally skilled in this, and I can well remember

how grateful I was as a young house physician for the unerring knowledge that some of the older ward sisters seemed to possess of the ultimate destination of a patient. I used to envy them and wonder how they did it. Many eminent physicians also in the past have attained fame and wealth mainly on their gift of clinical prophecy.

Nowadays, however, we can summon pathology to our aid in investigating more accurately the strength of the defending, as well as of the attacking, forces.

The soldiers of the body are the white corpuscles; in the event of an attack, therefore, we should expect to find an increase in their numbers, just as a country calls up its reserves to the colours when war is declared, and this is what actually occurs.

We should also want to know something about the quality of that army, not only of what units it was composed, but how many of the troops were untrained youths and seasoned veterans respectively. So it is with the blood corpuscles. We can recognise not only different kinds, but also youthful and elderly forms of each.

So much for the general principle. Let us now see how it works out in detail.

The procedure itself is simple. We first count the total number of red and white corpuscles respectively by taking a drop of blood of measured size from a finger prick, and then spread a thin film on a glass slide and treat it with appropriate stains which enable us to distinguish the different kinds of cell present by microscopic examination.

For the present we may neglect the red cells, though much valuable information can be derived from their study, and concentrate our attention on the white corpuscles.

These cells in health are of three main kinds: Polymorphonuclear leucocytes (called "Polymorphs" for short), Lymphocytes, and Hyalines. There are a few others, but they are not of present importance.

The polymorphs are the trench fighters of the body. They have the power of independent ("amæboid") movement, and are able to destroy microbes by direct attack at close quarters, a process which is known as phagocytosis. The lymphocytes may be compared to the labour corps in that they do not fight hand to hand; they are neither amæboid nor phagocytic, but they serve quite as useful a purpose in repairing injuries to the tissues caused by the hostile troops. The hyalines, I suppose, may be compared to tanks: they are very large cells, actively amæboid, and so

[previous page](#)

[next page](#)