Here is the picture of a young lady who has had a very sudden loss of her immunity. Suddenly her teeth are decaying very rapidly. The teeth were very sensitive. We have taken the debris from one of the cavities and put it on the microscopic slide, and you will note it is almost a pure culture. We then show a culture from that same patient's mouth showing organisms from other parts of the mouth, and you will notice an entirely different type and variety. On this slide we have an organism that has been blamed for pyorrhea and of being able to carry bacteria into tissue that is capable of infection. You will note how slowly it moves. (Shows various kinds of organisms.)

The next picture will show you these organisms which were taken from a blood system of a patient suffering from pyorrhea infection. We inoculated a frog with a quantity of that organism, and it produced in the blood vessels of the frog the formations that I spoke of. You will see, first, the rhythmic motion of the lung of the frog. We cut a hole through the frog's back, so to speak, and then another hole through the anterior chest wall, and let the light go through the hole in the back and come out through the hole in the front, and we got this view of the circulation. We have, first, the rhythmic motion of the lung as it is stirred with the heart beat. You will notice the blood stream as it rushes through the veins and the arteries and the capillaries. We injected into the circulation two minims of a media carrying this organism, and the effect on the frog's blood was to cause what you might call clumps of bacteria blocking up the small end arteries, just as it happens to us in our bodies when we have an invasion of streptococci, or any other invasion of infection. The effect is a blocking of the end arteries and the formation of a clot. You will see the bacteria block up and block up, and then the pressure behind will break it up and it rushes away.

There was a time when you and I were one sole organism, very much like some of these organisms we have seen on the screen. We had many characteristics in common, so, as a matter of fact, they are very close cousins to us. Keep in mind three things now, for we will have to make these observations by inference: How do mutations occur by which new strains of bacteria develop in an abscess; second, how do these various forms of bacteria differ and in what respects are they like ourselves, for, as a matter of fact, there was a time when each of us was a single germ cell, and at that time we were very, very much like these organisms we have been looking at, as you will see, and, thirdly, what are the conditions that determine the development of those organisms? The first of the pictures will show you the fertilizing process of certain forms of egg. I know of no operation in chemistry that is so rapid and so spectacular, and when you realize that practically all those processes are purely mechanical, it is wonderful. It is a process of physical chemistry. We will see how these bacteria produce