

Newest Microscope Will Trail Unknown Germs to Their Lairs

San Diego Inventor of Most Powerful Magnifying Instrument Known Tells Local Scientists of Marvelous Possibilities Now Opened to Research; Works on Still Greater Apparatus to Reveal Further Secrets.

By HAL JOHNSON

Has science, like the workman who neglects his tools, marched forward in the last 50 years without improving one of its most important complements, its optical equipment?

It has, according to Royal Raymond Rife, Ph.D., of this city, inventor of a powerful quartz-lens microscope, which has a magnifying power of 17,000 diameters and which may revolutionize the field of bacteriological research.

Speaking yesterday noon before a large gathering of prominent local physicians, scientific men and members of other professions at the University club luncheon, Dr. Rife contended that science has gone the limit with present microscopic and optical equipment.

"Science has gone ahead, but it has left its optical equipment behind," Dr. Rife said. "Lenses today are not so good as they were 50 years ago. Yet, in all great advances of scientific research one of the most important things was the optical equipment."

TO TRAIL STRANGE MICROBES

The next question of importance, which exists in the minds of laymen and men of science alike, is what use will be made of Dr. Rife's wonderful invention? Will it be put on the trail of heretofore obscure or unknown disease microbes and bacteria, to the great benefit of mankind in fighting pernicious maladies?

Dr. Rife said it will. He assured his listeners that he and several of his associates, men prominent in bacteriological circles, are going to work soon on a filterable form of infantile paralysis bacteria.

"If it is there," Dr. Rife said, "we can find it by breaking up the waves of light, so as to have no interference in the instrument.

"I've spent years looking down the tube of a microscope, but I have hardly scratched the surface. By the development of a more practical optical equipment, however, more details of a definite nature may be obtained with regard to ultra micro-organisms."

Combined efforts of Dr. Rife and Dr. Isaac Kendall, director of medical research at Northwestern university, may result for the first time in definite knowledge concerning bacteria which cause more than 50 communicable diseases.

FOLLOWS FILTERED GERMS

Dr. Kendall's discovery has to do with a substance, in which it is possible to cultivate germs as they develop in the human body. His process is one of filtering, but with continued filtering certain bacteria disappeared and it is Dr. Kendall's belief that the bacteria assume smaller forms. Excluding Dr. Rife's microscope, no instrument is said to exist which is powerful enough to see the bacteria in the smaller forms.

Recently at Pasadena Dr. Kendall used the Rife microscope and was able to trace typhus bacteria through several filtrations and the experiment confirmed the Chicago doctor's belief that the bacteria changed form in the

filtered state. Commenting on the experiment yesterday, Dr. Rife said he predicted that the specimens would appear blue in the field. His prediction came true, he said.

One of the revolutionary features of the Rife microscope is that it makes specimens visible without use of stains. Dr. Rife said he believes micro-organisms are so chemically composed that they are susceptible to their own color stains. A system of rotating, wedge-shaped prisms in the Rife microscope, "bend" the light and segregate one line of the spectrum. This is aided by a condensing and illuminating system of quartz lenses.

It apparently remains to create an index system of micro-organisms, according to their known or assumed colors. Dr. Rife said that each organism adopts its own individual band in the spectrum.

"We will know that the organism is not there," Dr. Rife said, "if there is no color.

"I positively believe the time is near when, for research work, we shall eliminate stain, and I believe a proper index can be worked out whereby each individual specimen will carry its own stain of the spectrum. It may take time, but other things in the field of scientific research have taken time."

USES GERM RANGE FINDER

In using his microscope at Pasadena, Dr. Rife said he also used a micro-polariscope, which is a microscope with a polarizer and analyzer attached. This aided in determining the chemical composition of the organism to be under observation. He explained that much time can be saved by use of the polariscope and a Vernier attachment, which aids in finding the object in the field. Without these finding devices, one might spend many hours hunting for the object, the speaker said.

Anyone who has gazed through the tube of an ordinary microscope can appreciate that statement. It sometimes is difficult to find the object in a microscope which magnifies 1500 diameters, or less. With an instrument of 17,000 diameters, the field would be like a chartless jungle.

Some idea of the magnifying ability of the Rife instrument is shown in experiments made at Pasadena. Dr. Rife said that his microscope even goes so far as to magnify vibrations together with the specimens, and that it becomes necessary for him and his associates to take the microscope to the basement and place it on the concrete floor to carry out their experiments.

The inventor announced yesterday that he is working on another microscope, which will embody a few changes. One of the biggest changes is in weight. The present instrument weighs 60 pounds. The new microscope will weigh 150 pounds and will stand in an upright position. The cost of the instrument that won him world-wide fame, cost Dr. Rife about \$8000, he said.

Dr. Rife's talk involved many technical terms known only to men of

science, but he pointed to an important feature of his instrument, which differentiates it from the old-type microscope. In his microscope, Dr. Rife said, the rays or beams of light in the tube do not cross. They are held apart by six quartz lenses. Instead of crossing, the beams are brought to the full width of the tube and are condensed. He said that higher magnification has not been attained because of interference of light rays that would not allow amplification of the field.

Dr. Rife showed several microphotographs which he said he took at 17,000 diameters. This was made possible, he said, because of the remarkable revolving power of the instrument. This power, he said, was picked up in the photographs at a point where the eye failed to perceive. He said the revolving power of the instrument is three times greater than that of the human eye.

Dr. Rife said that parts for his microscope were made in many parts of the world. He said he used quartz glass entirely, because it allows from 48 to 50 percent more light than other kinds of glass. He said he uses a 2000-candle power illumination unit with the instrument. The beam of the light is cold, he said, and he has had a living specimen under it for five or six hours without evaporation from heat.

In introducing him, Gordon Gray, said Dr. Rife has worked with the microscope 26 years and that the discovery of the new microscope was made eight or nine years ago. Dr. Rife has lived in San Diego about 17 years.

The meeting was opened by George Stone.