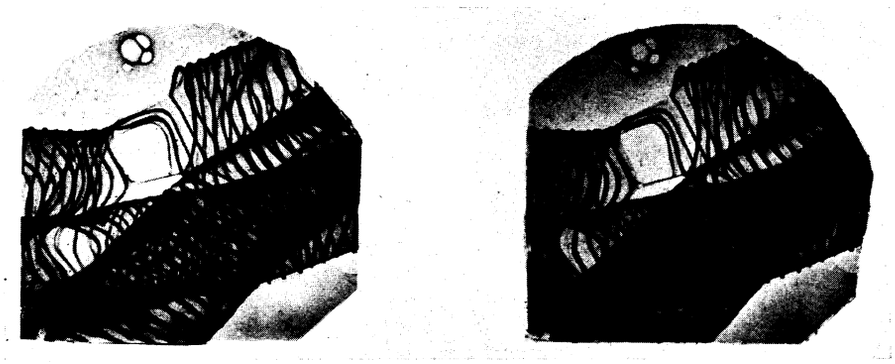

FROM SUBMICROSCOPIC WORLD

Aided by such stereo electron micrographs as this, scientists at the meeting of the American Association for the Advancement of Science were able to see, with a 3-dimension effect, objects not visible at all with ordinary microscopes. This is a mosquito larva trachea. Place a card between the two photographs with one edge against the page and the opposite edge against your face so that your left eye looks only at the left view, your right eye at the right one, and see whether you can get the 3-dimension illusion.

PHYSICS

See Three-Dimensional Images Of Submicroscopic Particles

Electron Microscope Used To Make Stereoscopic Pictures of Lining of Mosquito Larva Trachea

VIEWING invisible particles as huge, rugged, three-dimensional chunks that "stuck out" from the projection-lantern screen, an audience of physicists attending the meeting of the American Association for the Advancement of Science in Dallas sat in something like schoolboy awe, while Dr. V. K. Zworykin and Dr. J. Hillier of the RCA Research Laboratories explained this latest wonder of the electron microscope.

The electron microscope, now becoming well known for its capacity to make visible on a large scale details too fine to be detected at all with light-using instruments, produces its images by means of magnetically focussed streams of atomic particles. Hitherto it has been used only to take pictures from a single "shooting angle," so that its micrographs were like single, "flat" photographs.

The two RCA physicists have solved the problem of making the big instrument take stereoscopic pictures, that is, shots from two slightly different angles. The specimen holder is so built that it can be rotated through 180 degrees between exposures. The resulting photographs are then mounted so that they can be viewed through a stereoscope, like the parlor delight of our great-grandmother's time. Or, the twinned pictures can be made into a double lantern slide, and the audience provided with special Polaroid goggles which bring out the three-dimensional effect even more strikingly.

Science News Letter, January 3, 1942

Insect Parts Photographed

ELECTRON photomicrographs of almost unimaginably thin linings of insect breathing tubes were shown to the meeting by Dr. A. Glenn Richards of the University of Pennsylvania and Dr. Thomas F. Anderson, RCA Fellow of the National Research Council. Some of the details, invisible even with the highest powers of light-using microscopes, help to explain why certain insects are resistant to poison dusts and fumes while others are not.

The photographs, made with streams of atomic particles instead of waves of light, show that although the uppermost layer of the cuticle lining a cockroach's breathing-tubes (which serve insects in place of lungs) is only 2.5 microns (one ten-thousandth of an inch) in thickness, it is composed of two layers, the thinner of which has a thickness of the order of a hundredth of a micron.

Science News Letter, January 3, 1942

Wave Mechanics Supported

RECENT experiments on the scattering of electrons by light gases, hydrogen, helium and the lighter hydrocarbons, especially designed to decide between the classical mechanics and the new wave mechanics, resulted decidedly in favor of the latter, said Dr. A. L. Hughes, of Washington University, retiring vice-president of the physics section, reviewing progress in this field.

In one particular case, the wave mechanics predicted just half the scattering given by classical formulas. Experiment showed the wave mechanics was right. The scattering of electrons was also found to be identical with the scattering of X-rays under similar circumstances.

The classical mechanics assumes that forces in the atomic world obey laws laid down by Newton, which do work well for larger masses. Wave mechanics assumes that with every electron is associated a wave, and this "wave function" modifies its behavior in ways that can be calculated by the theory.

Science News Letter, January 3, 1942

VETERINARY MEDICINE

Sulfanilamide Beneficial In Fowl Pneumonia

SULFANILAMIDE, conqueror of a score or more of human diseases, appears to be good also for some of the diseases that afflict the poultry yard. It has been used successfully in treatment of fowl pneumonia and some types of eye infection by D. E. Lothamer of Louisville, Ohio. In most cases, the treated birds had fully recovered within 24 hours, with no unfavorable after-effects.

Before undertaking treatment with sulfanilamide, Mr. Lothamer tried heavy overdoses experimentally, both on three-day-old chicks and adult, laying fowl. The chicks fell into a condition of stupor, from which they recovered intermittently only to lapse again. Given doses of sodium bicarbonate, they recovered within 36 hours and remained normal.

The laying hens showed no immediate ill effects of over-dosing with the drug, but presently began to lay soft-shelled eggs, despite the fact that their ration included plenty of calcium, and also vitamin D. In some cases, the disturbance was so severe that the hens never recovered the ability to lay hard-shelled eggs, although most of them returned to normal functioning after the overdoses of sulfanilamide were stopped.

Science News Letter, January 3, 1942