PHYSICS

Three-Dimensional Object in World of Two Dimensions

THE ELECTRON microscope is revealing new marvels in the strange films only a single molecule thick produced by scientists. These mono-molecular films have often been called a "two-dimensional world" because of their lack of thickness and because the intermolecular forces act only in two dimensions.

The newest finding, reported to the meeting of the American Physical Society in Washington, D. C., is that such two-dimensional films can produce a crystal structure with three dimensions.

The discovery, announced by Dr. L. H. Germer of the Bell Telephone Laboratories, is about like saying roughly that three-dimensional marbles had been found to exist in a flat sheet of paper.

Dr. Germer is the colleague of Dr. C. J. Davisson who was co-winner of the 1937 Nobel Prize in physics for his discoveries of electron diffraction, a find which has made electron microscopes possible.

Thin films of many inorganic substances have been studied, Dr. Germer reported. They range, among the elements, from heavy gold to light beryllium. In many cases the amount of material evaporated into a film was so small that it could have produced a film only a single atom or molecule thick.

By shooting electrons through these films Dr. Germer obtained diffraction patterns which can be interpreted only on the basis that the film contains *three-dimensional crystals*. The italics are those of Dr. Germer's in his written report to the Society.

Content with reporting his astounding discovery, Dr. Germer left no hint as to how a two-dimensional world can contain a three-dimensional object.

Science News Letter, January 21, 1939

MEDICINE

U. S. Hopes To Be Independent In Morphine and Quinine

THE U. S. Public Health Service is taking steps to make the United States independent of outside sources of two of the world's most important drugs —quinine and morphine.

Efforts to do this by finding a way to make synthetic morphine and quinine or satisfactory substitutes for these two drugs will be started at the U. S. National Institute of Health early in 1939, the director, Dr. L. R. Thompson said. These plans for the Institute, which is part of the federal health service, were presented to the National Advisory Health Council.

The search for a synthetic morphine without habit-forming or addiction properties has been going on for nine years under the joint auspices of the U. S. Public Health Service and a committee of the National Institute of Health.

This line of research will be continued at the National Institute of Health, Dr. Thompson said, but in addition to looking for a non-habit-forming morphine, the federal scientists will try to develop a chemical at least as good as morphine for controlling pain, even if it is also habit-forming, so that patients and physicians in the United States will be independent of morphine. The latter drug is made from opium which comes from the Orient.

Nothing has ever succeeded in completely replacing quinine for the treatment of malaria, Dr. Thompson has said, nor has anyone been able to make quinine from anything but the bark of the cinchona tree.

Although the world's first quinine came from the bark of cinchona trees in Peru, the world's supply now comes from Java and the Dutch have a monopoly on this supply. Atebrine and plasmochin have been used in malaria control work but are not universally accepted as completely satisfactory quinine substitutes.

The National Institute of Health will continue its investigation of the tuberculin test as a method of screening out tuberculous from non-tuberculous persons in large population groups, such as schools, Dr. Thompson said. There is at present a lack of correlation between tuberculin tests and X-ray findings and the Advisory Council was consulted on this problem.

Science News Letter, January 21, 1939

PHYSIOLOGY

Test Yourself for Queer Eye Illusion

ARE you one of the few people who appear to be endowed with unusual stereoscopic vision which will permit you to obtain the illusion of depth in viewing two identical pictures taken with a stereoscopic camera? Can you, to say it another way, obtain the illusion of depth in a picture which could be created with Grandma's stereoscope that delighted visitors to the parlors of the past?

For some months now the British science journal *Nature* has had comment after comment about this curious optical phenomenon of some human eyes. Perhaps you too are a human stereoscope. At any rate try out the following test as outlined by G. R. R. Bray of Knockholt, Kent, England.

Set up two identical objects, say cubes or balls, about a foot apart and then step back about fifty feet. Most people with normal vision will see two objects.

But people with the unusual vision will see the two objects superimposed on one another if they can place them at some specific distance apart and view them from the proper distance. One foot apart and fifty feet distant merely happen to be the figures in Mr. Bray's own particular case.

The explanation seems to be that the eyes of such people tend to move their axes apart more readily than to converge from the normal angle for focused vision at medium distances. In Mr. Bray's case also a pair of stereoscopic photographs are easily seen in correct "perspective"—more easily than with a lens viewer in fact.

Persons with this type of vision may sometimes have experienced the queer unreality of seeing the pattern of a wall paper seem to become a semi-transparent object suspended in air and moving about with every movement of the observer. This strange happening has been known for about 200 years, states R. S. Creed of New College, Oxford, in reviewing the history of the binocular illusion.

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