BACTERIOLOGY

'Flu Virus Found Smaller

Sizes of all viruses must be recalculated, since "best yet" submicroscopic pictures show that the organisms are smaller than previously believed.

See Front Cover

➤ THE INFLUENZA virus is only four-fifths the size that previous electron microscope photographs have shown it. The sizes of all viruses, many of deadly diseases, must be recalculated.

The best submicroscopic pictures, showing organisms and viruses in three-dimensional form for the first time, were presented by Dr. Robley Williams of the University of California Virus Laboratory to the American Association for the Advancement of Science meeting in Corvallis, Ore.

A new freeze-drying method immobilizes the smallest of living particles in a ten-thousandth of a second. With it Prof. Williams got his new and "best yet" electron microscope photographs.

The sizes and shapes of viruses will have to be re-evaluated. The technique may permit researchers to some extent to photograph viruses and other agents in the act of attacking cells.

The key to the new method lies in a special application of freeze-drying of biological samples before photographing them.

Biological materials must be dried before being photographed in the electron microscope. Conventional methods require that water be dried out of samples. This creates surface tensions which squash the objects flat and thus present them in a distorted form. They look larger than they are.

Dr. Williams sprays his samples on a collodion surface with an atomizer. The droplets are only about a billionth of a cubic centimeter in size. His apparatus freezes the samples in about one ten-thousandth of a second, then a vacuum pump dries them as ice rather than liquid.

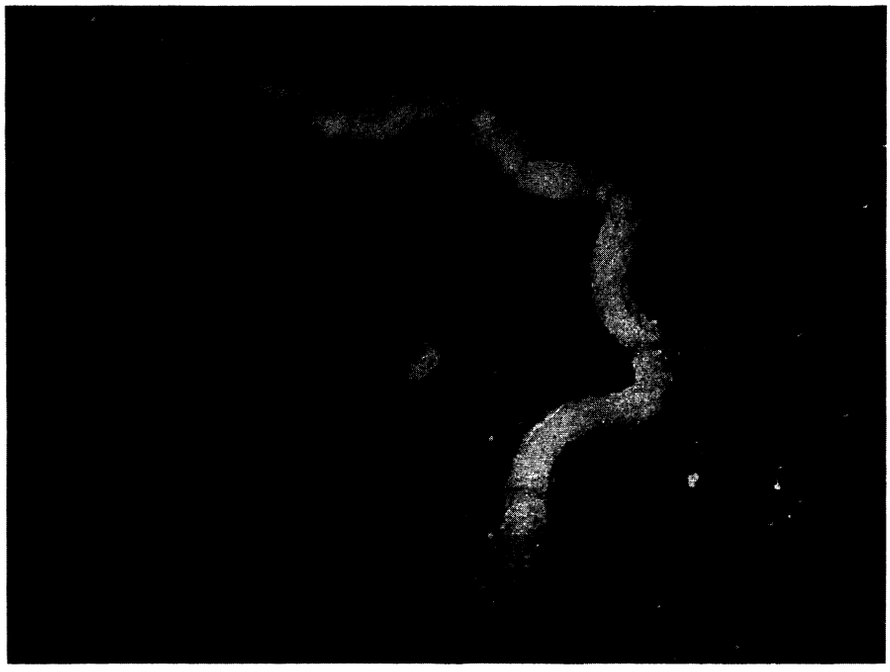
Viruses, bacteria and other objects retain their true shape when thus treated. They cast a high shadow, in contrast to very limited shadows cast by the squashed objects treated conventionally.

The contrast can be seen clearly by comparing the micrograph on the cover of this week's SCIENCE NEWS LETTER with the one shown below. The cover picture was taken of the harmless organism known as *Rhodospirillum rubrum* when prepared by the freeze-dry method, while the photograph below shows the same organism when prepared by drying in air.

So rapid is the freeze-drying technique that Dr. Williams hopes to be able, by choking off biological reactions, to catch the reacting materials in their true relationship. It may be possible to find at what point viruses attack living cells, and see this in true three-dimensional form.

The research was supported by the National Foundation for Infantile Paralysis in New York.

Science News Letter, June 28, 1952



AIR-DRIED MICROORGANISM—Squashed into a two-dimensional sine wave, by ordinary air-dried preparation, the organism shown here is used as a test object in a new technique for electron microscopy.

PUBLIC HEALTH

'Flu Vaccine Protects, Industry Test Shows

➤ VACCINATION AGAINST influenza helped many employees of the Remington Arms Co., Bridgeport, Conn., to escape the disease when an epidemic struck Bridgeport, it appears.

The vaccine used contained a mixture of types A and B. Laboratory tests were not made to determine the exact virus causing the epidemic so Dr. C. F. Yeager of the company in reporting to the American Public Health Association is cautious in his conclusions. Most of the outbreaks of 'flu that year (1951) in different parts of the country were found due to Influenza A prime virus when tests were made.

But the record shows that of 1,952 employees not vaccinated, 183 were sick with influenza, while only 15 got the disease among the 847 who were vaccinated. This is an incidence of 9.4% in the unvaccinated group, compared with 1.77% in the vaccinated. The average number of days lost from work was 8.2 in the unvaccinated group, 8.0 in the vaccinated.

Science News Letter, June 28, 1952

ENGINEERING

Power-Line Device Reduces Flicker of Electric Light

➤ ANNOYING LIGHT flickers, often typical of rural electric service, can be reduced substantially by a transformer device described to the American Institute of Electrical Engineers meeting in Minneapolis, Minn.

Paul A. Cartwright, assistant professor of electrical engineering at the University of Minnesota, said the power-line device was known as a "line-drop compensator." It works the instant a motor-driven appliance is switched on, virtually eliminating the momentary dimming of lights.

Essentially a low-voltage auto-transformer, the device also will help solve other disturbances on secondary power lines, he said. It is simple in construction, compact, inexpensive and requires little time for maintenance.

Science News Letter, June 28, 1952