

MEDICINE—BIOLOGY

New Potent 'Flu Vaccine To Get Human Trials

Influenza Virus Itself, "Seen" for First Time With Electron Microscope, Is Only 11 Millimicrons Across

A NEW, uoweful vaccine against influenza and pictures showing for the first time what the influenza virus looks like were announced by Dr. Leslie Chambers and Dr. Werner Henle, of the University of Pennsylvania's Johnson Foundation, at the meeting of the American Philosophical Society in Philadelphia.

First human trials of the vaccine, on several hundred volunteers, are scheduled to start this week. It is so powerful that a single shot quite regularly protects mice against 100,000 killing doses of influenza virus.

The 'flu virus itself, now seen for the first time with the aid of the electron microscope, was revealed as an unimaginably tiny spherical particle with a diameter of 11 millimicrons. This is so small that, placed side by side, enough of these particles to give influenza to about 500 mice could be covered by the period at the end of this sentence. This is based on the scientists' calculation that the minimal infectious dose is less than 100 particles.

The influenza A virus particle is one of the smallest disease-causing substances yet isolated.

The influenza virus had previously been believed to be about nine times this size. The larger particles which had been found in lungs of mice infected with influenza A are now believed to be components of normal cells which acted as carriers of the much smaller influenza virus particles.

The Philadelphia scientists isolated the true influenza virus particles from extra-embryonic fluids of developing hens' eggs that had been infected with influenza.

Chemical analysis showed the virus to be composed largely, if not entirely, of the kind of protein found in the nucleus of cells.

The virus was concentrated from the extra-embryonic fluids by spinning it for 90 minutes in an ultra-centrifuge with a force 90,000 times that of gravity, and by the addition of protamine, familiar to diabetics from slow-action protamine insulin.

The new vaccine, besides being remarkably effective in mice, has the advantage of being free from foreign proteins which might produce unfortunate reactions. It will be some time before its protective value for humans is known. Tested on mice, it showed greater efficiency than the vaccine developed by Rockefeller Institute scientists which, in trials during last winter's epidemic, cut down influenza among vaccinated persons to 50% of that among unvaccinated persons in the same institutions.

Science News Letter, November 29, 1941

Chilling Develops Ova

UNFERTILIZED rabbit ova were caused to begin their pre-birth stages of development by chilling the entire bodies of unmated young female rabbits, in experiments reported before the meeting of the American Philosophical Society by Dr. Herbert Shapiro of Hahne-

mann Medical College. This carries scientific investigation of parthenogenesis, or fatherless birth, a long stride ahead.

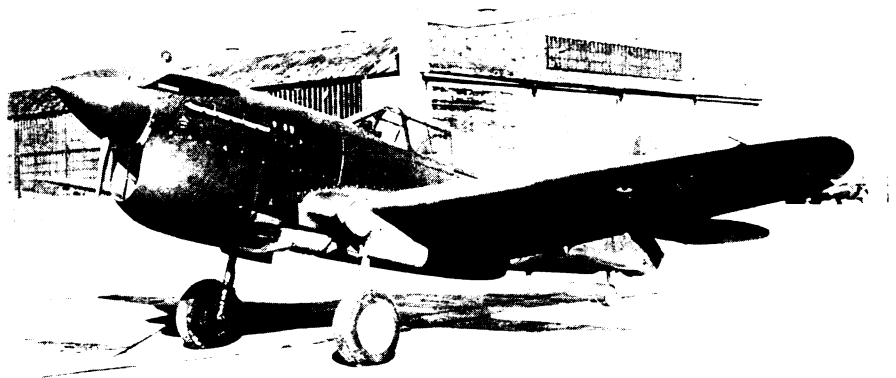
Previous experiments by other investigators had resulted first in the initiation of development of rabbit ova in glass vessels outside the mothers' bodies, later in starting development after surgically opening the abdominal cavity and chilling the Fallopian tubes with cold-water jackets. The experiments now reported are the first in which development was started without resort to any surgical means whatever.

In Dr. Shapiro's laboratory, the rabbits' bodies were cooled by applying ice packs on their flanks, directly over the region of the Fallopian tubes. The rabbits had previously been anesthetized. Temperature, pulse rate and breathing rate were recorded at regular intervals.

The rabbits were turned temporarily into something resembling cold-blooded animals. Their normal body temperature, nearly 104 degrees Fahrenheit, was reduced to points varying from 92.5 to 66.4 degrees. The rabbits all recovered, apparently none the worse for their chilly experience.

The eggs were subsequently flushed out of the Fallopian tubes and sectioned for microscopic examination. None had progressed very far in development, but three had undoubtedly at least been started. Two of them were in the two-cell stage, the third had undergone a considerable number of cell divisions.

Science News Letter, November 29, 1941



"WORLD'S DEADLIEST FIGHTER"

This new Curtiss Hawk P40F is so called by its designers because of its fire power (60,000,000 foot-pounds per minute at the muzzle), its speed and its high altitude performance. It is the first American warplane powered with the American-built Rolls Royce. The photograph has been retouched so as not to show any armament.

Atmosphere Loses "Roof"

THE "ROOF" of the atmosphere, where the stratosphere begins, is lost completely when the long, desperately cold night of the Antarctic winter settles down, Arnold Court of the U. S. Weather Bureau told the meeting. This winter disappearance of the tropopause, as the lower boundary of the stratosphere is known, has never been reported from the Arctic, despite very many measurements taken in Arctic regions. None of the Arctic stations, however, is as close to the North Pole as Little America is to the South.

The tropopause is defined as the level at which temperature ceases to decrease with greater altitude. Normal summertime height in the Antarctic is about nine kilometers (5.6 miles), with a temperature of —50 degrees Centigrade (58 degrees below zero Fahrenheit). Above that level the temperature in the stratosphere rises again, reaching a steady point at about —40 degrees Fahrenheit.

Under Antarctic winter conditions, however, the temperature keeps right on dropping as the radiosonde balloons explore higher and higher, detecting no tropopause at all. Lowest temperature recorded was —80 degrees Centigrade, or 112 degrees below zero Fahrenheit.

Science News Letter, November 29, 1941

MEDICINE

Common Unrecognized Disease May Be Cause of Lung Ills

Causes Tiny Limestone Formations in the Lungs and Is More Prevalent in Areas Near Appalachian Plateau

A COMMON but not yet recognized disease has been shown by U. S. Public Health Service scientists to be the cause of tiny limestone formations in the lungs previously thought due to tuberculosis.

Because physicians have taken these tiny spots shown up on X-ray plates to be due to tuberculosis lesions that have been cured, the new findings will probably cause a change in medical diagnosing of many cases.

Curiously, the disease is highest in areas where there are extensive limestone and chert formations, that is, in areas adjacent to the Appalachian Plateau.

These observations, made by other scientists, aroused the Public Health Service to make an independent study. It selected Ross County, Ohio, an area adjacent to the Plateau, where lung calci-

fication is common, but tuberculosis fatalities not above ordinary. Rural families were selected in order to rule out as far as possible contacts with tuberculosis outside the household.

More than 200 persons in 44 farm households were X-rayed and tuberculin tested. Of 253 persons effectively X-rayed, 125 showed the limestone formation in the lungs—but none had significant tuberculous lesions.

Of 235 who were tuberculin tested, 194 were negative. Fifty-six persons with negative tuberculin tests show lung calcification. The studies were made by Dr. B. J. Olson, passed assistant surgeon, Dr. W. H. Wright, chief of the division of zoology, and M. O. Nolan, associate zoologist, all of the Public Health Service.

The existence of an unrecognized disease of very common occurrence is suggested by these investigators. It appears to produce the lung lesions closely resembling the X-ray picture of primary tuberculosis. They believe, therefore, that the finding of lung calcification particularly in tuberculin-negative persons should not be assumed to be evidence of tuberculosis infection.

With tuberculosis apparently ruled out, the Public Health Service scientists next considered the ascaris as a possible cause of the lung calcifications. Ascaris is a tiny, parasitic worm, which in the larval stage may damage the human lung. Careful study, however, failed to prove or disprove that ascaris was guilty.

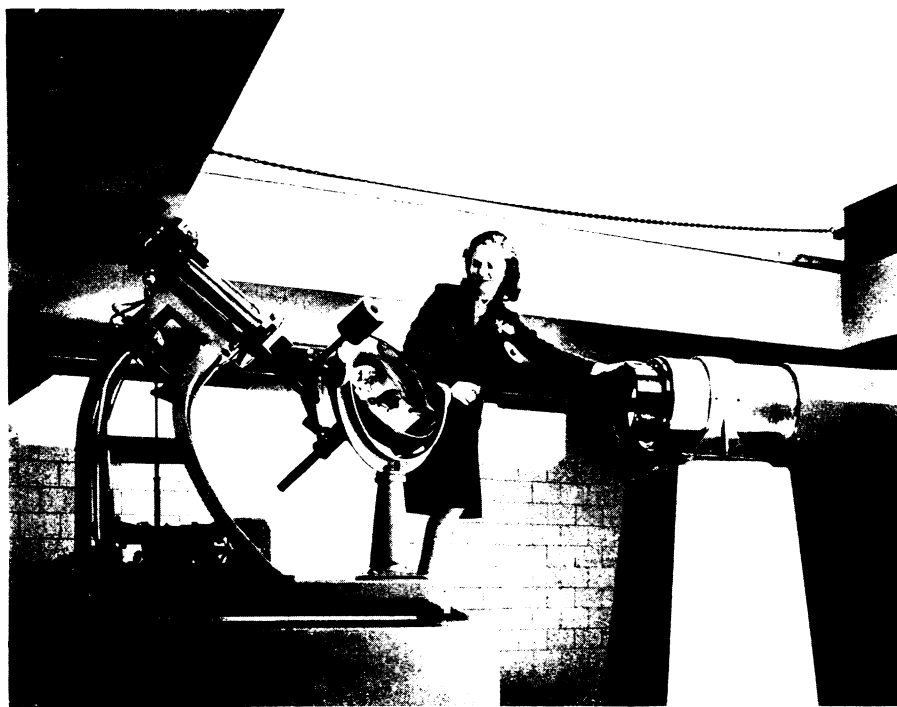
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ASTRONOMY

People's Observatory Dedicated in Pittsburgh

THE PEOPLE of Pittsburgh now have a telescope all their own. The new \$30,000 People's Observatory of the Buhl Planetarium will be used by the public and not by professional astronomers. Its siderostat telescope is the second such instrument in America.

The observatory itself is half outdoors, where the telescope is, and half indoors, where the star-gazers do their looking in



TELESCOPE FOR PITTSBURGH PEOPLE

It is this mirror which locates and follows the stars being viewed with the new siderostat telescope. The reflection is carried to another room where it is viewed.