MEDICINE

'Flu Viruses Alike

Grown on two widely different kinds of living tissue, chick embryos and mouse lungs, they have been shown chemically and physically identical.

➤ INFLUENZA viruses grown on two widely different kinds of living tissue, chick embryo and mouse lung, respectively, have been shown chemically and physically identical in experiments conducted at the Rockefeller Institute for Medical Research, by Dr. C. A. Knight. This evidence of identity, obtained for the first time on viruses that prey on animal hosts, has considerable practical value from the medical standpoint, for it gives reassurance that vaccines for human diseases cultured on media of non-human origin can be left essentially unchanged by possible influences of their alien hosts, and still have disease-preventing value when re-introduced into the human system.

The virus used by Dr. Knight in his crucial experiments is a strain of human influenza listed as PR8, because it is one of a series that was isolated during an epidemic in Puerto Rico. It has been kept going in the laboratory, for research purposes.

Dr. Knight first planted the virus in incubating hens' eggs—a procedure that has now become standard in propagating various causal agents of disease. He separated out a purified fluid containing the active principle, and accumulated a considerable quantity of it. He also cultured the same virus in the lungs of laboratory mice, and after painlessly killing the animals extracted and purified the fluid from that source.

Careful laboratory comparisons by both chemical and physical means indicated that the viruses collected from these two widely diverse sources are alike in all essential respects. The mouse-lung strain, when cultured on chick embryos, apparently behaves exactly as does the strain that has been fed on chick embryo all the time. Finally, examination with the electron microscope shows the spherical particles that appear to be the "bodies" of the virus to be identical in appearance.

Chemical and physical identity between strains of tobacco mosaic, a plant-disease virus, was demonstrated in the Rockefeller Institute laboratories some years ago by Dr. W. M. Stanley, but until now a parallel proof in the case of an animal virus has not been possible.

Dr. Knight gives a condensed summary of the technical details of his work in *Science,* (Mar. 2), and states that a longer discussion will soon be published elsewhere.

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MOURNING CLOAK—This butterfly has the unusual habit of hibernating during the cold winter months. Its favorite sleeping location in cold weather is under the loose bark of a tree. The first warm days in March usually bring him out into the sunshine. Photograph by George A. Smith.

AERONAUTICS

Fastest Fighter

Known as the "Shooting Star," the P-80 gives the Allies supremacy in the field of jet-propelled aircraft, Gen. Arnold discloses.

➤ THE ALLIES hold supremacy in the field of jet-propelled aircraft, reports Gen. H. H. Arnold, commanding general of the U. S. Army Air Forces, in disclosing first facts about the P-80, the fastest fighter in the skies.

The P-80, built by Lockheed, and developed with the aid of the Air Technical Service Command at Wright Field and British engineers, is known as the "Shooting Star." The P-80 can fly as far as any of the conventional pursuit ships in use today. This solves one of the major problems of design in jet-propelled airplanes.

Powerful armament is located in the nose, for the most effective concentration of fire power. The airplane is powered by General Electric's turbo-jet engine installed in the tail of the sleek plane. This engine of simple design produces more than twice the power of earlier models built for the AAF.

Air for the jet engine in the Shooting Star rams into vents in front of the wings, almost flush against the fuselage. It pours through the vents into the engine, where it is compressed by a swiftly turning impeller. At very high altitudes the air will be as cold as 75 degrees below zero Fahrenheit. The air is whipped by the impeller to a combustion chamber, where the aviation kerosene burns furiously. This causes the air to expand as a hot gas and increases its velocity. The gases then pass through a red-hot turbine wheel, which is connected by a shaft to the impeller-compressor. Finally, the blast passes out through the jet exhaust at the rear tip of the plane, giving tremendous forward thrust.

The improved jet motor on the P-80 makes virtually no vibration. This reduces the fatigue on the pilot. Although the pilot hears no noise from the jet while in flight, a rumbling roar, like a baby thunder, passes out the rear. Another advantage of the new jet motor is that it requires no warm-up. It develops more than enough power for a take-off in less than a minute.

The P-80 has a new type of wing with a knife-like leading edge and other aerodynamic innovations that master the problems encountered when the speed of sound is approached or surpassed. The cockpit is located forward of the wing, and the pilot gets fine visibility through a plastic bubble canopy. The cockpit is pressurized so that the pilot can fly above 30,000 feet without use of an oxygen mask. The Shooting Star is also equipped

for anti-G suits, which help prevent a blackout of vision during sharp turns and pullouts.

Small and lightweight, the new plane is extremely maneuverable through use of a hydraulic aileron boost and electrically operated flaps. It can carry heavy loads of ammunition, bombs and fuel, as well as photographic equipment for aerial reconnaissance. The simplicity of its design eliminates most of the controls found in a conventional reciprocating-engine airplane.

The entire surface area of the new jet plane is lacquered to a high polish. This reduces the air resistance still further and gives it the appearance of a skyrocket of death cutting through the skies.

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AERONAUTICS

Many Uses for Helicopters

When perfected, they may aid power and oil line inspectors, aerial photographers, and find other industrial and governmental activities.

➤ WHEN the helicopter is ready for the public it will find many uses in mdustry and government, as well as in civilian activities, Charles I. Stanton, Deputy Administrator of the Civil Aeronautics Administration, stated in an address before the American Helicopter Society in Bridgeport, Conn. He declared that the CAA is encouraging and fostering civil aviation and in this respect it is not ignoring the helicopter.

He pointed out that the helicopter may perform many industrial jobs already planned for fixed-wing airplanes, and in many cases it will do them better. Certain types of photography, particularly low-level shots of single buildings, can be done best from a stationary vehicle in the air, he said.

"Dusting of small areas such as stagnant pools, small fields surrounded by high obstructions and other pocket-like areas falls automatically into the performance ability of the helicopter," Mr. Stanton commented.

Aerial inspection of power lines and oil lines, and the transportation of repairmen to the scene of damage can be accomplished by the helicopter, he suggested.

As still further illustration of the versatility of the "flying windmill," Mr. Stanton stated that in the widespread range country of our western states, the helicopter may be used to spot cattle on the range, locate lost herds, and take censuses of wild animals. It can also be used in hunting coyotes.

Lakes so deep in the forests that they are still unknown to the fisherman's rod can become the long-sought vacation spots of sportsmen who own helicopters. In the duties of national conservation, the helicopter can be used as a flying sentinel over our national forests. It can help extinguish forest fires by permitting firefighters to drop bombs filled with fire-smothering chemicals into the heart of the flames.

"Everyone from the Greyhound Bus Company to the owners of a single taxicab decided that the helicopter was the answer to their plan for the future," Mr. Stanton remarked in speaking of the possible uses of the craft for feeder line service.

He declared that he did not know how soon the problems confronting helicopter engineers could be solved.

"We realize that although the helicopter has gained tremendous impetus from the demands of war, it is also being retarded in certain directions, because of military expediency. We know that the present models are not for the inexperienced private pilot; and we know that they demand too much expert maintenance for general utility," Mr. Stanton explained.

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MEDICINE

More Medical Societies Cancel Annual Meetings

➤ AMERICA'S oldest medical society, the American Psychiatric Association, and many medical societies younger than this 101-year-old organization, are cancelling annual meetings scheduled for this year, the action being taken in cooperation with the war effort.

The American Orthopsychiatric Association, the Society of American Bacteriologists, the Federation of American Societies for Experimental Biology which is made up of six scientific societies, and the American Public Health Association are the most recent to announce annual meeting cancellations.

Members of these societies have all been contributing to the war effort both through fundamental research leading to advances in medical treatment and through application of these advances for the protection and healing of our fighting forces.

The American Psychiatric Association has held meetings every year since 1844 except in 1861, when it was recorded "no meeting held on account of the disturbing conditions of the country." The Federation has cancelled its meetings each year during this war since 1942.

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