



ARTIFICIAL HEART

The Lindbergh-Carrel heart on exhibit at the New York Worlds Fair. Viewing the apparatus with Dr. Carrel (extreme right) are officials of the Ciba Pharmaceutical Products Co., in charge of the exhibit.

MEDICINE

Lindbergh-Carrel Heart Gives New Lead For Graves' Disease

Study of Thyroid Glands Removed From Patients With Disease Point to Condition Outside Gland

A NEW lead for an attack on the kind of goiter known as Graves' disease has been obtained from human thyroid glands kept alive on artificial medium outside the body for the first time for from three weeks to two months in the Lindbergh-Carrel heart apparatus.

The studies, if they can be continued, may revolutionize the treatment of this kind of goiter, characterized by popping eyes. They are reported by Drs. N. Chandler Foot, Lillian E. Baker and Alexis Carrel, of the Rockefeller Institute for Medical Research and Cornell University Medical College and New York Hospital. (*Journal of Experimental Medicine*, July 1)

The thyroid glands were taken from patients operated on for Graves' disease. The glands were immediately placed in fruit jars, the covers were clamped on, the jars wrapped in sterile cotton, and then whisked from the hospital to the neighboring Rockefeller Institute. There the glands, after preliminary treatment, were placed in the apparatus designed for Dr. Carrel by Col. Charles E. Lindbergh. They were nourished on solutions or media instead of blood. Different kinds of

solutions were tried, but the glands, it was found, could be kept alive and healthy for weeks on a completely artificial, synthetic solution which contained only a tiny amount of blood serum, just enough to act as a solvent for vitamin A.

A remarkable cancer-like change occurred in one of the glands during the six to eight weeks that it remained in the apparatus. The change was great enough to deceive a competent thyroid surgeon who examined sections of this gland into thinking the sections were from cancer tissue. No reason for this change was found, and after about one month, the gland became more normal looking.

A hint that the serious thyroid gland disorder, Graves' disease, may be due to some condition quite outside the gland was found in studies of the human glands in the Lindbergh-Carrel apparatus. The changes in the gland that appear in Graves' disease were increased and intensified when small amounts of extracts from the cortex of the adrenal glands and from the pituitary gland were added to the nourishing solution on which the glands lived in the Lindbergh-Carrel heart. Thyroid gland hormone itself, fe-

male sex hormone material, adrenalin, and insulin were also tried, but produced changes only in connection with the adrenal cortex hormone and the pituitary hormone.

"It is too early to say whether Graves' disease is a matter of something other than the thyroid gland," Dr. Baker declared in response to a Science Service inquiry.

At present she is more concerned with the fact that human organs can be kept alive for long periods in the apparatus.

"Now the time is ripe for further investigation," she said. She indicated that such investigations would be continued both on thyroid glands and other organs "if facilities permit."

One of the great advantages of the method is that the organs can be kept alive on artificial media for long periods, during which the effect of the continuous action of small amounts of gland extracts and other chemicals can be studied.

"Such experiments are probably of the utmost importance," Drs. Baker and Carrel state, "since this may be the way that certain profound changes are produced within the body."

Science News Letter, August 5, 1939

AERONAUTICS

U. S. Army Air Corps Looks Back At 30 Years

THE UNITED STATES Army Air Corps, oldest military flying force in the world, looked back on 30 years of progress August 2, the anniversary of its birth.

With one of the first five Army men to learn to fly, General Henry H. (Hap) Arnold, as their present commander, Air Corps officers could make this comparison:

Their first plane, built by the Wright Brothers and accepted by the War Department on Aug. 2, 1909, had a top speed of 47 miles an hour. It weighed 800 pounds. It could stay aloft more than an hour with two men.

Their latest embrace a score of types. Fastest are the experimental twin-engined Lockheed pursuit and the Bell interceptor, nicknamed the "cigar on a tricycle." Each has a top speed in the neighborhood of 420 miles an hour. Largest is the B-15, the "super flying fortress," whose gross weight is 35 tons. Under construction is a still larger craft whose range, with a load of several tons of bombs, will be 10,000 miles. Available to the Air Corps is a passenger plane which could transport upwards of 50 men at a time.

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