

MEDICINE

**Auto Mechanic's Tool
Made to Study Heart**

► AN INSTRUMENT developed to measure roughness of highly machined auto parts has been converted to help doctors study the human heart.

The medical instrument is an Electro Stethograph which gives doctors a high fidelity record of heart sounds so faint they cannot be heard by the human ear even aided by a physician's stethoscope.

The machine shop tool it was made from is the Surfagage, developed by General Motors Research Laboratories. Adaptation of the Surfagage's supersensitive pickup to the doctor's stethoscope was suggested by Charles F. Kettering, GM research consultant, when Dr. Dale Groom at the Medical College of South Carolina, Charleston, told him of technical difficulties he was having in experimenting with various sounding devices.

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HI-FI HEARTBEATS — Electro Stethograph, which records faint heart sounds with high fidelity, was developed from an automotive tool. Doctors show how the device works.

MEDICINE

**Flu and Chemical Cause
Lung Growth in Mice**

► INFLUENZA VIRUSES combined with a chemical cause an extensive growth in the lungs of mice, although the chemical alone produces only a tiny tumor.

Research by Drs. John Adams and David Imagawa, of the University of California at Los Angeles, shows that the chemical, urethan, alone produces a few tiny tumors in the lungs of mice when injected into these animals. And influenza viruses alone cause some inflammation. But the combination of the two produced large masses of cells which are far more extensive than can be produced by either alone.

"Like most other animal experiments, these results do not tell us what happens in human beings," the researchers said. "They merely suggest lines for further research. Chemicals which produce cancer in animals are suspected of being related to human cancer. Several respiratory diseases are known to cause extensive cellular changes and the formation of giant cells in human lungs."

The question is whether these cells are seeds of cancer that may be germinated by repeated irritation from inhaled chemicals. Or is lung cancer caused by a combination of chemical irritation and repeated jolting of lung tissue by the many respiratory ailments we have during life?

These are some of the questions the investigators hope to answer through such studies.

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Because of their greater penetrating power and lower scattering, high energy X-rays from betatrons and synchrotrons produce sharper images than lower energy X-rays, allowing detection of more minute flaws in metal parts.

AERONAUTICS

Strange New Planes

► NOW THAT man can fly like a bird in his planes, he is trying to accomplish something else any bird can do—leap into the air without long runways.

Aircraft designers are therefore abandoning classical bird-like shapes for their new planes. They are thinking in terms of flying barrels, flying saucers, flying platforms, flying Venetian blinds and more versatile helicopters.

The purpose of such designs is to permit vertical or steep-angle take-off, yet maintain fast forward flight.

France is reportedly working feverishly on its revolutionary scheme, the secret barrel-winged coleopter. Flying models are believed to have been tested, but whether or not they were piloted is not known. The tube-like wing surrounds the fuselage like a barrel.

The A. V. Roe Co. in Canada has experimented with a "flying saucer," designed to take off vertically. Jet thrust blowing downward around the edges of the disc-like craft causes suction on the upper surface, generating the lift. Adjustable thrust vanes deflect the jets for horizontal flight.

Rolls-Royce, in Britain, has designed a model dubbed the "flying bedstead." It is thrust into the air vertically by two jet nozzles pointed downward in the front and rear.

The United States has her share of new sharp-angle take-off planes, design of which

has been prodded by the military because of the strategic advantage of operation from smaller airports.

Two models of the convertiplane, a cross between helicopters and conventional planes, have been unveiled. One, the McDonnell XV-1, has completed its first successful conversion from vertical to fast forward flight. The other, the Bell XV-3, is in initial tests.

The flying platform, with its hidden lift propellers, created a sensation recently with its first successful flight. It is controlled by the balance responses of the pilot, who leans in the direction he wants to go.

The Navy's XFY-1 and XFY-1, the "Pogo" planes, are another successful attempt for quick take-off. They are designed to rise and land on their tails.

A design under serious study in many countries is a channel-winged plane. A U-shaped scoop in each wing is built behind the propellers to provide extra lift.

The National Advisory Committee for Aeronautics, a U. S. Government research group, has tested a configuration with a series of retractable flaps mounted like a Venetian blind on the wing to deflect the propeller backwash downward. This provides extra lift on take-off.

One or more of these advanced designs may become the major plane type of the future.

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