

ENGINEERING

Fluorocarbon Jet Spray

Development of new cooling technique that promises electric transformers as much as one-third lighter than present units aided by electrical "howitzer."

► THE RELATIVELY new chemicals known as fluorocarbons when used as a cooling spray greatly increase the efficiency of electrical transformers, Westinghouse scientists revealed in Sharon, Pa.

These chemicals permit the delivery of 3.5 times as much power as is produced by conventional oil-cooled transformers. This comes from the ability of the fluorocarbons to dissipate by vaporization 10 times as much of the heat created in the transformer.

Transformers are the familiar black metal boxes on electrical distribution systems that cut the voltage of the current from feeder lines to safe limits to use in a building. This new cooling system will probably find its first application in the giant transformers which reduce the extremely high voltage used in cross-country power lines to lower voltages for local distribution.

Fluorocarbons are similar to the hydrocarbons of petroleum but differ in that all the hydrogen is replaced by fluorine. They

are synthetic compounds, made by a new electro-chemical process, which entails no use of the dangerous free fluorine. There is no natural source of fluorocarbons corresponding to petroleum and coal for hydrocarbons.

The development of fluorocarbon cooling sprays for transformers is the result of work by scientists of Westinghouse Electric Corporation in Sharon, Pa. As explained by Dr. Paul Narbut, Westinghouse engineer, instead of filling the transformer tank with oil, a small quantity of liquid fluorocarbon is stored at the bottom of the tank.

This liquid is pumped to a nozzle that sprays it directly on the hot transformer core and coils. The heat evaporates some of the liquid. The vapors formed then circulate toward the cooling surfaces of the transformer tank where they condense and release the heat taken from the coils. The condensed liquid flows back to the bottom of the tank for reuse.

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ELECTRICAL "HOWITZER"—Dr. C. F. Hill of Westinghouse Research Laboratories here shows the equipment used to bombard fluorocarbons with electrical strokes ranging up to 300,000 volts to develop cooling spray for transformers.

● RADIO

Saturday, Sept. 22, 1951, 3:15-3:30 p. m. EDT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Armand Spitz, director of the Spitz Laboratory, Philadelphia, will discuss "Seeing the Stars."

With this program "Adventures in Science" takes a vacation because of the broadcasting of football games. It is expected to resume December 1.

AERONAUTICS

Space Flights Can Now Be Planned on Global Basis

► SPACE FLIGHT planning is now on a global basis as a result of the formation in London of the International Federation of Aeronautics.

The following ten countries are members: Argentina, Austria, Britain, France, Germany, Italy, Spain, Sweden, Switzerland and the United States.

Headquarters of the new organization will be in Switzerland. Its president is Dr. Eugene Saenger, German rocket pioneer now developing rockets and jets for the French Air Ministry. Vice presidents are the German physicist, Dr. G. Loeser, and Andrew G. Haley, Washington, D. C., expert on international and technical law, formerly president of the Aerojet Engineering Corporation and now associated with the American Rocket Society.

The object of the Federation is the coordination, dissemination and direction of theoretical research and information. It aims to keep a step ahead of official research establishments.

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MEDICINE

Future Medical Use for Lung Banks Foreseen

► LUNG BANKS may some day join the blood, bone, artery, eye and nerve banks which doctors now draw on to save lives and patch sick bodies.

This possibility is suggested by a report of Drs. George R. Gerst, Jacob Grossman and Adrian Kantowitz of Montefiore Hospital, New York, to the journal, SCIENCE (Sept. 7).

The donor lungs, presumably to come from persons just after death, would be used temporarily for supplying oxygen to patients undergoing heart surgery. At present in such operations mechanical pumps are used to short-circuit blood from the area of the heart being operated on.

But in future heart operations it may be necessary to divert blood from all the heart chambers, the Montefiore doctors predict. In such a case there would be a problem of getting enough oxygen into the blood for circulation through the body.

They report successful use of a donor lung for such a purpose in rats.

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