AERONAUTICS

Self-Starter For Jet Engines

➤ OUTSIDE ELECTRIC power to start the engines of jet-propelled airplanes will not be needed with the use of a jet-engine self-starter announced by General Electric, Lynn, Mass.

It means that the field of usefulness of jet planes is greatly expanded. They will be able to land and take off at flying fields where the outside power is not available.

In this development, a small jet engine built into the plane is used to start the main power plant. Two types have been developed. One uses in the starter jet a combination of fuel and compressed air. The other is powered by hot gases resulting from the burning of a solid propellant in a replaceable cartridge.

Several types of self-starters for jet engines have been developed during the past few years, but none seem to be successful enough to warrant their general use. The type of self-starter used in conventional planes cannot be employed because of the large amount of power required.

In the solid propellant system, developed by G.E., the energy for the starter is provided by the burning of a solid fuel contained in a breech. A fast-burning charge, looking much like an artillery shell, is inserted in the breach and ignited electrically.

In the air-fuel system, pneumatic methods are employed. The pneumatic system can be charged on the ground from air bottles, and in flight from an engine-driven compressor. Approximately five pounds of high-pressure air is used per start. The air enters a combustion chamber through a valve. There it is mixed with jet fuel from a pressurized one-quart bottle. The mixture burns and operates the starter jet which in turn starts the main engine.

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WEIGHTLESS — This tank photographed during a free fall was weightless as the shot was made. Bubbles from the dry ice at the bottom of the tank remain suspended in the water. The camera which took the photograph was fastened to the other end of the same board that carried this tank.

PHYSICS

H-Bomb Already Tested?

American people have received only rumors, but hydrogen bomb broadcasts its own official report in the form of microscopic radioactive particles carried by winds.

➤ JOSEPH STALIN may already be studying a report on the first explosion of a hydrogen bomb at Eniwetok Atoll in the Pacific.

It is certain he will know about the first H-bomb explosion long before the American people will. All the American people now know is that there are rumors the first H-bomb will be tested at Eniwetok sometime this fall or winter. It might already have been set off.

Stalin will know about it not through any elaborate spy system, nor through agents who might have infiltrated the Joint Task Force conducting the Eniwetok tests. None of this cloak and dagger stuff is necessary. An H-bomb explosion sends thousands of microscopic radioactive particles high into the air. From there they are carried by the winds all around the world. Delicate instruments, sent up by high-flying balloons, or flown up in airplanes, can detect these particles. Detailed analysis of the particles can tell not only whether an A-bomb or an H-bomb has been exploded, but also something about the precise composition of the bomb.

For greater efficiency in the analysis, perhaps Stalin has a submarine stationed somewhere in the thousands of miles of empty Pacific ocean between Eniwetok and the west coast of the American hemisphere. Balloons which automatically send back reports of radioactivity in the sky could be launched from the submarine.

Of course, the reverse picture is true as well. American high government officials will have a report of the first Russian H-bomb explosion a few days after it happens. They have to wait only until the wind currents carry the radioactive particles to the nearest detecting stations in the free world.

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NUTRITION

Reducing Diet Dangers

➤ THE PSYCHOLOGICAL approach to weight reducing has some danger, Dr. Ruth M. Leverton of the University of Nebraska warned at the meeting of the American Dietetic Association in Minneapolis, Minn.

The danger is that it may help people diet too much.

Inability to stay on a reducing diet formerly safeguarded people from permanently injuring their health by long periods on grossly inadequate diets, Dr. Leverton pointed out.

"We can no longer depend on this safeguard," she stated. "By receiving help in understanding some of their emotional problems they may be able to stay on dangerously inadequate reducing diets until their health fails."

An outstanding requirement of a good reducing diet, she said, is that it will replace faulty food habits with good ones which will lead the patient to choose the kind and amount of food that will meet his nutritional needs.

Reducing diets, "generally speaking," are most likely to be deficient in calcium and riboflavin because they do not include enough milk, Dr. Leverton criticized.

Next most likely deficiencies are protein and vitamin B-1 because of too skimpy servings of meat and milk and enriched bread and cereals. Most reducing diets call for so much in vegetables and fruits that they usually supply plenty of vitamin A and vitamin C.

In general, she said, reducing diets come from one of four sources:

1. Figments of unbridled imaginations, untested and uninhibited by scientific knowledge.

2. Accumulations of both sound and "screw-ball" ideas which happened to produce the desired results and therefore are being promoted.

3. Sound ideas leading to careful and intelligent planning of diets.

4. The same as the third, but with one addition—organized scientific testing of the diet using as subjects a group of overweight people.

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