speed electric motor.

Aircraft used should be sufficiently rugged to withstand severe turbulence. Good performance is desired and should include a ceiling of at least 20,000 feet, rapid climb, and enough endurance to seed a large area. A weight capacity of 650 pounds of dry ice will permit the seeding of 1,000 square miles. The aircraft should be equipped for blind flying and oxygen equipment should be provided for the crew. De-icing apparatus is also desirable.

The Heat's On

"Rain may be the best remedy for putting out a fire but the time may come when fire may prove a useful tool in starting a rainstorm." Thus begins a publicity blurb from the General Electric Company. That opening statement is based on the fact that the silver iodide smoke generators developed by the General Electric Research Laboratory make use of fire to produce snow and rain.

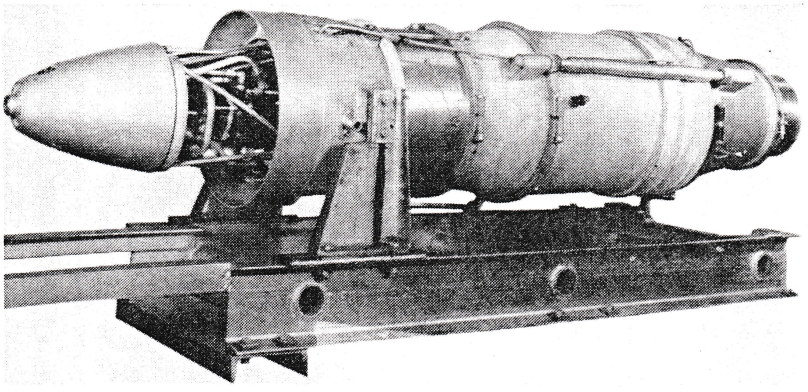
In each of the several types of generators developed, fire acts as an agent in dispensing tiny silver iodide particles into the clouds. What happens in the clouds is that these particles serve as nuclei upon which supercooled water droplets crystallize into snow. The snow then may turn to rain, dependent upon temperature and humidity near the ground.

The smoke generators are each capable of dispensing into the atmosphere in one second, one hundred million million (10 to the 14th power) particles of silver iodide, which are about .0000001 inches in diameter.

Breaking it down even further, the number of particles dispensed in one second would be sufficient to seed continuously a cubic mile of atmosphere at a rate of one particle per cubic inch. It might be pointed out that all this is so far just theoretical as the generators have only been laboratory tested. Dr. Bernard Vonnegut, General Electric scientist who developed the silver iodide technique, admits that it is not yet known how the winds will distribute the particles, or what effect the atmosphere will have on them.

Chief among the generators developed are two charcoal-burning units, one for use on the ground and one for use in a plane; and a hydrogen-burning unit for use on the ground.

Here is the most interesting part, the generators are expected to undergo extensive experimentation in actual weather conditions by the U.S. Army Signal Corps and the Office of Naval Research under a weather research program known as "Project Cirrus." Apparently nobody believes the USAF and the United States Weather Bureau —not even their own countrymen. And the multiplicity of experimental projects just goes to prove that the Americans have really and truly attained their long awaited merger of the armed forces . But is it possible to make rain by artificial means? Your guess is obviously as good as anybody's.



LITTLE BLOW: A new small gas turbine built by Fredric Flader, Inc., of North Tonawanda, N.Y., is pictured above. The engine is a centrifugal type with an overall diameter of 15.75 ins. and an overall length of 79 ins. The exhaust cone diameter is 8.75 ins. Other salient details are as follows: Thrust, lbs.: Take-off, 770 at 28,200 rpm; Continuous, 700 at 26,800; Idling, 350 (max.) at 19,800. Specific Fuel Consumption (with tailpipe gas temp. in °F in brackets): Take-off, 1.64 (1250°); Continuous, 1.65 (1170°); Idling, 1.96 (1040°). Specific Thrust, lb. sq. ft. frontal area (Continuous): 515. Specific weight, lb. sq. ft. frontal area (continuous): .428 Net Weight: 300 lbs. Engine handles 15.4 lbs. air per sec. at a compression ratio of 2.85 at sea level for static take-off thrust. Maximum take-off thrust: 770 lbs. at 28,600.

home in it as if it were a Vampire. Designed to replace the Vampire, the Venom is a four-gun fighter powered by the de Havilland Ghost. A straight development of the Vampire, using the same fuselage and tail unit, the most noticeable feature of the Venom is a reduction in the thickness-chord ratio of the wing with a moderate degree of sweepback. The Venom is also fitted with wing-tip tanks which can be jettisoned if necessary.

The de Havilland 113, a two-seater night fighter version of the Vampire, provides accommodation for A.I. radar equipment. It is powered by an improved de Havilland Goblin.

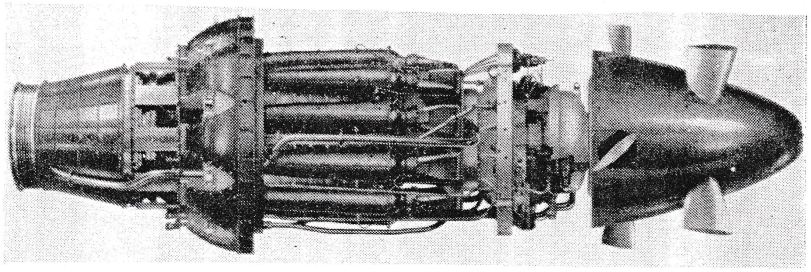
The Static Exhibition seems to become more technical each year and to offer more new developments. Among the new exhibits which aroused great interest were the first de Havilland rocket motor, the Sprite, intended as a unit for assisting take-off. Provision is made for two Sprites to be installed in the Comet. The Sprite gives a total impulse of 55,000 lbs/sec. and 5,000 lbs. thrust for aproximately 9 seconds.

THE PICTURES

On preceding page, left to right: Westland Wyvern; Cierva Air Horse; de Havilland Comet. Below the Comet, top to bottom: Avro Shackleton; Vickers-Supermarine 510; de Havilland Venom; English Electric Canberra; Handley Page Hermes V turbo-prop airliner.

Altogether this Tenth SBAC Display and Exhibition has shown the full measure of Great Britain's steady advance in the air, and especially its continued lead in the gas turbine field. Three years ago, of the 50 airplanes on view, only six were powered by gas turbines. This year of 61 different types of aircraft, 24 were powered by gas turbines of one kind or another and five types of turbo-jets and four turbo-props, all out of the experimental stage, were on view.

And as a fitting climax, the Bristol Brabazon I made an impressive appearance at the end of the second day's flying program. The Brabazon made its first flight on September 4, remaining in the Air for approximately 25 minutes and performing well, according to all accounts. Take-off was made in 500 yards and the landing also required only some 500 yards. Take-off weight was 210,000 pounds. Thus after five years, the Brabazon I has flown successfully and shown its mighty size to the SBAC visitors.



The Python

The wraps have been taken off the Armstrong Siddeley Python, said to be one of the most powerful aircraft engines in the world. The Python, already powering the Westland Wyvern — a naval strike fighter also just of the secret list — is a turbo-prop engine developing over 4,000 hp. driving a Rotol eight blade, eleven foot, contra-rotating propeller.

The new engine consists in brief of an axial flow compressor which draws air from a forward facing air intake and compresses it into eleven combustion chambers radially disposed round the compressor casing.

In order that 90% of the total power output of the unit may be supplied to the propeller, the turbine is made larger than would be the case with a plain jet, to absorb more power from the gases. After passing through the turbine the gases are then expanded down to atmospheric pressure before being released in a comparatively low velocity jet of 500 mph. instead of the 1,200 mph. of the pure jet.

The Python is a reverse flow engine, that is, the air entering the air intake is turned through 180° and then moves forward through the compressor. After leaving the compressor the air is again turned through 180° and passes rearward. The overall length of the engine is therefore considerably less than it would be if a straight flow were utilized.

Viewed from the side (see cuts), the engine is made up of the following components, starting at the front: First is the front cover, which carries the auxiliaries, and also encloses the reduction gear and two propeller shafts. Immediately behind the front cover is the diffuser casing and behind this, the compressor casing. Surrounding the compressor casing are the eleven combustion chambers with the forward facing air intakes leading to the compressor situated slightly to the rear of them. The Python SPI-1 has a circular intake and the SPI-2, wing ducts on either side of the engine.

The fourteen stage compressor and the two stage turbine are mounted on the same shaft and the latter is located in a housing at the rear of the air intakes.

Maximum horsepower rating for take-off is 3,670 plus 1,150 lbs/thrust at 8,000 rpm.; maximum continuous cruise power is 3,680 shp. at 7,600 rpm., plus 220 lbs./thrust. The latter figures are given by Armstrong-Siddeley in reference to an aircraft travelling 400 mph.