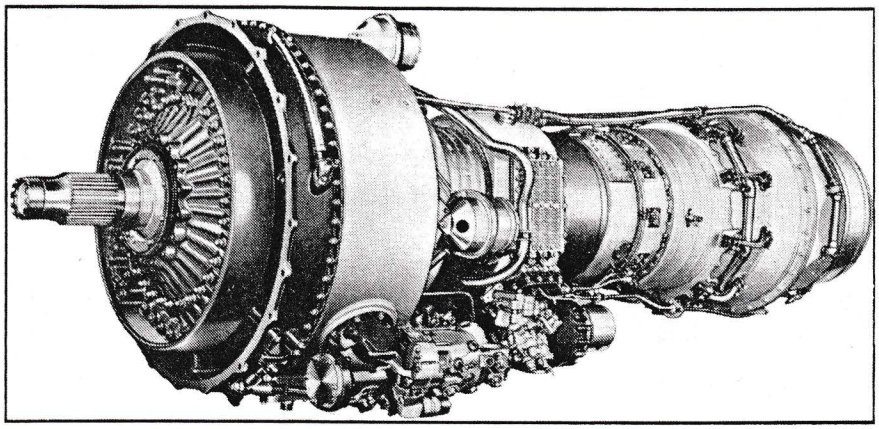
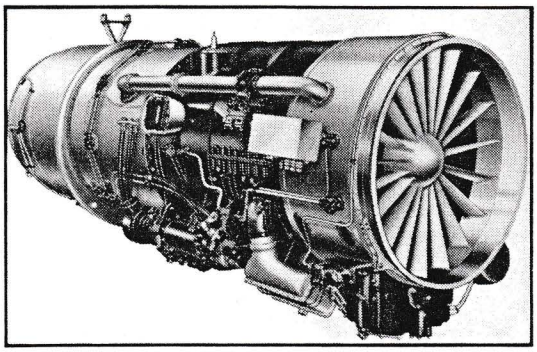
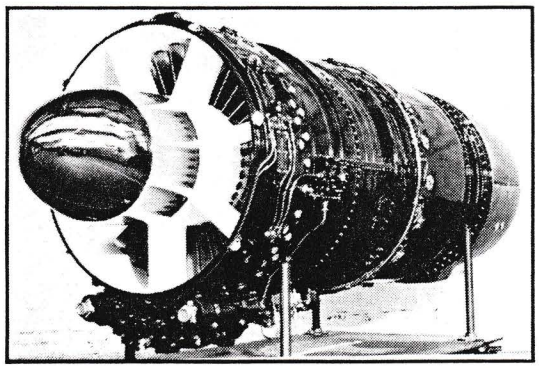
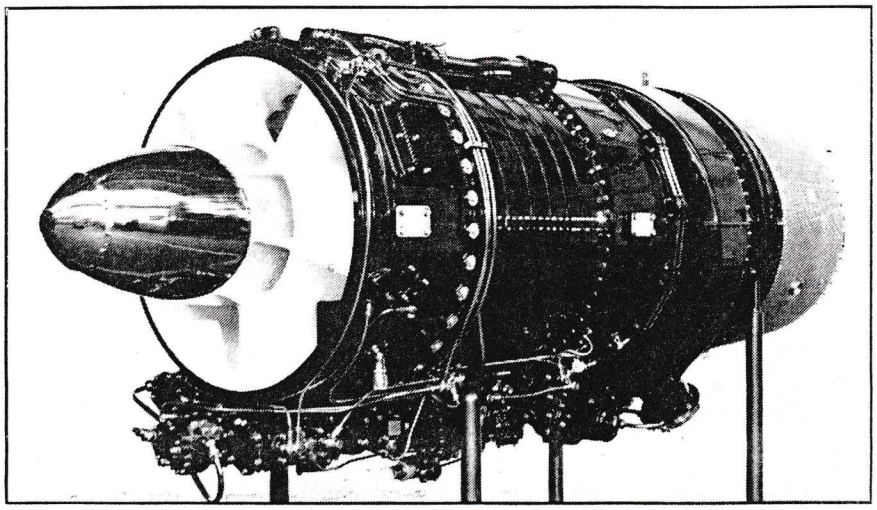




Above, Tyne R.Ty.1 Turboprop rated at 4,795 ehp, to power the Vanguard; left, the Conway R.Co.10 bypass turbojet which will power TCA's DC-8's.



Strong family resemblance between de Havilland Gyron (right) and its less powerful small brother, the Gyron Junior (below), is obvious in the photos.



reaction chamber is strengthened against the high operating pressure (about 500 lb./sq. in.) necessary to ensure fuel economy over a wide range of powers and altitudes.

High test peroxide enters the engine through a centrifugal vane pump on the front of the gear box and is delivered through a large pipe to the cooling jacket of the nozzle. Part of the fluid is taken by a pipe below the reaction chamber to its head. Kerosene is supplied by a similar, but smaller, pump on the left of the engine, across the top to a cylindrical fuel-cooled oil cooler on the right side, from which it is again piped across the engine to a control valve on the left of the reaction chamber.

A spherical accumulator and hand-pump/control valve unit are used to deliver HTP to the accessory-drive turbine in the head of the reaction chamber for starting. This turbine is energized by the superheated steam (600°C) released by catalysis when HTP is passed over silver-plated wire gauze. The steam, and the essential oxygen, from the turbine exhaust into the reaction chamber where they form a proportion of the propellant. Once the turbine is running the main pumps build up pressure and the Spectre idles as a "cold" rocket on catalysed HTP alone. The design of the reaction chamber and the sequencing valves is such that liquid HTP never reaches the combustion zone, only oxygen and steam, which purge it both on starting and shutdown, so that there is no risk of an explosion.

A Napier Contribution: D. Napier and Son entered the Display with the immense prestige of the newly acquired airplane altitude record of 21,340 m. (70,013 ft.) set up by its Avon-engined Canberra testbed for the Double Scorpion rocket.

The Double Scorpion (23 in. wide and 32 in. long) is a two-barrelled HTP/kerosene rocket (half of which was shown at the Salon), which is inevitably linked with the belly fairing that periodically appears on the P.1. Since it has two separate combustion chambers, one can assume that the Double Scorpion is not throttleable, but offers two thrust increments to boost high-altitude performance.

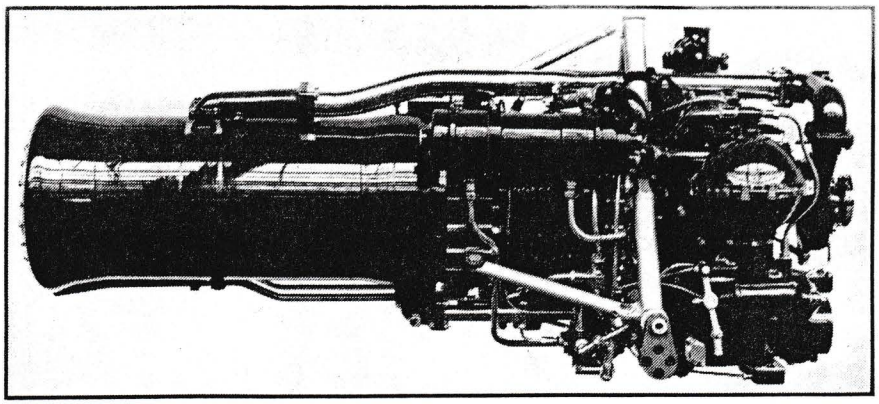
The two cast reaction chambers appear to be cooled by HTP, not fuel, and there is an integral HTP turbine for pump power. This latter exhausts

to atmosphere, probably because recuperation of the catalysed oxygen would be complicated in a two-chamber unit. The complex of piping and sequence valves which surround a rocket are relatively unfamiliar, but one notes that there is an electrical socket on each chamber, which must be for ignition — also an adjacent cylindrical accessory has, for some Security reason, been removed.

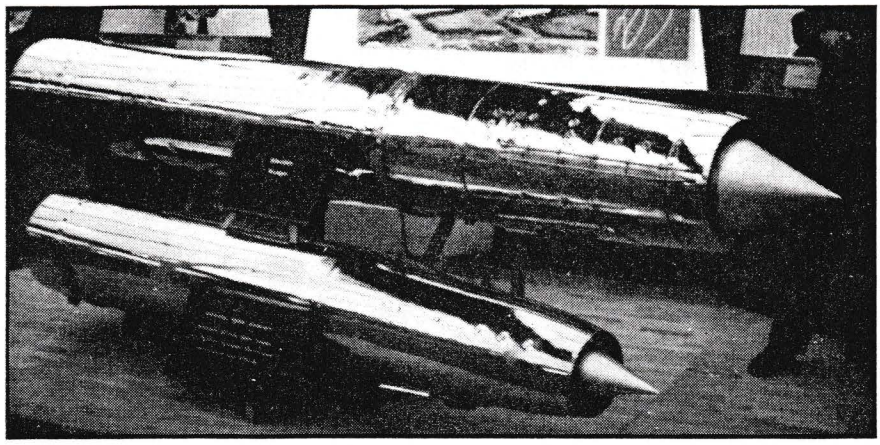
Pleasant Surprise: The presentation of the partly opened centrebody of the Napier/NGTE ramjet test vehicle was a pleasant technical surprise. This series of ramjets was planned for a program of basic research, each round being slightly different. Since performance, as such, was immaterial, the first vehicles had plain pitot air intakes; but the example shown has a conical nose extension to give double-shock ram compression before the air enters the diffuser duct between the diametric centrebody and the widening circular outer casing. At the tip of the cone there is a pitot/static head on a spike. The centrebody is a simple light-alloy riveted structure, with a 8 swg skin and rather lighter diaphragms. Hermetically sealed cans contain the recording instruments so that they would be unaffected by the very great changes in pressure and temperature which occur in the diffuser of a supersonic ramjet. Five sealed cells aft of the instrument bays contain flexible bags of about one gallon capacity each, which are connected by a manifold to the fuel control unit through an aircraft type flowmeter.

The control unit was partially dismantled, but it regulates on height/speed/pressure information taken from the pitot/static spike, the fuel pump being powered by a ram-air turbine. The air for this is brought in from external ram intakes through the streamlined support arms above and below the centrebody. Eight upstream "walking-stick" injectors mounted in a cylindrical extension deliver the fuel. Details of the flame-holders and the downstream throttling device were not revealed.

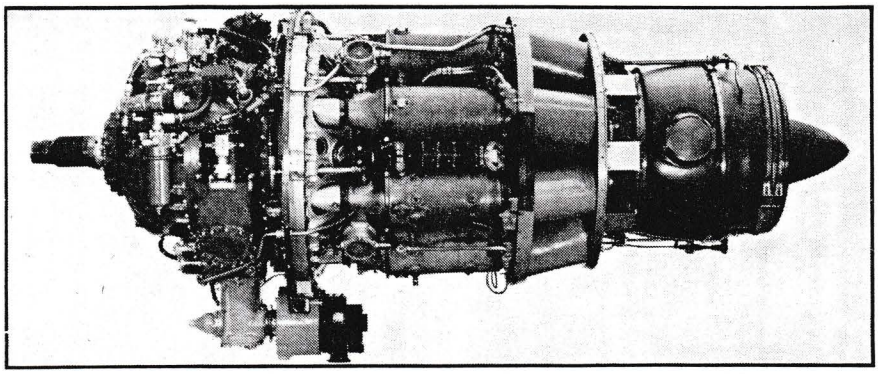
R-R in the Van: The Rolls-Royce, Stand A of course, was packed with novelty. One particularly applauds the innovation of showing a civil Avon RA-29 and Conway R.Co.10 in production rather than show-finish form. The whole emphasis of the display, as at the Salon, was upon civil engines,



Above, the de Havilland Spectre rocket engine, as seen from the starboard side. The Spectre forms one half of the mixed-powerplant system in the Saunders-Roe SR-53 experimental fighter.



Above, the Bristol BRJ.801 eighteen inch ramjet is displayed above the 15¾ inch Thor ramjet, two of which power the Bristol Bloodhound ground-to-air anti-aircraft guided missile.



Above, Bristol Proteus 755 turboprop, for long range Britannias. Below, Blackburn & General Artouste 510 APU, for providing bleed low pressure air, electric supply, and accessory drives.