

CL-1011, and the new Hawker Siddeley-Sud Aviation design. As the RB.207 is rated significantly higher than the JT9D, the size of which is now fixed, the R-R design also has the possibility of powering second-generation versions of the Boeing 747.

Most likely to proceed to development first of the RB.178 derivatives is the 9,730lb Trent for the new Fairchild FN.327 feederliner. Other possible applications for this engine are the Hawker Siddeley HS.136, the NAMC C-X, and later versions of the Fokker F.28. The 20,000lb RB.205 was proposed for a West German four-engined airbus design.

In May last year R-R was selected as the sales and service distributor for Allison T63 and Model 250 turboshaft and turboprop engines operated in Europe, Africa, South America, and the Middle and Far East. To meet its commitments R-R is establishing new distributorships as well as using its existing international distributor network. The agreement also gives R-R the option for exclusive licensed manufacture of the T63 in the UK. If any of the major helicopter applications of the Allison engine, namely the Hughes OH-6A and Model 500, and the Fairchild-Hiller FH-1100, show signs of selling well in R-R's franchise areas, especially in Europe, then undoubtedly the company will initiate production in the UK.

At R-Rs Motor Car Division at Crewe, the company's Light Aircraft Engine Department continues in production with licence-built Continental piston engines, some 1,600 of which have now been delivered. These comprise 95 b.h.p. C-90, the 100 b.h.p. O-200, and the 145 b.h.p. O-300. In addition R-R has factored numerous engines from the higher power end of the Continental range. Full details of this aspect of R-R's activities were given in an article in *Flight* for December 15 last.

ROTAX Hemel Hempstead, Herts.

Rotax has been awarded a contract by the MOA for the CT2102 gas turbine starter for use on BSE Pegasus powering the Hawker Siddeley P.1127. The 70.2 b.h.p. CT2102 has been designed and developed by Rotax in association with Rover Gas Turbines and Lucas Gas Turbine Equipment.

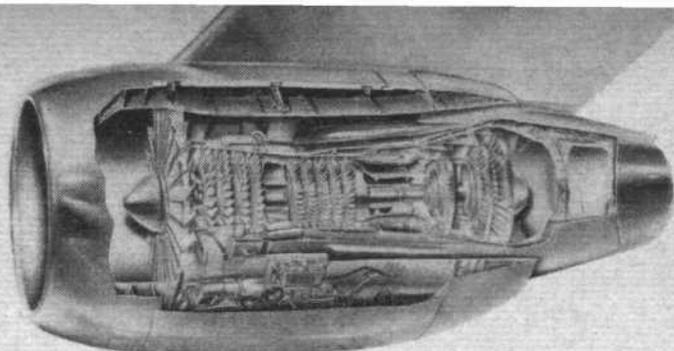
ROVER GAS TURBINES

Solihull, Birmingham.

Rover last year introduced a series of new small turbines comprising the Moreton turbojet, and Ryton and Napton turboshafts. The Moreton is a 125lb-thrust unit intended for the same Canadair CL-89 surveillance drone application as the Bristol Siddeley BS.347. The engine comprises the gas generator section of Rover's 2S/150 turboshaft (now named the Marton). At present the first batch of CL-89 is powered by the Williams Research WR2 turbojet. The Ryton, a 75 b.h.p. scaled-down version of the Marton, constitutes a turboshaft version of the Rover gas turbine used in the Rotax starter for the BSE Pegasus. The 30 b.h.p. Napton is a design study for a small lightweight portable power unit. With electric starting, the weight is 60lb, and with hand cranking 45lb.

The Rover Wolston turboprop was flown last year in a modified Chipmunk. Rated at 100 b.h.p., this engine comprises a 1S/60 turboshaft with a Rover reduction gear manufactured by the Hampshire Aeroplane Co, who commissioned Hants & Sussex Aviation to undertake the Chipmunk conversion. The Wolston has full certificate and a t.b.o. of 1,000hr. The Marton has also been specified to power the Hovercraft Development HD.2 air-cushion vehicle.

Rolls-Royce Trent triple-spool turbofan. Single-stage axial fan. Four-stage axial i-p compressor. Five-stage axial h-p compressor. Annular straight-through-flow combustion system. Single-stage axial h-p turbine. Single-stage axial i-p turbine. Single-stage axial l-p turbine. By-pass ratio, 1.3:1. Rating, 9,730lb



Rover, who in 1965 acquired Alvis Ltd, is itself the subject of a takeover bid by the Leyland Motor Corporation.

USA

AIRESEARCH (AiResearch Manufacturing Company, Division of the Garrett Corporation) Phoenix, Arizona.

Major engine products of AiResearch are the TPE331/T76 turboshaft and turboprop units, and an extensive range of small auxiliary purpose turbines. The civil TPE331 powers the Aero Commander Turbo Commander, Mooney-Mitsubishi MU-2, Fairchild-Hiller Turboporter and the Volpar turboprop conversion of the Beech 18. Forthcoming installations include the conversion of a DH Dove by Cair Inc under the name Carstedt Starliner and a projected turboprop version of the Piper PA-31 Navajo. The majority of these installations are rated at 605 s.h.p. The military T76, at present rated at 660 e.h.p., powers the North American OV-10A COIN aircraft. For this application the engine is being up-rated to 715 s.h.p. and should be available for flight testing next month. Civil certification at 700 e.h.p. is scheduled for six months hence. The higher powers are being obtained primarily by a re-design of the compressor second stage. In the longer term, powers as high as 1,000 s.h.p. are projected.

AiResearch APUs have been specified for the majority of America's new transports, including the Boeing 747 and the Lockheed C-5A. Since 1946 the company has produced more than 10,000 of these small turbines. In the V/STOL field, AiResearch has recently been awarded a NASA contract for development of a tip turbine driven thrust fan for the Bell X-14A. The fan is designed to provide twice the roll control thrust of the present system.

ALLISON (Allison Division, General Motors Corporation) Indianapolis, Indiana.

The past year has seen a series of three collaborative agreements signed between Allison and Rolls-Royce, bringing to a

head an association between the two companies initiated in November 1958. First of these events was in April, when Allison was chosen as the company to collaborate with R-R in the development of the new Anglo-US advanced lift jet (see Rolls-Royce). Estimated total programme costs are \$100m with each government funding the work done in its own country and R-R contributing 20 per cent of the UK costs. Earlier in the year Allison had been awarded a \$1.61m contract by the USAF for preliminary design-study work. Details have also been released of Allison's lift engine developments, including the 21:1 thrust:weight ratio 610-B5 lift-jet demonstrator and the 10,000lb 610-D1 lift fan. The 610-A1 is the common gas generator for both units.

In May last year Allison selected R-R as the sales and service distributor for the T63 and Model 250 turboshaft and turboprops for the majority of areas of the world aside from North America and the South Pacific (see Rolls-Royce). Hawker de Havilland Ltd of Australia was later chosen to handle sales and service in the South Pacific. Major application for the turboshaft version is the Hughes OH-6A—of which more than 700 have been ordered for the US Army—powered by the 250 s.h.p. T63-A-5A.

In 1966 Allison announced that uprated 370 s.h.p. versions of the Model 250 were being developed in turboshaft and turboprop form for FAA certification by the middle of this year. Production deliveries will follow in 1968. The power increase will be obtained by means of an increase in air mass flow involving a slight increase in compressor diameter. Virtually all other parts will be common to the lower power models.

In August last year Allison was awarded a \$200m contract by the USAF for development and production of a new turbofan, the T41-A-1 up-rated version of the R-R Spey-25 of 14,250lb. This engine, which will be built under licence to R-R, is to power USAF LTV A-7D Corsair IIs. The contract is being shared with Rolls-Royce, who will participate in both development and manu-

Rover Marton free-turbine turboshaft. Single-stage centrifugal compressor. Annular reverse-flow combustion system. Single-stage radial-inflow h-p compressor-turbine. Single-stage axial l-p power turbine. Rating, 146 b.h.p. Weight, 160lb

