Taking the high and the low road across Loch Lomond are a "giroboat" built by General Development Co (Glasgow) Ltd and a 35 h.p. Perkins-powered motor boat. Towing speed is 30-35kt; take-off run for the giroboat is 100yd and its cost is £160-£200

Sport and Business

THE 1961 NATIONAL GLIDING CHAMPIONSHIPS will be held at Lasham Aerodrome from Saturday, May 13, to Monday, May 22. For the first time in recent years the number of entries may have to be restricted, although this has not yet been decided. As in previous nationals there will be two leagues: sailplanes in League 1 will not be handicapped, while those in League 2 will be handicapped. Once again an international glider trade fair will be held in conjunction with the championships.

ILLUSTRATED BELOW is the four-seat fuselage of the new Procaer Cobra executive aircraft powered by a Turboméca Marboré II turbojet giving 850lb thrust. The first prototype, a two/three-seater, is now undergoing testing. The engine is mounted in the fuselage immediately aft of the wing, with bifurcated wing-root intakes; and the thrust line is tilted downwards to allow exhaust to clear the fuselage skin. The Cobra is intended for a maximum level speed in the region of 380 m.p.h. at heights up to 20,000ft, the occupants using oxygen. Pressurization might prove possible at a later stage.

Like the four-seat, piston-engined Picchio, several of which have now been delivered to customers, the Cobra has a wooden airframe with plywood skinning covered with thin aluminium sheets Redux-bonded to the wood. The finish is extremely clean and more durable than plain wood. The Picchio has a 1½mm ply skin sheathed with ¼mm aluminium. This weighs about the same as a 2mm ply skin to which it is equal in shear strength. The Cobra has 2½mm ply skin covered with aluminium.

Considerable testing has been done with this type of skin both in the form of test panels and complete airframe components. Trade secrecy is being maintained on the finer points of strength and detail design. The only information readily obtainable is the fact that the relative thicknesses of the two materials are arranged so that both rupture simultaneously. Apart from the aspect of durability, there seems to be little to suggest that the ply-metal skin is superior to ordinary plywood. The reduced thickness and consequently reduced inertia of the panels would appear to make it an inferior structural material for end-loaded skin panels. But the very much higher Young's Modulus of the aluminium alloy compared with plywood will increase the buckling load. Also the higher tensile strength of the metal is a useful asset on the lower wing surface. Comparison between the weights of the Nibbio and Picchio show that there is a very slight weight advantage to be gained.

Designer Stelio Frati, responsible for the earlier Rondone, Falco and Nibbio, has now projected a six-seater with approximately the same dimensions as the Twin Bonanza and powered by two turbojets. This would have an all-metal airframe.

FOURTEEN of the original 20 Drovers designed and built by de Havilland in Australia are still operating. Six are with the Royal Flying Doctor Service, three are flying in Fiji with Fiji Airways, one is in New Guinea (where it has been operated by Qantas and may be taken over by TAA), two are operated by the Commonwealth Department of Health in Northern Australia, and two are based at Bankstown, near Sydney, with private operators.

The Drover was designed by the late Martin Warner to solve the post-war problems of the Australian bush operator, and was particularly aimed at feeder airlines. With three engines (Gipsy 10 Mark 2), it offered good engine-out performance and was ruggedly built for outback operations. At £14,000, it was a cheap aircraft. As Australia's first—and still her only—airliner, the Drover gained considerable prestige for the Australian DH organization. But there were troubles—the original de Havilland variable-pitch propeller had to give way to Fairey fixed-pitch propellers, after what our Australian correspondent describes as some hairy incidents. Double-slotted flaps were installed at the same time. These changes made the Drover a dependable aircraft which was of some credit to Australia. Its main drawback, which is serious in Northern Australia, was loss of performance at altitude in hot weather. Between 1947 and 1953, twenty Drovers were built.

Three years ago, the Flying Doctor Service looked about for a Drover replacement and was strongly pressed by the US industry with modern twin-engined types. Meanwhile, after looking over available engines abroad, de Havilland came up with a proposal to re-engine the Drover. Much to everybody's surprise, this proposal beat the foreign competition.

Six Drovers are now being re-engined, at least one is now flying, and the job will be finished within 12 months. The 180 h.p. Lycoming O-360-A1A has been installed, together with Hartzell controllable-pitch, feathering propellers. The whole powerplant installation has been re-designed, with fibreglass being used extensively in the cowls. Some other airframe modifications were also carried out, mostly connected with flap actuation and tailwheel energy-absorption capacity. A new cooling system using ejector exhausts has proved adequate, even when ambient ground temperature was 109° during tests, and has been cleared for 113°.

The new Drover is an attractive aircraft. Cruising speed is increased by 25 m.p.h. to 145 m.p.h. One-engine-out rate of climb at sea level is now 430ft/min, while engine-out ceiling is 9,000ft, max climb 1,040ft/min and max ceiling 20,000ft. With 132 gallons of fuel, range is 900 miles. All-up weight is the same as before, 6,500lb, with the same payload. It is understood that the cost of the re-engine work and other modifications is about £14,000.

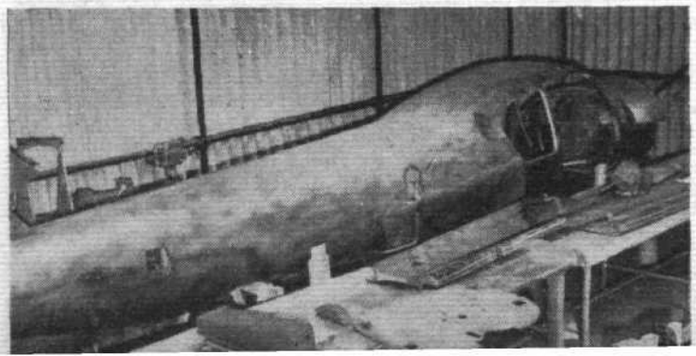
RETROSPECT

From "Flight" of November 26, 1910

A Flying "Circus": From America the first "Aviation Circus" is reported as having been formed, the programme opening with the following illuminating information: "This circus has enrolled the greatest, grandest, and speediest aggregation of aerial chauffeurs in the world, and in death-defying, dare-devil races through the air they will give the public thrilling value for their money."

It is to be hoped that the "aerial chauffeurs"—said to be Moisant, Charles Hamilton, Roland Garros, Rene Simon, E. Audemars and J. Frisbje—will take a different view of their responsibility to themselves and the public than the compilers of such blatant stuff have in mind. This "circus," which comprises 20 biplanes and monoplanes, and has its own equipment of tents, motorcars, trucks and horses, opens at Richmond, Virginia, today (Saturday). After touring the United States, it is intended to exploit Europe.

Four-seat version of the Marboré-powered Procaer Cobra takes shape at Milan (see news item above). The ply skinning is aluminium-covered



Lycoming-powered Drover operated by the New South Wales branch of the Royal Flying Doctor Service and described in the above news item