

AGRICULTURAL DOUBLE

First Views of Two British Newcomers Designed to Commonwealth Requirements

THE first two British aircraft to be designed specifically to meet the requirements of New Zealand operators for a topdressing (aerial fertilizing) machine made their introductory appearances last week. They are the Auster B.8 Agricola, which made its first flight at Rearsby on December 8th, and the Edgar Percival P.9, which has been built by Edgar Percival Aircraft, Ltd., at Stapleford Tawney Aerodrome, near Abridge, Essex. Orders for both machines have already been placed by New Zealand operators.

The phenomenal growth of the use of aircraft for topdressing in New Zealand is evident from the following figures. Between 1950 and 1955 the number of aircraft used has increased from 15 to 230; the area treated annually from 48,750 to 2,783,800 acres; the number of operators from 7 to 49; and the annual hours flown from 2,140 to 70,790. The potential value of aerial topdressing was referred to by the Duke of Edinburgh in his British Commonwealth and Empire Lecture before the Royal Aeronautical Society last year, when he said it was expected that the technique was capable of increasing New Zealand's meat production by 50 per cent over the next ten years.

Of the 230 aircraft which were being used for this work in April of this year, the majority—163—were de Havilland Tiger Moths. There were 30 Cessna 180s, 19 Austers, 8 Fletchers FU-24s, 5 Pipers, 4 D.H. Beavers and 1 Lockheed Lodestar. Of these machines, only the Fletcher had been specifically designed for this type of work.

It has been found that the ubiquitous Tiger, although cheap to procure and adapt, simple to maintain and relatively

safe for the pilot in the event of a crash, has a number of disadvantages. It is underpowered for this work, expensive to maintain, uncomfortable to fly for prolonged periods, and carries insufficient load. The performance of the Beaver leaves little to be desired, but for New Zealand operators it is in general too expensive in first cost and too large for the average-sized job. Something between the Tiger and the Beaver is indicated.

The two newcomers are similar in size and load capacity but, as is apparent from the photographs on the opposite page, they differ vastly in appearance. The two machines represent different approaches to the problem of meeting New Zealand's requirements, the Auster being a topdresser pure and simple, the Percival more of a general-purpose "aerial tractor" type of agricultural vehicle.

Both machines meet many of the requirements in the specification for "the ideal agricultural aircraft" circulated to manufacturers by New Zealand authorities in 1950, including rugged and simple construction, high degree of pilot-safety, ability to operate from small strips, hopper load of over 1,000 lb (normal category) and gross weight between 3,000 and 4,000 lb.

The purchase prices of the Agricola and of the P.9 have not been announced, but a New Zealand source has given £5,500 as the approximate cost of each. In the 1950 specification, it was required that new aircraft must be available "fly-away" from the N.Z. aerodrome of delivery at a price not exceeding £NZ2 per lb gross weight. Further details of the two new machines are given below.

Auster B.8 Agricola

ONE of the two new British aircraft designed specifically to meet the requirements of New Zealand's topdressing operators, the Auster B.8 Agricola made its first flight on Thursday, December 8th at Rearsby. Its shape, as indicated in the photographs at the top of the opposite page, shows little resemblance to the familiar Auster family of high-winged light aircraft.

The Agricola is a single-engined, low-wing machine powered by a 240 h.p. Continental O-470-B engine. Its fuselage has a steel tube framework and is fabric-covered, and a rear enclosed cabin is designed to carry two passengers when the machine is not engaged on topdressing operations. This rear cabin is separated from the pilot's cockpit by the filler trunk of the hopper.

Maximum safety, the company states, is built into the cockpit in the form of a tough overturn structure. Further to reduce the danger of injury in the event of a crash landing, the hopper itself (capable of carrying 1,680 lb of fertilizing chemical) will be located below the pilot's cockpit. A strong shoulder harness and a foam rubber pad on the instrument panel are also provided.

For simplicity, essential instruments only are fitted in the cockpit, and a fully automatic engine-cooling system known as "jet cooling" enables the Continental engine to be operated at full power without fear of overheating.

The wide-track fixed undercarriage has 22-inch diameter low-pressure tyres, and port and starboard legs are interchangeable. Port and starboard ailerons and elevators, also, are respectively interchangeable. Flying-control cables run along the outside of the fuselage, for ease of inspection, and are nylon-covered to guard against corrosion. Another safeguard against corrosion caused by the superphosphates used in topdressing is the use of plastic paints and dopes specially developed for this aircraft.

To prevent dust accumulation in the rear of the fuselage, the section aft of the rear passenger accommodation is completely sealed off. In addition to being equipped for aerial topdressing, the Agricola has space provision for spray-tanks.

The prototype machine is expected to leave this country during next month for a demonstration tour of New Zealand.

AUSTER B.8 AGRICOLA
(Continental O-470-B engine of 240 h.p.)

Span	42ft 0in
Length	27ft 6in
Height	8ft 4in
Wing area	254.7 sq ft
Undercarriage track	14ft 4in
All-up weight (normal category, 1,120 lb load)	3,280 lb
All-up weight (agricultural overload, 1,680 lb load)	3,840 lb
Take-off run (1,680 lb load, no wind)	250 yd
Wing loading (overload case)	15.1 lb/sq ft

Edgar Percival P.9

FIRST product of the new Edgar Percival Aircraft company, the P.9 is the result of a study of the needs of Commonwealth operators made by Edgar Percival himself, designer of the famous pre-war Percival series of racing and touring aircraft. Detailed design work was started in May of last year and the company moved to its present base at Stapleford Tawney almost exactly one year later. From its hangar at Stapleford (which contains also one of the remaining Q.6s, Edgar Percival's last design), the P.9 was rolled out on Friday last.

A major objective in the design of the P.9 has been versatility, for the machine is envisaged as an agricultural all-rounder capable not only of economical topdressing work but also of spraying, supply-dropping and freight and passenger transport operations. To this end an extremely large cabin space aft of the pilot has been provided; access is by a large side door and rear clamshell doors.

The fuselage is a steel tube framework covered by fabric (aft) and non-stressed metal panels, and the high-mounted wing has a stressed light-alloy skin. Slotted flaps and drooping ailerons are employed. The machine is powered by a Lycoming GO-480-B engine of 270 h.p.

For maximum visibility, the pilot is placed as far forward as possible. For safety, he sits on a level which is above both the load and the engine. The main cabin, or cargo space, thus runs forward beneath the floor of the cockpit.

As mentioned, the machine can be used for general-purpose freighting. It can carry sheep or other small animals, bales of wool, 45-gallon drums of oil or petrol, fence-posts and fencing material, and other types of goods. For ambulance work two stretchers, one sitting patient and an attendant can be carried. If used as a passenger machine, the P.9 is a six-seater.

Top and cruising speeds of the P.9 (normal category) at sea level are estimated at 138 and 123 m.p.h. respectively, landing speed (light) being 37 m.p.h. Sea-level rate of climb is 1,090 ft/min. Grass-field take-off run with zero headwind is 145 yd (normal category) or 205 yd (agricultural overload).

EDGAR PERCIVAL P.9
(Lycoming GO-480-B engine of 270 h.p.)

Span	43ft 6in
Length	30ft 0in
Height	8ft 9in
Wing area	227.6 sq ft
Undercarriage track	10ft 5in
All-up weight (normal category, 1,565 lb load)	3,415 lb
All-up weight (agricultural overload, 1,825 lb load)	3,675 lb
Take-off run (1,825 lb load, no wind)	205 yd
Wing loading (overload case)	16.1 lb/sq ft