

With one airscrew feathered (note also large rudder-trim tab) the Piper Apache, fully loaded, has a 5,000ft plus ceiling.

vania. Pipers have, of course, built a long series of successful light aircraft of the Cub type, leading up to the Tri-Pacer and the Cruiser series. Their venture in the light-twin field is called the Apache, and it is the lightest and most compact of all the twins here described.

Incidentally, the company recently held a convention of their own, attended by over 200 distributors, at which the work of the company was reviewed. From a series of customer surveys, carried out in the last four years, they have been able to draw some interesting conclusions; for instance, that the percentage of buyers who had never owned Pipers before is steadily increasing and that, whereas in 1951 90 per cent of Piper aircraft sold were used for business purposes, in 1954 the figure is 97 per cent. Each owner flies an average 320 hours per year. The block-to-block speed of the aircraft in service has increased from 114.9 to 119 m.p.h., while fuel consumption in gallons per hour has decreased from 8.9 to 8.1. The company have even established that the average r.p.m. used by their customers has decreased from 2,410 to 2,375.

The most significant figures, however, are those concerned with navigation aids and blind-flying instruments. For instance, in 1951, 46 per cent of Piper aircraft owners used standard instrument-panels, and only 8 per cent full blind-flying panels. In 1954, only 14 per cent retained standard panels, 74 per cent ordering full panels. Similarly, radio navigation equipment of the compound "omni" type was fitted by only 17 per cent in 1951, and is now used by 85 per cent. On the other hand, use of A.D.F. has remained constant at approximately 8.3 per cent.

From this can be gained some idea of the increasingly efficient use of business aircraft. The navigation-aid coverage is there; the airborne equipment is available in quantity at prices owners are prepared to pay; and the installation of both this equipment and full blind-flying panels shows that more and more of these light aircraft are being used, airliner-fashion, for journeys in I.F.R. conditions which were previously the prerogative of the fully equipped scheduled airliner.

Further surveys have shown that, of the types of people using Piper aircraft for business purposes in 1954, 18.2 per cent were farmers or ranchers, 27.5 per cent manufacturers, 12.2 per cent construction companies, 9.2 per cent physicians, 15.8 per cent wholesalers and distributors, and 6.2 per cent engineers and architects (the remainder are classed as "miscellaneous"). These proportions fluctuate slightly from year to year but remain substantially constant. To support their figures, Pipers announced at the convention that they had a backlog of orders—for Apaches, Tri-Pacers, Super Cubs and PA-18-A agricultural machines—worth \$6 million, with firm deposits on hand.

The Piper Apache was described in *Flight* on May 7th last year. It has a cruising speed of 160 m.p.h., an all-up weight of

3,500 lb and is powered by two Lycoming 0-320 engines with Hartzell constant-speed, fully feathering, two-bladed airscrews. It seats four and can, of course, be equipped for night and instrument flying. More than 100 have been delivered since production began last May.

Pipers found that it was cheaper to fly their aircraft to foreign customers than to crate them and ship them, and the most remarkable venture in this respect has been Max Conrad's delivery flight of an Apache direct from New York to Paris last November. The aircraft was destined as a sales representative's demonstrator for the European area. It was a standard airframe with its two 36-gallon wing tanks supplemented by three tanks in the cabin, bringing the total fuel load up to 360 gallons. Max Conrad also installed his own system for adding engine oil in flight. Endurance was reckoned at 25 to 26 hours. Radio equipment consisted of the standard

The largest of the light twins approximately to scale with each other and with those on the opposite page.

TWINS MEAN BUSINESS . . .

successively by a number of companies, the latest of which is Temco. This concern has developed a production-line conversion system for which the customer furnishes a Navion airframe and Temco convert it to the full Riley '55 standard. Under an agreement concluded this year, the Temco-converted Navion is marketed by the Riley Twin Aircraft Sales Corporation; hence the name.

Conversion was originally suggested by a Los Angeles businessman in 1951. Riley took up the idea, converted a Navion, and obtained a C. of A. The actual conversion work was then delegated to Temco, who redesigned it in August 1953, incorporating 150-h.p. Lycomings. The Riley '55 is the new model of this aircraft. If the engines become available in time, the '55 is to be powered with newly developed 170 h.p. Lycoming 0340s, which will give it a top speed of 180 m.p.h. and allow an increase of gross weight to 3,600 lb. The fuel system is improved, and the addition of wing tanks will allow a range of up to 1,200 miles. In view of the longer endurance the front seats have been redesigned for greater comfort. The instrument panel, almost inevitably for a new model, has also been redesigned. Take-off and landing distance in standard atmosphere over 50ft obstacles are respectively 1,150ft and 1,050ft. Rate of climb is 1,400 ft/min and range on internal tanks at 70 per cent power 900 miles. Fuel consumption is 8-10 gal/hr/engine, and the single engine ceiling is 6,000-8,000ft.

One of the latest producers of light twins in the U.S.A. is Piper Aircraft Corp., whose factory is at Lock Haven, Pennsyl-

