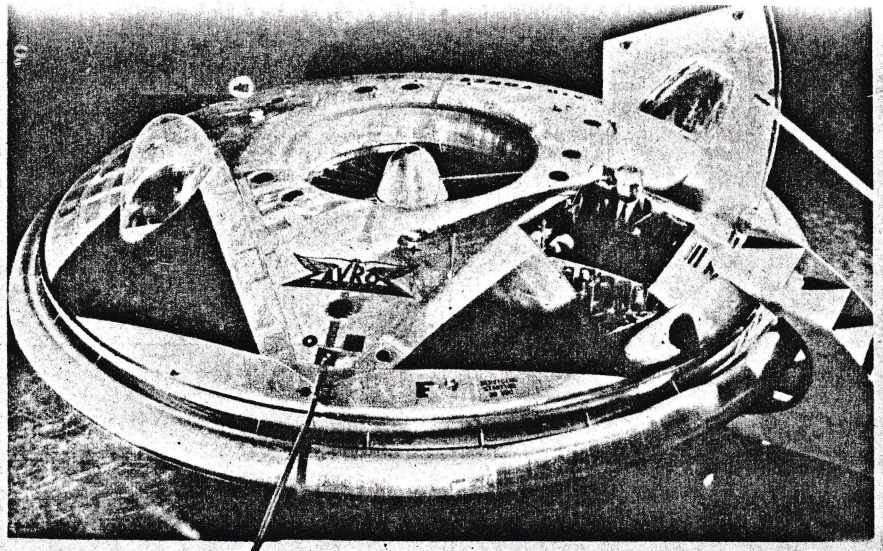

THE FIRST REAL Saucer?

NEARLY eight years ago *RAF Flying Review* was the first British publication to reveal the fact that the Canadian Avro company was working on a revolutionary near-disc, or, more accurately, omega-shaped aircraft. The story was taken up widely by both the popular and technical Press, and then . . . silence! Official Canadian sources refused to make any comment on the project. They would not even confirm officially its existence! Rumours were rife but it was not until more than two years later, in October, 1955, that any *official* mention of this remarkable vehicle was made—it was then announced that the programme had been purchased outright by the USAF as Weapon System 606A.

Another four years passed, four years in which the project was financed by the U.S. to the tune of some ten million dollars, and then, on December 5 last year it was announced that the first test with this revolutionary new aircraft had been made. The photographs since released and published on this page reveal the fact that the machine, now known as the Avrocar, has changed radically from Avro's first design studies. These envisaged a machine shaped rather like the last letter of the Greek alphabet, the *omega*, which for take-off was to have been supported by a tricycle undercarriage upon which it rested at an angle of some seventy degrees to the horizontal. Rising near vertically it was to have been capable of transition to supersonic horizontal flight. A mock-up of the Omega-shaped machine was built, this measuring some 21 feet across and 25 feet in length, and accommodating the pilot in a prone position, but shortly afterwards the Avro team turned its attention to the study of true disc-shaped vehicles, and gradually, as the immense cost of developing and building the more ambitious of these became apparent, it concentrated on a less costly, subsonic but still highly radical machine, and it was this project that, in 1955, became Weapon System 606A.

Now considered purely as a research vehicle, the Avrocar has, since the spring of 1958, been developed as a joint USAF-U.S. Army project, the U.S. Army having decided to sponsor the programme after reaching the conclusion that the Avrocar could make a highly mobile vehicle in the combat area. The Avrocar, which has now made a number of tethered flights, is powered by three Continental J69 (licence-built Turbomeca Marboré) turbojets each of some 1,000 lb.s.t. which are mounted in the centre of the vehicle and provide an annular jet of air which is exhausted around the perimeter of the circular aerofoil. The primary air for this annular jet is pumped by the large central fan, and this flow is augmented as it is exhausted around the rim of the wing by passing through a nozzle which creates a jet pump effect, drawing in relatively low-speed air. Taking-off vertically, the Avrocar will be capable of hovering by making use of the ground cushion phenomenon, riding on air in much the same way as the hovercraft, but after it has attained minimum velocity it will use aerodynamic principles in much the same way as an orthodox aircraft, forces generated by its forward motion being used rather than brute force to stay aloft and manoeuvre. The deflection of the annular jet rearwards provides the horizontal thrust for forward flight, but as the jet cannot be turned through a 90° angle it always contributes in some measure to lift.

Carrying a crew of two seated under bubble canopies on each side and slightly forward of the central duct, the Avrocar has an overall diameter of some twenty feet, and it is anticipated that it will offer a higher performance than other vehicles employing similar principles for taking-off, hovering and landing. Although all details of its potential performance have been withheld, a maximum speed of 300 m.p.h. and a range of 1,000 miles have been mentioned. The Avrocar does, of course, represent only one approach to the problem of achieving VTOL capability, but the U.S. Army considers its prospects to be highly promising and view it as a possible replacement for current liaison aircraft. There have been reports of setbacks in the Avrocar's development programme, unexpected stability difficulties being encountered and the thrust available from the annular jet being less than that anticipated, but more recently there have been rumours of five million dollars support for the programme from the Canadian government, so. . . !

— W. G.