

### VERTICAL TAKE-OFF AIRCRAFT

**T**HOUGH little published information has been given regarding the Short SC-1, a recent Press notice released by the S.B.A.C. says this jet-powered research aircraft designed for VTOL (vertical take-off and landing) and able to change from hovering to forward flight, made its first taxiing trials at Belfast just before Christmas.

VTOL and STOL (slow take-off and landing) aircraft are receiving increased attention from many designers nowadays, since runway lengths are reaching fantastic — even ridiculous—proportions. The prospect of the next generation of transatlantic pure-jet aircraft belting down 10,000 ft. (3048m.) runways at 150 m.p.h. (241k m.p.h.) with, perhaps, 150 passengers on board is not viewed with equanimity by everyone.

Two years ago Rolls-Royce revealed their engine test-rig — promptly named the *Flying Bedstead*. This was a device designed to test not only the engines in a new rôle but the system of stability and control. Air bled from the two engines' compressors was ducted outboard and used, in *ad hoc* squirts, to maintain equilibrium. T. Brooke-Smith, Short's test pilot who will be in charge of testing the new SC-1, underwent a brief course on the *Bedstead*. He said it was like learning to ride a bicycle—a knack.

Autogiros have been superseded by the helicopter, the most usual example of VTOL aircraft. Recently, flying platforms have been evolved, notably in the United States, powered either by a jet or ducted fan motor. "Tailsitters," aircraft which rest on their tails when on the ground but which gradually assume horizontal flight after take-off, have also made

their appearance. Other projected designs, some of which have been realised in research aircraft, include comparatively conventional-looking aircraft with swivelling powerplants to give downward thrust on take-off and landing but forward thrust for normal flight: a variation of this in which the whole wing moves with the engines thus providing, in effect, a horizontal-fuselage version of the "tailsitter": helicopters with small fixed wing and horizontal propellers (the Fairey *Rotodyne* for example): finally an aircraft fitted with advanced boundary-layer control and jet-flap which, strictly speaking, comes under the category of STOL. The new Short aircraft does not conform precisely to any of these categories.

In November last year, the Minister of Supply announced that a contract had been placed for an aircraft designated P.D.11. It is this aeroplane which, bearing its company's designation SC-1, is now engaged on its taxiing trials. The one photograph and sparse details that have been published reveal that it has a delta wing, a tricycle undercarriage and five new Rolls-Royce RB-108 engines housed in the fuselage — powerplants which give a high thrust for low weight.

This rather unusual number of engines indicates that perhaps four of them are used to provide vertical lift and the fifth forward propulsion. Stability air jets for use at slow speeds — similar in principle to the *Bedstead's*—appear to be installed at the nose, tail and wingtips. As flight speed is increased, control is transferred to more conventional controls — rudder and elevons.

Initially, tethered hovering flights will be made followed by forward flight tests using normal take-off technique. Then, step-by-step, the two will be combined until the aircraft takes off and lands vertically and transition from hovering to forward flight is effected.

### TECHNICAL COLLEGE CHRISTMAS SERVICE

**A** CAROL service, sponsored by the Students' Union, was held in the Assembly Hall on Thursday, December 20th. The service was led by Canon F. B. Hutchinson, Church of England, the Rev. W. R. Kent, Methodist Church, and the Rev. D. C. Henderson, Church of Scotland.

The College Principal, Mr. R. D. Peggs, read the first lesson: the second lesson was read by the President of the Students' Union, and the third by a senior girl student. Cdr. Asbury, lecturer at the College, accompanied the carols.

Professor C. A. Coulson, Professor of Applied Mathematics at Oxford University, took as the theme of his address the power and love of the Christian message. These were symbolised at the first Christmas by the star and the Baby: since then, he said, we have become sentimental about love and callous about power.

The star was a marvel to the three wise men, said Professor Coulson, and the stars are no less marvellous to-day, when our greater astronomical knowledge reveals the magnitude of the universe and the power of its Creator. The harmony of science and religion is made manifest as our scientific learning enables us to appreciate more fully the nature of God.

### THE BISHOP CUP AGAIN ?

Would an inspired effort to bring back the once popular Bishop Cup competition meet with success? This competition brought departments against each other in a series of evening football matches, and ran for many years up to a couple of years ago.

Whether it starts again will depend on the number of departments entering a team. Why not chat it over with your colleagues and then contact Mr. A. Young of "M" Shed, extn. 217?