



Wilde, has now made calculations which, based on these figures, suggest that a most curious situation must have arisen during the seconds which elapsed between the time the Vulcan pilot was told he was 80ft above the glide-path and the moment the aircraft struck the ground.

At three-quarters of a mile from touch-down the Vulcan should rightly have been 208ft above touch-down on the three-degree glide-path which was presumably in use. The pilot was told he was 80ft too high and it is therefore to be deduced that he was 288ft above touch-down. The aircraft struck the ground 1,000yd from touch-down, and therefore lost 288ft in a horizontal distance of 960ft. The actual distance travelled down the inclined flight-path was 985ft at an angle of 17 deg to the horizontal. Air Marshal Sir Harry Broadhurst, the co-pilot at the time, said, in a statement reported on this page last week, that the Vulcan hit the ground at 140 kt. At this speed the aircraft would have covered the inclined flight-path of 985ft in 4.08 sec—the staggering rate of descent of 4,230ft/min. Such a descent would almost certainly have forced the undercarriage up through the wing instead of sweeping the bogies off the legs as in fact occurred.

Conversely, the official statement says that some ten seconds elapsed between the three-quarter-mile point and the point of impact. This would result in the Vulcan's speed being about 64 kt. If the elapsed time was 7 sec the speed would have been 83 kt. Both these figures are entirely improbable in view of the type of damage caused to the undercarriage.

These calculations could lead to one of three suppositions, none of which seems altogether valid. The Vulcan might indeed have been stalled; it might have been dived or "mushed"; and the G.C.A. indications or instructions might have been faulty.

## Spare Our Blushes

AS this issue closed for press the following Reuter message was received from Washington: "American aviation experts have been surprised to find in the British magazine *Flight* a lot of information about the United States guided missile programme which they had not known before.

"Included in a special 'Guided Missile' issue of the magazine are details of a number of projects about which nothing had been released for publication here. *Flight* said that the United States has 'brought 30 families of guided missiles to the hardware' or production stage, and it listed many of them. Among the new or unfamiliar projects listed by the magazine were the air-to-air missiles BDM, Cherokee, Diamondback, Ding Dong and Skokie I and II; the air-to-surface missiles Bullpup and Dove, and the surface-to-surface missile Triton.

"Defense Department officials identified some of the listed projects as old ones that have been discontinued, and others as study projects on which nothing is said until they result in something useful. About several more of the projects listed by *Flight*, the Department had no comment to make."

While we are naturally gratified that *Flight* should have been the means of apprising American experts on new developments in their own field, we must, if only for the reassurance of our readers at home, place it on record that our guided missile review (December 7 last) was based entirely on a diligent collation and appraisal of available facts, and in no instance betrayed any secret or abused any confidence.

As we say, the Reuter message afforded us some quiet gratification—of the sort, incidentally, we experienced recently when we were shown a complete (pirated) reissue in Russian of our Iliffe publication *Development of the Guided Missile*, by Kenneth Gatland.

## H. L. Milner

WE record with regret the death, on December 19, of Mr. H. L. Milner, A.M.I.C.E., F.R.Ae.S., chief project engineer of Rotol, Ltd. Born in 1886, Mr. Milner was educated at the Manchester School of Technology and at London University, where he gained the Whitworth Scholarship. He served an apprenticeship with Armstrong Whitworth before joining the Royal Aircraft Factory at Farnborough for engine design duties in 1912. He remained in that post until 1922, when he joined Dr.

**MODERN PRACTICE:** Special Saunders-Roe carriers for two 25 lb practice bombs are in service with the R.A.F. and Royal Navy. Aircraft fitted include the Venom, Hunter, Canberra and Sea Hawk. Above is a Hunter with one of the carriers on each of its inboard pylons (four pylons are fitted); right, the carrier in close-up.



Hele-Shaw and Capt. Beacham, who had ideas on the subject of a variable-pitch propeller. It was really Milner who translated those ideas into the first constant-speed variable-pitch propeller which was tested both at Farnborough and by the Gloster Aircraft Company. Mr. Milner next moved to the Bristol Aeroplane Company, where he developed propeller designs for the Mercury and Pegasus engines; thence, on the formation of Rotol in 1937, he went to the company as chief designer.

One of Mr. Milner's inventions was the propeller-blade integration machine, which worked out by mechanical means the correction which had to be applied to individual blades in order to suppress the vibration which naturally occurs. That machine, which was patented in 1941, was taken up by the R.A.F.

During the past ten years Mr. Milner had been project engineer at Rotol and had spent most of his time studying the future trend in propeller and accessory design.

## D.H. Engine Appointments

SUCCESSOR Mr. C. D. Beaumont as chief test pilot of the de Havilland Engine Co., Ltd., is Mr. J. M. Nicholson, who joined the company as a test pilot in June 1954, having previously



Mr. J. M. Nicholson.

been at A. and A.E.E., Boscombe Down. During the war he had flown Beaufighters in the Middle East, served as an instructor in Rhodesia, and been a Dakota pilot in Transport Command. Demobilized in 1946, he rejoined the R.A.F. three years later, obtaining an A.1 Instructor's Category at C.F.S. and serving in the Examining Wing before being posted to Boscombe Down.

Mr. Beaumont, who retired on December 31, was first associated with D.H.s as an instructor at their White Waltham school in pre-war days. Throughout the war he served as an operational pilot, and on demobilization joined the de Havilland Engine Co. under John Cunningham (who was then in charge of engine flight testing). When Mr. Cunningham was made chief test pilot of the de Havilland Aircraft Company in 1946, Mr. Beaumont took over from him and has since been responsible for much of the development flying of the Goblin and Ghost and latterly of the Gyron in the Short Sperrin.

This change-over comes at a time when the Engine Company's flight development department under Mr. John Grierson is being expanded for intensive flight testing of new gas turbines and rocket motors. Assisted by Mr. Plenderleith (who is at the same time appointed deputy chief test pilot) and by Mr. Muir (who joined the company as a test pilot a year ago), Mr. Nicholson will be responsible for the continuing development of the Gyron and for the flight testing of the Gyron Junior and the Spectre.