

ENGLISH ELECTRIC AVIATION

Marconi House, London, W.C.2. Telephone: Covent Garden 1234

Thunderbird It was in October 1948 that the Ministry of Supply decided to place a major contract with English Electric involving a complete surface-to-air missile system. Since that time the company have established a completely new missile plant at Stevenage—which today employs about one-third of the town's working population—and at Luton, where the Thunderbird missile system is today in production for the British Army. Early development was concentrated upon test vehicles powered by an internal liquid-propellant motor; later a solid sustainer was adopted and in recent years the entire airframe has been re-engineered in order to fit it for bulk production and arduous operational service, including an overall policy of "maintenance by replacement" wherever practicable.

The basic airframe consists of a circular-section body consisting of sections clipped together by manacle rings, the nose being a large pointed radome. Guidance is of the semi-active homing variety, the ground equipment including a tactical control radar, where incoming raids are resolved into individual targets and allocated to weapon sites where each target is acquired by a tracking and illuminating radar. Each of the latter radars feeds a number of associated launcher/missile combinations. The entire system is designed to be transportable at normal road speeds, and the launchers can be deployed in fixed installations or on wheeled chassis.

Rounds are dispatched in either of two conditions. In the first instance the complete missile is delivered as a series of packaged sub-assemblies, each of which can be removed from its environment-free and shock-proof transit container and built into a missile in a matter of minutes. Alternatively the body may be received in "cigar" form, requiring only functional testing and the addition of wings, fins, warhead, radome and the four wrap-round boost motors. The complete round is then placed on the launcher elevating frame which is a steel-tube structure with a fixed elevation of 50 deg, carrying the missile by zero-length feet on the lower pair of boost motors. The complete elevating frame is then taken on a special trailer to the launching base, on to which it is moved by a rail system and secured by a pair of rotary locking shafts. All missile services are fed in through a fly-off head which provides multi-pin electrical and pneumatic connections through sockets at the base of the body. It is anticipated that Thunderbirds should be capable of being left on launchers in any climate for up to two years. Very extensive firing trials have taken place at Aberporth and Woomera, and on June 5 last *Flight* reported a visit to the Army's Thunderbird training school at Manorbier.

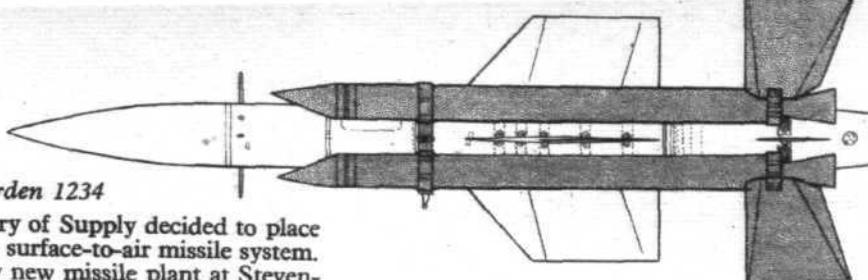
It was recently announced that a Mk 2 version of Thunderbird is in the course of development, claimed to offer substantial advances in range and overall lethality and to be better suited to engaging targets at all altitudes. It has frequently happened in the past that missiles with semi-active homing guidance have been limited electronically in that the effective range of the radars has been less than the practicable range of the missile up to the point at which the flight speed becomes too low for control to be maintained. Although all details are obviously classified it seems fair to assume that the electronic performance of Thunderbird Mk 2 must be considerably better than that of the Mk 1 system.

FAIREY AVIATION LTD. (Weapon Division)

Heston, Middx. Telephone: Hayes 2821

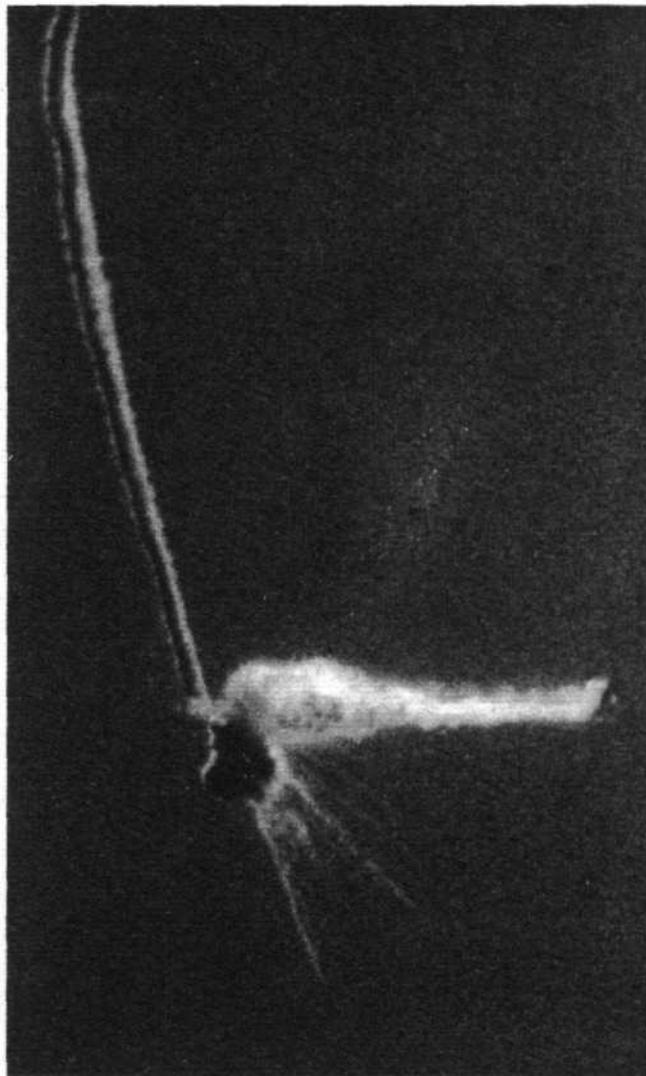
Anti-Tank Missile Not yet officially named, this missile is under development against a Ministry of Supply contract for the British Army. It has been stated that, when fully developed, it should "sweep the heavy tank from the battlefield."

Fireflash For more than two years No. 1 Guided Weapon Development Squadron have been operating Swift F.7 aircraft from Valley on indoctrination missions with these air-to-air missiles. Not released for operational service, Fireflash—originally code-named Blue Sky—is a beam-rider and consists of an unpowered Dart boosted to supersonic speed by jettisoned motors. This form of propulsion was adopted in order to eliminate the possibility of introducing guidance errors as a result of ionization of the radio beam by the flame from the motor. In the photograph below a round can be seen immediately after launching; both motors are firing and the weapon has yet to be gathered into the beam transmitted from the nose of the parent aircraft.



English Electric Thunderbird Mk 1 (Red Shoes)
Four wrap-round boost motors, solid sustainer motor. Length (with or without boosts), 21ft; body diameter, 21in; span of wings, 63in; span of control fins, 63in. Weight and performance data restricted.

Destruction of jet target by a Thunderbird



Launch of a Fireflash from a Swift F.7 fighter

