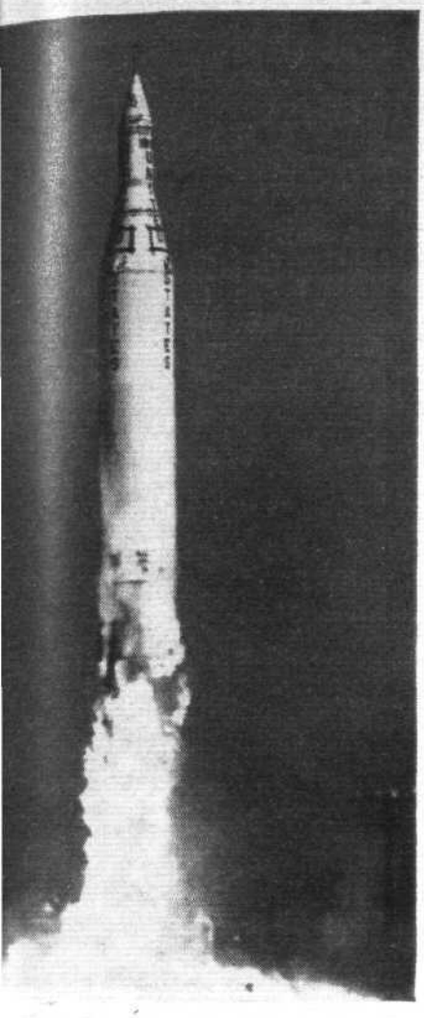
Missiles and Spaceflight



The attempted launching of a 35.3lb satellite, Explorer 8, from Cape Canaveral on March 23 was unsuccessful. The first stage of the four-stage Juno 2 launching vehicle (left) fired as planned, but soon after first-stage burn-out radio contact was lost and it was believed that one of the upper stages failed to ignite. The satellite was intended to provide information on the Van Allen radiation belts

AEOLUS SUCCESS

A height of 80 miles was achieved in a successful night firing of an Australian two-stage, solid-propellant Aeolus rocket from Woomera on March 24. The object of the launching was to prove the performance of ground instrumentation systems recently installed at Woomera, including phototheodolites which photograph flashes emitted by the rocket against a star background. Among the observers present on March 24 was Alan S. Hulme, the Australian Minister for Supply, who said that Aeolus could be used in connection with the forthcoming Australian space-research programme. Mr Hulme was later reported to have said that everything was going according to plan at Lake Hart, where Blue Streak launching platforms were being erected.

POLARIS PROGRESS

As portrayed dramatically by a photograph on this page, one of the definitive series of Polaris test vehicles was successfully fired from Cape Canaveral on March 18. The firing was the first to be made from the ship-motion simulator constructed for the Polaris programme by the Loewy-Hydropress Division of Baldwin-Lima-Hamilton Corp. It had previously been believed that this simulator terminated in a conventional above-ground launcher, the Polaris first-stage motor being fired with the missile at rest. It is now clear, however, that the simulator incorporates a submarine-type firing tube.

As in the *George Washington* class of ships, this tube shoots the Polaris into the air (from either the surface of the sea or under water), the rocket not being lit until the weapon has reached a height of some 70ft. The first stage is just firing in the photograph. Many test firings have been made in California with launching tubes both above ground and submerged, but the March 18 firing was the first in which a real missile was launched by its pneumatic tube. The weapon achieved successful first-stage ignition, separation and second-stage ignition, and a range of over 900 miles.

Another Polaris was fired by the same method (and doubtless from the same tube) at Cape Canaveral on March 25. Photographs of this firing taken at an altitude of approximately 100ft show the base of the Polaris surrounded by pieces of material blown out of the tube with the missile. It is clear that these are in fact shoes which locate the missile in the firing tube and which are jettisoned following first-stage ignition. It is doubtful whether they assist in reducing pneumatic leakage around the missile during the launch but they obviously prevent the thin stainless-steel skin of the motor body from rubbing on the launching tube. These shoes are still in place in the March 18 photograph. The March 25 missile also flew a successful 900-mile mission.

FIRST SHOTS PLANNED

Presenting the $915m budget appropriations request of the National Aeronautics and Space Administration for Fiscal Year 1961 in Washington on March 28 before a subcommittee of the Senate Committee on Aeronautical and Space Sciences, NASA Administrator T. Keith Glennan gave details of the planned launching schedule for the forthcoming family of multi-purpose US rocket vehicles. Initial launchings were quoted as:—

Scout, a relatively low-cost, utility vehicle, mid-1960.

Thor-Agena B, by the Department of Defense, mid-1960. (For the next year or so, NASA will use a less powerful interim vehicle in the general class, the **Thor-Delta,** scheduled for initial launch in April 1960.)

Atlas-Agena B, by the Department of Defense, late 1960; by NASA in mid-1961.

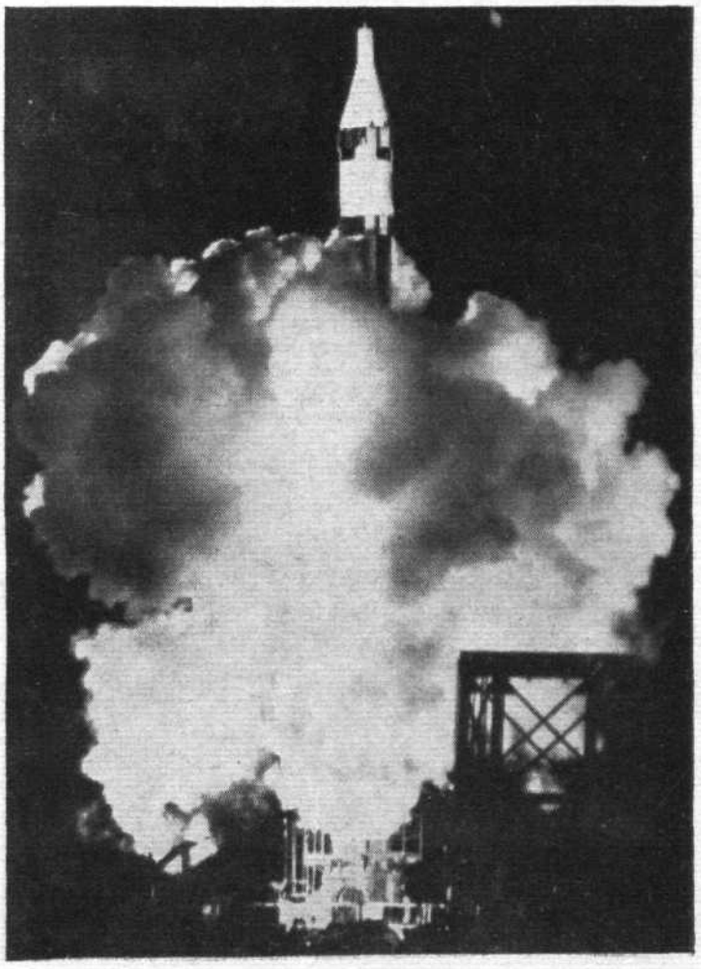
Atlas-Centaur, the first system to use liquid hydrogen as a fuel, in 1961.

Saturn (if granted full 1961 budget request), static test of eight-engine cluster, spring 1960; launch of first stage with dummy upper stages, by summer 1961; two-stage vehicle, autumn 1962; three-stage vehicle, late 1963; first operational vehicle, before end of 1964.

"Looking farther down the road, and another billion-plus dollars into the future," Dr Glennan continued, "we expect to have the Nova vehicle, consisting of a cluster of F-1 engines, with total thrust of six to twelve million pounds, some time after 1965."

SNAP-8 NEGOTIATIONS

An $8m contract to build SNAP-8, a nuclear electric power generating system for spacecraft, is being negotiated between the National Aeronautics and Space Administration and Aerojet-General Corporation. The reactor for SNAP-8 is already being developed by separate contract to Atomics International, a division of North American Aviation, from the Atomic Energy Commission. The system, which should be ready for flight in about five years' time, should generate 300kW and operate for a year.



This Polaris, virtually identical with the operational weapon, was fired pneumatically from the ship simulator at Cape Canaveral on March 18. The jettisonable launching shoes are still in place around the body