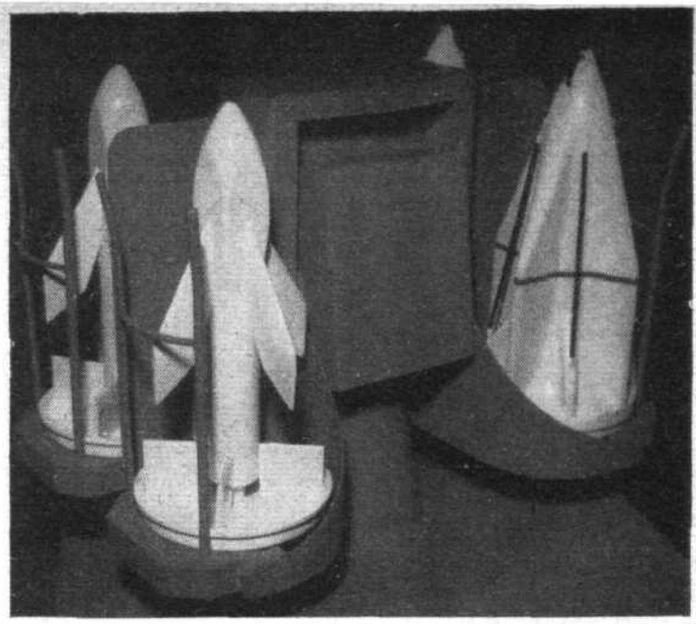


A model Seacat launcher, two of the rounds being protected by light-weight canisters of glass-fibre which are removed before firing

reproducing full IRBM characteristics and later those of an ICBM.

In its new rôle the Jupiter will need to simulate all possible types of ballistic trajectory, re-entry angle and velocity. Normally the main powerplant and tankage sections of Jupiter separate from the nosecone and re-entry body (containing the guidance compartment) following burnout of the S-3D engine. In order to exercise the capability of Zeus to the fullest extent only the warhead of the Jupiter will separate, and the target will also be able to launch decoy warheads just before re-entry to the atmosphere.

SWEDEN BUYS SEACAT

A joint announcement by the Swedish Admiralty and Short Bros & Harland on December 17, states that the former has contracted to purchase "a number of Seacat surface-to-air guided missiles, which are to be used for the purpose of evaluation." In a statement in Stockholm, the Swedish Navy revealed that tests with Seacat will be carried out in the Baltic during the coming autumn, and that an unspecified number will be delivered in 1961.

Already scheduled to replace the 40mm Bofors—by a twist of fate, a gun of Swedish origin—as the standard close-in defence system against aircraft for ships of the Royal Navy, Seacat can be installed relatively easily in existing destroyers and frigates and is likely to find a very wide market indeed. The navies of Australia, New Zealand and Western Germany have expressed interest in it, and a somewhat different land-based system is under development as a company venture under the name of Tigercat.

INTERNATIONAL SPACE EFFORT

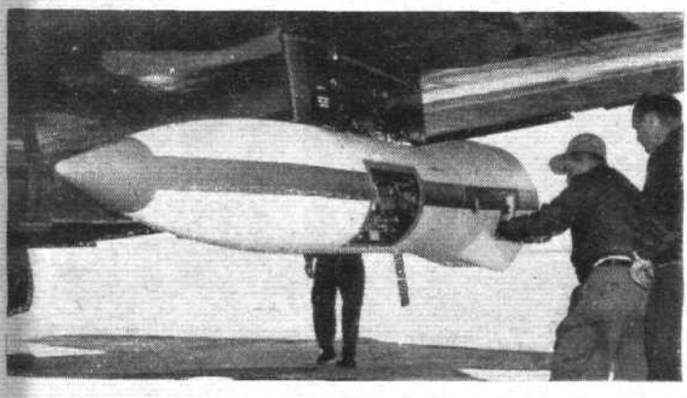
Speaking before the Institute of World Affairs in Pasadena, California, last month, Dr T. Keith Glennan, Administrator of the National Aeronautics and Space Administration, referred to international co-operation in the field of space research. "The ultimate step in international co-operation is joint participation in a single programme with participation by scientists of two or more countries in the design of experiments and in the preparation of payloads for rockets, satellites and space probes," Dr Glennan said. "Discussions are under way between NASA scientists and their colleagues from other countries with the view of beginning activities of this type."

"As a matter of fact, the international character of co-operative space activities in which we are engaged is already broad. Our radio and optical tracking network is composed of stations located in, and often operated by scientists and technicians of, Argentina, Australia, Chile, Ecuador, India, Iran, Peru, Spain, and South Africa. Other co-operating stations are situated in England, West Germany, and Japan. The new Project Mercury tracking stations will expand this list to include additional countries to the South and in Africa, along the planned orbit of the manned capsule.

"Beyond this, tentative arrangements for substantial programs of joint exploration of our spatial environment have already been made with the United Kingdom and Canada. Additional co-operative programs have been proposed by a number of Pacific and European national space committees . . . As an evidence of our interest in international co-operation, we would be most happy to offer the services of our tracking network in support of the scientists of the Soviet Union when and if that nation undertakes a manned space flight program."

SPACE MEETINGS

The 1960 London lecture programme of the British Interplanetary Society includes a film show at the Science Museum, South Kensington on Saturday of next week, January 9. Among new astronautics films to be shown are *Assignment Outer Space*, *Down to Earth*, *Sub-gravity Tests in Jet Aircraft*, *Atlas in Orbit*, *Space Pioneer* and *Explorer in Space*. A schools lecture on *The Scientific Exploration of Space* will be given by Dr N. H. Langton on January 16 in Church House, Westminster, and a half-day symposium on Moon exploration is scheduled for March 5 in Caxton Hall.



NEW SPACE CONTRACTS

A $250,000 contract for instrumentation for a Delta-launched Earth-orbiting solar observatory is included in the list of contracts announced by NASA for October. The cost of this item, which goes to Ball Brothers Research Corp, represents initial funding; the total cost of the project may reach $750,000. Other projects announced include $150,000 to the Army Ordnance Missile Command for initial funding for design, construction and integration of a Juno 2-launched satellite to study the energy and source of gamma rays, the total cost of which might be $800,000; and a similar sum, also to AOMC, for the same work to be carried out on a Juno 2-launched satellite to sample the ionosphere.

NASA HEADQUARTERS RE-SHUFFLE

A new headquarters unit for rocket-vehicle development has been established by the National Aeronautics and Space Administration. The new group will be headed by Maj-Gen Don R. Ostrander, previously Deputy Director of the Advanced Research Projects Agency, who takes up his new appointment—as Director of Launch Vehicle Programs—today (January 1).

The new section is the fourth major unit in the NASA headquarters organization. The other principal offices are concerned with spaceflight development (under Dr Abe Silverstein), aeronautical and space research (directed by Ira H. Abbott) and business administration. In this last-named group, the appointment of Wesley L. Hjornevik as deputy director of business administration has been announced.

Radio frequencies for space research and radio astronomy were allocated at two conferences of the International Telecommunications Union which ended in Geneva on December 21.

A successful full-range flight was achieved by an Atlas fired from Cape Canaveral on the night of December 18. A simulated warhead was dropped near Ascension Island.

At Nord-Aviation emphasis has shifted from the A.A.20 to the A.S.20 (*air-sol* instead of *air-air*). Compared with the familiar air-to-air weapon (also designated Nord 5103) the A.S.20 has a larger warhead, facilitated by the descending trajectory. The proximity fuze is eliminated. Production of A.S.20 is being shifted from Chatillon to the main plant at Bourges, chiefly for Fiat G.91s of the Luftwaffe.

Brig-Gen Austin W. Betts has been named director of the US Advanced Research Projects Agency in succession to Roy W. Johnson. Dr Charles Critchfield of Convair was originally named for this post but declined following criticism of the proposed arrangement under which Dr Critchfield would have continued to receive his $36,000 company salary but no Government remuneration while with ARPA.

Jaguar is the name of a new air-launched research rocket which the US Air Force expect to fire for the first time this month. The rocket, which weighs 1,700lb and is 29ft long, will be launched from a B-57 aircraft during a vertical climb, and is designed to achieve heights between 500 and 600 miles. Test objectives will include the measurement of Northern Light discharges and of the behaviour of trapped radiation.

The US Army have developed a TV transmitter designed to be ejected from a missile during flight and transmit pictures of the impact and resulting damage. Here it appears to be housed in the second stage of a Martin Pershing, carried under the wing of a B-57