

JUMBO JET

Year-long test for C-5A

A vast, year-long checkout of the giant C-5A jet transport has begun under the joint aegis of the Air Force, Army and Lockheed-Georgia Co.

In the next 12 months, the controversial jumbo jet will undergo an elaborate exercise in which it will deliver about 25,000 tons of Army equipment by parachute along with more than 2,000 men. The drops, extending over about 150 flights, will begin with dummy troop and cargo loads, progressing by next summer to composite drops of 75 paratroopers and full cargo capacity of as much as 220,000 pounds.

The aircraft used in the test will be the eighth one off the assembly line, which is contractually one operated primarily by Lockheed crews. The C-5A will begin operational service, however, while the test is still going on, with the first squadron deliveries scheduled for April 1970.

Because of large cost overruns and generally escalating bills for the plane, the Air Force recently decided to reduce the number it would buy in its initial order from 115 to 81.

ELECTRONICS

Three-D radar

Highly mobile radars that see in three dimensions are being readied by the Air Force to replace present systems that require two radars each, one to measure the distance and direction of aircraft and the other for altitude.

The three-D radar, known as Topsy-43 for its designation AN/TPS-43, is being delivered to units in the U.S., Europe and the Pacific. One installation weighs about 3,500 pounds, compared to several tons for the systems it is replacing, and can be carried by helicopter, two-and-a-half-ton truck or wheeled cart.

One advantage of the Topsy-43 over many transportable radars is that its antenna does not have to be dismantled in high winds. The antenna, made of tubular alloy slats, provides an efficient reflecting surface but has a wind resistance of only 35 percent.

The unit has also been designed so that it can be operating within one hour of delivery to its site, which can range from jungle to frozen icecap. Modification kits are needed to use the unit with present operations centers, says the Air Force, but it will be compatible with new, inflatable command centers that are now under development for easy transport.

SELENOLOGY

Moon craters may be fluid-bed phenomena

The moon's craters, most researchers agree, are likely to be due either to meteor impacts or to volcanic eruptions, or both. A British geologist, however, suggests that a third mechanism may often be responsible: the fluidized bed process, in which gas bubbles up through a layer of small, lightweight particles.

Among the moon's many craters, points out Prof. A. A. Mills of the University of Leicester in the Nov. 29

NATURE, are features such as the twin craters Azophi and Abenezra, whose circumferences just touch so they partly share a common wall. With either impacts or eruptions, says Prof. Mills, this common wall ought to be largely destroyed, even if the two craters were formed simultaneously.

A more likely explanation, believes Prof. Mills, who has demonstrated it in his laboratory, is the slow diminution of gas bubbling up through particles of lunar material. In tests, he finds, abruptly shutting off the gas flow through the almost-floating particles, simply lets them collapse back again. With a slow reduction, however, particles tend to mass together as soon as the flow rate is too low for turbulent boiling. This leads the gas to choose easy paths around the agglomerates, forming circular structures on the surface similar to many types photographed on the moon.

AMATEUR RADIO

Ham satellite to orbit in January

A tiny satellite designed and built by amateur radio operators will be launched by NASA as a piggyback rider during the launch of the Tiros-M weather satellite, scheduled for Jan. 9.

Called OSCAR, for Orbiting Satellite Carrying Amateur Radio, the 39-pound spacecraft will transmit signals on two amateur bands to let ham radio operators practice tracking satellites and study radio-wave propagation.

AIR TRANSPORT

Intercity copter service

A helicopter shuttle service has been opened between Allentown-Bethlehem-Easton Airport in Pennsylvania and New York City's West 30th Street heliport.

The service, operated by Americus Airways, will use three Sikorsky S-55 helicopters, each with eight-passenger capacity. The initial schedule calls for six round trips a day from Allentown, with possible expansion to include the purchase of additional aircraft and inauguration of flights from Wilkes-Barre and Scranton, Pa., to New York. The flight is estimated to save almost an hour compared with a fixed-wing flight to Kennedy Airport and ground transportation to Manhattan.

SATELLITE COMMUNICATIONS

Laser set for ATS-F

The National Aeronautics and Space Administration's first use of a laser communications system on a satellite will be with the sixth Applications Technology Satellite, ATS-F, to be launched in early 1972.

The space agency hopes the experimental system, to be built by Aerojet-General Corp. in Azusa, Calif., will open the door to a number of savings on future missions.

Because lasers operate in frequency bands not now in use, they could help to alleviate the presently crowded communications spectrum (SN: 9/13, p. 216). They would also allow smaller, lighter antennas than microwave systems, and require less on-board power.

january 3, 1970

9