

First "Group Flight" in Orbit

Continued from page 50

between two spaceships was also "a new page in radio-engineering." He said the time was not far off when man's dream of establishing a world-wide communications system would become a reality.

Enthusiasm for communications satellites seems to have been gaining ground in the Soviet Union during the past year although the idea is invariably linked in the literature with the attainment of manned spaceflight. While the moon is obviously the No. 1 priority of Soviet man-in-space ambitions, it is possible that concentration on manned spaceflight (with the prospects of orbital-rendezvous) has the double objective in one bold step of achieving a manned space-station and the orbital refuelling of lunar spacecraft.

Certainly there has been no evidence to date of the Russians attempting anything approaching the 170 lb. 34-in. diameter Telstar — and they may be thinking in terms of comprehensively equipped relay stations of truly vast capacity, which offer opportunities for periodic inspection and repair.

Finally, what new information have we obtained of the multi-stage Vostok boosters? Certainly we have received another vivid demonstration of the accuracy with which large payloads can be placed in orbit. However, the latest firings have given little further information of their capability since the Russians have not revealed the projected mass of Vostoks 3 and 4. At the time of Major Yuri Gagarin's single-orbit mission in Vostok 1 (April 12, 1961), Prof. I. A. Merkulov gave the liftoff weight of the launcher as more than 100 times the payload, i.e., $100 \times 10,416$ equal 1,041,600 lb. A rocket of this size would require a liftoff thrust of the order of 1,300,000 lb.

Following the 17½ orbit Vostok flight on August 6-7, 1961, the further information was given that the multi-stage rocket "had six engines at the moment of launching with a total thrust of 20,000,000 hp." Ambiguity concerning the terms in which the horse power rating was obtained was subsequently clarified to some extent when, in a submission to the FAI in Paris, it was stated that the total maximum thrust of all stages was 600,000 kg. (1,323,000 lb.).

As this figure leaves little over for top staging, it is possible that the launch vehicle employs some form of lateral staging — something like a super-Atlas in which

perhaps five 260,000 lb. thrust main stage engines are firing at liftoff, jettisoning in sequence. A separate rocket stage might then be fitted at the head for final orbital injection. Other arrangements are, of course, possible.

An interesting sidelight on the Soviet Vostok booster has recently been received in which the Russians state that the launching of Vostok 2 took only two days to prepare after the rocket had been placed on the launch pad. To achieve this the rocket is assembled in a nearby preparation building, or hangar, where stages are mated together and the Vostok spacecraft fitted to the nose of the booster.

A complete check is made of all systems with the rocket in the horizontal position and when at length the inspection crew are satisfied that all is in readiness, the complete vehicle is brought out from the hangar on a railed track. At the base of the launch platform is a gigantic handling frame to which the vehicle is attached at strong points; it is then lifted bodily into the vertical firing attitude. Further systems checks are made and the rocket is fuelled.

This was the sequence for the Vostok 2 mission:

August 4, 1961: Rocket ready in preparation hangar with Vostok spacecraft attached. Wheeled out and raised to vertical position on pad.

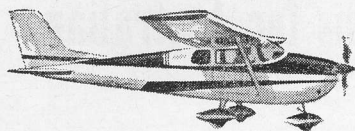
August 5: 9.0 am (Moscow time): pre-launch tests begun, finished at 2 pm.

August 6: Titov enters Vostok at 07.15. Hatch closed 7.42. Head shield placed over hatch 7.50. Liftoff 8.59.

At a Press conference attended by hundreds of the world's journalists at Moscow University on August 21, 1962, it was disclosed that both Nikolayev and Popovich ejected from their spacecraft in the lower atmosphere and landed by parachutes. The spacecraft were separately recovered. Nikolayev spoke of being rather disturbed on re-entry by seeing smoke, then flame changing from red to orange-red, green and blue, as the spacecraft encountered highest heating rates under air friction. He described the descent as "bumpy."

Popovich said he saw glowing particles in space and thought these originated from "the exhaust of rocket motors" (presumably orientation gas-jets). Mass of the spacecraft, he disclosed, was about five tons. At one time the two vehicles were as little as three miles apart in orbit but a rendezvous was not attempted.

As a result of the success of Vostoks 3 and 4, Prof. A. Blagonravov declared that it might now be possible "to speed up the Soviet space program." **END**



REX

AVIATION LIMITED

has pleasure in announcing the appointment of
MASLING AIRCRAFT SALES AND SERVICE
of Cootamundra as **Cessna** Dealer for Southern
New South Wales.

This first class Dealer facility supplements the Australia-wide Cessna Sales and Service Organisation consisting of: Schutt Aircraft Pty. Ltd., Moorabbin, Victoria • Bush Pilots Airways Ltd., Cairns, Queensland • Western Air Navigation Ltd., Charleville, Queensland • Darling Downs Aero Club, Toowoomba, Queensland • G. W. Campbell, Mudgee, N.S.W. • Tamair Pty. Ltd., Tamworth, N.S.W. • Central Western Aviation Service, Nyngan, N.S.W. • Bourke Aviation Service, Bourke, N.S.W. • Silver City Air Taxis Ltd., Broken Hill • E. C. Osgood, Darwin, N.T. • The Royal Aero Club of S.A., Parafield, S.A. • The Aero Club of Southern Tasmania, Hobart, Tasmania • The Tasmanian Aero Club, Launceston, Tasmania.

Distributor for Australia and New Guinea.

REX

AVIATION LIMITED

AUSTRALIA'S LEADING LIGHT
AIRCRAFT ORGANISATION

Bankstown

Archerfield

Maylands

Parafield