

FURTHER ADVANCEMENTS IN SPACE RESEARCH

COMMENTING on the latest Soviet achievement in space science, last year's president of the British Association for the Advancement of Science, Sir George Thomson, said: "If you have done a thing once it is not difficult to do it several times. It seems to me a cheerful Bank Holiday event, and we should thank the Russians for arranging it". After pondering these remarks they would appear less waggish and more profound than at first. The first remark is, however, rather naïve, for there can be no doubt that this second successful attempt to put man into orbit embraced more scientific 'things', with consequent results from which much can be gleaned, than were inherent in the first successful attempt, with Major Yuri Gagarin in the space-vehicle. The second remark, however, needed making. The news would be cheerful whether the feat was achieved by Soviet scientists, American scientists or those of any other nationality: for here, once again, is the manifestation of great triumphs for scientists, coupled with the heroism of another—this time Major G. S. Titov, of the Soviet Air Force.

The spaceship-satellite *Vostok 2*, 1961 τ , launched from the U.S.S.R. at 06.00 hr. U.T. on August 6, carried the second man to travel in orbit around the Earth. The satellite, which weighed 4,730 kgm. excluding the final-stage rocket, was projected into an orbit inclined at 64° 56' to the equator and having an orbital period of 88.6 min. Its height above the Earth varied between 178 km. at perigee and 257 km. at apogee. Its radio transmitters operated on frequencies of 15.765, 19.995, 20.006 and 143.625 Mc./s. *Vostok 1*, which carried Major Gagarin in the first manned orbital flight on April 12 (see *Nature*, 190, 307; 1961), made one revolution about the Earth. *Vostok 2* made 17 revolutions, and, since the orbital period was such that the geographical track on the seventeenth revolution was almost identical with that on the first, Major Titov made his descent in the same region as Major Gagarin. Major Titov landed safely near Saratov, some 500 miles south-east of Moscow, after a flight lasting 25 hr. 18 min. The main object of this second orbital flight was to test the effects on a human being of a longer journey in orbit. Major Titov reported that his condition was excellent throughout his epoch-making flight, and the prolonged period of weightlessness appeared to have no ill-effects. He slept for 8 hr. and ate several meals, taking the food from tubes, as well as operating various manual controls in the satellite, observing the Earth from one of the three portholes, and sending messages to the peoples of the countries he passed over.

On this second occasion more details of experimental conditions were revealed, and even some preliminary results announced—an excellent and cheerful omen for scientific advancement on an international scale. Hitherto, far too much lip-service has been paid by Soviet and American political leaders to the ideal of sharing their scientific results; but little has so far accrued.

There can be no gainsaying the fact that the Soviet scientists are in the vanguard of space travel; but it does not follow that they are ahead of others in space research *in toto*. There are many who believe that the U.S.S.R., through their awe-inspiring achievements, are deliberately playing to the political gallery. It is obvious that their successes are enhancing the political prestige of the Soviets throughout the world, especially in scientifically and culturally backward and emergent countries. But it would be wiser for world leaders in policy to look on these successes in space-travel as the result of hard and inspired scientific endeavour made by scientists who are highly respected and encouraged by their political leaders.

Even in their own country, certainly outside it, Gagarin and Titov are presented to the public as great heroes, which they surely are. But it is essential to recognize that the real prime-movers in these fantastic feats are the scientists and technologists who, through their ingenuity and devoted effort, have made such feats possible. The lay public, both Soviet and millions of others, will acclaim the heroism of men such as Gagarin and Titov; but world leaders would be better advised to take heed of the words of Prof. Nikolay Barabashov, who said: "The general triumph of Soviet *scientists and engineers* consists in that they have created a spaceship controlled by man".

There are still too many otherwise intelligent people who grudgingly now admit that we have had science thrust upon us. They will continue that attitude at their peril, for this is the Age of Science, and, like it or not, we must do all we can to give moral, and especially practical, support to our scientists (in all branches). This is best done by learning and teaching more about science, for then shall we treat scientists for what they really are—world leaders in their own sphere, not 'backroom boys'.

Walter Bagehot said that: "Governments are only strong when public opinion is definable and decided". The strength of democratic Governments must now be enhanced by the support of a public opinion inspired by knowledge of, and greater respect for, science and scientists.