

## SPACE

# Heart Study of Astronaut

► THE STUDY of a spaceman's heart flutter may medically benefit man on the ground.

In response to a question asked by SCIENCE SERVICE at a news conference in Washington, D. C., Dr. Charles H. Roadman, aerospace medicine director of manned space flight, said that Astronaut Donald K. (Deke) Slayton was grounded from the next orbital space flight so physicians could reevaluate his condition under stress.

"We are waiting for Deke to fibrillate (experience heart flutter) and put him under stress," Dr. Roadman said. He described the condition as paroxysmal atrial fibrillation, meaning that the heart flutter happens at indeterminate times, in the atrial, or upper part of the heart, which fills with blood but does not pump it out into the body.

Deke Slayton, also present, added that the fibrillations have never made any difference in his performance during training. He said he paid a good deal of attention to the condition when he first found out about it in November, 1959, a few months after he had been chosen for astronaut training.

This happened when the astronaut was "suiing up" for flight in the centrifuge, and heart sensors were attached to his body. Slayton said he has experienced as much as 14 to 15 g's in the centrifuge, or this many times the earth's gravitational pull. He has been through the same training as the other astronauts.

He said he can only "feel" the heart flutter by taking his pulse, which becomes irregular. It happens every few weeks for a couple of days, but he does not now pay much attention to it.

When the condition was first discovered, medical authorities felt assured that the heart flutter would not interfere with his mission in space. No change has occurred in his condition since then, but National Aeronautics and Space Administration officials felt that more should be known about this condition under the stresses of simulated "flight."

Dr. Hugh L. Dryden, associate director of NASA, said this does not mean that Slayton is out of the space program, but only that he will not fly the next orbital flight in the Mercury capsule. Slayton said that he will spend about a month before the flight bringing Astronaut M. Scott Carpenter up to date on the particular space capsule. Carpenter, his back-up, has now been chosen as his replacement. Dr. Dryden said Slayton will definitely take an active role in the next flight.

More general knowledge of heart fibrillation may result from studies of the astronaut, who is put under far greater stress than persons ordinarily are.

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## Satellite Score: U.S. 20, USSR One in Same Time

► RUSSIA has sent its first satellite into orbit in seven months, during which time the U.S. has made 20 successful launchings.

The Russian launch on March 16 of what appears to be the first U.S.S.R. weather or communications satellite was timed to coincide with disarmament talks in Geneva. Premier Khrushchev lost no time announc-

ing the launch with the threatening note that Russia now also has an invulnerable rocket that can circle the earth and send a blow at any target.

A Soviet news agency reported that the satellite has on board instruments, a radio system and a transmitter, sending on 20.003 and 90.018 megacycles. It was reported to be the first of a series of instrumented satellites, or cosmodromes, to be launched during 1962.

However, the U.S. achievements in space for the past seven months are more impressive than Russian threats and promises. After the Russian Vostok carried cosmonaut Titov around the earth 17 times on Aug. 6, 1961, the U.S. launched two Explorer probes, three Ranger deep space probes, and eight Discoverer satellites, for studying re-entry problems.

An unmanned Mercury capsule was successfully orbited around the earth on Sept. 13, followed by an orbital flight of two laps by the Chimp Enos on Nov. 29. Astronaut John H. Glenn Jr.'s three-orbit flight on Feb. 20, 1962, showed the steady, determined progress of U.S. space efforts.

In addition, the U.S. has since the Russian launch Aug. 6 sent one Tiros weather satellite and a Transit navigation satellite into orbit, plus a Midas spy-satellite designed to detect the firing of missiles at any point on earth. The latest U.S. space effort is the "near perfect" OSO-1, the orbiting solar observatory studying the sun's radiation, visible and invisible, from a vantage point far superior to any on earth.

The U.S. also fired its largest intercontinental ballistic missile, the Titan-2, on a successful 5,000-mile trip across the Atlantic on the same day that the new Russian satellite was launched.

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# Rocket Exhaust Dangers

► A NEW SPACE AGE PERIL has been suggested: rocket exhaust from powerful missiles.

"We do not know yet what effects the release of large quantities of chemicals from rocket exhaust will have on the atmosphere, but there may be some strange results," warns Dr. Harry Wexler, director of meteorological research for the U.S. Weather Bureau and now a regents lecturer at the University of California, Los Angeles.

One of the strange results might be that chlorine in the exhaust chemicals would dissipate the ozone layer that protects the earth from sterilizing ultraviolet radiation, Dr. Wexler speculates.

"Because the air in the upper atmosphere is very thin—for example, 20 miles up it is only one percent of the density at sea level—even a small amount of chemicals could cause a lot of pollution," he said.

"So far, American and Russian rocket engineers have been mainly interested in getting more thrust from their rocket fuel.

In the future, they may have to check first on the harmful effects."

Despite its perils, the space age has been good to weathermen, sparking a "new era in meteorology" through large-scale international research programs, greater public interest, and orbiting weather satellites.

"The Tiros satellite now observes about 20% to 30% of the earth's surface each day," Dr. Wexler said. "Next year we plan to launch the first Nimbus, a circumpolar satellite which will cover the whole earth twice a day.

"Eventually we hope to have at least one Nimbus in orbit at all times as a 'global bookkeeper,' giving us continuous day and night reports on storm fronts, changes in cloud covers and other weather data."

To get the full value out of its new tools, meteorology needs more trained people, Dr. Wexler stressed, especially those with a good background in mathematics, chemistry and physics.

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**CHECKING FUEL BUNDLES—***Atomic power technician, Lester Race, checks fuel bundles for Yankee Electric Company's nuclear plant whose reactor was built by Westinghouse Electric Corporation, Pittsburgh, Pa.*