

## SPACE

# Astronaut Man of Vision

**An astronaut must have vision to see reality only, relying on his own judgment, and suppress imagination which is dangerous for a person flying spacecraft, Lillian Levy reports.**

► U.S. ASTRONAUTS are men of vision but not of imagination, Dr. Robert Voas, assistant to the director of the National Aeronautics and Space Administration's manned-spacecraft center, told SCIENCE SERVICE at Brooks Air Force Base, Texas.

An astronaut has vision on the ground to see the potentials of space flight. This provides him with the motivation to fly in space where he must have vision that assures him of seeing only reality, Dr. Voas said. In flight, if he has imagination, he must suppress it. It is dangerous for a person flying an airplane or spacecraft to imagine something is happening or may be happening or could happen so that he loses touch with reality.

The astronauts are men of known reliability and completely trustworthy, but to succeed as space pilots they cannot rely on other persons or be too trusting, Dr. Voas said. An astronaut learns to trust largely in his own capabilities. This is because he must fly alone, depending largely upon his own ability and, therefore, cannot place complete trust in other people.



G. T. Schjeldahl

**BALLOON MATERIAL**—A technician demonstrates the strength and tear-stopping properties of the super-tough material, a combination of polyester plastic film and a network of polyester fibers, developed by G. T. Schjeldahl Company, for use in heavy-load balloons on long-duration flights.

These characteristics are so marked that an astronaut would be a very poor subject for hypnosis. A tendency to be open to suggestion could be very dangerous, Dr. Voas said.

Therefore, a large part of the astronaut's psychological training is to teach him not to be open to suggestion and not to use his imagination. Yet in Gemini and Apollo two and three astronauts will fly as a team. This will require some modification to trust their own judgment. They will have to think of the team as a unit, Dr. Voas said.

Nevertheless, the basic confidence of the astronaut always will be in himself. This is seen in tests performed on pilots during airplane flight. Stress measurements showed that the pilot was more anxious about his co-pilot when his co-pilot was flying the plane than when he himself was flying it.

"This is similar," Dr. Voas said, "to the experience of teaching your wife to drive. You are more nervous when she is driving than when you are."

Crews for the two-man Gemini and three-man Apollo missions will be selected mostly by the individual choice of the astronauts themselves, although the director's selection of possible crew combinations also will be a factor. The Gemini and Apollo teams will be combinations of the seven original Mercury astronauts and the nine new selectees.

Dr. Voas said the personality characteristics of the new group of astronauts were as varied as the original seven. Some are quiet and tend to be introverted. Others are outgoing and tend to be mischievous. The nine new astronauts all express themselves well and are able to describe their experiences in training very graphically.

• Science News Letter, 83:101 February 16, 1963

## New Energy Resources

► U.S. SPACE research may advance Africa's development by providing new energy resources, Dr. Ammishaddai Adu, biologist member of the National Research Council of Ghana, predicted at Brooks Air Force Base, Texas. Dr. Adu is the first African scientist to attend a space symposium at the U. S. Air Force School of Aerospace Medicine.

"We are keenly interested in uses of solar batteries in space and are very hopeful that these and other solar power developments from the U.S. space program may help provide energy for electrical power which Ghana and most of the new African states need."

He told SCIENCE SERVICE, "Ghana has plenty of sun, what we need is to capture its energy." Work on solar energy applications has begun at the Kwame Nkrumah University of Science and Technology at

Kumasi in central Ghana. Among the projects is the building of solar pools (reservoirs of energy) developed by Israeli scientists for use in arid areas.

Ghana at this stage of its development cannot afford the luxury of research just for the sake of knowing, Dr. Adu said. Research has to be aimed at doing.

"We need to use the fruits of science to provide more of the fruits of life for our people," Dr. Adu said. Great stress is being placed on agriculture to develop food crops to feed the population rather than concentrate only on cash crops, as Ghana did under colonial government.

Since the great block to advancement has been lack of education, the council is now concentrating on convincing farmers that scientific methods of handling crops are better than the old ways. Progress has been made in that cocoa planters, for example, now have learned to cut out diseased trees from their groves rather than continue to use them until they die, thereby risking further plant infection.

The African biologist said Ghana is seeking ways to interest its youth in science so that they will seek careers in engineering, technology and agricultural research.

The National Science Fair-International is among the most promising means to this end.

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## Manned Balloon Flights

► MANNED BALLOON flight now rates with rockets and satellites as a means of probing space.

The costs of such balloon flights are only a fraction of space launches, U.S. Air Force pilot of Project Stargazer, Capt. Joseph Kittinger, reported to scientists attending a symposium on aerospace medicine at Brooks Air Force Base, Texas. However, the balloons provide a research platform in "semi-space" from which scientists can make studies pending the time when they can travel in orbiting satellites.

Capt. Kittinger and an astronomer soared to 85,000 feet last December in a balloon-borne gondola carrying a 12-inch telescope with which they photographed the stars. At this height observations are made from above more than 95% of the earth's atmosphere which ordinarily obscures photographs made from the ground.

Obstructions that appeared on stars, "lumps" as Capt. Kittinger calls them, and which may be reflections of the atmosphere, partially disappeared at 85,000 feet.

Pilot and astronomer both wore partial pressure suits with automatic closing face plates. These were constructed to close automatically if pressure went to 30,000 feet in the gondola, even if both passengers should be asleep. Blood boils at about 40,000 feet without such protection.

During flight both men ate and drank what they wanted. The support system, Capt. Kittinger said, is at a highly developed state of the art for balloon flights. The next flight under Project Stargazer is planned for spring, again from New Mexico, and will be a 36-hour voyage.

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