



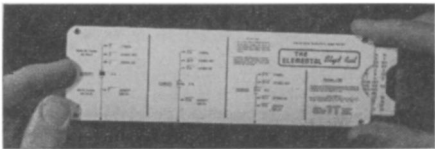
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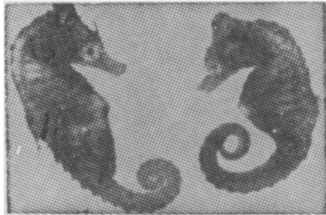


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## COMPARATIVE PSYCHOLOGY

# Chimps May Outdo Man

➤ THERE ARE SOME THINGS that a chimp can do better than a human astronaut.

An astronaut chimp, such as Enos, can work at a mechanical, routine task and keep at it steadily for a longer period than can a human. This has been found by psychologists who have compared the performance of human beings and apes. The chimp can do the same monotonous, dull job for as long as six months.

The work that a chimp does in a space capsule orbiting far above the earth not only lets monitors on earth know that the animal is still alive and functioning, but the animal can actually furnish information about conditions in space.

The score is not all in favor of the chimp, however. There is still good reason, the psychologists believe, to send a man into space.

The flight of Enos was cut short after he orbited the earth twice on November 29, partly because he did not have man's ability to correct a difficulty with the altitude control.

A man and his human brain can be described as the best engineered and packaged computer system for coping with space problems. This living computer includes a memory or data storage system, an intelligence for solving problems, and a means for responding appropriately to new and unforeseen situations that may come up. And, best of all from the engineering point of view, all this complex computer system is contained in a package that weighs only about 180 pounds. Dietitians are reportedly attempting to keep the weight of Mercury astronauts down to 160 pounds.

Another advantage held by the human is that of speech, but after all, the chimpanzee

## TECHNOLOGY

### Photometric Tunnel Improves Signal Flares

See Front Cover

A special instrumented tunnel, shown on the cover of this week's SCIENCE NEWS LETTER, can precisely determine the intensity and color of new signal flares under development by the U.S. Naval Ordnance Laboratory, White Oak, Md.

With it, NOL scientists are designing brighter pyrotechnic flares of better color for use by the Navy's fleet as identification signals on the high seas. It also will be used for smoke measurement.

The 75-foot-long tunnel has a concrete block building on either end. One building is equipped with a metal rotating table on which flares are burned, and an exhaust fan with a flow rate of 2,400 cubic feet per minute for removing smoke.

The other building houses sensitive instrumentation for recording the burning flare's brightness and its color coordinates.

• Science News Letter, 80:390 December 9, 1961

can communicate useful information in the way he pushes buttons or presses levers. Some anthropologists say that the unique humanness of man lies in his ability to invent and use tools for specific purposes. But the chimp has been observed to use a rake to pull in a tasty morsel, such as a banana, or to pile stools or boxes to climb up to reach a high object. Man can transmit culture to younger individuals in his society. But the adult chimp can teach a baby chimp the difficult knack of breaking open a coconut.

To train Enos, the astronaut chimp, his trainers used a training system developed by a Harvard psychologist, Dr. B. F. Skinner. It is called reinforcement training and is useful for training not only chimpanzees but also humans and even pigeons.

Dr. Skinner has trained pigeons to perform such unusual tasks as playing a miniature piano and table tennis. During the war, he trained one of his birds to ride along in the nose of a missile and, by pecking, direct the missile to its target.

This was a top-secret project. The missile flight of the bird was a suicide mission. When he hit the target he was destroyed.

Reinforcement training is the principle used in the teaching machines that are doing so much to make learning easier and quicker, even for very young children or those not very bright.

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## PHYSIOLOGY

### Female Voice Has Flaws For Routine Broadcasting

➤ "UNINTELLIGIBILITY" is a characteristic of the female voice, an Air Force research study published by the U. S. Department of Commerce Office of Technical Services has revealed.

This flaw is due to a lack of "harmonics" and may rule women out as broadcasters of routine transmissions for aircraft communications systems. Despite its vocal inferiority, the female voice could be useful in broadcasting warning transmissions since it has a "natural priority in commanding a man's attention," the team of male scientists discovered.

On the basis of experience, however, the researchers conclude that in the long run a man's voice "will prove more acceptable than a woman's voice to male operators."

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Computers can now receive the electric signals generated by the heart and analyze them electronically to locate and estimate heart damage.

Young men who work their way up to managerial positions have poorer health than executives who step into their jobs from college, studies have shown.

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