

SPACE

Doctor in Space an Asset

➤ BORIS YEGOROV, Russia's doctor in space, kept 1,000 times better watch on his cosmonaut patients than could a doctor on the ground reading telemetry signals, said a Federal space agency official.

There are just as many problems in trying to send data back to earth from a spacecraft as there would be in trying to completely control the craft from the ground by radio, said George Chatham of the National Aeronautics and Space Administration's biotechnology and human research division.

Atmospheric interference, equipment failure and loss of accuracy in the sensors that actually take the measurements on the astronauts' bodies all combine to make the earthbound doctor's job harder and less effective.

Many things about an astronaut cannot be measured automatically anyway, Mr. Chatham added. The size of the pupil of the eye can reveal many different problems but is very hard to measure except by actual observation. Dr. Yegorov was in a position to tell if the faces of the two other cosmo-

nauts aboard the "Sunset" were flushed or pale or if their hands were shaking and even to observe their facial expressions.

NASA has been planning for some time to start a school, probably at the Manned Space Flight Center in Houston, Texas, where astronomers, geologists, doctors and other scientists could train to be astronauts. So far, however, the plans have not materialized.

At present, NASA is not training its astronauts to make medical observations of one another on flights with crews of more than one, such as the three-man Apollo moon trip.

The scores of aerospace doctors who are guiding the astronauts through their rigorous physical training will have to be content during actual space flights with tiny electrical signals produced by sensors in the spacesuits.

However, Mr. Chatham said, there are only so many places where you can attach things to an astronaut and still leave him free to work.

• Science News Letter, 86:260 October 24, 1964

TECHNOLOGY

Computer Own Designer

➤ A RADICALLY NEW computer system which can change its own design and help create other computers is being put together at the University of California at Los Angeles.

Its designer, Dr. Gerald Estrin, calls his system the "Fixed Plus Variable Structure Computer." It consists of a powerful standard computer, connected with a variety of "black boxes," or electronic systems, which can be called upon to solve the toughest kinds of problems.

Dr. Estrin and his colleagues have written a dozen papers full of mathematical symbols and circuit diagrams to explain his design to other specialists.

However the basic difference between the "Fixed Plus" and conventional computers is more easily illustrated with a constructive analogy:

A contractor wants to build a house and hires a dozen general laborers to do the job in sequential steps. The chief workman pours the foundation, but needs some help to hammer the frame together. He stops his job, calls to a second laborer, explains what he wants done, and the second man goes to work.

When it comes to plumbing, more help is needed, so the chief workman calls to a third laborer, explains the job on hand, and so on until the house is finished.

That is roughly how a present computer system works in tackling a difficult problem. A number of general purpose computer programs are set up and the first program goes as far as it can, then requests help from another program, and so on down the line.

By contrast, and going back to the house-

building analogy, this is how the "Fixed Plus" system works:

This time the contractor hires one all-around worker, and surrounds him with a group of fast-working, specialized craftsmen. A foreman, or "supervisory control unit" cues in everybody on his part of the project beforehand, so that no time is wasted later in explaining the work, and all the craftsmen can do their jobs simultaneously.

The "Fixed Plus" also can decide on its own which combination of specialized units can best solve a given problem and in what time. Target date for the first operation of the "Fixed Plus" is in late 1965.

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TECHNOLOGY

Silver and Gold Sand Track Bay Water Flow

➤ SILVER-COATED SAND that has been plated with radioactive gold has been spread over the bottom of Botany Bay near Sydney, New South Wales by scientists from the Australian Atomic Energy Commission.

The movement of the treated sand will be tracked with scintillation counters as the flowing waters push the sand of the bay around in the course of natural ebb and flow of the sea.

This is a pilot test for a ten-week experiment to be carried out later this year as a guide to dredging operations, according to the Australian News and Information Bureau.

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