Charity Hospital uses Lab-designed computer

Critically ill patients recovering from open-heart surgery someday may have a computer to thank, as well as the doctors, if an experimental system developed by Lewis works out.

Lewis last week turned over to Cleveland's St. Vincent Charity Hospital a small, inexpensive analog computer that can continuously monitor changes in a patient's blood pressure and cardiac output. The computer, designed by Vernon D. Gebben and John A. Webb, Jr., of Lewis, took about a year to develop and cost about $1,500.

"The computer measures trends such as the increase or decrease of the stroke volume of the heart, or changes in how long the heart valve stays open, for instance," Gebben says. A nurse or doctor thus could detect certain abnormalities very early.

The analog system, known as the PPC (Pulse Pulse Contour) cardiac computer, was modeled after a digital computer program in regular use at the Latter-day Saints Hospital in Salt Lake City, Utah. The analog computer uses the same equations as the digital computer to calculate cardiac output from continuous readings of pressure with time. However, the analog system is both cheaper and smaller than its counterpart, making it more practical for small hospitals to use.

Development of this new computer was the result of a cooperative research program between NASA and Dr. Earle B. Kay and Dr. Akio Suzuki, specialists in open heart surgery at St. Vincent. They plan to use the computer on an experimental basis before application to human patients. The doctors are particularly interested in using the computer to measure the effects of drugs given patients who remain critical after open heart surgery. Experience at Salt Lake City has shown that this type of computer can detect complications in patients earlier than can standard methods of monitoring.

In operation, the computer would be directly linked to a patient. To obtain a precise measurement of blood pressure, a tiny teflon tube is inserted through an artery in the patient's arm up to a point near the heart. A transducer attached to the tube outside the arm converts the pressure measurement into an electrical signal that can be handled by the computer. Relations between pressure and time are used to compute changes in blood flow.

The computer displays six measurements: end-diastolic pressure, the lowest point in the blood pressure waveform; the notch pressure; showing the blood pressure when the aortic valve closes; the systolic period, or length of time the valve remains open; the heart rate in beats per minute; the calculated percent stroke change, a measure of volumetric change; and the calculated percent cardiac output change, indicating changes in the heart's efficiency.

Such a profile provides an approximate picture of what is happening. It's not (Continued on page 5)

Ames Director speaks about current mission

At the final staff conference of FY 1971 on Tuesday, March 27, Dr. Hans Mark, Director of Ames Research Center near Mountain View, California, will discuss current and future NASA programs being performed at the Ames Center.

Dr. Mark, a physicist and nuclear engineer, was Chairman of the Department of Nuclear Engineering at the University of California at Berkeley for five years before joining NASA as Ames Director in 1969. During that time he was also the Administrator of the Berkeley Research Reactor, which became operational late in 1966. Dr. Mark is still active in researching x-ray astronomy and atomic physics.

Programs at Ames Research Center currently include space shuttle development and life sciences research, including biotechnology. In the Earth resources field, Ames is receiving two U-2 high altitude aircraft which they will adapt to re- search programs. The center is also investigating V/STOL development, and is working with the University of Illinois on an advanced computer technique.

The staff conference will be held in the DEB Auditorium at 5:50 p.m. Dr. Mark will entertain questions from the audience after he explains his center's programs.

Meet Director held April 30

The third in a series of 'Meet the Director' socials will be held April 30 in the DEB Cafeteria beginning at 5 p.m.

Invited to the third social are the Rockets and Vehicles Office, Launch Vehicles Division, Vehicles Procurement Branch and Spacecraft Procurement Section and Plant Services Division.

At FEB luncheon

Channing C. Conger, Chief of the Spacecraft Technology Division, was one of 10 recipients of the "Career Service Award"—the highest honor available in Greater Cleveland to Federal employees.

The awards were given in ceremonies April 15 at the Federal Awards Luncheon in the Sheraton-Cleveland Hotel. More than 800 Federal employees attended the ceremonies and heard main speaker, James M. Beggs, Undersecretary, Department of Transportation, talk about government reorganization and revenue sharing.

The "Career Service Awards" program is designed to honor Federal employees for outstanding contributions they have made to the community and country through their career and personal service.

Conger joined Lewis in 1948 after earning an electrical engineering degree from Iowa State College. In 1963 he was promoted to assistant manager of the Agena launch vehicle project, and four years later to his present position.

Under his direction, the SERT II spacecraft was developed and flown, conclusively demonstrating that electric propulsion is ready for space applications. (Continued on page 4)