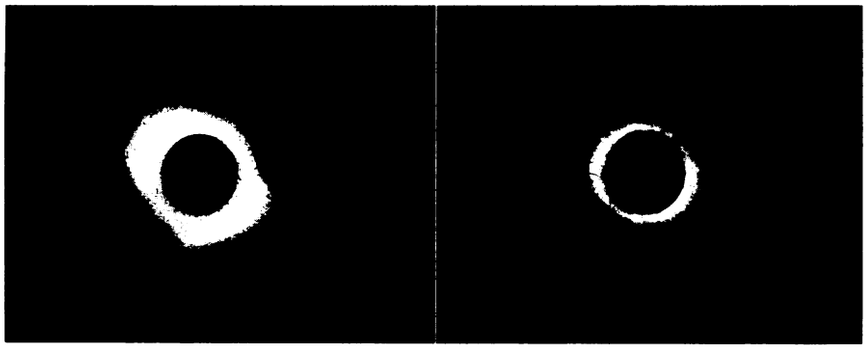

Fremont Davis

TWO VERSIONS—Shown are the two photographs, by visual rays (left) and infrared, of the totally eclipsed sun taken simultaneously with identical cameras, Saturday, July 20.

BIOTECHNOLOGY

Computers Fight Disease

Computers, expected to be the focal point of large medical centers of the future, are already aiding medical research and helping diagnose disease—By Walter Wingo

➤ ELECTRONIC COMPUTERS, which are fast becoming mighty weapons in man's fight against disease, are expected to be the center of every large medical center of the future.

Medical use of the computer ranges from routine tasks, such as taking care of hospital records, to such exciting assignments as keeping a running health check on a man orbiting in space.

Dr. William A. Spencer, director of the Texas Institute for Rehabilitation and Research in Houston, has coined the name "medical humanetics" for the way his organization uses the computer.

"It is a union of medicine, psychology, social science, mathematics and computer technology," he explained. "We treat the whole man, not just his illness."

The Institute, a 54-bed research affiliate of Baylor University College of Medicine, stores in its computer physical, emotional and environmental observations made of each patient.

The computer is programmed to examine and evaluate this data, printing out findings of significant relationships or trends. Institute teams use this information to make decisions about how to care for each patient.

The Institute's computer has come up with several incidental achievements, too.

It calculated, for example, that a patient recovering from a spine-straightening operation should spend exactly 12 weeks in a cast. It showed that in a shorter period the spine starts edging toward its original position, but if the patient is in the cast more than 12 weeks, other parts of his body are affected adversely.

In Kansas City, an experimental computer examined 268 cases of thyroid conditions and made the same diagnosis as a thyroid specialist in 258 of them.

The Heart Disease Control Program of the U.S. Public Health Service has a computer in Washington, D. C. Doctors can phone electrocardiograph signals from their patients directly to the computer and quickly get back reports indicating possible trouble spots in the heart.

A computer developed at Ohio State University is designed so doctors can make an early diagnosis of artery hardenings and high blood pressure.

The day is coming, computer-makers say, when your family doctor will put information about your latest complaint into a box in his office. Seconds later out will come an analysis of your case based on all the things your doctor has noted about you in the past and the combined opinion of the world's best medical minds. The box would be connected with a computer at a nearby medical center.

Computers are making great headway in medical research, too. They are invaluable, for example, in the search for order among the chaotic variety of cellular structures.

The largest medical research center using computers is the Health Sciences Computer Facility at the University of California at Los Angeles. It is concentrating on heart, brain and cancer projects.

In addition, the facility is developing computer techniques and programs to be used in future computer centers. Recently Federal health and space agencies announced plans to support another such center in the Cambridge, Mass., area.

The center, which the Massachusetts Institute of Technology will set up, will explore the general field of bio-medicine, including man's ability to adapt to outer space.

The vast store of results from increased medical research is itself being compressed into the artificial memories of computers.

Hopes are that some day man can rely upon these amazingly swift robots to give back the precise bits of this information needed to save human lives.

• Science News Letter, 84:69 Aug. 3, 1963

PHOTOGRAPHY

Airplanes Seen Best For Viewing Eclipse

See Front Cover

➤ THE BEST WAY to be sure to see an eclipse is to fly in an airplane above the clouds. Since only a few are lucky enough to be able to do this, many persons were disappointed when weather interfered with their view of the partial solar eclipse visible over most of North America on Saturday, July 20.

Many in the narrow, 60-mile path of totality also had their view of this beautiful spectacle blocked by clouds. However, staff reporter Ann Ewing and photographer Fremont Davis took pictures of the solar event from an American Airlines jet plane flying 35,000 feet above the earth's surface.

Using identical cameras, Mr. Davis was able to take simultaneously a direct infrared picture of the totally eclipsed sun and another on standard black and white film.

The black-and-white photograph is shown on this week's cover superimposed on the sky near the Astrojet's wing in the approximate position in which it was seen by some 75 scientists, newsmen and photographers during totality. In the composite photograph, the dark path of the moon's shadow can be seen as it rushed over the cloud surface. The glow beyond is sunlight reflected from clouds beyond the totality path. The extremely dark area bordering the bottom of the picture is the jet plane's window.

Aim of the simultaneous photographs, believed to be the first such attempt, was to compare the corona's structure in infrared and black and white. Scientists will evaluate the results.

• Science News Letter, 84:69 Aug. 3, 1963

ASTRONOMY

Total Eclipse of Sun Now Routine Observation

➤ ALTHOUGH a grand spectacle and an astronomical field day, the total eclipse of the sun visible from Maine, Canada and Alaska on July 20 did not have the prime scientific importance of total eclipses of yesteryears.

The eclipsed sun is actually observed routinely over a dozen times a day at more than a dozen observatories, especially at the High Altitude Observatory, Boulder, Colo. It is done with a clever instrument called a coronagraph which was invented by Bernard Lyot at Pic du Midi in France.

This produces an artificial eclipse in the instrument. The prominences and flares, great eruptions from the surface of the sun that extend thousands of miles into space, can be seen on the photographs taken.

Before Lyot astronomers spent months in travel to see what for a few minutes is now routine daily.

In 1922 photographs of starlight deflected by the sun gave evidence for Einstein's general theory of relativity, one of the century's revolutionary new concepts.

• Science News Letter, 84:69 Aug. 3, 1963