

SURGERY

Animal-Man Transplants

The recent successful kidney transplants from animal to man, previously deemed impossible, have spurred scientists to further research with animal organs—By Faye Marley

➤ A 40-YEAR-OLD white man whose kidneys were replaced by those of a baboon in Denver (Dec. 20) has made such good progress that the team that operated on him has planned a series of similar transplants.

On January 6 an unidentified 45-year-old man received baboon kidneys at the University of Colorado Medical Center where the first transplants took place. The medical world is watching these transplants for a possible rejection phenomenon that normally occurs.

The reason for rejection of transplants is that the body's defense mechanisms recognize foreign tissue and produce antibodies to destroy it.

The Denver transplants from animals to humans follow closely on the successful chimpanzee kidney transplant in New Orleans on Jefferson Davis, a 44-year-old Negro dock worker who died of pneumonia Jan. 6. The transplant was considered successful as the animal kidneys were still operating at the time of his death. Death was caused by pneumonia, fatal because the drugs he had taken to prevent kidney rejection weakened his system.

The team of 12 physicians and surgeons headed by 38-year-old Dr. Keith Reemtsma who operated on Mr. Davis said the patient did "fine" for nearly two months after the operation, which was performed Nov. 5. He

was allowed to go home but was again brought to the hospital Dec. 20 with a cold and chest infection.

Dr. Reemtsma told SCIENCE SERVICE that although he did not predict lasting success after the transplants, he was encouraged because the operation had overcome widespread skepticism that met his plans to perform a graft from animal to man. The transplant, called a heterograft, had been generally considered impossible. Mr. Davis was only the second person in history to receive the kidneys of a monkey. The first person later died at Charity Hospital where Davis underwent surgery.

Now Dr. Reemtsma hopes liver, heart, and other animal organs can soon be transplanted to humans. His apparent "daring" was born of necessity, he explained. There were no human kidneys available and the patient certainly would have died much sooner if allowed to continue with his own diseased kidneys. The operation had the patient's approval.

The whole outlook for long-term success with organ transplants, even between identical twins—the most promising type of transplant—has been cautious, however, because of the high probability of rejection.

Dr. Joseph Murray of Peter Bent Brigham Hospital, Boston, who was one of the team that transplanted a kidney between non-

identical twins, said at a meeting in Washington that future success in similar operations is unpredictable.

"We do not know why patients should die when the same techniques are used to overcome the immunity factor," he said.

The most encouraging reports have come from use of drugs in combination with radiation to combat the rejection problem.

Examining the records of 244 human-to-human kidney transplants since 1955, Dr. Murray with other American and European surgical group representatives at the private conference in Washington, D. C., noted disturbing facts.

"Very few patients have lived longer than one year," Dr. Murray reported, emphasizing the experimental nature of even the most successful transplants.

Of 120 patients who received transplants from living unrelated donors and persons who had just died, only one who survived the operation longer than one year is still alive. Of 91 patients who were given transplants from blood relatives, including mother, father, brother and sisters, only five who survived more than a year after their operations are alive.

Seven of the 28 identical twins who received transplants are now dead.

However, 22 out of 61 patients who received both radiation and drug therapy to overcome their immunity are still alive.

Dr. Murray favors use of cadaver kidneys for transplants because the rejection risk appears to be only slightly greater than transplanting live fresh kidneys from relatives. Rejection patterns are inconsistent at best.

Four drugs were used on the New Orleans dock worker, Dr. Reemtsma said: imuran, actinomycin C, azaserine and prednisone. Radiation also was applied in an effort to prevent rejection of the chimpanzee kidneys.

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Albert Einstein College of Medicine

INFANT BEHAVIOR—Drs. Wagner H. Bridger (left) and Beverly Birns check the reaction of an infant to a jet of air on the abdomen at the Albert Einstein College of Medicine of Yeshiva University, New York. The tests are part of a long-range study of behavioral and physiologic patterns in newborns.

ASTRONOMY

Moon's Total Eclipse Was Darker Than Usual

➤ THE TOTAL ECLIPSE of the moon on Dec. 30 was so dark that the moon could not be seen when its face was entirely covered with the earth's shadow, a scientist reported.

Usually the eclipsed moon has a coppery red color during totality. However, dust spewed high into the atmosphere by a great eruption of the Indonesian volcano Agung on Bali in March last year caused the obscured lunar eclipse.

Dark eclipses also were reported following the eruption of Krakatoa in 1883.

Dr. Aden B. Meinel of the University of Arizona's Steward Observatory in Tucson said that the lunar eclipse was the darkest he had ever seen.

He also said that the volcanic dust is continuing to cause spectacular red sunsets. Dr. Meinel is now in the process of asking observatories around the world for their photoelectric data on the fading light at twilight. This information should show any long-period fluctuations in the sunset light due to rotation of the dust cloud.

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