SURGERY

Stopped Heart Beats

A DOG'S heart can be preserved for 20 hours, transplanted and stimulated to beat again.

A report on the method of prolonging the preservation of organs was presented to the American College of Surgeons meeting in Atlantic City, N. J., by Drs. Ernest M. Barsamian and Samuel C. Collins, Massachusetts Institute of Technology, Dr. Stanley W. Jacobs, University of Oregon, and Dr. Owen E. Owen, St. James Hospital, London.

Here is what the scientists did:

The hearts of puppies aged one to four weeks were transplanted into the necks of adult mongrel dogs. Two of the hearts were transplanted immediately after removal. Within minutes, a good coronary flow was established and both hearts in each dog regained a normal beat which continued for 60 hours, the scientists reported.

However, other puppy hearts were dehydrated up to 55%, rehydrated, and resuscitated after transplantation into the necks of dogs.

Five hearts that were refrigerated for less than 24 hours were also successfully resuscitated when transplanted into dogs.

It is clear from these experiments that by lowering the temperature of the preserved heart from 37 degrees centigrade to four degrees, the heart can safely survive without a blood supply for almost one day, the investigators said. The rate of dehydration appears to have some effect upon this endurance, they add.

This work has no clinical application, they stressed. It represents a fundamental study in the possibility of preserving hearts at low temperature.

This type of transplant cannot be done on man until the problem of homograft rejection is solved. Homograft rejection occurs when tissue or an organ is transplanted to the host body. The host soon sloughs off the transplant, treating it as a foreign body.

Two enterprising surgeons have capitalized on communism and Russian experiments.

These two University of Pittsburgh doctors have taken advantage of the recent Russian surgeons' work that involved transplanting a dog's head onto another dog. Actually, this work was done in the first decade of the 1900's, Drs. Samuel P. Harbison and Barnard Fisher said. Furthermore, it was done by an American, Dr. C. C. Guthrie, at the University of Pittsburgh, the surgeons told their colleagues attending the meeting. They exhibited a new edition of Dr. Guthrie's book on "Blood Vessel Surgery and Its Applications," originally printed in 1912.

"While the Russians claim a first, Dr. Guthrie accomplished these transplants 51 years ago," Dr. Harbison pointed out.

Dr. Guthrie's first head transplant was done on a white terrier. The picture of that two-headed dog was displayed. Also displayed was a blown-up picture of another head transplant that appeared in the *Journal of the American Medical Association* (Nov. 14, 1908). The picture in the *Journal* was taken one and one-half hours after the operation. The two-headed dog lived 12 hours, at which time it was killed.

At that time, Dr. Guthrie's work with blood vessel surgery, involving the transplanted head, was a feat. This is no longer true, however, Dr. Harbison said, despite the publicity given to the Russians.

The head transplant is today considered to be a surgical oddity. Surgeons today still face a tremendous problem with transplants. The host body will not accept a transplant but, rather, will reject it unless it is an organ or tissue from an identical twin, he said. Presently, blood vessels are being replaced not by transplants, but by synthetic materials such as nylon. Even this is not "accepted" by the host, but is tolerated long enough for tissue to gradually grow around the fabric, reconstructing a new vessel.

Science News Letter, October 10, 1959

SURGERY

Female Sex Hormones May Cause Gallstones

GALLSTONES that develop in mothers appear to be due to the abundant production of female hormones during pregnancy.

It is well-recognized that women who have borne several children are very likely to develop gallstones. These stones occur only when biliary physiology is disturbed, Drs. Kamil Imamoglu, Stephen L. Wangensteen, Harlan D. Root, Peter A. Salmon, Ward O. Griffen, Jr., and Owen H. Wangensteen, all of the department of surgery, University of Minnesota Medical School, Minneapolis, reported.

An experiment with rabbits led the investigators to conclude that prolonged administration of two female hormones, progesterone and stilbestrol, could produce such gallstones. They suggested to their colleagues attending the American College of Surgeons meeting, Atlantic City, N. J., that pregnancy increases the production of female hormones. This in turn may be the cause of the formation of gallstones, they said.

During the rabbit experiment, both male and female animals received progesterone and estrogen, hormones that are normally in abundance during pregnancy.

Results of the test showed that eight of ten female and five of ten male rabbits developed stones in the gall bladder. The animals were examined either upon death or within from 20 to 51 weeks.

The gall bladder was enlarged two to three times its usual size in most of the animals, including those that failed to develop stones, the surgeons pointed out. Control animals did not exhibit any changes in their biliary tract.

In addition, 50 young pregnant women, between the ages of 16 and 35, were observed shortly after delivery. After 24 hours, 28 of these patients exhibited evidence that there was a delay in emptying the gall bladder.

Science News Letter, October 10, 1959