Rice-Baylor Heart Research Team Eyes Implantation Early Next Year

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If all goes well, the Rice-Baylor heart project team hopes to implant a left-ventricular bypass mechanism into a patient early next year.

The function of this device is to assume the pumping action of the heart for a temporary period of time, while the heart recovers from an attack or a surgical correction.

The bypass device consists of a small silicon-rubber bulb diaphragm, which alternately expands and contracts when operated by a pneumatic pulser. The latter is highly advantageous, as it can variate the pulse rate from 60-120 beats per minute at any desired pressure output.

Both variables are important in consideration of the maintenance of a desired heart work load. As now planned, the pulser will be external to the body, connected to the bypass by means of a chest tube, and powered by either electricity or compressed gas.

Seven different materials, such as silicone-rubber, teflon, dacron, Kel-F, and polycarbonate resins are adaptable to artificial heart devices.

All of these are basically biologically acceptable to the body, but only the former has the additional advantage of easy fabrication.

The biological acceptability of silicone-rubber is based upon its resistance to body chemical functions, that is, inertness, and its relatively low potential towards either blood coagulation or red-corpuscle destruction.

Relations Unknown

The latter two difficulties are presently of prime concern; they are caused in part by protein reactions and blood pressure, but exact relations are unknown.

The team, directed by Dr. W. W. Akers of the Rice Mechanical Engineering Department and Dr. Michael DeBakey at the Baylor University College of Medicine, eventually hopes to develop a completely artificial heart within five years at a cost of $4.5 million. The funds will be supplied by the National Institute of Health.

Work Divided

The work involved is so divided that Baylor is responsible for researching physiological problems while Rice must develop engineering designs and determine their interactions with the body.

The latter area of study encompasses fluid dynamics of the blood, chemical and physical relations between the artificial and living systems, and the development of a suitable power supply.