Rice, Baylor Begin Work On Mechanical Heart

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The nation's first multidisciplinary approach to the development of an implantable artificial heart was initiated recently by surgeons at Baylor University College of Medicine and chemical engineers at Rice, working under a $653,324 grant from the Public Health Service. The project is to result in surgical heart replacement in three to five years, and could mean $4.5 million in supporting grants.

Dr. M. E. DeBakey, chairman of Baylor's Department of Surgery, will direct the $395,000 project there. Dr. W. W. Akers, chairman of the Chemical Engineering Department, will direct Rice's $258,000 project.

Special laboratories are to be set up on both campuses for the coordinated effort.

Rice To Do Engineering

The research teams from both schools will combine in attacking the following problems: the development of power sources for both external and implantable pumps, design of the artificial pumping units, and the problem of destructive interactions between the body and the artificial system.

In addition, the Baylor team will concentrate on implantation techniques, blood destruction studies, and general physiologic reactions to the system.

The Rice project will concentrate on the engineering design of the pumping unit, basic research on fluid dynamics of blood movement, and the physical and chemical properties of materials developed by industry for the project.

Bio-Engineering Program

One result of the project will be the development of a graduate program at Rice in bio-engineering which will train advanced engineering students for research in the medical field.

Dr. DeBakey has been directing pilot studies on the project for two years, and one model of a temporary circulatory pump has been clinically tested. In late 1963, Baylor surgeons implanted a left ventricular by-pass with good results. A right ventricular by-pass is under development and will be clinically tested within the year.

Two Sources Considered

Two types of power units need to be developed: a temporary external source and a permanent internal unit. Possible internal power systems under consideration are: (1) external electrical power which, through "wireless" transmission, energizes a power source within the body, and (2) skeletal muscle power, operated by electrical stimulation of the muscles involved.

Once the system is developed, the cardiologist and surgeon working on each individual case will decide whether it should be used. Patients will come from the Baylor-affiliated hospitals: Methodist, St. Luke's, Texas Children's, the Veterans Administration and Ben Taub.