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DALLAS--Electronic equipment designed to analyze missile flights has been converted by researchers at The University of Texas Southwestern Medical School to track the movements of beating hearts.

This work, in turn, has provided a scientific fallout for the oil industry.

The research may have settled a controversy as to whether a heart shortens in all dimensions when ejecting blood. By tracking six lead beads implanted in the hearts of experimental animals, the Southwestern researchers have assembled information that the hearts do, in fact, shorten in all dimensions.

Main objects of the research are to establish the geometry of a healthy heart's movements and then learn how a heart reacts when beset by various kinds of attack.

Dr. Jere Mitchell, head of the Weinberger Laboratories for Cardiovascular Research at Southwestern, explains that the new computerized tracking techniques have saved vast amounts of time spent in analyzing the dynamics of hearts.

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"We were sitting around measuring the movements of the beads by hand. You would get less than a minute of data and it would take weeks to analyze it," he explained. In the research, six beads are implanted in strategic positions in an animal's heart and their movement recorded by x-ray movies taken simultaneously at right angles so information in all three dimentions can be had.

Positions of the beads on the projected x-ray movie frames are tracked by a "Large Area Record Reader" which converts the positions to numbers on punch cards so that a computer analysis can be made.

The LARR system has been used in the space program through the Gemini shots for space positioning analysis, according to a spokesman for its manufacturer, Computer Industries, Inc.

Modification to medical research came partly on the suggestion of Bill Romans in Southwestern's Bioengineering section.

Dr. Mitchell said analyses have been made of animal hearts in which coronary arteries have been tied off to simulate heart attacks. Further work is planned and this hopefully will lead to better understanding of how contractions or movements are changed by a heart attack.

The tracking equipment is being used by Dr. Mitchell and fellow workers to follow movements of human hearts injected with dye so that the organ's contour is recorded on the x-ray movie.

"Interestingly enough," says Dean Redwine of Computer Industries, "Dr. Mitchell's idea for automatically tracing contours has since been incorporated in all our machines which are used to analyze contour maps for the oil industry."

The researchers are collecting a great deal of information in computerized form so that they can begin to analyze volume, pressure, area and other factors to "produce a real quantitative description of the sequence of events," says Dr. Mitchell.

A description of the work is to be presented at the Ames Research Center in August by Dr. Mitchell, Dr. Charles B. Mullins and Dr. Kern Wildenthal of the Southwestern Medical School. The research is supported by grants from the U. S. Public Health Service.

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