

Heart Data Distorted

➤ A MATHEMATICAL error has reportedly been distorting heart data obtained by the vector cardiograph, an instrument which records the magnitude, rhythm and direction of the heart's pumping activity.

Dr. Thomas D. Downs, assistant professor of biometry at the Western Reserve University School of Medicine, Cleveland, said previous data should be re-analyzed to correct misleading information.

Vector cardiographers have been taking the arithmetic mean of the directions—the average of separate points on a straight line—as the average direction of the heart's electric beat, Dr. Downs said.

As a more accurate method for finding the average direction of the heart's activity from the points on the chart, he suggested considering them as points on a circle—a topological concept. The center of gravity, or average, of the points would then fall within the circle, often resulting in a completely different measurement from that obtained by the arithmetic mean.

Dr. Downs collaborated with Dr. Jerome Liebman, assistant professor of pediatrics, in the study. In recent studies of the vector cardiograms of premature infants, normal infants, chil-

dren with cystic fibrosis and others, the researchers used the two different mathematical methods of analysis to examine the difference in results. They found that in some instances the variance was so great as to completely change the interpretation of the cardiograms.

• *Science News*, 89:258 April 16, 1966

MEDICINE

Multiple Sclerosis Clue Significant

➤ A POSSIBLE LINK between environment and multiple sclerosis (MS) could be a valuable tool in searching for the cause and cure of the disease, the American Medical Association said.

Cases of MS seem to appear in clusters, and there is apparently some as yet unknown environmental factor that is distributed in the same way, reported Dr. John F. Kurtzke, a neurologist at the Georgetown University School of Medicine and the Veterans Administration Hospital, both in Washington, D.C.

It would be "significant," said an editorial in the *Journal of the AMA*,

195:775, 1966, if it does turn out that MS is an acquired disease caused by factors outside the body.

Dr. Kurtzke studied world-wide distribution reports on MS and published his findings in the *Archives of Neurology*, 14:213, 1966. Although he does not speculate on what these environmental factors might be, he does eliminate some possibilities.

Climate or diet seem to be ruled out because the cluster areas are too small to be affected by these. Heredity may not be a factor, either, inasmuch as two generations of patients surveyed in Denmark and Switzerland had no familial relationship.

The highest frequency of MS is found in northern United States, southern Canada and northern Europe, where there are 30 to 60 cases per 100,000 population.

Medium-frequency zones, in which 5 to 15 per 100,000 cases are found, include southern United States, southern Europe and Australia. Asia and Africa seem to have the lowest incidence of the disease, although Dr. Kurtzke concedes that figures may be distorted by the lack of adequate surveys in some areas.

Scandinavia and Switzerland were singled out as places where highly significant concentrations of MS are prevalent. It would be meaningful if the concept of MS as an acquired disease could be proved, the research and the editorial stated. Identification of the factor in clusters that have been located may lead to discovery of the cause, now baffling researchers.

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RADIOLOGY

X-Rays Before Surgery May Stop Tumor Spread

➤ SMALL X-RAY doses given to cancer patients before surgery could prevent some recurrences of malignancy.

Carefully controlled animal experiments have given significant support to the belief of a number of scientists who have tried preoperative irradiation.

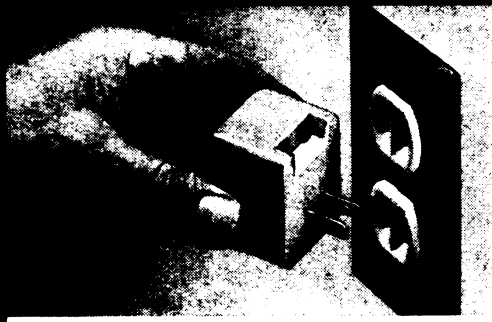
Dr. Bernard H. Feder of the Veterans Administration Hospital, Long Beach, Calif., sees hope in X-rays because of success in preventing growth in transplantable mouse tumors.

With a modified shoemaker's needle, Dr. Feder and his associates transferred cancer cells between laboratory animals in less than 30 seconds, thus permitting the cancer cells to retain their potency. Untreated and spread with the needle, the cancers were almost 100% fatal. But when the tissue was exposed to various strengths of X-ray, not necessarily cancer-killing ones, before transplantation took place, the growth of the cancer was prevented.

Dr. Feder did his work with the partial support of the American Cancer Society.

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