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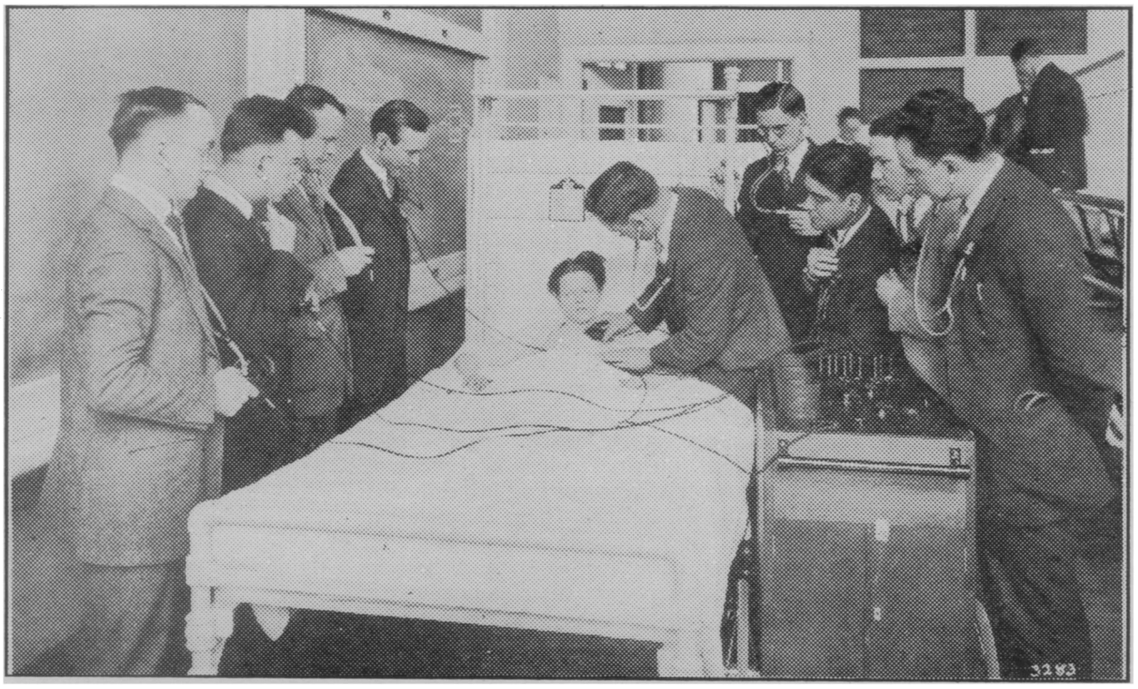
MEDICAL SCIENCE

Medical Science Declares War on Heart Disease



MECHANICAL DEVICES PLAY AN IMPORTANT PART in the early detection of leaky valves in the body's pump. The electrical stethoscope perfected in the laboratories of the Bell Telephone Company magnifies the noises of the chest so that hundreds of people can hear the sound of a single heart beat

By MARJORIE MACDILL

Science, medicine, and welfare organizations have declared war on heart disease, the greatest single cause of death in the United States.

From 10 to 15 per cent. of the total deaths from all causes in this country come from some form of heart disease. In some guise or other it interferes with the efficiency of close to 2,500,000 American citizens today. Since one-half of the patients with chronic heart disease are of an age when their earning capacity should be at its highest and when family responsibility is likely to be heaviest, statisticians estimate that the economic losses to the country from heart disease run well into the billions.

Tuberculosis, which a generation back held the doubtful honor of standing at the top of the country's death list, has dropped to fifth place and in some sections to sixth and seventh. As a result of the combined onslaught of social forces, cities, states, research institutions and the nation itself, the White Plague is giving way. Even the most conservative physicians foresee tuberculosis deaths as a negligible mortality factor in fifty years. Today the medical profession admits that it stands in almost the same place with respect to heart disease that it did with regard to tuberculosis some twenty-five or thirty years ago.

Because heart disease drags on for years in an unspectacular way and takes off many old people who may or may not have died of old age, the significance of the soaring heart disease rate has not bitten into public consciousness. The scientific world has known, as the bulky thickness of the pages in the *index medicus* listed under "heart" testifies, but the world in general has not yet been roused to the menace that heart disease presents.

Heart Associations

In 1915 a little group of physicians in New York City, among whom were Dr. Haven Emerson, now professor of public health at Columbia University, Dr. Lewis A. Conner, Dr. Robert Halsey and Dr. Stuart Hart, undertook to build up a program for the prevention of heart disease. The war interfered, as it did with so many

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things, but the need was so urgent that by 1919 the New York Heart Association had a well-established start. Philadelphia, Boston, Chicago and other cities followed suit, until in 1924 the American Heart Association was incorporated, as a headquarters for the ramifications of the heart disease prevention movement all over this country and Canada.

The objects of the Association are briefly to distribute information about heart disease, to stimulate research, to establish clinics where the malady can be detected in the early stages and where cardiacs can be kept under supervision, and to encourage the opening of convalescent homes where those with overworked hearts have the opportunity to rest and gain strength to go on. Some 140 clinics of this sort have now been established in the United States and Canada, where cardiac patients can receive treatment and learn how to prolong their existence with the handicap of a damaged heart.

Rheumatism Chief Cause

Heart disease may come from any one of a number of causes. Organic heart disease means some structural defect that may hamper its work very greatly or very little. Some are defective from birth but by far the most have been injured by various sorts of disease, mainly rheumatism and syphilis, though influenza, scarlet fever, diphtheria, and pneumonia also claim their share.

Victims Become Self-Supporting

Of all the serious and potentially fatal maladies, heart disease lasts the longest, with the possible exception of some of the disorders of the mind, and brings in its wake the longest chronic handicap on self-support. Through the efforts of the heart associations at rehabilitation through occupational therapy, hundreds of men and women are gainfully employed who in years past would have been permitted to flounder about in a state of disability, dependent either on relatives or charitable institutions.

By means of the cardiac clinic the old couple, who would have been separated years ago in some home for the aged or infirm, can keep working and go down through their declining years together. The years of the housewife who is a cardiac are prolonged, so that she does not leave a family of motherless little children. The porter with heart disease and a wife and two children to support is found a job requiring no lifting of heavy weights. Twenty dollars per year per patient is the cost of such medical, nursing and social service in a large clinic, according to estimates of the New York Heart Association. Through organizations of this type, cardiac patients, better and happier than if they were completely idle, are helped into jobs they can fill as effectively as workers without handicaps.

Digitalis Great Boon

Digitalis is one of the great boons of the cardiac patient who has to keep on earning his living. Certain types of heart disease require daily medication with this drug. By its means the heart is slowed down so that its ability to work is increased if the proper amount is given. Too much results in serious consequences, so that the patient must be taught to understand the dosage and to recognize the symptoms of an excess. Consequently, the necessity of supervision and education is very apparent. Periodic reports at the clinic are required while the patient is using the drug. The use of digitalis has increased greatly in the last ten years and occupies an important place among the forces at work to turn incapacitated cardiacs into self-supporting citizens.

Hearts and Tonsils

Since heart disease actively threatens people in the middle years its incidence among children has not in the

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THIS YOUNG MAN is learning how to get well at the convalescent home of the Philadelphia Heart Association

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past received a great deal of attention. Recent surveys, however, show that at least one per cent. of the children in the elementary grades have cardiac disorders. This means that some 200,000 of the children in the public schools need medical supervision if they are to live out their allotted span of life.

Up to the age of twenty rheumatism is a more frequent cause of heart disease than all the other causes combined, says Dr. Haven Emerson. It is only in the last decade, he explains, that the relationship of acute tonsilitis, St. Vitus's dance, acute rheumatic fever, and infections of the heart without rheumatic disease of the joints has been made sufficiently clear to convince physicians that we are dealing with one and the same infection expressing itself in widely separated parts of the body.

Watch for Growing Pains

Though a damaged heart cannot be transmitted from one person to another, it is now believed that rheumatic fever can be communicated, much as a sore throat "goes through the family." It has been claimed that it is due to a specific germ, but this has not as yet been confirmed. It is definitely known, however, that decayed teeth, diseased adenoids and tonsils, and sinus infections are ports of entry of rheumatism. Consequently it is obvious that cleaner mouths, fewer diseased tonsils, more frequent trips to the dentist, more careful attention to sore throats, are ways to cut down the inroads of heart disease among the younger generation. "Growing pains" that in days past were rather sniffed at by grownups as an excuse to get out of odd jobs arond the house, are now treated as a serious symptom worthy of medical attention.

The examination of 50,000 school children at Rochester, N. Y., recently reported to the American Medical Association by Dr. A. D. Kaiser, demonstrated that heart disease occurs much less frequently in children who have their tonsils removed than in those who have not. The investigation also showed that the child whose tonsils have been removed was far less likely to suc-

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AVIATION

Model Airplanes

This is the tenth in a series of articles on model airplane making by Paul Edward Garber, of the Smithsonian Institution.

Other Scientific Models

The two model airplanes which have been described in this series represent the elementary and advanced types of construction. Although the last one described embodies the latest improvements, it can be made to fly still better if it be made lighter. The utmost refinement of detail is necessary to improve the model. Before attempting to build a record breaking model, the constructor should weigh the one which he has just completed. Postal scales are usually used for this purpose as they can register small loads. You will probably find that your model weighs around four ounces. You may be surprised to learn that models of this same size can be made to weigh half as much. Naturally they will fly much farther. These final improvements were not included in former articles because it is the author's opinion that a model maker needs to construct several models before he gets the knack and finesse necessary for the finest work. A paragraph will be devoted to each part of the model and will explain what can be done to better it.

FRAME. The sizes of wood specified for the previous model frame very nearly approach the limit of lightness, but by careful trimming the longerons and braces might be made slightly smaller. In order to insure adequate strength at the rear of the model it would be a good idea to stretch a silk thread across between the propeller bearings.

WING. The ribs might be further lightened by cutting away more of the center. The ribs can be made of bamboo sticks curved to the shape of the upper and lower surfaces, and Ambroided in place. The bamboo could be as small as 1-32"x1-64", and might require a few balsa strengtheners. The wing spar might be lightened by burning out sections between the ribs with a hot ice pick or piece of wire. The bamboo in the wing ends might be pared down.

ELEVATOR. The bamboo used for this part might be pared down somewhat.

POWER PLANT. The propellers have already been specified as very thin, but they might be lightened by cutting away part of the hub. On record breaking models which I have seen the hubs were as thin as ⅛".

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Model Airplanes

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The general lightening which has been advised will enable the model to be flown with less rubber. Five or six strands should suffice instead of the original eight. This eliminating saves a great deal of weight, as rubber is a great weight maker. Its reduction accomplishes a double purpose, it saves weight and also enables more turns to be stored in it, thus resulting in longer flights. By exercising ingenuity and care you may be able to equal or even surpass the present world records.

The two models described in this series are known as twin pushers, because they have two pushing propellers. In addition to this type, there are model airplanes of the tractor type which have their propellers in front, and modifications of the two types such as biplanes, hydroairplane models, models with landing gear for launching off the ground, models without power plants, known as gliders, etc. Descriptions of these types may be found in books on model flying, or in the model aeronautics department of magazines.

To prevent damage to your model while making it or when carrying the completed model back and forth from the flying field, you will find a model carrying box very handy. The construction of a suitable box will be given in the next article. One of the most interesting types of models is the scale model. These are made in direct imitation of the large prototypes, and are usually made to fly. Thinking that you will want to make one of these, we will follow the model box article with a series describing how to make a flying scale model of Lindbergh's famous aeroplane, "The Spirit of St. Louis."

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After Boston's smallpox epidemic of 1752, out of a population of 15,684, only 174 persons were left in the city who had not had the disease.

Government tests show that molten metal placed in huge closed ladles for transportation between furnaces can be kept 40 hours before it becomes too cold to be poured.

Wild animals kept in captivity are apt to lose the natural color of their skin or fur, and even their figures become changed, so that they may no longer represent their normal state.

Heart Disease

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cumb either to rheumatism or scarlet fever.

Children's Convalescent Homes

Convalescent homes for cardiac children are doing a big job of reclamation work. Here many times the young victims get their first lessons about how to take care of themselves, for it is essential, if the heart patient is to live, that he must learn to conserve his energy. Most of the homes now in operation are in the suburbs of large cities. Sunshine, fresh air and rest are the main essentials at first. Later come supervised play and school lessons, maintained in New York state by the public schools in every convalescent home with 25 or more children.

Some homes follow the custom of having each child wear a colored ribbon to denote how much activity he should be permitted to indulge in. Then the nurse or supervisor can see at a glance that none of the fellows are playing at games that will exceed their capacity. In time the child is allowed to go back to home and school and the clinic keeps track of him after he returns. Many children whose fathers and mothers have to work return from their sojourn in the convalescent home to their poverty-stricken environment capable of becoming better citizens than they might otherwise have been.

It is important that children with defective hearts should take up a trade or profession that will not tax the capacity of the overburdened heart. At the cardiac clinic the child's condition is fully diagnosed and written out on a blue card that is sent to the vocational section of the heart association. Here after further interviews with the child and his parents, plans for his education are laid. Millinery, dressmaking, novelty making, typing and stenography are suitable for girls, while the various sorts of skilled labor that do not call for extreme physical exertion are recommended for boys.

Since heart disease causes the greatest number of deaths and disabilities in the United States, and since it first appears in the child, it is with the children that the greatest concern of the physician and social worker must rest.

Diphtheria is a matter of days, tuberculosis of years, but heart disease may drag on for decades. Up to the age of 35 less than one person in a thousand dies of it, but from 45 onward the curve representing the rate of death from disorders of the heart shoots up faster than for any other disease known. By combining the research of laboratories with the findings of the clinics new developments will be made that will help the heart patient on his way. But the great panacea for this disease, the best heart authorities warn us, does not lie in specific drugs or vaccines, but in teaching the patient how to care for himself and in teaching others how not to have it.

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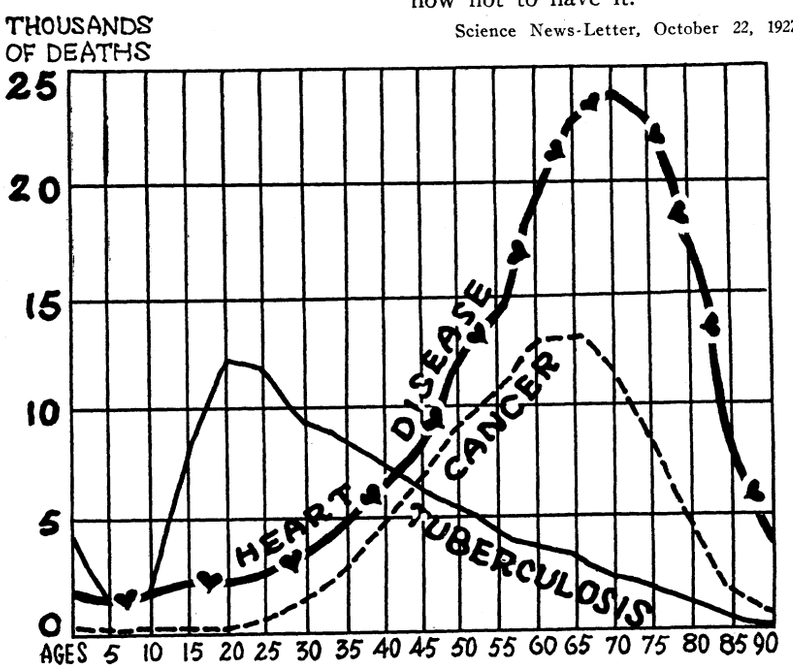

ONE PERSON OUT OF EVERY FIVE who reaches the age of ten years is eventually stricken by heart disease. This chart based on the latest figures from the U. S. Census Bureau shows how disorders of the heart have surpassed tuberculosis and even cancer as a cause of death