

MEDICINE

Problems of the Heart

Atherosclerosis, high blood pressure and rheumatic fever account for nine out of ten sick hearts. Finding the basic causes of these disorders is the chief aim in heart research.

By JANE STAFFORD

► PROBLEMS OF the heart on Valentine's Day traditionally concern romance. But for many millions of Americans, the big heart problem is how to keep the flesh and blood pump in the chest ticking on year after year.

These victims of true heart-sickness are getting much help. Medical men and surgeons, chemists and bacteriologists, even atomic scientists and automotive engineers, have teamed to fight the greatest of all disease killers, cardiovascular disease. In layman's terms that means diseases of the heart and blood vessels.

Consequently, even though some 10,000,000 Americans suffer from heart and blood vessel disease, three-fourths or more who suffer a heart attack recover from the first attack and survive, on the average, eight years or a little longer. Patients stricken by apoplexy from a blood clot on the brain are being protected from future strokes by some of the newer medicines and there is even hope that the drugs may help toward recovery from strokes. And though rheumatic fever, forerunner of rheumatic heart disease, affects about a million young Americans, sulfa drugs and penicillin are saving these young people not only from premature death but in very many cases from heart damage.

Causes Inflammation

Rheumatic fever makes hearts sick by causing an inflammation in the heart that results in scarring of its valves or of its muscle wall. Valves with scars on them do not work well. Either they leak or they block blood flow. Depending on how severe the scarring is, the consequences may range from slight to serious, including invalidism and premature death.

Doctors have known for long that a youngster might come through one attack of rheumatic fever with little or no heart damage, but that second and third attacks were sure to leave their scars. For some years, too, there has been knowledge that germs of the streptococcus family played a part in rheumatic fever. An attack of the fever, it was discovered, almost always came after a strep. infection. This was a most important discovery because there now are drugs, such as sulfa drugs, penicillin and other antibiotics, that stop the streptococci.

These drugs are now being used in several ways to protect hearts from strep. damage. One way is to give them continuously after the first attack of rheumatic fever to

ward off further attacks. Another, newer way is to give them early and vigorously as soon as a strep. infection develops, to prevent even the first attack of rheumatic fever.

New combinations and forms of these strep-fighting drugs have been developed so that they no longer need be taken three or four times daily for months and years.

Young hearts and lives are being saved through these findings, but for the future there is hope that even more can be accomplished. Many people, young and old, get strep. infections, but only three out of every 100 infected come down with rheumatic fever. Scientists, therefore, are seeking the factor in some human bodies, whether in the glands or other body organs and mechanisms, that make some respond to strep. infection by getting rheumatic fever. Another line of research involves the strep. germ itself. Since it is not found at the inflamed spot in the heart, scientists assume that it does its damage by some chemical or poison that it produces. If such a poison can be

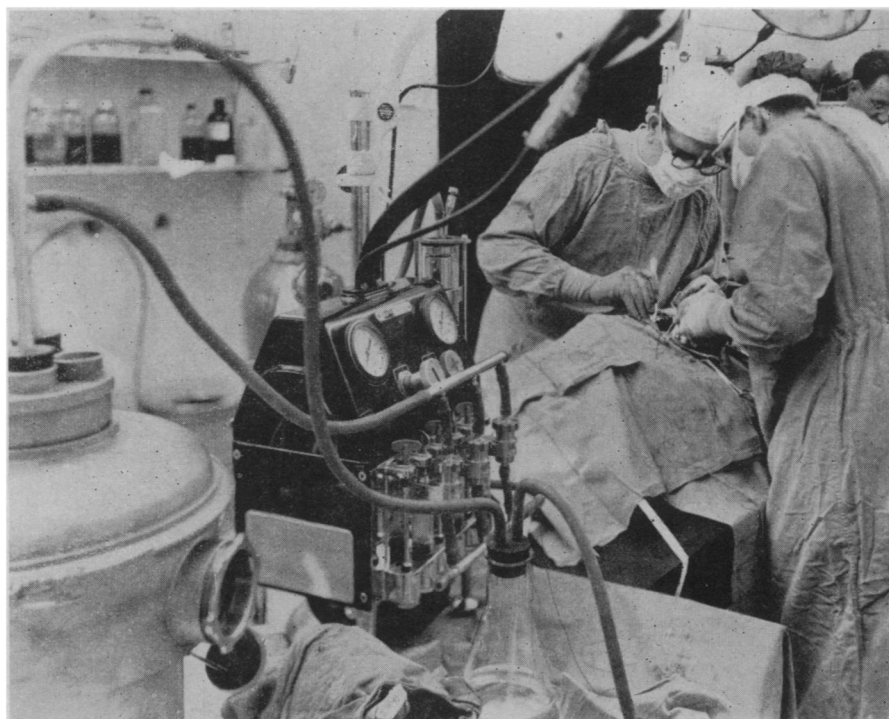
discovered, development of an antidote to it might follow.

Rheumatic fever is one of the Big Three that damage and stop hearts. You have read of the congenital heart defects which are being repaired by "blue baby" and similar operations. You may have heard that there are 20 forms of heart disease. But the three that cause nine out of 10 heart deaths are: rheumatic fever, atherosclerosis and high blood pressure.

Spots on Arteries

Of all the deaths caused by heart and blood vessel diseases, more than half are due to atherosclerosis. This is a form of hardening of the arteries. Normally, the lining of the arteries is smooth, so the blood can flow easily and steadily along to all parts of the body. But in atherosclerosis, little spots filled with a fat-like substance, cholesterol, form along the artery walls.

Formerly, scientists thought that just as old pipes in a house got rusty and worn with age, so the pipes that carry blood through the body got rough, thick and hard with age. Now it is thought that the artery-hardening process called atherosclerosis is not "the inevitable accompaniment of aging," but a result of some fault in body



NO LACE-EDGED VALENTINE—This artificial heart of glass, steel and rubber was made for work, not romance. During operations it doubles for the heart of flesh, keeping the blood circulating through the body but by-passing the real heart which the surgeon is repairing.

chemistry. Cholesterol is found in many foods, including whole milk and egg yolks. It is also manufactured in the body and is a constituent of gallstones.

Pushing along this line, scientists are using cholesterol labelled with radioactive carbon to learn more about how the body handles this fat-like chemical. In other studies, scientists are working with heparin. This chemical is an anti-clotting agent, already being put to good use to prevent dangerous blood clots in veins and arteries. But heparin has another property, that of clearing fats from the bloodstream.

This property is being studied to see whether heparin can be used to fight and perhaps forestall the deposits of fat-like cholesterol in artery walls and thus, if possible, to prevent atherosclerosis.

High Blood Pressure

Another kind of artery trouble is that which brings on high blood pressure. In this condition, the very small arteries at the ends of the blood vessel system constrict. Pumping blood through the narrowed bores of constricted arterioles takes a higher pressure. If the pressure remains higher for a length of time, it starts trouble in heart, brain and kidneys. The constriction of the littlest arteries and consequent high blood pressure may have many causes, operating alone or together. Nervous and emotional factors, hormones from the various glands, including the adrenals, and changes in body chemistry, even sodium from the salt in the diet, all seem to be involved.

Surgery in which certain nerves are cut, new drugs and diet have all helped lower blood pressure in many patients. One big need now is some method or test or series of tests to tell what is causing the high pressure in a given patient. Then doctors would know better what to prescribe.

All this research takes money as well as men. For that reason the American Heart Association this month is campaigning for new funds to finance new research to solve the big heart problem.

Science News Letter, February 12, 1955

TECHNOLOGY

Embroidery Machine Sews by Remote Control

► DEVELOPMENT OF an experimental embroidery machine that sews patterns by telegraphic orders was disclosed at a meeting of the American Institute of Electrical Engineers in New York.

The machine's needles respond to electronically punched tape at an average rate of 500 stitches per needle per minute. The color, direction and length of each stitch registers in the device in the brief time lapse between needle movements.

Control of the device is possible from anywhere in the embroidery plant, or from an office or studio miles away, Louis Casper, research engineer of the Electrotex Corporation in New York, said.

Science News Letter, February 12, 1955

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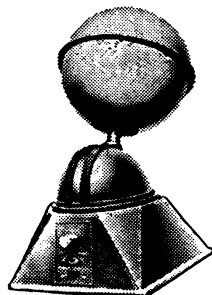
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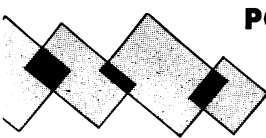
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