

## MEDICINE

# New Aids for Heart Study

Studies of the circulatory system and the heart itself are providing the medical scientist with new insights into the nature of the heart and how it functions.

► THE INTRICATE chemical testing technique used for investigating deaths by poisoning was demonstrated to the New York Heart Association as a new means of studying the characteristic patches or plaques, resulting from atherosclerosis, that roughen and narrow the inside channel of arteries.

Dr. Charles J. Umberger, toxicologist for the city of New York, exposed the plaques to solvents to obtain all extractable material. Both the soluble materials and the residue were then subjected to various instrument inspections to record tiny amounts of metals, liquids and other component parts of the plaque.

The major results of this system for testing the plaques reveals that the contents of the plaques are not as complicated as expected and it is believed to be a chemical problem capable of solution. If further studies are

made, Dr. Umberger said, it may be possible to accumulate more evidence and some leads to the genesis of atherosclerosis.

## Muscle Study

► MORE STUDY on ways to improve the heart's pumping action in cases of congestive heart failure was urged by Dr. Louis Leiter of Montefiore Hospital, New York, in a demonstration for the Heart Association.

These new studies, he said, will stress the importance of improving pumping action since the known drug aids have been used extensively and have proved to be only adequate.

Dr. Leiter and his associates studied the effects of acidity and alkalinity, sodium intake treatment and bandaging the legs in

relation to fluid intake and kidney disorders. Their results show that the measures do not cure heart failure, the inability of the heart to pump sufficient supplies of blood, but merely alleviate some of the discomforts which are a result of heart failure.

## Heart Operation Success

► A TECHNIQUE to measure the quantity of additional blood brought to the heart by various surgical procedures has been developed by a New York University group.

A demonstration for the Heart Association evaluated the effectiveness of various operations designed to bring new blood supplies to the heart. Many of the operations, this method showed, do not aid the heart in its quest for more blood.

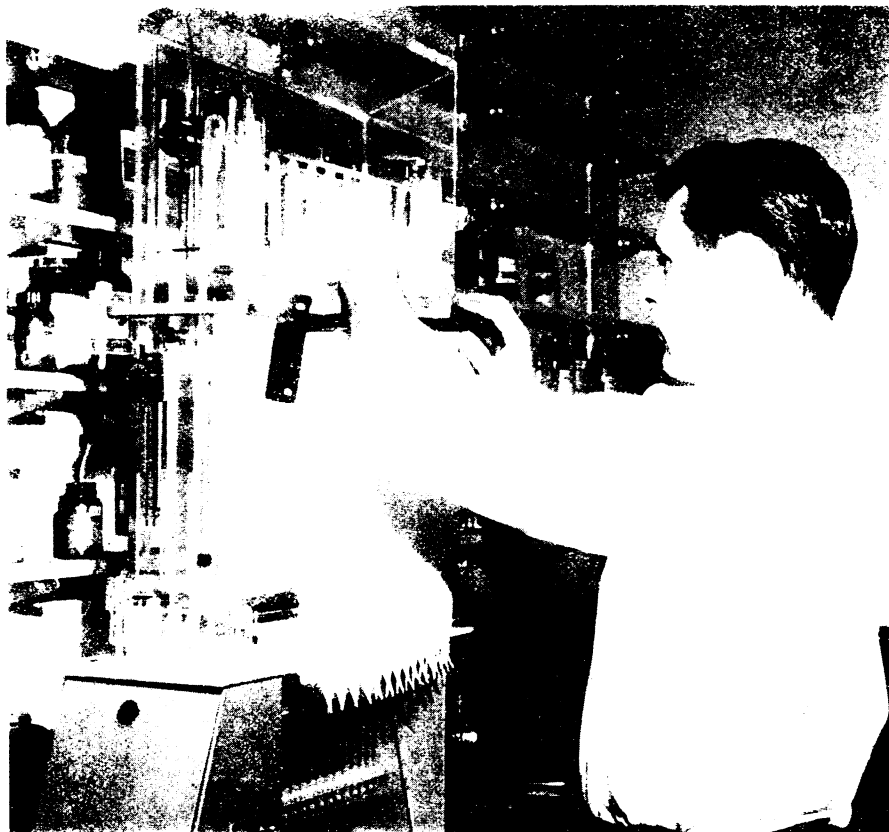
The method, used on animals, consists of diverting all blood from the heart by means of a heart-lung machine. The pulmonary artery is blocked off by inflating a small balloon after it has been inserted in the artery.

A tube, inserted into the right ventricle, will then collect only that blood which is carried there by the only source of inflow, that which comes from the operation.

This measuring technique has determined that the only successful operation of those intended to increase the heart's blood supply is the surgical procedure by which the pericardial sac is made to adhere tightly to the heart muscle. The tests showed, in four of the six experimental animals, that this operation was responsible for a flow equal to three to five percent of the normal total coronary flow.

Preliminary results from this study show that mammary artery ligation, tying off part of the internal mammary arteries to divert additional blood to the heart, does not bring new blood to the heart.

Science News Letter, March 1, 1958



**FAT IDENTIFICATION**—Identification of the ingredients of the fatty patches that form in hardening of the arteries is made through the use of ionophoresis. Dr. Leo A. Dal Cortivo, toxicologist for New York City, sets up the apparatus for demonstrating the process of ionophoresis. Material for separation is put in tubes at the top. It drips down the paper, across which an electrical current flows. This causes the fractions to separate, ending up in tubes at the bottom as separate substances.

## PHYSICS

## Show Single Atoms In First Atomic Film

See Front Cover

► THE FIRST atomic motion picture, showing the surface of a tiny platinum crystal as it appears on the screen of a low temperature field ion microscope, was demonstrated to the American Physical Society meeting in New York. (See SNL, April 6, 1957.)

The photograph on the cover of this week's SCIENCE NEWS LETTER is one shot from this film. It shows the crystal lattice of a platinum hemisphere with a diameter of approximately 1,000 angstrom units or 1/100,000 of a centimeter. Each fine dot is a single atom of 2.7 angstroms diameter. In the film the actual movement of atoms is seen as they evaporate at  $-420$  degrees Fahrenheit when a field of 700,000,000 volts per centimeter is applied.

Dr. Erwin Müller, assisted by J. Mulson, is carrying on the research at the Pennsylvania State University.

Science News Letter, March 1, 1958