

MEDICINE

Lucite Tubes Mend Aorta

Plastic segments are stitched with specially braided silk to artery carrying blood directly from heart. Rubber balloon holding mercury may save intestines from gangrene.

► A NEW KIND of spare part for the human body, tubes of lucite, the modern plastic, may be used by surgeons of the future to repair the big artery that carries blood directly from the heart.

This possibility appears from experiments reported by Dr. Charles A. Hufnagel of Boston at the meeting of the American College of Surgeons.

Segments of this big artery, called the aorta, measuring one to three centimeters long were replaced by highly polished lucite tubes in animals. The tubes were held in place by stitches of specially braided silk.

These spare parts were still firmly united to the rest of the artery six months later. The artery with its lucite tube section functioned satisfactorily in carrying blood, and no drugs, such as heparin or dicoumarin, were needed to prevent clotting of the blood.

An inch and a half long rubber balloon with a little mercury in it may save lives of patients threatened by peritonitis and gangrene of the intestines. The balloon is put up the patient's nose and down his throat, through the stomach and all the way down the intestines, if necessary. It is attached to a long rubber tube with several holes in it near the balloon end. Object of the tube is to enable the surgeon to suck out through it fluid and semisolid material which a cancer or some other obstructing condition may prevent passing in the normal way.

The use of mercury in such tubes was developed by Dr. Meyer O. Cantor of Detroit. The weight of the mercury and

even more its tendency to run together makes it ideal, he believes, for carrying the tube along the up and down course of the intestines.

The object of this and other methods for removing the obstructed material is to prevent its cutting off circulation in the walls of the intestines, following which gangrene may set in. With the material removed, the surgeon can safely operate to correct the underlying cause of the obstruction.

Prevention rather than salvage is the new order in surgery for future battlefields and for civilian injuries and disasters, Dr. Edward D. Churchill of Boston declared.

This is the chief, and so far little discussed, surgical lesson from the war that ended with the atom bomb explosions over Japan. By studying the pattern of injury, such as was seen in the atom bomb explosions, in the Coconut Grove fire in Boston and in other disasters, surgeons will be able to devise methods of preventing injury.

Much is already known about how weapons injure and how wounds from various types of weapons are distributed. If these facts are applied to development of body armor, such as flak suits, the number of those killed in action might be reduced by 12% and of those wounded by 8%, according to figures quoted by Dr. Churchill. The development of the crash helmet of the British army by a neurosurgeon is another example cited for the possibilities of preventive rather than salvage surgery.

Science News Letter, December 28, 1946

MATHEMATICS

Particle Energy Tackled

► A COMPLEX mathematical struggle to explain how primary particles of the universe can escape the necessity of having infinite energy has won for a 28-year-old physicist from Ceylon, Dr. Jayaratnam Eliezer, the \$2,000 Mayer Award administered by the National Science Fund of the National Academy of Sciences.

A high-powered award jury pro-

nounced the 35-page, equation-filled contribution a "profound and comprehensive treatment" of the major problem of the interaction of particles with an electromagnetic field. What place the prize paper will have in the final solution of the problem, the committee is not sure.

The dilemma that Dr. Eliezer attempts to solve is that modern physics does not allow primary particles to have a space

structure, but that as soon as a particle is assumed to be point-like its self-energy becomes infinite. Classical physics has ways to get around these infinities, but quantum theory finds it more difficult. That is the problem attacked.

Dr. Eliezer is now a research fellow at Christ's College, Cambridge, England, where he had previously studied with Prof. P. A. M. Dirac, one of the founders of modern physics.

Science News Letter, December 28, 1946

CHEMISTRY

Carbon 13 Is Available For Cancer Research

► AVAILABILITY of carbon isotope 13, first shipped by Kodak Research Laboratories to New York's Memorial Hospital, will make it possible for research scientists to tag the carbon on two sides of a chemical or physiological reaction.

This may speed understanding of what happens in cancer, which is the main research problem at Memorial Hospital. The new carbon variety weight 13, produced by a chemical exchange method, supplements the radioactive carbon 14 made in the chain reaction atomic pile at Oak Ridge, distributed for research a few months ago.

Science News Letter, December 28, 1946



IN THE MAKING—Carbon 13 is being made in the fractionating column. Dr. William O. Kenyon (right) of the Kodak Research Laboratories is holding a bottle containing some of the rare isotope used in medical research.