

MEDICINE

Chemicals Give Hope Dreaded Heart Ills Can be Conquered

Work Through Influence on Reflex Nerve Action; Pain of Angina Abolished, Deaths Reduced by Third

HOPE that such dreaded heart ailments as angina pectoris and coronary thrombosis can be conquered by chemical remedies is held out by discoveries announced by Dr. G. E. Hall, of the University of Toronto, at the meeting of the American Medical Association.

The exact chemical that will be used has not yet been determined. It may be atropine, familiar as the "drops" doctors put in your eyes before testing your vision. This drug has shown some life-saving possibilities in dogs with experimental heart disease. More likely, Dr. Hall said, the chemical treatment used for human heart sufferers will be a combination of atropine with some other drug or chemical.

The chemicals must be the kind that can produce results by their effect on certain sets of nerves, because a reflex nerve action, Dr. Hall has found, is probably responsible for sudden deaths from heart disease with or without evidence of the disease of the heart's arteries known as coronary thrombosis.

People likely to have a heart attack from mild exertion, cold air, worry or anxiety, as is the case with sufferers from angina and coronary thrombosis, probably have a more sensitive reflex nerve mechanism than the average person.

Existence of this reflex nerve mechanism was discovered by Dr. Hall in studies of dogs that could be given "heart disease" by cutting off the artery that supplies the heart muscle with blood. The reflex is from the afferent nerves leading away from the heart and producing the sensation of pain in angina, to the vagal nerves that lead to and stimulate constriction of the smaller arteries in the heart's muscle.

When this reflex was abolished, either by cutting the pain nerves or by ether anesthesia, the animals with the simulated heart disease had no pain. The deaths were reduced from 75 per cent. to 25 per cent. in the nerve cutting procedure, and from 50 per cent. to one per cent. when the pain nerves were put out of action by the anesthetic. Atro-

pine abolished the reflex nerve action to some extent, as shown by reduction in pain and in deaths.

A Boston surgeon has been getting similar results in human patients, Dr. Hall said, by cutting some of the nerves and thus abolishing the reflex. Dr. Hall hopes that a chemical can be found to accomplish the same end without resort to the hazards of an operation on nerves connected with the heart.

The reflex nerve mechanism, starting with the pain nerves, causes a spasm of the small blood vessels which cuts down the blood supply to the heart, Dr. Hall believes. In coronary thrombosis this blood supply is already reduced and further reduction is likely to stop the heart completely. Sudden and often fatal heart attacks in patients who have not had coronary thrombosis is probably caused by a spasm set up by the same reflex nerve mechanism.

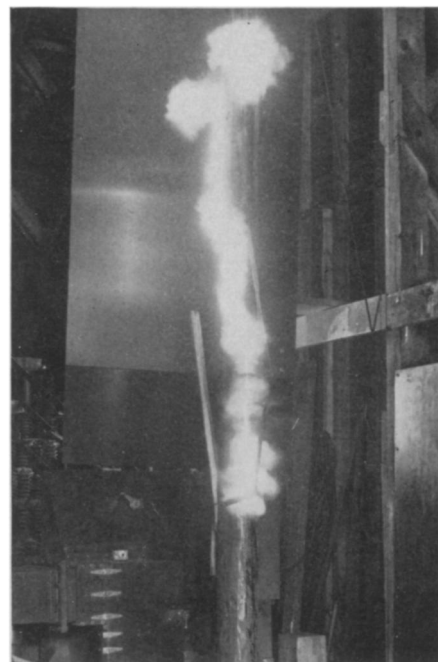
Science News Letter, May 27, 1939

Cancer Solution Promised

SOLUTION of the cancer problem, so far as the cause of breast cancer is concerned, seems promised by a method presented by Dr. Charles Geschickter, of the Johns Hopkins Hospital, Baltimore. "A method for determining the ultimate mechanism by which mammary cancer develops in humans" has been obtained, Dr. Geschickter said, by the studies he has made on rats.

Working with a strain of rats which normally never have breast cancers, Dr. Geschickter produced such cancers in the animals by large doses of a female sex hormone. All forms of breast cancers can be produced in the rats by this gland product because, as Dr. Geschickter explained it, the hormone constitutes a physiologic agent which can be used to upset normal growth.

This hormone or gland product is being used to treat certain glandular disorders in women, but there is no danger of its causing cancer, Dr. Geschickter said, because the doses used in treatment are much smaller (*Turn to Page 332*)



HOT LIGHTNING

Now man-made lightning, like Nature's bolts, can set fires, it has been demonstrated by Westinghouse.

PHYSICS

"Assembly Line" Production Of Artificial Lightning

ASSEMBLY-LINE production of artificial lightning for routine testing of all transformers to make sure, as they are completed, that they can withstand natural lightning bolts when in service, and artificial creation of "hot" lightning, the kind which sets fires, are announced by the Westinghouse Electric and Manufacturing Company as the two latest achievements in man's struggle to capture and conquer lightning.

Great 1,500,000-volt 80,000-ampere bolts of lightning are now crashing down onto every transformer to make sure it is able safely to by-pass the bolt without damage to its essential electrical circuits, as it will be called upon to do when out in service on the line.

And now for the first time, through the work of P. L. Bellaschi, an artificial lightning bolt which imitates natural lightning in its ability to set fires has also been created. It differs from the conventional artificial bolt in having a low-temperature, long-duration stroke following the main and leader lightning discharges, similarly to natural lightning.

Although the heat of previous artificial bolts is intense and they have

enormously destructive explosive effects on whatever they hit unless it is adequately protected, they did not last long enough to set fire to combustible targets, only leaving a scorched hole. The after-stroke of "hot" lightning generates temperatures only half as high as the main stroke, but it lasts between 100 and 1,000 times as long.

The long-duration charge is produced by means of additional capacitors or a transformer from which the charge is "soaked" through a series of resistance and inductance coils in oil and permitted to follow the initial high current discharge relatively slowly.

In demonstrations, "hot lightning" fused sand in a fiber tube, set fire to cotton cloth, and burned holes through copper sheets varying from one thirty-second to one-sixteenth of an inch thick.

Science News Letter, May 27, 1939

MEDICINE

Cancer Control Attempted Through Use of Insulin

THE POSSIBILITY of controlling cancer in the future by means of insulin, now used in diabetes treatment, is hinted in two reports to the Society for the Study of Internal Secretions.

None of the work has yet reached the stage where insulin can be recommended for human cancers. But the studies show that scientists are trying all possible methods in the search for more weapons to fight this great killer.

A University of Rochester group studied two lots of rabbits which all had tumors of the same average size in the beginning. One lot got insulin and the other did not. There were always, even in the non-insulin group, a few spontaneous regressions of the cancers. But there were always a few more regressions of the malignant growth in the rabbits that got insulin. The insulin-treated animals always gained more weight than the controls and it was suggested that this improved nutrition might have been the determining factor in reducing the size of the cancers, rather than any direct effect on their growth by the reduced amount of sugar in the blood.

The attempts at controlling cancers in animals, with a degree of success in some cases, were described by two groups of investigators: Drs. John R. Murlin, C. D. Kochakian, T. B. Steinhausen and R. Ryer of the University of Rochester, and Drs. Milton O. Lee, William Freeman, R. G. Hoskins and Helen M. Levene of Harvard Medical School.

Science News Letter, May 27, 1939

AERONAUTICS

Air Giants of Future May Carry Own Oil Refineries

AIR GIANTS on the skyways of the future may carry their own petroleum cracking refineries aloft, it was suggested at the meeting of the American Petroleum Institute by S. D. Heron and Harold A. Beatty of the Ethyl Gasoline Corporation.

Increasingly aviation is demanding more powerful fuels, said the oil experts, but at the same time it is rightly asking for safer fuels which will decrease the menace of fire.

Safety fuels that ignite less easily and which burn more slowly than gasoline are the answer to this need. However, such fuels can be burned either in Diesel engines or in spark-ignition engines only after the latter are in operation.

"Engines operated on safety fuel require either gaseous or volatile liquid fuel for starting," declared the petroleum experts. Unless these starting fuels are carried with great precautions they may greatly increase the low fire risk inherent in the safety fuels. If they are carried in heavy tanks like those used in storing oxygen under pressure they add weight.

"It might be practicable to install a small electrically-heated cracking unit to crack either safety fuel or engine lubricating oil to a fixed gas (for starting)," the experts said.

"Even though such a unit were of considerable size and weight, it still would probably be lighter than special pressure tanks for volatile or gaseous fuels; and it would avoid the manufacture, distribution, and storage of special starting fuels (in event that fuels other than gasoline were used for this purpose)."

"The average layman has been led to believe that the use of Diesel engines is practically a cure-all for this problem (fire hazard), but to the aircraft operator or designer the solution does not appear to be so delightfully simple," they added.

Current handicap of aircraft Diesels is that no 1,000 horsepower units have yet been seen in the United States, whereas spark-ignition engines giving 1,200 and 1,500 horsepower are commonplace and 2,000 horsepower units are now in demand, the petroleum experts concluded.

Science News Letter, May 27, 1939

AERONAUTICS

Pick-Up Airmail Service For Towns With No Airports

ONE of aviation's fondest dreams—of a day when all first class mail goes by air—moved a step nearer realization when a United States airmail plane dropped low over ten Pennsylvania, Ohio and West Virginia towns for the first time in their histories to launch an experimental pick-up airmail service.

Carrying no revenue load except mail, a fleet of five trim monoplanes of All-American Aviation, Inc., will in a few weeks' time be serving 56 cities in four states with speedy letter service such as no small American city has ever had.

If the novel experiment, backed by Federal funds to the extent of 43 cents a mile on one route and 32 cents on the other, is successful during the course of the next year, and Congress approves, it will be extended to hundreds of other

cities throughout the United States and rapidly bring nearer the day when first class mail all goes the fastest way possible—through the air.

Several unique devices developed by an Irwin, Pa., dentist who became interested in aviation, Dr. Lytle S. Adams, underlie the new service which dispenses with the necessity of making landings to pick up letters and other packages, or to deliver them.

A mail bag will be slung between two masts 40 feet high. As the mail plane approaches, an operator aboard the ship will lower a 65-foot cable at the end of which is a grasping hook, and at the end of another 20 feet, a container of mail for delivery to that town.

As the bag being delivered touches ground, a special device will sever the copper wire by which it is fastened. An