

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.

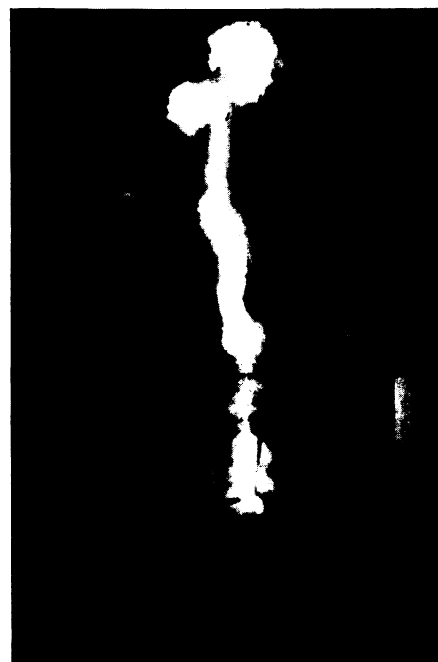
Science News Letter, May 27, 1939

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

herd in a sheep camp is like a captain on an ocean liner. He is the sole ruler of the people and their flocks, and his word is law."

It was not so strange that ancient prophets and kings were called to leadership from tending sheep.

The feasting and brimming cup described in the psalm are typical of hospitality among Eastern nomads, says the Assyrian. Food for guests or strangers must be piled high and the dishes running over, lest they fear there is too little, and refuse to eat. Easterners even borrow from a neighbor to set forth a laden table for guests. And when an enemy comes to see if rumors of poverty are true—as is sometimes done—the hasty arrangement of a lavish meal wins admiration from the gossipy guest. He will at least leave pitying and admiring the family that keeps up its traditions of generosity in a hard time.

Science News Letter, May 27, 1939

From Page 323

than those used to produce the cancers in the rats. The development of cancer under the influence of this hormone, he added, all depends on conditions existing in the breast before the influence of the hormone is brought onto the scene.

Another female sex hormone can probably be used in a chemical test for distinguishing between breast cancer and another disease of the breasts, chronic cystic mastitis. The amount of this hormone, as measured by its excretion product, pregnandiol, is reduced in the cystic condition, Dr. Geschickter said.

A weapon against one form of heart disease, bacterial endocarditis, has been forged by two St. Louis physicians, Drs. Ralph Kinsella and R. O. Muether. By discovering a way to produce and cure the disease in animals, these doctors have presented medical science with a possible means of curing the ailment in man and with a means for further research for a cure if necessary.

Germs play a part in this heart ailment, which is a diseased condition of the heart valves. The disease can be produced in dogs exactly as it appears in man, the doctors found, by a mechanical injury to a heart valve followed by injection into a vein of germs of the streptococcus family. When induced in this way, the condition was invariably fatal.

Treatment with a chemical remedy, known by the trade name of merthiolate, saved half of a group of 24 animals. Sulfanilamide also proved an effective remedy against the ailment in dogs, but

its action was not as prompt as that of the other chemical.

Science News Letter, May 27, 1939

Artificial Heart

AN ARTIFICIAL lung and heart device with real life-saving possibilities made its debut before the American Medical Association meeting.

The mechanical steel cylinder and pumps of the apparatus have already doubled successfully for the living lungs and beating heart of a cat, keeping the animal alive for eighteen minutes while its own breathing apparatus was put temporarily out of commission by a surgical clamp which closed the artery supplying blood to the animal's lungs.

An attempt to save human lives with this artificial heart and lungs is the next step planned by the inventors, Drs. John H. Gibbon, Mary H. Gibbon and Charles Kraul, of the University of Pennsylvania Medical School.

Pulmonary embolism is the condition for which the apparatus holds promise of saving lives. This condition, in which a blood clot obstructs the artery leading to the lungs, causes two per cent. of all deaths. It is the condition most feared after surgical operations, killing about six out of every hundred persons who die after an operation. It develops unexpectedly and kills so rapidly that there is not time to do anything to save the patient.

Thousands of attempts have been made, Dr. Gibbon said, to save patients from this complication by slitting the artery and sucking out the blood clot. Of all the attempts, however, only about a dozen have ever succeeded. The extra time which the artificial heart and lungs can keep the patient alive, if it works as well with humans as with cats, may be enough to allow life-saving measures to be applied with a good chance for success.

The apparatus consists essentially of two pumps, one for arterial and one for venous blood, and a cylinder. The blood on its way from one pump to the other passes over this cylinder in a thin film, picking up life-essential oxygen which the blood normally gets from the lungs. The obstruction to its passage to the lungs in pulmonary embolism prevents this vital oxygen-collecting process, and the resulting oxygen starvation of the body is what makes the condition fatal. The apparatus is attached to a vein and to an artery, is primed by a small amount of blood from a donor, and then will carry the patient's own blood supply

through the oxygen-collecting circuit and back to his body.

Attempts by means of sedative drugs to save lives threatened by pulmonary embolism were reported by another group of investigators, Drs. Geza de Takats and George K. Fenn, of Chicago.

Science News Letter, May 27, 1939

Gas Mask For Oxygen

AN INVENTION which rivals the new chemical remedy, sulfanilamide, in its power to save lives and restore health to suffering patients was demonstrated by a group of Mayo Clinic physicians.

It is a new gas mask, for giving oxygen efficiently and economically. One of the famous Mayo Brothers, Dr. C. W. Mayo, and its inventors, Drs. Walter M. Boothby, W. R. Lovelace II, and A. H. Bulbulian, described its promising medical uses.

One patient desperately ill with rheumatic heart disease began to improve immediately when given one hundred per cent. oxygen with the new apparatus, although he had been expected to die. The treatment was not a cure, but an aid to the patient's fight to recover.

Patients suffering with gas gangrene and tetanus or lockjaw have been helped to recovery by oxygen given with this new type of mask. The recovery in these cases is due to the fact that both these ailments are caused by germs of the kind that cannot live in an atmosphere that contains oxygen. Giving the patient one hundred per cent. oxygen makes life very unpleasant for the germs and gives the patient a better chance to overcome them and get well.

The mask is also being used to give oxygen to patients in shock or collapse following injury or surgical operation, in cases of abdominal distention, for headaches following air injections into the brain for diagnosis of brain tumors, for migraine headaches, and for a number of lung disorders. The mask has already been installed on an airline for use of pilots and passengers threatened by oxygen lack at high altitudes.

The reason the new apparatus is finding such a wide field of usefulness is because it can be used in the patient's home as well as in large, well equipped hospitals and because it reduces enormously the cost of oxygen treatment. The cost of giving oxygen by oxygen tents, method used before invention of the new mask, is from \$12 to \$25 a day. This has prevented the use of oxygen

except in very few cases, chiefly severely ill pneumonia patients. With the new apparatus the cost of the oxygen should average only \$5 to \$8 a day.

The reduction in price, made possible by the efficiency of the apparatus, will enable doctors to use helium quite generally in treatment of asthma. Until six months ago, Dr. Boothby pointed out, helium was never used except for the most severe asthma cases, because of the high cost. With the new apparatus, both helium and oxygen can be used, starting with helium and as the patient gets better, increasing the proportion of the less expensive oxygen till the patient is getting all oxygen.

Tanks of pure helium should never be in a hospital ward or in a patient's room, Dr. Boothby warned, "or someone will be killed in two minutes." The danger is that the nurse or attendant might leave the patient breathing pure helium for a minute or two, while answering a knock at the door, for example. Complete lack of oxygen for even so short a time would prove fatal.

Besides the greater efficiency and lower cost, the new mask is not at all uncomfortable to wear. Only the nose is covered, so that the patient can talk and drink water, and if not too sick can sit up and read or carry on other activities. When helium is being given, the patient will find his speech sounds as if he were talking through his nose. This is because helium breathing, Dr. Boothby explained, causes an apparent change in the pitch of the voice.

Science News Letter, May 27, 1939

Must Attack Mental Illness

MENTAL illness and defect are the next great plagues in line for attack by medical men, Dr. Rock Sleyster, of Wauwatosa, Wis., said in his presidential address.

Hand-in-hand with the attack on these problems will come an understanding of

man's mind to help solve problems of government, Dr. Sleyster pointed out.

"One by one the great plagues that used to devastate mankind are being overcome," he declared. "No longer does civilized man live in constant fear of cholera, smallpox and bubonic plague. Typhoid fever has become so rare that many a modern physician has never seen a case of this disease. . . . In our own time we have seen arsphenamine for syphilis, insulin for diabetes, liver for pernicious anemia, biologic preparations for pneumonia and scarlet fever, sulfanilamide and sulfapyridine for streptococcal and pneumococcal and similar infections We have seen the life expectancy rise from 40 years at birth to 62 years. What fields remain to be conquered?"

"Among the problems which yet confront us, mental defect and mental disease are increasingly significant. They are imposing in their scope. An understanding of the human mind and of human thinking may aid in the solution of problems of government."

The 1,300,000 Americans who, Dr. Sleyster estimates, are on any one day incapacitated by epilepsy, feeble-mindedness and various types of mental illness, constitute a problem which is directly up to physicians to solve. Besides this huge problem, there is the problem of how to oppose the forces which tend to sap the vitality of men and women, destroy their initiative and break down individual character.

"The citizen of the United States in Revolutionary times was a hardy pioneer who had fought the forces of men and of nature successfully and who knew where he wanted to go and what he wanted to do," Dr. Sleyster pointed out. "Today the forces that have been developed by man as a result of modern invention in the field of both materials and of thought are so intricate and so great that frequently they are far beyond the ability of the average man to grasp. Hence bewildered, little men seek constantly for leadership without even sufficient data or background to determine whether or not the leadership is for good or evil."

It is the responsibility of the physicians and of the nation to see that, as a consequence of this situation, people do not pay too great a price, in breakdown of character, for security in old age, medical care and insurance against unemployment.

Granting that not all the people possess the benefits of "American life and living" which are enjoyed by the ma-

jority, Dr. Sleyster said that the same forces which brought us to our present high standards of health and living should enable us to extend these benefits to those who have not yet enjoyed them.

"To this purpose the American medical profession has repeatedly dedicated itself," he declared, adding that as president of the American Medical Association for the coming year he proposes to devote himself primarily to this task of "doing all that can be done to spread more widely the benefits of American life and living."

Science News Letter, May 27, 1939

Acne Helped by Vitamin D

EXCELLENT results in treating acne with vitamin D, the sunshine vitamin that cures and prevents rickets, were announced by Dr. Merlin T. R. Maynard of San Jose, Calif.

The treatment brought about satisfactory results in 75.6 per cent and 83.4 per cent, respectively, of patients in two groups. X-ray treatment, which is not always satisfactory in acne cases, was unnecessary when vitamin D was given.

Vitamin D was also helpful, Dr. Maynard reported, in treating other skin diseases such as alopecia areata, which is characterized by patches of baldness; scleroderma, in which the skin grows thick, hard and rigid; and a hardening of the skin from overdosage of X-rays.

Explaining the action of the vitamin, Dr. Maynard said that chronic inflammatory diseases such as these respond to agents like vitamin D which modify the calcium and phosphorus in the blood serum and the tissues.

Vitamin D is essential for normal utilization of calcium. Since the vitamin is found only in limited quantities in ordinary foods, the chief medical source has been cod liver oil.

Science News Letter, May 27, 1939

Sudden Deaths Explained

CASES of sudden death formerly labelled "acute indigestion" and more

● RADIO

Monday, June 5, 1939, 5:45 p. m. EDST

ADVENTURES IN SCIENCE with Watson Davis, Director of Science Service, will have as guest scientist Dr. Carl D. Anderson of California Institute of Technology, Nobel prizewinner in physics. Dr. Anderson will discuss cosmic rays and will also mention his important discovery of the positron, fundamental atomic particle. While cosmic ray researches have revealed new facts about the smallest things in the universe, they also promise to tell us in the near future important things about the largest things in the universe, the far-away nebulae and other astronomical bodies.

In the first part of the program Mr. Davis will report and interpret the latest news of science. Origination from WJSV, Washington, switching to KNX, Los Angeles, for Dr. Anderson.

Books

SCIENCE NEWS LETTER will obtain for you any American book or magazine in print. Send check or money order to cover regular retail price (\$5 if price is unknown, change to be remitted) and we will pay postage in the United States. When publications are free, send 10c for handling.

Address Book Department

SCIENCE NEWS LETTER

2101 Constitution Ave. Washington, D. C.

recently attributed to heart disease may be explained through the balloon-swallowing experiments reported by Drs. Lester M. Morrison and William A. Swalm, of Temple University, Philadelphia. More successful treatment of both heart and digestive disorders resulted from the findings, the Philadelphia doctors declared.

According to the balloon experiments, the sudden deaths may be due to distention of the stomach acting through the vagus or other nerves like a hair-trigger mechanism to cause sudden changes in the heart or its arteries. The changes may produce fainting, the severe pain of angina, and even sudden death with or without stoppage of the heart's arteries.

In the experiments, the tiny balloons were inflated after being swallowed. Two patients with angina pectoris and two with other forms of heart disease experienced severe distress as a result of the inflation. The attacks were promptly relieved by release of the gas in the balloons.

An intimate connection between the nerves of the digestive tract and those of the heart was shown, the Philadelphia doctors said, by the fact that consistent and analogous changes in the tracings of the heart's action were produced by blowing up the balloons in three of the four patients.

The results of the experiments apply especially, it was pointed out, to patients with angina pectoris who also have disorders of the stomach and intestines. Treatment for such patients, planned as a result of the experiments, consisted in giving antispasmodic drugs to quiet the nerves that are intimately related to the heart; a strict diet arranged to avoid foods tending to form gas; and instruction to the patients never to eat when tired or nervously distraught. Surprising improvement followed this plan of treatment, it was reported.

Science News Letter, May 27, 1939

Meerscham Pipe Chemical

THE ESSENCE of a meerscham pipe, a chemical known as hydrated trisilicate of magnesium, has been giving good results, in both England and the United States, as a remedy for stomach ulcers, Dr. Manfred Kraemer, of Newark, N. J., told members of the Association.

Out of a group of 90 patients with long standing, severe recurrent ulcers, 79 were benefited by the "seafoam" chemical used in making the pipes to which it gives its name, and 73 have been free of symptoms for periods ranging from three to eighteen months.

Advantages of this form of magnesium over other drugs used to combat acidity in ulcer cases were reported as follows: The chemical has no injurious effects and does not incite the intestinal tract to undue activity. Its acid-neutralizing action is gradual, which is valuable because acid is secreted in the stomach over a period of hours. It can probably remove acid from the ulcerated areas by absorption in addition to neutralizing acid in the stomach.

Science News Letter, May 27, 1939

Save Them if You Can

THE IMPORTANCE of pulling teeth and cutting out tonsils to prevent or cure ailments elsewhere in the body has been greatly exaggerated, Dr. Hobart A. Reimann, of Philadelphia, declared.

Ten years of this practice, as reported in medical literature, have failed to prove a relation between infection in teeth and tonsils, Dr. Reimann reported on the basis of a study by himself and his associate, Dr. W. Paul Havens.

The general idea of systemic disease arising from a focus of infection in one part of the body cannot be denied, he said. Such a relation exists in the case of boils that lead to blood poisoning. But the routine extraction of teeth or re-

moval of tonsils in the hope of influencing general systemic or remote disease is not warranted, he declared.

Even in the case of acute colds, inflammation of the inner ear, bronchitis and pneumonia, removal of the tonsils failed to lessen the attacks, one study of 1,000 children over a ten-year period showed.

A tooth should be removed when it is definitely beyond repair or if a chronic abscess is causing pain, swelling and other local symptoms, the Philadelphia doctors stated. Similarly, tonsils should come out when the patient is having repeated sore throat or if the tonsils are chronically inflamed. Aside from these conditions, their findings failed to show good reason for removal of teeth or tonsils.

Science News Letter, May 27, 1939

"Corpse Come to Life"

TAKING on permanently the appearance of "a corpse suddenly come to life" may be the fate of those who use nose drops containing silver, such as argyrol, or similar preparations, warned Dr. Ben L. Bryant, of Los Angeles.

The condition, characterized by a bronzed-blue or slate color of the skin that has been termed corpse-like, is known medically as argyria. It comes about from the chemical action of light on the silver which has deposited in the tissues following use of silver-containing drugs. Methods have been devised for determining the amount of silver that will cause argyria to develop, but no very successful methods for causing the discoloration to fade have been developed.

Science News Letter, May 27, 1939

GEOLOGY

Bring Meteorite Fragments From Arabian Desert

FRAGMENTS of a meteorite that fell near Wabar in the Rub'al Khali, heart of the Arabian desert, and of silica glass formed by the hot blast as it struck, have been added to the collection of the Field Museum of Natural History. The specimens were brought out by an oil geologist, who visited the inaccessible site in 1937.

The silica glass is of peculiar interest because it is full of microscopic globular flecks of iron from the meteorite. The theory is that the heat of impact was so great that part of the iron and some of the desert sand were vaporized, and then condensed into the iron-impregnated glass.

Science News Letter, May 27, 1939

LETTER SUBSCRIPTION COUPON

To Science News Letter, 2101 Constitution Avenue, Washington, D. C.

☐ Start my subscription to SCIENCE NEWS LETTER for ☐ 1 year, \$5
☐ Renew ☐ 2 years, \$7

Name _____

Street Address _____

City and State _____

(No extra postage to anywhere in the world)

SCIENCE NEWS