MEDICINE

Adrenal Glands May Help Cause Cancers

➤ THE ADRENAL glands, which help humans to overcome stress, may also help cause some kinds of cancer.

This has been indicated by research done by Dr. W. J. Eversole, University of New Mexico, Albuquerque, and Dr. John DaVanzo, Princeton University, Princeton, N. J., and reported by the American Cancer Society.

The scientists were able to prevent the development of liver cancer in rats by removing the adrenal glands and injecting large doses of an artificial adrenal hormone called DCT, or desoxycorticosterone trimethylacetate.

Rats with adrenal glands or remnants of adrenal glands, whether given the hormone or not, always develop the liver cancer after four to five months of a diet which includes butter yellow.

The scientists removed the adrenal glands and gave the rats heavy doses of DCT. Five months later the treated rats showed little if any evidence of disease. Rats which still had their adrenals and had not received the DCT all had diseased livers by that time and many were dying of liver cancer.

Smaller doses of the DCT were also tried in adrenal-less animals. This slowed down the development of the cancer although it could not prevent cancer from occurring. The rats grew new adrenals from small accessory gland tissue, a fact which the researchers believe may explain the results.

Possibly, the large dose of DCT suppresses this accessory tissue, while low doses permit the tissue to begin producing the adrenal hormones which bring on the cancer.

The research has no direct application to human cancer at present, but it helps narrow the search for the chemical causes of at least some kinds of cancer, the Society reported.

Science News Letter, March 22, 1958

SURGERY

Find New Treatment For Angina Pectoris

➤ THERE IS A new surgical approach and technique for treatment of angina pectoris, severe pain in the chest, arm and heart, caused by heart disease.

Dr. Louis T. Palumbo, chief of the surgical service, Veterans Administration Center, Des Moines, Iowa, reported the technique will also help vascular insufficiency or inadequate blood supplies to the hand.

Angina pectoris, which occurs more frequently in men than women, is characterized by recurring attacks of severe chest pains, usually provoked by exertion or excitement. The pain sometimes radiates to the left shoulder and down the left arm, and death may even occur.

Dr. Palumbo told surgeons at a meeting of the International College of Surgeons and 23rd annual Congress of the United States and Canadian sections, Los Angeles, Calif., that the technique permits a complete removal of the sensory and motor pathways from and to the heart. The operation is simpler and easier to perform than any other for this disease, he pointed out.

In addition, it completely or nearly completely relieves the disabling pain due to angina and also eliminates the undesirable action of the nerves which supply and control blood vessels of the heart muscle.

This leaves the patient free from the fear of the pain which formerly made him an invalid. The procedure carries a lesser risk and a lower operative complication rate than any other known procedure now advocated for angina.

"The interruption of both nerve pathways has a very favorable outcome in bringing about a more rapid rehabilitation of the patient with both freedom from disabling pain and allowance for the individual to carry on within the limits of his physical capabilities and cardiac reserves. Many patients previously incapacitated are now restored to a nearly normal socio-economic life without the need of the type of medications they were taking prior to surgery," Dr. Palumbo stated.

Results of this study have led to the introduction of a new concept concerning the sympathetic nerve pathways which control the pupil of the eye of man.

Science News Letter, March 22, 1958

MEDICINE

Researchers Devise TB Detecting Blood Test

➤ A BLOOD test to detect active tuberculosis has been developed by scientists at Northwestern University Medical School, the National Tuberculosis Association has announced.

This test, which will aid early diagnosis of TB, was difficult to devise because of the questionable role of antibodies in the disease.

The test is known as a double-diffusion precipitation technique. It was devised by Dr. Guy P. Youmans, head of the department of microbiology, and associates, Robert C. Parlett and Caroline Rehr, with the aid of Dr. William Lester of the Suburban Cook County Tuberculosis Association Sanitorium.

Live TB germs were introduced in a gelatine-like substance made from a seaweed base. This solidified after being pipetted into glass tubes. A second layer of gelatine without germs was introduced in the tube and solidified. The tube was then filled with blood serum to be tested for antibodies.

If the serum was from TB patients, a cloudy layer precipitated between the two layers of gelatine within a period of 48 to 72 hours. This precipitation is known as an antigen-antibody precipitate.

The advantage of the test lies in the fact that it is simple and reliable and can be carried out in hospital laboratories with a minimum of equipment, the scientists report in the *American Review of Tuberculosis and Pulmonary Diseases* (March).

A disadvantage, however, is that the method detects the TB antibodies but provides no measurement of the amount of any of the antibodies detected.

Science News Letter, March 22, 1958

IN SCIEN

TECHNOLOGY

Report Method for Taking Pictures Using Heat

➤ A NEW METHOD of taking pictures using the heat radiated by the object has been developed.

The device is called a "thermal image converter." It will give photographs of objects only 27 degrees Fahrenheit warmer than the surrounding atmosphere, the scientists say in *Nature* (March 8).

The complete image converter consists of a self-supporting film of amorphous selenium that has been coated with metal on one side and is mounted in a vacuum at the focus of a parabolic mirror. The photograph is made by recording the amount of sodium light transmitted by the film.

For objects at temperatures more than 400 degrees Fahrenheit the aperture of the mirror must be reduced to avoid crystallization of the selenium.

Developers of the thermal image converter are Drs. W. R. Harding, C. Hilsum and D. C. Northrop of the Services Electronics Research Laboratory, Baldock, Herts, England.

Science News Letter, March 22, 1958

AGRICULTURE

Pesticides From Mums Found Safe and Potent

➤ HARD ON insects but easy on man and other warm-blooded animals is how the U.S. Department of Agriculture describes four new insecticides.

The new compounds all come from chrysanthemumic acid, a man-made substance similar to an acid found in plants of the chrysanthemum family. They are related chemically to the already well-known pesticides pyrethrum and allethrin that are also derived from plant substances.

All these chemicals have "substantial lethal power over certain insects, yet a low toxicity to warm-blooded animals." The new insecticides, however, are even less deadly to animals, with toxicity as measured with rats ranging from one-eighth to one-third that of pyrethrum and allethrin, respectively.

USDA scientists report that the best two of the new compounds are equal to or better than the other plant derivatives when it comes to high levels of kill against the malaria mosquito, the codling moth, the southern armyworm and the body louse. Both these compounds, 6-chloropiperonyl chrysanthemumate and 6-bromopiperonyl chrysanthemumate, are slower in their action, however.

They are less effective than DDT and other chlorinated hydrocarbons, all of which may leave toxic residues.

Science News Letter, March 22, 1958

CE FIELDS

OCEANOGRAPHY

Atlantic Loses 6,000,000 Tons of Water a Second

➤ SIX MILLION tons of water each second are lost by the North Atlantic, and exactly this amount is fed into the North Atlantic from below the equator.

This and other findings about the major ocean currents of the world are reported by Dr. F. G. Walton Smith of the International Oceanographic Foundation to the Smithsonian Institution, Washington, D. C.

The major currents circulate continually, making a clockwise circuit in the northern oceans and a counterclockwise one in the southern oceans. In general, the current flowing toward the pole on the western side of the ocean tends to be comparatively narrow and fast, whereas the corresponding current on the east, flowing toward the equator, is wide and slow.

Best known of these ocean rivers is the Gulf Stream. In the west it carries between 25,000,000 to 50,000,000 tons of water a second northward in a narrow stream flowing up to six knots. It crosses the North Atlantic, then veers southwestward off the coast of Africa, where it is known as the Canaries Current. To complete the circuit, it crosses the Atlantic again, very slowly, and spreads over a wide area.

The 6,000,000 tons poured each second across the equator is balanced by the water that leaves the surface and sinks below between Greenland and Iceland, in the Labrador Sea, and west of Gibraltar where the Mediterranean comes in contact with the Atlantic.

Each of these three downward movements removes from the surface about a third of that carried across the equator by the South Equatorial Current.

Science News Letter, March 22, 1958

MEDICINE

Cross Antibiotic Hurdle; Retention Problem Solved

➤ A LONG-SOUGHT method by which antibiotics can be improved in their effectiveness against infection, by raising their concentration and body retention time, has been found.

The method, reported in *Nature* (March 8), consists of combining familiar antibiotics, such as streptomycin and neomycin, with salts containing large molecules, to form compounds called antibiolymphins.

Drs. P. Malek, M. Herold, J. Hoffman and J. Kolc of the Institute for Antibiotic Research, Prague, Czechoslovakia, report that this combination produced a long-lasting concentration of the antibiolymphins in lymph nodes, the body's storehouse for germ warfare.

Previously, many antibiotics injected into the blood stream traveled to the lymph nodes but remained only for a few hours and at an extremely low level of concentration.

The physiological characteristics of the antibiolymphins attract them to the lymph nodes. With them, they carry the beneficial antibiotics.

Another favorable result of the research concerns the reversal or reaction by the two types of germ fighting compounds.

Some antibiotics, when injected, result in immediate high concentration in the blood, while low in the areas needed, the lymph nodes. Antibiolymphins reacted in an opposite manner, concentrating in the lymph nodes, the scientists report.

They also point out that antibiolymphins showed "far less" toxic, or poisonous, effects than the antibiotics.

Antibiolymphins are compounds resulting from treatment of antibiotics such as streptomycin, neomycin, viomycin and streptothrycin, with a wide range of naturally occurring organic acids.

Since antibiolymphins are specifically attracted to the lymphatic system, a higher concentration of antibiotics can be attained and stored and released at a more desirable rate in lymph nodes. Other antibiotics, when injected, circulate through the body by means of the blood stream which means high concentration but for a very short period of time.

Science News Letter, March 22, 1958

HORTICULTURE

Brown Lawns May be Dyed Green Safely

➤ IT IS perfectly safe to dye your brown lawn green.

Dr. Victor B. Youngner, turf-grass specialist at the University of California at Los Angeles, finds that green dyes for dormant grasses may well find a permanent place in turf-grass management.

Recently developed colorants from the chemical industry were tested in fall, 1957. Most gave good coloring to browning grass plots for two weeks after applications. Several maintained good to fair color up to eight weeks and may have lasted longer under ideal conditions.

All compounds tested exhibited little rub-off after drying.

In addition to offering a solution to brown winter lawns, the products may also be used to color disease-killed turf until replanting is possible, or turf brown from lack of water.

In using colorants, several points must be remembered, Dr. Youngner emphasized:

1. Even though the dormant, artificially colored grass may look quite fresh and green, it should be watered occasionally during periods of low rainfall.

2. Apply only enough colorant to thoroughly and uniformly cover the grass with a minimum of run-off.

3. Buy only colorants made by reliable companies. The good materials are designed only to economically color discolored grass until new growth begins. This is all a dependable manufacturer will claim to do.

Science News Letter, March 22, 1958

MEDICINE

U. S.-Sweden Team Study Cause of Newborn Death

➤ A JOINT RESEARCH project carried out by American and Swedish scientists may lead to a better understanding of respiratory malfunction in babies, the most common cause of newborn death.

The research is the first complete scientific record of a baby's first breath.

Dr. Forrest H. Adams of the University of California at Los Angeles Medical School, recently described "first breath" research to the Western Society for Clinical Research.

This research was carried out in collaboration with Drs. Petter Karlberg and John Lind of the Wenner-Gren Laboratory, Stockholm, Sweden.

Recordings of pressures within infants' chests during and after delivery and rapid serial X-rays of the lungs before and during the first few breaths were obtained. These suggested that a sudden expansion of the tiny lung capillaries may assist in the lung expansion associated with the first breath.

The sudden capillary expansion is thought to be related to changes occurring when blood flow through the umbilical cord to the infant is suddenly shut off.

There was generally no chest recoil in the baby immediately following the "big squeeze" of delivery. Some had thought this assisted lung expansion.

"The first breath is probably the most important breath we take in our lives since it may set the pattern for future lung action," Dr. Adams pointed out.

"Yet we know little about the conditions leading to it. As we learn more about the mechanisms involved, we may learn to prevent some of the many newborn deaths caused by lung collapse and other respiratory malfunctions," he said.

Science News Letter, March 22, 1958

MARINE BIOLOGY

Shell Pattern Identifies Old and New Barnacles

➤ "FINGERPRINTING" barnacles may turn out to be as successful a means of identifying these small sea animals as it is for humans.

It is very difficult to tell one species of barnacle from another just by their external appearance or shell. Usually it is necessary to dissect the animal and in cases where no soft body is present, as in a fossil, species identification is more difficult.

Now, however, the discovery of unique patterns that can be seen by cutting and polishing the cut edge of a shell provides a relatively easy and accurate means of identification.

Ira E. Cornwall of Victoria, British Columbia, reports in the current issue of the *Canadian Journal of Zoology* (Feb.) that even small or delicate fragments of a barnacle can be studied and identified. He has found that in many of the sessile barnacles studied, the pattern is the same in recent and fossil specimens.

Science News Letter, March 22, 1958