

MEDICINE

New Dye Test Reported For Severe Burn Injuries

➤ A NEW DYE test is expected to help determine the extent and severity of burn injuries in human patients soon.

Preliminary success with experimental animals was reported at the annual meeting of the American Association of Plastic Surgeons in Chicago.

The dye used in the test is called bromphenol blue. Its purpose is to distinguish living tissue from dead tissue in severe burn injuries by turning the tissues different shades of blue. By helping physicians and surgeons assess burn injuries, the method will make possible proper early treatment.

The dye is injected into the blood stream and spreads rapidly throughout the body, turning the entire body blue except for the dead tissue. The injured areas at once become darker blue than the unaffected areas.

Color differences provide a vivid three-dimensional demarcation of normal, injured and dead tissues to guide the doctor.

Dr. Dicran Goulian Jr. of New York Hospital and Dr. Herbert Conway of Cornell University Medical College, New York, did the research.

This dye has so far shown considerable advantages over other methods that have been used for differentiating between living and dead tissue in burn injuries, they said. Extensive research with laboratory animals indicates an "extremely wide margin of safety."

Another report on burn treatment described a drug called tris, which is expected to become commercially available soon. At present it is only available for research by physicians doing clinical investigation.

The new drug is a buffer that can be given intravenously as part of the regular fluid treatment given routinely to severely burned patients because they usually have a huge loss of fluids.

Tris counteracts the critical acid condition that develops in the body after burning and smoke inhalation. It also prevents kidney damage that sometimes occurs.

Drs. Lester M. Cramer, J. Raymond Hinshaw and Robert M. McCormack of the University of Rochester Medical Center in New York reported this research.

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VETERINARY MEDICINE

Heart Disease Common In Dogs But Not Cats

➤ CATS HAVE less heart disease than dogs, and when they do it is a different kind.

Cats, like humans, may suffer from embolism, a plugging of the arteries thought to be due to fragments that break off from the diseased lining of the heart and are carried into the blood stream.

Rarely seen in cats, however, is a narrowing of the opening between the two chambers of the left side of the heart caused by scar tissue in the valves, although this condition is relatively frequent in dogs and humans.

Dr. R. J. Tashjian of the Animal Medical Center, New York, told a conference on comparative cardiology at the New York Academy of Sciences that these findings were based on studies of more than 200 cats, including most kinds of house cats and a few zoo cats.

Almost one dog out of every hundred seen in a veterinary clinic has congenital heart disease, Dr. D. F. Patterson of the University of Pennsylvania, Philadelphia, told the conference.

Purebred dogs are affected more often than mixed-breed dogs, he said. Some types of malformations are so common in certain breeds that experiments are underway to determine if a hereditary factor could be involved.

Dogs often have disease of the heart valves and coronary arteries, and hardening of the arteries is also seen.

Comparisons by other speakers showed that diseases of the heart and blood vessels occur in cattle, horses, pigs and other animals, especially with advancing age.

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OCEANOGRAPHY

Ocean Ship Launched For Research Studies

➤ THE HULL of a new ship, designed specifically for studying plants and animals of the oceans, has dipped its prow into freshwater at Sturgeon Bay, Wis.

The 117.5-foot long vessel, the Eastward, was built for the Duke University Marine Laboratory with support from the National Science Foundation.

Until just a few years ago, research ships were merely reconverted ships such as tankers, trawlers, sailing ships and freighters.

Now new impetus in exploring the ocean is making available more grants for designing and building ships "from the keel up" to include more scientific equipment and less waste space.

Other surface ships built for ocean research include the Atlantic II at the Woods Hole Oceanographic Institution, Woods Hole, Mass., the Conrad at Lamont Geological Observatory, Palisades, N. Y., and the Gilliss and Davis, both used by the U. S. Naval Oceanographic Office on the East and West Coasts.

After the Eastward is launched, the Sturgeon Bay Shipbuilding and Dry Dock Company will spend two to three months installing the scientific equipment, including navigation, communication and instrument handling gear. When completed, the ship will be delivered to its new home at Beaufort, N. C., by way of the Great Lakes, the St. Lawrence Seaway and the Atlantic Ocean.

The Duke Marine Laboratory at Beaufort will operate the vessel as part of its program of training students and continuing research activities in marine biology. Groups of 15 scientists, five officers and ten seamen will be able to explore ocean depths of about 18,000 to 24,000 feet.

With an operational range of 4,500 to 5,000 miles, the Eastward is capable of traveling over any of the world's oceans, and can stay at sea up to 21 days.

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IN SCIEN

GEOPHYSICS

Continents Move Around As Earth's Heat Builds Up

➤ VAST MOVEMENTS of radioactive heat deep within the earth are forcing the continents to drift apart.

A slow buildup of radioactive warmth under continents may start large circular heat movements that can break up and separate continental masses, Dr. M. H. P. Bott of the University of Durham, England, believes.

The upper part of these huge heat circles, called convection currents, lies about 40 to 80 miles below the earth's surface, Dr. Bott reported in *Nature*, 202:583, 1964.

A convection current may cause a continental region to split. A new oceanic crust is formed between the land blocks that are forced apart, since this is the most efficient way of removing excess heat.

Under normal conditions convection currents take place more readily beneath oceans, Dr. Bott believes. But as temperatures build up underneath the continents, convections are formed under land masses, which may split, drift apart and come to rest over other regions.

These large heat convections take place in the mantle of the earth, a region about 1,800 miles deep, under the earth's crust, or outer surface.

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SPACE

Astronaut's Life Called Safer Than Test Pilot's

➤ EACH OF AMERICA'S astronauts is far safer than any test pilot in the history of aviation, claims the head of the Manned Space Flight Program.

Dr. George E. Mueller said the safety results from a "philosophy" of ground and flight testing involving "overstressing of all components."

At the National Aeronautics and Space Administration's Michoud Operations Center near New Orleans, Dr. Mueller said increased ground testing, such as that going on at Michoud, greatly reduces the need for expensive and dangerous testing in the air.

He pointed out that even after 100 test flights, the Atlas rocket still was undergoing certification tests on the ground.

Big businesses unrelated to space travel are likely to benefit from new management techniques being developed in the program to put Americans on the moon, Dr. Mueller said.

Ways of running very large programs will be one of the most important side effects of the Apollo lunar mission, which employs nearly 300,000 persons, a quarter of a million of them in private industry.

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CE FIELDS

GENERAL SCIENCE

Two Congressmen Win Lasker Awards of \$2,500

► REP. OREN HARRIS (D-Ark.) and Rep. Melvin R. Laird (R-Wis.) were presented with the rarely given Albert Lasker Public Service Awards of \$2,500 each at a luncheon in New York May 13.

An engraved citation and gold statuette of the Winged Victory of Samothrace, symbolizing victory over death and disease, also were awarded the Congressmen for their outstanding legislative service in the public health field.

Rep. Harris is chairman of the Interstate and Foreign Commerce Committee of the House of Representatives, and was cited for "guiding to passage on the floor of the House . . . bills which are milestones of progress against disease and crippling disability."

These bills include the Community Mental Health Centers and Mental Retardation Acts of 1963 and a number of other health-related acts.

Rep. Laird is ranking Republican member of the House Subcommittee on Appropriations for Health, Education and Welfare, and has been a key committeeman in the Congressional drive for increased appropriations for the National Institutes of Health, Bethesda, Md. Among the accomplishments for which he was cited was the sponsorship in 1960 of an amendment to the Labor and Health, Education and Welfare appropriations bill that has resulted in construction of 14 cancer research facilities at universities in various parts of the country.

The luncheon also honored medical journalists. Dr. Howard Rusk, director of the Institute of Medicine and Rehabilitation, was chairman of the luncheon and Senate Majority Leader Mike Mansfield (D-Mont.) gave the major address.

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BIOTECHNOLOGY

First Tiny Heartbeat Of Bird in Egg Recorded

► HUSH! The first tiny pulsation of a baby bird's heart is being recorded by an extraordinarily sensitive instrument.

Originally designed to record microscopic meteorites impinging upon spacecraft and satellites, the instrument now picks up the first faint pulses of embryonic heart muscles as life begins in the eggshell, four days after incubation.

With a sensitivity that can detect the impact of a single grain of salt when it falls from a distance of about one-third of an inch, the instrument offers new techniques for use in vaccine production and drug research, said Vernon L. Rogallo, at the Ames Research Center, Moffett Field,

Calif., part of the National Aeronautics and Space Administration.

Medical researchers now determine the effects of vaccines and various drugs on chick embryos either by inserting electrical probes to measure the heartbeat of muscular movement, or by "candling" the egg with a light to notice the visual effects.

The new instrument is far more precise and records minute changes in muscular pulses from the first faint flutter of the young embryo to full development.

The spring system is so delicate that a number of precautions have to be taken to insure no outside vibrations can jolt it. The bird's egg is cradled gently in a plastic basket attached to the top of a support stem. A pad is placed under the instrument which is enclosed in a foam box on the shelf of an incubator, supported on foam pads. The whole system is located within a double-walled sound-proof room.

Even so, if someone taps gently on the outside wall of the room, the instrument responds to the disturbance.

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PHYSICS

First Reactor to Produce Electricity Shut Down

► THE EXPERIMENTAL breeder reactor in which electricity was first produced from atomic energy is being shut down.

On Dec. 20, 1951, Experimental Breeder Reactor I in Idaho Falls, operated by the Argonne National Laboratory, Illinois, was the scene of the first operation of a steam turbine by heat produced from nuclear reaction of uranium-238.

The facility will be replaced by a new reactor capable of producing 100 times as much power as its predecessor.

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BIOCHEMISTRY

Chronic Lung Disease Replaces TB as Killer

► DEATHS FROM the chronic lung disease, emphysema, are increasing as deaths from tuberculosis have decreased, and the two facts have been linked in a study of upstate New York death records.

Treatment of tuberculosis by the newer drugs has prolonged the lives of tuberculous persons, particularly those with advanced disease, the study shows.

Julius Katz and Solomon Kunofsky of the New York State Department of Health, Albany, said, however, that unfortunately the drugs are unable to repair the damage done to the lungs by TB.

Although the patients' lives are spared for the time being, their lungs become more susceptible to emphysema. In this disease the air spaces of the lungs are enlarged and breathing is difficult.

The two lung diseases are often found together on death certificates, either as primary or contributory causes of death. Emphysema has increased more among TB patients than in the nontuberculous.

Findings from the study were published in the American Review of Respiratory Diseases, May, 1964.

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PUBLIC HEALTH

Cigarette Smoking Effect Seen on Blood Clotting

► EARLIER AND MORE frequent heart attacks could be due to the fact that cigarette smoking increases blood clotting, two scientists believe.

The stickiness of blood platelets, which aid in blood clotting, showed a dramatic 84.4% increase in tests on nonsmoking students asked to smoke nonfilter cigarettes.

Each of 20 healthy medical students who did not ordinarily smoke was given a blood test before smoking. He was then asked to smoke a cigarette, inhaling deeply and finishing it within five minutes. Two of the students became violently ill and could not finish the experiment. Blood tests on the other 18 five minutes after smoking showed an increase in blood clotting time for all.

Help in supporting the research of Drs. Julian L. Ambrus and Irving B. Mink of the Roswell Park Memorial Institute, Buffalo, was provided by the American Cancer Society.

These researchers believe the equilibrium of clotting could be disturbed by cigarette smoking and that this could give rise to plaques that harden and obstruct the arteries, thus causing heart attacks.

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PHYSICS

New Atomic Particle Found at Brookhaven

► A NEW INHABITANT of the atomic nucleus has been discovered by a team of physicists from Syracuse University and Brookhaven National Laboratory.

The discovery was made in photographs of atomic collisions of particles speeded to very high energies in the Brookhaven giant atom smasher. The new atomic particle is being temporarily called the "chi-zero." It will not be formally christened until more is known about its properties.

The particle has a mass of 960 million electron volts, or Mev. It was found by Dr. J. Leitner and four other Syracuse physicists and Dr. P. L. Connolly and five other scientists from Brookhaven.

Scientific details of the find were reported in Physical Review Letters, 512:546, 1964.

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TECHNOLOGY

Portable Two-Way Radio Used in Office or Field

► A NEW two-way radio, which runs on house current, a car battery or its own power supply, has the highest radio power output ever produced in a self-powered hand-carried design.

The 18-watt unit, developed by General Electric Company, Schenectady, N. Y., is completely transistorized, saving much space and weight.

The rechargeable nickel-cadmium battery pack requires no external charger, permitting recharging anywhere that ordinary AC power is available.

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