MEDICINE

Heart Standards Set For Premature Babies

➤ PREMATURE BABIES' heart patterns can now be compared by doctors with patterns of "normal heart standards" for babies during the first six months of life.

The instrument used to establish the standards is the vectorcardiograph. It is similar to the commonly used electrocardiograph, which uses an electrode on the skin to measure electrical signals of the heart. But instead of one, the vectorcardiograph uses eight electrodes to record both the size and direction of the impulses, giving a "far more accurate and sophisticated picture" of heart action.

For the first time, researchers at Western Reserve University School of Medicine recorded and tabulated vectorcardiograms from premature infants, and used them to evolve standard patterns for various periods of life, from 24 hours to six months. The standards will be published as a series of tables this spring.

In a normal baby's heart, the right ventricle is much stronger than the left. In a premature infant, however, as in an adult, the difference is less pronounced.

Dr. Jerome Liebman, Oglebay Fellow in pediatrics at the School, together with Thomas D. Downs, assistant professor of biometry and Henry C. Romberg, a third year medical student, analyzed more than 300 vectorcardiograms from 50 premature infants.

Support for the three-year research program came from the Cleveland Area Heart Society (now the Heart Association of Northeastern Ohio), the National Institutes of Health and the National Institute of General Medical Sciences.

• Science News Letter, 89:72 January 29, 1966

PUBLIC HEALTH

New Program in Bays: Aquaculture of Oysters

➤ A LITTLE THOUGHT and a lot of fresh water and care for oysters, mussels and clams will go a long way toward saving the $45 million shellfish industry, experts agreed on the 40th anniversary of the National Shellfish Sanitation Program.

One urgent situation needing immediate attention is the increasing pollution of shellfish beds in the estuaries and bays of the 22 contiguous coastal states of the United States. Shellfish from these polluted waters can cause disease if consumed.

Already 1.3 million acres out of eight million acres of shellfish beds have been closed because of the sewage and other contamination dumped in the waters, according to the National Register of Shellfish Growing Areas.

Oysters, clams and mussels can clean themselves of contaminants, including harmful bacteria and viruses, within 24 hours after being placed in fresh water. This is a natural process of purification, much like the man-made pasteurization of milk or the chlorination of public drinking water.

Under sanitary standards suggested by the shellfish industry and the U.S. Public Health Service, shellfish taken from polluted waters should be placed in special tanks through which sterilized water is circulated. When the washing procedure is bypassed, people can and have become ill.

A serious epidemic of typhoid fever occurred in the winter of 1924-25, leading to the creation of the National Shellfish Sanitation Program in 1925. Since then, no illnesses have been traced to eating shellfish which were grown, handled and processed in accordance with approved procedures.

Eighty cases of infectious hepatitis that occurred in Mississippi and Alabama in 1961 were traced to consumption of raw unclean oysters. Later, hepatitis was associated with raw clams in New Jersey and Pennsylvania, and then in Connecticut and Rhode Island. A small outbreak of hepatitis occurred in North Carolina due to consumption of raw oysters illegally harvested and sold outside of commercial channels.

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PUBLIC SAFETY

Computer Used to Study The Science of Fires

➤ FLAMES, RISING HEAT and currents of air are being programmed on a computer for better fire control.

Data are taken from actual fires and include the time an actual fire started, the time adjacent buildings were ignited and the prevailing wind conditions. One fire programmed on the computer occurred in South Boston on May 22, 1964. In a period of two and a half hours, seventeen wood frame residential structures were destroyed and 22 others damaged.

The houses were duplicated in exact scale models on a table. Less than an inch in length, each house model contained miniaturized electronic equipment, including radiation and conventional heat sensors and generators.

When controlled electric energy was applied to the sensors, they put out heat "signals," which if amplified, would correspond to the heat actually generated during the real fire. Heat radiation from one model ignited the model representing the house next door.

The programming of fire characteristics for an electronic computer requires two sources of data—from an actual fire and from controlled burning of models, according to scientists at Southwest Research Institute, who are working under a contract from the Defense Atomic Support Agency.

With data from the actual fire and the model, the simulator recreates the movement and intensity of flames during an actual fire history. By building up a background of histories, scientists hope to study the science of fires and devise better fire control methods.

• Science News Letter, 89:72 January 29, 1966

IN SCIENC

MEDICINE

Upset Stomach Virus May Cause Pneumonia

➤ A VICIOUS but versatile virus ordinarily associated with stomach upset has been found to double as a cause of pneumonia in premature infants.

The virus, ECHO 22, was recently discovered infecting 24 out of 49 premature babies who developed pneumonia in two recent outbreaks at Kings County Hospital, Brooklyn.

Until now ECHO 22 was believed to be a cause only of diarrhea and other gastrointestinal upsets, says Dr. Summer Berkovich, assistant professor of pediatrics at the State University of New York Downstate Medical Center, Brooklyn.

The runny noses of some of the babies were what gave the virus away.

Several nurses had listed the symptom routinely in their daily records. Dr. Berkovich noticed the recurrence of runny noses in these reports and decided to check out the possibility of a virus. This is quite a task in the case of ECHO 22, since the virus multiplies slowly and poorly in most commonly used tissue cultures.

The source of the virus infections is very difficult to determine, the doctor said. They may be carried by hospital personnel. Another possibility is that some babies are actually born infected and then serve as a "reservoir of disease" within the nursery for the premature.

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PUBLIC SAFETY

Radiation to Keep Fish Fresh on Research Ship

➤ GAMMA RADIATION from the world's first shipboard food irradiator will keep freshly caught fish from spoiling.

Eleven inches of lead shielding will protect crewmen of the U.S. Department of Interior's research fishing vessel, Delaware, on which the irradiator will be installed.

Radiation has already been shown to be a remarkable preserver of foods. The Food and Drug Administration has cleared radiation treated bacon, potatoes, wheat and wheat products for human consumption, and more foods are expected to be added.

The Delaware's irradiator, which measures seven feet high by four feet square, can process 150 pounds of seafood per hour. The heart of the device is 46 strips of steel-jacketed cobalt 60, each about a foot long and three-quarters of an inch wide.

A second irradiator, identical to the first, will be loaded with cobalt 60 and then sent to Louisiana State University for studies of shrimp and oysters.

• Science News Letter, 89:72 January 29, 1966

E FIELDS

PALEONTOLOGY

Ancient Worm With Teeth Found in North Illinois

➤ A WORM WITH TEETH, a wagging tail and a curious bar protruding from the back of its head used to roam the offshore waters of northern Illinois about 280 millions years ago.

This little creature, nicknamed the Tully monster after its discoverer Francis J. Tully of Lockport, Ill., has been formally dubbed a new genus by Eugene S. Richardson of the Chicago Natural History Museum, reporting in Science, 151:75, 1966.

The animal, found in fossil form, was two to ten inches long, with several small sharp triangular teeth in a slot in its snout, and a cross bar projecting on both sides of its body. Its tail had thin and mobile triangular fins.

The Tully monster, or *Tullimonstrum gregarium*, were at one time quite abundant in shallow water broken by mud bars and low, unforested islands.

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GEOPHYSICS

Volcano Residents Are Blase but Watchful

➤ EUROPE'S LARGEST VOLCANO and one of the world's most active sputtered for two days, causing some alarm among scientists, but the Sicilian farmers living on the slopes of Mt. Etna hardly noticed.

Mt. Etna has been spewing out fiery ashes and lava since at least the eighth century B.C., and it is still active, although some observers think the giant has quieted down.

Almost every year the 10,741-foot mountain erupts. Sicilians will pause, listen and go on with their work. That they still pause and listen, however, indicates a central fact about Sicily's famous volcano: no one really knows how tame it is.

The last big eruption was in 1960. Authorities said then that the activity of the central crater was Mt. Etna's largest in modern times. Fortunately lava flow did not destroy any villages.

Violent eruptions number about 80 within written history. One of the biggest, in 1169, buried 15,000 people and the entire city of Catania 10 miles away on Sicily's east coast. Five hundred years later explosions lasting 40 days almost filled the Catania harbor with lava.

Despite the uncertainty of living within a hundred miles of Mt. Etna, the Sicilians keep returning again and again, probably because the lava soil is among the richest on earth. In some years harvest from the large farms and vineyards have been gathered not once but five times during one season.

Almost as thick as its lava coat are the legends Mt. Etna has gathered since Greek times.

Ancients called the furnace the Forge of Vulcan. In one legend Zeus used the mountain to crush a monster with 100 serpent heads.

Most recently even Homer has been placed there. Ernle Bradford, an Englishman who found and traced what is now accepted as the best description of Ulysses' Mediterranean journey, placed Ulysses at Taormina, like Catania some 10 miles from the mountain.

Homer wrote of the Sun God's Pastures where sacred bulls grazed. Ulysses' hungry men killed one of the animals and had to flee to the sea to escape the wrath of the gods.

• Science News Letter, 89:73 January 29, 1966

CONSERVATION

Wildlife, Rivers, Shores Set for Congress Action

➤ WILD ANIMALS and thoughtful humans will be watching to see if members of the 89th Congress will rack up such huge conservation successes this second session as they did during the first session.

One of the first bills slated for early approval by the Senate is Bill S. 1446 to set aside five clear streams as a start on the National Wild River Preservation System.

This bill calls for intensive study on 11 other natural streams and rivers to place them under possible protection before they are damaged or destroyed.

Separate bills will bring attention to the Saint Croix National Scenic Riverway of Minnesota and Wisconsin, and the Hudson Highlands National Scenic Riverway in New York. Proposals are expected to set aside the Buffalo River in Arkansas as a National River.

Another bill dear to the hearts of those trying to preserve wildlife from the onrushing human race is the proposed legislation to protect rare native species of mammals, birds and fish. The House has passed the bill, and the Senate is expected to do the same in short order.

Members of the Congress are expected to continue emphasis on Federal grants to cities for construction of waste treatment plants in an effort to control water pollution. Current construction grants set for $150 million per year expire at the end of fiscal year 1967, which begins July 1, 1966. A massive program for construction grants may be proposed to authorize up to five million dollars over the next five years.

Present grant authorizations for air pollution control also expire after fiscal year 1967. Proposals to extend them will be introduced, possibly to expand the ceiling to $50 million.

Several bills on setting aside some of the nation's dunes, beaches and parks may be approved this year.

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MEDICINE

Brain Injury Diagnosis Aided by Modern X-Rays

➤ HEAD X-RAYS which show up brain fractures, tumors or stroke effects in the head can be detected by putting air into the brain cavities.

Procedures for visualizing injuries of diseases that cannot be seen with X-ray alone were made known to a forum at the New York Academy of Sciences by Dr. Juan M. Traveras of the Washington University School of Medicine, St. Louis.

Pneumography is based on the principle of air in the brain cavities. The procedure calls for a slight reduction in the amount of spinal fluid in these cavities and its replacement by air. With this change, the radiologist's films can show the effect of pressure defects on the air-filled cavities, displacement of brain substance and other conditions.

Another common aid is called angiography, a method that makes visible the arteries within the skull. It can reveal a greater area of the head than pneumograms generally show.

Ultrasound and thermography, two procedures still in the testing stage, were developed to eliminate patient discomfort during examination and to reduce chances of danger to the ailing patient.

Ultrasound, or echoencephalography, calls for a beam of light-pulsed ultrasound to be passed into the head. Returning echoes are recorded on tape, thus mapping out the exact position of the midline structures. If a structure is displaced, disease is present.

Thermography deals with temperature differences between diseased and normal tissue.

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MEDICINE

Shortwave Radio Station To Help Jungle Doctors

➤ DOCTORS in jungle hospitals will have a chance to hold consultations by radio.

Quick medical assistance for isolated jungle physicians is assured by Duke University, Durham, N.C., for at least two years through a $25,000 grant from the Mary Reynolds Babcock Foundation in Winston-Salem, N.C.

Physicians with shortwave radio installations can get fast information by way of radio-telephone hookup that will bring them the latest information on diagnosis, treatment and prevention of diseases.

A 1,000-watt transmitting and receiving station is being set up on top of the Duke Medical Center. It will use shortwave radio communication on frequencies allocated to amateur radio operators or "hams."

Instant processing of electrocardiogram data can be done by a data-processing facility. EKG data from a patient in a jungle hospital could be transmitted over the radio-telephone hookup to the processing center and the results sent back to an overseas doctor in a matter of minutes.

• Science News Letter, 89:73 January 29, 1966