

## MEDICINE

**Record Infant Heart Rate Separately During Labor**

► CHILDBIRTH has become a great deal safer for mothers but not for babies during the last 20 years, Drs. Edward H. Hon and O. W. Hess, department of obstetrics and gynecology at Yale University School of Medicine, New Haven, Conn., report in *Science* (March 22).

The birth process kills 160,000 infants every year, as well as afflicting a large number of others with cerebral palsy and mental retardation, they report.

The common basis for the death and injury is possibly a lack of oxygen getting to the baby during labor. Up to now there have been no reliable means of telling if the unborn child is in "fetal distress," they said.

To help solve the problem, the researchers have designed a special electrocardiogram to give a continuous record of the baby's heart rate during labor and delivery.

Electrocardiograms have been used before to study fetal heart rates but they always recorded a combination of both the mother's and baby's heart rate, making it difficult to get an accurate picture of the baby's heart alone.

The new device is actually a combination of two of the machines plus an electronic "subtracting" circuit. One machine registers the mother's heart rate alone while the other records the mother-child combination rate. Then the mother's rate is electronically canceled out from the combination rate, leaving only the baby's heart rate.

What are considered "normal" fetal heart rates today are open to question, the researchers reported.

By charting a number of normal labor periods they hope to set up new standards for normality, which will aid in spotting those unborn babies who are in distress.

*Science News Letter, April 6, 1957*

## SURGERY

**Ice Bath Surgery Safer With New Drug**

► A "HEART TONIC" called strophanthidin reduces the threat of heart failure after surgery performed under hypothermia or "refrigerated sleep."

The drug is obtained from the seed of an African shrub and was successfully tested on animals by Drs. Thomas A. Lombardo, Leo R. Radigan and Andrew G. Morrow at the National Heart Institute, National Institutes of Health, Bethesda, Md. It has since been used on more than 20 human surgical patients at the National Heart Institute.

Hypothermia is the technique of lowering the body temperature in an ice bath to 12 degrees below normal. This reduces the body's need for oxygen from the circulating blood and has made possible many forms of surgery on the heart itself. It gives the

surgeon eight or ten minutes to clamp off the heart's blood flow and work inside, but is sometimes followed with heart muscle failure after the operation.

An apparent cause of the failure in some cases is that the heart muscle needs a more continuous supply of oxygen than other body tissues. Even in the chill of hypothermia it soon weakens and may fail to pump effectively after the surgeon restores blood flow through the heart.

The drug proved to be more effective than any of the more common digitalis heart stimulants because of its comparatively fast, short-term action.

Dr. Lombardo is now with the Medical College of Alabama, Birmingham, and Dr. Radigan is at Indiana University Medical Center, Indianapolis.

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## MEDICINE

**Report Suavitil Relieves Depression**

► A DRUG that promises to work in types of mental disorders that are not helped by the tranquilizing drugs was reported by its developer, Dr. Erik Jacobsen of Copenhagen, Denmark, to physicians attending the American Academy of General Practice meeting in St. Louis, Mo.

The drug is called Suavitil and is classified as an antiphobic drug. Its main difference from presently available tranquilizers and relaxants is that it works in depressions and obsessive compulsive states, Merck Sharp & Dohme, Philadelphia, producers of the drug, reported.

It is reportedly successful in treating psychosomatic disorders such as peptic ulcer and chronic compulsive alcoholism as well as mild depressions and compulsive disorders such as fanatical cleanliness or filthiness.

The drug is not a sedative and has no hypnotic effect, but leaves the quality and nature of thinking virtually unchanged. Unlike the tranquilizers, Suavitil improves discrimination and learning, and, at proper dose levels, even increases the precision of performance.

For neurotic patients, it puts disturbing situations in their proper perspective and reduces tension, anxiety, depression, fear and compulsion, Merck Sharp & Dohme reported.

Technically known as benactyzine (2-diethylaminoethyl benzilate hydrochloride), Suavitil is believed to prevent anxiety from ever reaching the cerebral cortex of the brain.

The drug has been extensively used by physicians in England and Denmark who reported that it relieves the milder depressions as well as tension and anxiety.

The effects are subtle and the patient himself may not notice the gradual disappearance of his symptoms. No signs of addiction or symptoms of withdrawal have been noticed with the drug, the pharmaceutical company reported.

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**IN SCIENCE**

## MEDICINE

**Use Ultrasonics to Treat Bone Cancer**

► BONE CANCERS in animals have been at least partially destroyed by the use of ultrasonic energy, researchers at the Mayo Clinic, Rochester, Minn., reported in the *Archives of Physical Medicine and Rehabilitation* (March).

The ultrasonic energy, made up of sound waves too high in frequency to be heard by the human ear, was applied to experimental bone cancers in rabbits. In one rabbit, an estimated 90% of the cancerous cells were killed.

The main cause of the cell destruction appears to be the heat generated in the bone. The outstanding feature of ultrasound is its ability to heat bone selectively in a more effective way than any other known agent, they reported.

In animals showing the signs of tumor formation, the bones treated with ultrasound did not develop tumors, although the untreated ones did. This is not conclusive proof, however, that the ultrasound prevented the tumor, the researchers cautioned.

Since all the ultrasonic energy came from a single source, all treatment areas may not receive the same intensity of treatment. Some live tumor cells can still be found afterwards, they said.

Additional studies using several sources in an attempt to produce more uniform intensities are now underway, they said.

The work was reported by Drs. Joseph M. Janes, David C. Dahlin, J. F. Herrick and George M. Higgins of Mayo Clinic and Mayo Foundation, Rochester, Minn.

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## SAFETY

**Most Drivers Not Able to Drive at Speed of Over 50**

► MOST DRIVERS are not qualified to drive over 40 to 50 miles per hour even on a dry road, declare the experts at the Iowa State College driving laboratory.

"This may sound like a radical statement, but we are convinced that it is true," they report.

An increase in speed from around 50 miles an hour on the average to around 58 miles per hour in the state of Iowa has been accompanied by an increase of about 25% in fatalities. Some drivers can possibly drive at this rate but it takes extreme caution and good judgment to do so.

At least 95% of drivers, they warn, should keep their speed down well around 50 miles per hour if they expect to stay out of serious accidents.

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# CE FIELDS

## AGRICULTURE

### Fire Ant Fails to Spark Mad Wildfire

► THE FIRE ANT, a small pest with a big bite that has set the nation's legislators aflame, has failed to do more than warm agricultural experts in Washington. They say the fire ant is an ember, but no conflagration.

An undesirable alien from South America that jumped ship in Mobile 27 years ago, the fire ant is capable of killing small farm animals and making life generally miserable for farm workers. When it bites, it feeds into the wound irritating fluid that causes festering sores.

The fire ant received national publicity when the House Agriculture Subcommittee was "alerted" to the fact that the ant was "invading" the North.

Despite the publicity and sudden interest, agricultural experts say that this is no new emergency, but rather, "a culmination of interest."

They point out that the pest can be easily controlled with the newer chemical insecticides, such as dieldrin and chlordane, applied directly to the two- to three-foot mounds the ants build for homesteading.

Perhaps one factor that makes the problem a national one is that individual efforts to rid an area of the fire ants meets with little, if any, success. As soon as a farmer clears them out, they return. What is needed, the experts explain, is a community effort.

The reported invasion of the North by the ant is a slow one and not likely to menace the United States overnight, if at all. The ants have been in the Carolinas for the past three to five years and although they crossed the Alabama line into Tennessee a few years ago, they were eradicated. Researchers say that they do not know if the ants could survive in the North.

There is little hope of total eradication of the fire ant, but control is possible. Scientists are generally agreed that the pest is here to stay.

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## BIOCHEMISTRY

### Large Amounts of Life Substance From Bacteria

► A PRACTICAL CHEMICAL METHOD for getting generous amounts of DNA (deoxyribonucleic acid) from a bacterial source is reported by Dr. Roland F. Beers Jr., of the Robert W. Johnson Laboratory, Children's Hospital School, Inc., in Baltimore.

Up to now DNA, the basic life material associated with chromosomes and genes, has

been available only in small quantities from yeast or certain mammalian tissues, Dr. Beers told Science Service.

But this method makes available a much greater supply of the substance for further research work. It is the first practical method for extracting DNA from bacteria and has many commercial possibilities.

The bacteria used are *Micrococcus lysodeikticus*, a strain that can be grown on a very large scale. From them can be isolated a chalky mixture of the two nucleic acids, ribonucleic acid (RNA) and deoxyribonucleic acid (DNA). Dr. Beers reported his findings in *Nature* (March 23).

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## BOTANY

### Find New Enzymes In Spinach Leaves

► TWO ENZYMES termed essential for photosynthesis, the process responsible for the world's entire food supply, have been discovered and isolated in spinach by Drs. Anthony San Pietro Jr., Andre Jagendorf and Mordhay Avron at John Hopkins University.

One of the enzymes, discovered by Dr. San Pietro, has been tentatively called "photosynthetic pyridine nucleotide reductase." It is necessary for the transfer of hydrogen to an important biochemical substance, diphosphopyridine nucleotide, tabbed DPN.

Photosynthesis, Dr. San Pietro explained, involves two steps; the splitting of water by sunlight yielding free oxygen gas and hydrogen; and the combining of the hydrogen with carbon dioxide to form carbohydrates or sugars.

The new enzyme plays a major role in facilitating the transfer of the hydrogen once it has been obtained from the photochemical splitting of the water.

The second enzyme, discovered and isolated by Drs. Jagendorf and Avron, was isolated from spinach chloroplasts, the chlorophyll-containing structures of the cells. As yet unnamed, the enzyme plays an important role in the reactions of hydrogen prior to its ultimate combination with carbon dioxide.

It is during these prior reactions, the scientists pointed out, that the energy obtained from the sunlight is transformed into "useful chemical energy" in the form of a chemical compound known as adenosine triphosphate, or ATP. This ATP, which provides energy for all life processes, aids here in the conversion of carbon dioxide to carbohydrates.

The newly-discovered enzyme, which the researchers say is directly involved in making ATP photosynthetically, is now being studied intensively.

Drs. San Pietro and Jagendorf are professors of biology in the McCollum-Pratt Institute of the University. Dr. Avron is a visiting scientist at the Institute from Israel.

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## MEDICINE

### Human Placenta Heals Varicose Vein Ulcers

► PATCHES made from human placenta promote quick healing of varicose vein ulcers, Dr. Fred R. Denkwalter of Ohio State University College of Medicine, Columbus, reported in *Archives of Surgery* (March).

The novel treatment method is similar to one devised for war wounds by a French army doctor and can reduce the healing time of the ulcers from months to a matter of weeks, Dr. Denkwalter reported.

The placenta, a round flat organ that establishes connection between mother and unborn child through the umbilical cord, is obtained immediately after delivery. One layer of it is then washed with salt water, cut into cubes, and can be stored in refrigerated jars for three weeks.

For use, the cubes are cut to the desired shape and placed in the ulcer. Then the wound is covered with gauze and an elastic bandage.

Placental tissue is naturally concerned with cellular growth and probably stimulates the growth of new cells in the ulcer. It may also act as a "lattice" through and around which healthy tissue may grow.

Placenta was also used to treat six leg ulcers from other causes such as hardening of the arteries and burns, but it was generally unsuccessful for these conditions.

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## CHEMISTRY

### Tin Plating Bath May Show Isotope Enrichment

► THERE IS A GOOD CHANCE that there will be demonstrated a second example of the enrichment of one variety or isotope of a chemical element through long-continued electrolytic action.

Samples of a long-used tin plating bath have been secured by Prof. S. Tolansky of Royal Holloway College at Egham in Surrey, England, and will be investigated to determine whether the amount of the heaviest tin isotope 124 is larger than the normal abundance of that kind of tin in nature.

The classic example of isotope enrichment was the discovery that there was more heavy hydrogen, or deuterium, in the form of heavy water in electrolytic cells used for a long period than is found naturally. This was made use of in producing heavy water for the atomic energy program.

There is about six times the percentage of tin's heaviest variety, mass 124, as the lightest mass 112. The tin electrolyte that has been used for one and one-half years is expected to show an increase in this six-to-one ratio. Tin has been extracted in small quantities and is being offered for mass-spectrographic analysis.

Prof. Tolansky's report appears in *Nature* (March 23).

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