

## CARDIOLOGY

**Multiple Births Predicted  
16th Week of Pregnancy**

► **MULTIPLE BIRTHS** may be predicted as early as the 16th week of pregnancy through improved techniques of recording heartbeats of the unborn.

This is reported by Dr. Saul David Larks, biophysicist at the University of California at Los Angeles Medical School, and Dr. Kanakabeena Das Gupta, visiting obstetrician from India, in the *American Heart Journal*. The study is being supported by the U. S. Public Health Service.

They have been able to record fetal heartbeats as early as the 11th week of pregnancy, those of twins at 16 weeks and of triplets and quadruplets relatively early in pregnancy.

This technique may prove a safer and more practical method of detecting multiple births early than use of X-rays, they believe.

Characteristic spikes of the electrocardiogram seem to reflect the way the baby will be presented at birth. When spikes are up, a head presentation is indicated. Spikes down indicate breach presentation.

Fetal distress detected by the technique may be an aid to clinicians and help to minimize certain difficulties in labor, they say.

The studies are generally helping to fill in missing chapters in the history of early pregnancy, before one can hear or feel anything, Dr. Lark says. He believes he will be able to demonstrate a heartbeat as early as four to six weeks.

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## MEDICINE

**Arsenic in Tobacco  
May Cause Lung Cancer**

► **ONE OF** the deadliest poisons known to man may soon be under fire as the cause of lung cancer among cigarette smokers.

Some scientists believe that arsenic, contained in insecticides sprayed on tobacco plants, may be doing the damage.

A group of Texas scientists report in *Cancer* that arsenic is the only component of cigarette smoke definitely known to cause cancer in man, yet little scientific and medical attention has been directed to its presence.

They found concentrations of arsenic in cigarettes as high as 17 times the maximum concentration allowed in foods by the Food and Drug Administration. Cigarettes are not regarded as a food or drug and are not regulated for arsenic content.

The report was made by Drs. Robert H. Holland, Russell H. Wilson, Dale A. Clark and Henry C. Lanz, and Antonio R. Acevedo and Mary Sue McCall. They are connected with the medical research and radioisotope units of the Veterans Administration Hospital and the surgery department of Southwestern Medical School of the University of Texas, both in Dallas. Their study was supported by the National Cancer Institute.

They found the arsenic content in cigarettes has increased between two and six times in the last 25 years.

"The coincident increase in lung cancer deaths during this period suggests a causal relationship," they said. "However, this . . . remains to be proved by further laboratory and clinical research."

Most of the arsenic, they said, is believed to come from insecticides used on the tobacco plants. In five regular-sized, unfiltered brands of cigarettes they found arsenic concentrations ranging from 42.5 to 52 parts per million. The FDA allows a maximum of three parts per million of arsenic trioxide in foods.

Of the 45 micrograms of arsenic contained in the average cigarette, nearly five micrograms is inhaled. Filters, they reported, removed about 30% of the arsenic that would otherwise be inhaled.

While they cited opposing scientific viewpoints, the Texas group believed that the habitual inhalation of arsenic, attached to irritating particles of tar, could ultimately result in lung cancer.

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## SURGERY

**Newborns Better Surgical  
Risks Than Older Babies**

► **THE BEST TIME** to perform surgery on a newborn infant is within the first three days of its life.

The younger the infant, the less disturbing will be a major surgical procedure, Dr. H. William Clatworthy Jr. of Columbus, Ohio, explained at the clinical meeting of the American Medical Association in Minneapolis.

The infant is in excellent nutritional state with high levels of hormones and inherited antibodies circulating in the blood during the first three days of life, he said.

In addition, newborn babies are less affected by pain and require smaller amounts of anesthetic agents. They also recover rapidly.

However, after three days have elapsed from the date of birth, surgery should be suspended until the infant is two weeks old. The intervening time is a period of transition in the life of a newborn. The infant, at this time, is losing weight, and has a sluggish adrenal response.

Dr. Clatworthy noted an increased interest in children's surgery, in that one-quarter of all surgery, other than that related to maternity, tonsillectomy and adenoidectomy, is being done in children under 16 years of age.

The first three causes of death among youngsters, excluding prematurity, are congenital defects, accidents and malignant disease.

"Fortunately, for children everywhere, there appears now to be a reawakening of concern for the child and his technical surgical problems—his peculiar pathology—his physical, physiological and emotional limitations—and to prevention of unnecessary morbidity as well as mortality," the doctor concluded.

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**IN SCIEN**

## MEDICINE

**Four Virus Types  
Cause Meningitis**

► **FOUR DIFFERENT** types of a recently found group of viruses are causing the same disease, meningitis.

The culprits are numbered echo viruses four, six, nine and 16. There are at least 20 different types of identified viruses in the echo family, Dr. Tom D. Y. Chin of Kansas City, Kans., reported at the clinical meeting of the American Medical Association in Minneapolis.

These viruses can be identified; however, doctors do not yet know what diseases are caused by some of them, he said.

The four viruses that are found among persons suffering from meningitis are associated with slightly different symptoms of the disease. These symptoms include variations of combinations of stiff neck, severe headache, sore throat, nausea, vomiting, fever and general irritability, Dr. Chin said.

The highest attack rate occurs among children aged 14 or under. Approximately 25% of the persons who come in contact with victims of the viruses also become infected, but many do not have any symptoms. Many simply develop an immunity.

The echo viruses are known to cause meningitis, summer rash, particularly among children, diarrhea, acute respiratory infections and sometimes a mild paralysis.

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## ROCKETS AND MISSILES

**Army Sends 13-Lb. Moon  
Upward in New Probe**

► **AN IMPROPER** fuel mixture may have been responsible for the failure of the U. S. Army's Pioneer III space probe, Dr. Werner von Braun, Army missile scientist, reported.

The 13-pound probe, carried in the nose of a Juno II rocket complex, was launched at 12:45 a.m. Saturday morning, Dec. 6, from Cape Canaveral, Fla. It hit a peak altitude of approximately 66,654 miles before plunging back to earth after about 38 hours of life. All four rocket stages fired, but it is thought the first stage burned out some three seconds too soon.

Intended to go past the moon and to go into orbit as a new man-made planet of the sun, Pioneer III fell short of its goal. However, it is expected to provide a great deal of information on the intensity of the radiation zone believed to extend thousands of miles into space.

This zone may be as high as 1,000 roentgens an hour some 8,000 miles out, a dose twice as high as that considered lethal to man.

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# CE FIELDS

## AGRICULTURE

### Grass-Wheat Hybrid Promises Better Wheat

► SEVERAL new wheat-grass hybrids that offer the promise of better wheat and new crops for conservation and forage are being tested.

The hybrids are also long-lived, U. S. Department of Agriculture scientists reported.

Two perennial wheat-Agropyron selections grown at the University of California experiment station at Davis gave as good yields as the best local wheats. Although second-year yields from the hybrids, developed by USDA scientist C. A. Suneson, were much lower, scientists believe weed control and fertilization can increase the yields.

High protein flour was produced from one hybrid selection. Others have shown high disease and drought resistance.

For some 35 years, USDA scientists have been experimenting with crosses of wheat and plants belonging to the Agropyron genus. W. J. Sando, now retired, selected this genus of grass because of the desirable qualities he believed it would contribute to wheat.

Scientists are hopeful that undesirable qualities of the hybrids, fragile spikes, sterility, and low test weight of the grain, can be eliminated in breeding experiments.

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## NUTRITION

### Americans Starve as They Eat and Grow Fat

► MILLIONS OF Americans are growing fat and starving themselves at the same time.

Poor nutrition prevails to a disturbing degree in the United States and is generally misunderstood, ill-defined and ignored, two Evansville, Ind., physicians told colleagues at the American Medical Association's clinical meeting in Minneapolis. The doctors, Harold D. Lynch and W. D. Snively Jr., charged that everyone considers himself to be a nutrition expert.

They urged the nation's family doctors to push aside the "fads, fancies and fetishes of the laity," and tackle the problem from the standpoint of clinical medicine.

Routine examination of school children shows poor health and poor nutrition are at least as common in the prosperous school districts as in the poorer neighborhoods. Malnutrition is not necessarily depicted by the skinny, scrawny, tattered individual, a product of the slum area. Many persons simply starve their bodies of food they need while growing fat on food they do not need, the doctors pointed out.

There is an abundance of protein-containing food in the U.S. We have plentiful

supplies of fowl, meat, milk, eggs, cheese and cereals, as well as vitamins and minerals. Our children are carefully provided with minerals and vitamins while the master nutrient, protein, is neglected, Dr. Lynch said.

Children, in particular, pose a difficult problem because feeding deteriorates into a selling job as infants grow. Mothers give the child whatever they can and whenever it suits the fancy of the child.

For instance, beverages, including milk and juices, can be poured down fairly easily. But protein foods require chewing, a task which many youngsters are reluctant to perform. In addition, protein foods are not sweet. On the other hand, desserts, sweets, and palatable between-meal snacks readily win the younger child's approval. Older children and adolescents need after school and bedtime snacks that include carefully selected protein foods, the doctors concluded.

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## EVOLUTION

### Control of Evolution Now Within Man's Grasp

► CONTROL OF HUMAN evolution—if we want it—is actually within our grasp, a noted biologist predicted.

This is an example of the advances that have been made recently in human genetics, Dr. Bentley Glass of the Johns Hopkins University said. Human genetics has the difficulty of not being able to make experimental human test-crosses, he said, but the science does have its advantages.

Concerning the future, Dr. Glass said it is safe to predict that great strides will be made in experimental population control by means of tissue culture genetics. The possibility of exposing tissue culture cells carrying some defective gene to DNA (deoxyribose nucleic acid) derived from normal individuals and thus restoring the defective cells is a "spectacular" concept.

The great advances already made in the artificial synthesis of bacterial DNA suggest many fascinating possibilities of producing and modifying human genetic material in the laboratory, Dr. Glass concluded.

In certain respects, Dr. Glass told a meeting of the University of Illinois Sigma XI chapter, human genetics offers opportunities which cannot be derived from the study of plants, animals or microbes. The vast size of human populations and a large amount of medical and anthropological information have made possible unforeseen advances in the study of man and his inheritable characteristics.

However, a great deal of work needs to be done in the field of mutations before we are able to estimate accurately the danger, for example, from subjecting the entire population to fallout, medical and dental diagnostic exposures to X-rays, or possible future exposures of all kinds. From studies of fruitflies and mice, it appears that some of our conceptions of the roles recessive and dominant genes play in affecting mutations must be revised, Dr. Glass explained.

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## BIOLOGY

### Timetable Found for Protein Biosynthesis

► IT TAKES just five and one-half minutes to complete synthesis of a molecule of ferritin in the liver.

The timetable for the biosynthesis of this iron-containing protein, believed to be the first time scientists have succeeded in timing such a synthesis, was reported by Dr. Robert D. Loftfield and Miss Elizabeth Ann Eigner of Harvard University.

Working with rats that had been fed a diet low in iron prior to the experiment's start, the scientists found that because of the diet there was no significant accumulation of the ferritin molecule in the rats' livers.

Injections of a colloidal iron oxide into the venous system of rats triggered the ferritin synthesis, Dr. Loftfield reported. Later two amino acids labeled with carbon-14 were injected. The rate of uptake for the radioactive amino acids into the ferritin of the rats' livers gave the scientists their "clock" for timing the protein manufacture.

"We found," Dr. Loftfield said, "that the incorporation of the labeled amino acids into ferritin starts slowly and gradually increases so that after six minutes the rate of incorporation is equal to the rate of net synthesis."

He estimated that this rate is between 2.4% and 8.3% of new ferritin per hour under experimental conditions.

Results of these chemical time trials for the protein, which were conducted in the J. Collins Warren Laboratory at Harvard's Huntington Memorial Hospital, are significant in the study of cell metabolism. This, in turn, is related to problems of cancer with its uncontrolled cell growth.

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## GENERAL SCIENCE

### Science News Coverage Increased Since Sputnik

► U. S. NEWSPAPERS have increased their science news coverage substantially since the Russians launched the first sputnik a year ago.

Responding to an inquiry from the National Association of Science Writers and New York University, 236 newspapers provided the following information:

Ninety-four papers give science news twice as much space as they did last year. Eighty-eight are allotting 50% more space, 42 have increased coverage slightly, 11 reported no change, and none said they decreased coverage.

Asked to specify the science news they thought had special interest, 189 papers cited satellites and outer space. Next was medicine (134 papers), atomic energy (129), agricultural science (77), military science (67), aviation (63), general research (37), new inventions for the home (25), engineering (17), astronomy (13), physics and chemistry (10), social sciences (7) and biological sciences (1).

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