

MEDICINE

Find Virus Cause of Infant Diarrhea

► **DISCOVERY** of a virus believed to be one cause of epidemics of diarrhea among newborn babies was announced to the Sixth International Congress of Pediatrics in Zurich, Switzerland, by Dr. Horace L. Hodes, pediatrician in chief at Mount Sinai Hospital, New York.

The virus was found in outbreaks of diarrhea among newborn babies on four different occasions in two hospitals in Baltimore, Md., and Washington, D. C.

Dr. Hodes does not suppose that this virus is the cause of all the outbreaks of diarrhea which sweep through hospital nurseries, sickening and often killing new babies. But apparently it is the cause of some and perhaps many of these epidemics.

In studies with Dr. Jacob S. Light, Dr. Hodes found that this virus would regularly produce diarrhea in young calves. The virus can perpetuate itself, multiplying in the animal's body.

Further evidence that the virus which caused the disease in calves was the one that made the babies sick came when Drs. Hodes and Light injected blood serum from two babies who had recovered from the epidemic diarrhea into two calves. This serum completely protected the calves from the infection, and the serum from two more recovered babies partially protected another two calves.

Material from stools of eight normal infants caused no disease in calves.

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AERONAUTICS

Faster than Sound Missiles Studied

► **A NEW** scheme to study the behavior of airplanes and missiles traveling faster than sound utilizes a tiny model of the object which is shot from a gun through very cold gas. In such a gas, sound waves travel relatively slowly.

The speed of sound is approximately 760 miles an hour at sea level under ordinary conditions, but in a dense gas, obtained by cooling, it is less. In this method very low sonic velocities are obtained by cooling the gas to very low temperatures, using liquid nitrogen.

This method was employed at the Langley Aeronautical Laboratory of the National Advisory Committee for Aeronautics and found successful. A report issued in Washington by the NACA states that the practicability of increasing the Mach number of a model by refrigeration of the test medium is established.

Mach number is the ratio of the speed of the object to the speed of sound. A Mach number of 6.7 was obtained in these

tests. This means the velocity of the model used was 6.7 times the speed of sound in the highly cooled gas used.

In the investigation, a commercially available 22-caliber high velocity gun was used to obtain velocities of some 4,200 feet per second. The chamber was filled with nitrogen gas. The low-temperature chamber was composed of two cylindrical compartments, one within the other. The cooled test gas was contained within the inner cylinder.

Focused shadowgraphs were taken through windows. They are known as schlieren photographs and show the shock waves about the model. Twin photocells operated the equipment to record the time required for the model to traverse the space between the cells.

Science News Letter, August 5, 1950

MILITARY SCIENCE

Light Tanks without Armor for Future

► **LIGHT** tanks without armor—or with very little armor—that can move fast over rugged terrain may one day replace the lumbering, almost road-bound 35- to 60-ton tanks in our armed forces.

This is the conclusion of Col. Hamilton H. Howze, now on duty with the Army General Staff, in an article in the *COMBAT FORCES JOURNAL* (August).

"Granting that the tank has lost much of its ability to plow through shot and shell (an ability that was always much overestimated)," he said, "it may gain a more than compensating mobility and destructive power."

Col. Howze wrote his article to the question: "Is the tank a dead duck?" He answered that with another question: "Is mobility obsolescent?"

"When the gasoline engine was developed," he pointed out, "the horse became obsolescent—but only because the motor could do the job better. It follows then that so long as the motor is capable of propelling a vehicle that can carry effective guns and heavy loads of ammunition—and other destructive devices—to and about the battlefield, there will be the greatest demand for its services. Only the shape of the vehicle will be changed."

New anti-tank weapons like the 3.5 bazooka, he intimated, far from outmoding the tank, serve only to influence its design and change its tactics. The new tank must learn to avoid the hit, rather than absorb it, and must improve its ability to kill. Barring radical improvements in armor, the tank cannot hope to wall itself off from projectiles.

"There is no weapon that presents a more challenging prospect," he concluded, "than tanks do for those of us who are willing to throw off the restrictions of the past."

Science News Letter, August 5, 1950

IN SCIENCE

CHEMISTRY

Carbon Dioxide from Coke with Iron Ore

► **A NEW** method of making carbon dioxide for use as dry ice and in soda pop and fire extinguishers has been developed in Cambridge at the Massachusetts Institute of Technology. It is a short cut over older methods and results in pure carbon dioxide directly by reacting coke with iron ore.

In the process, powdered coke and ore are mixed together and form a "fluidized powder" by means of a stream of pure carbon dioxide blown through them. The process is somewhat similar to one employed in the petroleum industry where a fluidized material is used as a catalyst in the refining process. The material is not actually a fluid but, because finely divided and kept alive by the current of gas, acts somewhat like a fluid.

In this new method of making carbon dioxide the mixture of coke, iron ore and gas bubbles like a liquid. The coke is converted to carbon dioxide by taking the oxygen from the iron ore. The resulting gas is drawn off and the ore, stripped of its oxygen, is regenerated with oxygen from the air and used over again.

Usually carbon dioxide is made by burning coal, giving a mixture of the desired gas with nitrogen from the air. The resulting mixture has to be treated with chemicals to absorb the carbon dioxide, and the fizz gas is then obtained by heating.

The new process was developed by W. K. Lewis, E. R. Gilliland and M. P. Sweeney of the M. I. T. staff. It was described by them at a regional meeting of the American Institute of Chemical Engineers held in Cambridge.

Science News Letter, August 5, 1950

AGRICULTURE

Hybrid Sugar Cane Is Tailored for Machine Age

► **HYBRID** sugar cane tailored to the machine age was unveiled recently by the Department of Agriculture, Louisiana Agricultural Experiment Station and the American Sugarcane League.

Erect growth, uniform stalk height and stiffness during cutting and stacking make the new variety naturally adapted to mechanical harvesting. Latest in a long series of hybrids developed for the Gulf States since mosaic disease all but wiped out Louisiana's sugar cane plantation a generation ago, the new cane even has a machine-age, coldly factual name: "CP 43/47."

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E FIELDS

MEDICINE

Vitamin B₁₂ Prevents Shock

➤ VITAMIN B₁₂, that is proving of importance in promoting growth in animals and humans, as well as treating pernicious anemia, now is shown to be able to prevent anaphylactic shock, even when used in very small quantities.

In experiments with guinea pigs, Dr. Vincenzo Traina of Fairview Park Hospital, Cleveland, found that no other substance is able to protect from this form of shock when used in such small quantities.

Dr. Traina made his report to the British science journal, *NATURE* (July 8).

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MEDICINE

Use Embryos to Prospect For Anti-Cancer Chemicals

➤ CHICK embryos can be used to prospect for possible cancer-controlling hormone chemicals, Dr. C. Chester Stock of Sloan-Kettering Institute, New York, announced at an international gathering of cancer researchers at Ciba Foundation in London.

The method is based on the observation that minute quantities of cortisone and other anti-cancer steroid hormones cause baldness in the embryos and inhibit their growth.

The stunting and baldness are not directly correlated with anti-cancer activity, Dr. Stock said, but they are indicative. Since very tiny amounts of active steroids will produce these chick embryo effects, the method should be an invaluable screening measure for detecting the presence of promising chemicals in mixtures and extracts of uncertain composition.

An alternative screening method is to measure the effectiveness of a steroid in inhibiting the growth of certain tumors implanted in mice. The advantage of both these methods over direct trial on patients is that they require such small quantities of the chemical, which is often initially available only in preciously small amounts.

Science News Letter, August 5, 1950

NUTRITION

Correct Foods Not Chosen Automatically

➤ DON'T be fooled by the "naive assertion" that a child or adult will automatically choose the foods he needs on the simple basis of taste and appetite. This is the warning of Dr. C. G. King, scientific director

of the Nutrition Foundation in New York.

Some individual animals have automatic guidance in selecting foods needed to preserve or regain health. This was shown in experiments by Dr. E. M. Scott and associates at the University of Pittsburgh. But Dr. King explains that this ability varies with different nutrients and from animal to animal.

Even when in a cage where they could eat a good quality milk protein whenever they wished, many animals in Dr. Scott's experiments lost weight and even starved to death for lack of protein.

Even more striking was a failure to select essential magnesium salts even when salt mixtures containing them were available.

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RADIOLOGY

Radioactive Arsenic and Gold Valuable Tracers

➤ ARSENIC and gold in their radioactive forms are two of the Big Six medically valuable radioactive tracer atoms at the present time, Dr. Leon O. Jacobson of the University of Chicago declared at the sixth International Congress of Radiology in London.

More than 700 radioactive tracer atoms have been prepared, he reported, but he called these six the most valuable.

Radiophosphorus is used in many forms of diseases of the blood and blood-forming organs and radioiodine is used to treat thyroid gland cancer. The other four are promising, Dr. Jacobson said, but have been less thoroughly explored.

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INVENTION

Earphones at Each Seat Allow Opera Translations

➤ AS the thunder and fire of a Wagnerian opera roll out across the Metropolitan Opera House, how many of the opera-goers can understand the words being sung? Not many, says a music-loving inventor from Morristown, N. J., who would like to put science to work at the opera.

Single miniature earphones at each seat would allow a running translation of the opera by a competent narrator, B. F. Miessner writes in the *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA* (July). Coin-released, the earphones would have an output just loud enough for the listener, but low enough not to disturb the persons next to him.

Held by rubber earplugs sterilized each day, the listening device could be switched on or off at will. Such a scientific sound system might even popularize opera enough to make it profitable, Mr. Miessner theorizes.

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MEDICINE

Sleeping Depends On Brain Stem

➤ "TO sleep, perchance to dream" depends on the brain stem, it seems from studies by Dr. H. W. Magoun, professor of anatomy of Northwestern University Medical School.

The brain stem, about the size of a man's thumb and four or five inches long, runs from the top of the neck up into the skull to the two cerebral hemispheres of the brain.

Dr. Magoun, assisted by Dr. D. B. Lindsay, Northwestern professor of psychology, and Dr. Guiseppe Moruzzi, visiting professor from the University of Pisa, Italy, came to the conclusion that the brain stem serves normally to keep the rest of the nervous system awake.

Dr. Magoun reported that by direct stimulation of the brain stem of sleeping animals it is possible to produce all the features of wakefulness. Destruction of the brain stem, on the other hand, leaves animals in a state of pathological sleep.

However, it is not yet known just how the brain stem controls sleeping and waking states. Dr. Magoun thinks that sleep in man is brought about by a lessening of sensory impulses which reduces brain stem activity.

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METEOROLOGY

Frigid Upper Air Sinking Causes Winter's Cold Spells

➤ MASSES of frigid air in the stratosphere that sink to the earth are the cause of severe winter cold spells that grip large sections of the globe simultaneously.

This is the opinion of Dr. William Kellogg, geophysicist at the University of California at Los Angeles, who bases it on evidence gathered while studying upper atmosphere conditions for the U. S. Weather Bureau. This is his theory:

Air masses are constantly circling the earth. There appears to be a continuous flow of air from the summer hemisphere to the winter hemisphere in the region between 20 and 50 miles high. As a result, air is piled up over the polar regions in the winter—with a consequent sinking and outflow in the lower atmosphere.

This outflow at low levels from the winter pole may be more rapid when the flow in the upper atmosphere speeds up. Such an increased outflow would cause the cold air masses near the ground to move toward the equator, thus causing severe cold spells in the middle latitudes.

Evidence for Dr. Kellogg's sinking theory is that ozone is occasionally forced to the ground level in polar regions in winter. Normally, ozone exists at altitudes of 10 to 20 miles.

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