

ENTOMOLOGY

Deaths of Honeybees Puzzle Scientists

► THE HONEYBEES are dying, and no one knows why.

Scientists are puzzled over the mysterious deaths of thousands of these valuable bees, necessary for pollinating such fruit trees as cherries, plums, pears and apples, and other plants such as almonds, cantaloupes and clovers.

For the past two years, beekeepers in several southern states and in California have reported losses of 50% or more from their hives, said Frank Todd, entomology division, Agriculture Research Service, U.S. Department of Agriculture.

Several thousand bees "just disappear" from each hive in the early part of winter, a time when the hive is relatively quiet, Mr. Todd said. No one yet knows where they go or what happens to them, since no bodies can be found.

From studies on survivors, researchers believe that the deaths were not caused by insecticides, poisons, known bee diseases or climatic conditions.

Extensive research will be carried out this summer to determine the cause of the disappearance and to solve the mystery before it becomes a disaster for beekeepers and fruit growers.

• Science News Letter, 87:376 June 12, 1965

MEDICINE

Measles Virus May Cause Brain Disorder

► THE MEASLES VIRUS itself may cause a puzzling, disabling and frequently fatal brain disorder associated with common measles.

This is reported by Drs. John M. Adams and Catherine Baird, pediatrics department, University of California at Los Angeles Medical School.

For years medical men have puzzled about the cause of measles encephalitis. Indictment of the measles virus itself in the brain disorder appears imminent on the strength of increasing evidence.

The UCLA investigators reported finding significant changes in brain cells in a series of 18 autopsied cases of the brain disease known as measles encephalitis.

This group of autopsies is the largest in the world and was gathered from 12 different places in Mexico and the United States.

When measles virus attacks tissues such as the lungs, it leaves "hallmarks."

These telltale signs include unusual objects in the tissue cells known as inclusion bodies. These bodies occur in the outer part of the cell as well as in the core or nucleus.

When viewed with the electron microscope, they reveal small particles which may be in clumps and have a thread-like appearance typical of viruses. Inclusions were seen in more than half of the autopsied brain specimens of encephalitis victims.

Giant cells with multiple nuclei are also

seen in tissues of the respiratory passages in the wake of the measles virus. These were found in the brain tissue of more than 20% of the autopsied series.

Dr. Adams further suggests the possibility that acquired mental retardation may be the result of brain damage following encephalitis caused by common viruses, including those of the common cold. Viruses of many common diseases may sometimes invade the brain, resulting in damage leading to mental retardation, disablement and even death.

• Science News Letter, 87:376 June 12, 1965

PALEONTOLOGY

Huge Ancient Tortoise Unearthed in South China

► A WELL PRESERVED tortoise with a four-foot-long shell, and other fossils dating back more than 70 million years have been unearthed in the red beds in Nanhsiung County, Kwangtung Province in South China. This is the biggest fossil tortoise yet found in China.

Other fossils found in the same formation include small dinosaurs and two well arranged "nests" with more than 20 dinosaur eggs each. The biggest egg is about eight inches long. This is the first time that dinosaur eggs, rare in the world, have been found in South China.

These fossils were excavated by the Institute of Vertebrate Paleontology and Paleoanthropology of the Chinese Academy of Sciences.

The red beds consist of pebbles, red sandstones and red clays. They are widely distributed in the provinces of South China.

Paleontologist Yang Chung-chien and other specialists judge that the geological period of the lower half of the red beds near Nanhsiung County belongs to the Cretaceous Period of the Mesozoic Era.

Fossils of archaic mammals were found in the upper part of these red beds, estimated to be at least 50 million years old.

• Science News Letter, 87:376 June 12, 1965

BOTANY

Fruits Caused to Ripen By Volatile Ethylene

► APPLES turn red, bananas turn yellow and honeydew an icy white because of the volatile substance, ethylene, present in the plant tissues.

Recent studies using gas chromatography show that ethylene acts as a hormone to stimulate fruit to ripen, Dr. Stanley P. Burg and Ellen A. Burg of the University of Miami School of Medicine, Miami, Fla., reported.

The amount of ethylene is lower in fruits still on the tree than in those that have become detached, the researchers stated in Science, 148:1190, 1965. This may be because a substance from the living shoot inhibits the ripening action of ethylene.

Harvested fruit may perhaps be preserved longer by storing it in a flowing airstream that would blow away the ethylene responsible for ripening.

• Science News Letter, 87:376 June 12, 1965

IN SCIENCE

PUBLIC SAFETY

New Safety Emblem for Slow-Moving Vehicles

► A BRIGHT RED triangular emblem that glows brightly in both daylight and headlights has been designed to keep motorists from colliding with tractors and other slow-moving vehicles (SMV's) from behind.

The emblem is intended for any vehicle that normally travels less than 25 miles per hour. It is visible for about 1,000 feet in daylight, while at night it can be seen at the outer limits of a car's headlight range.

A study at Ohio State University, Columbus, of 708 accidents involving SMV's showed that less than 10% took place on hills or curves. The rest were on stretches of highway where the only obstacle was lack of visibility. In more than half the collisions involving farm vehicles, the farmers said that they had intended to travel less than a mile on the road, but had not even gotten that far.

Design of the emblem, by Ohio State researchers Kenneth A. Harkness and Wilbur E. Stuckey, was financed by the Automotive Safety Foundation.

• Science News Letter, 87:376 June 12, 1965

SPACE

Parachutes Abandoned In XB-70 and F-111

► TWO OF THE MOST significant aircraft in recent years, the XB-70 and the F-111, both of which made their maiden flights in 1964, have done away with an old safety device, the pilot's parachute.

Instead, when the pilot presses the ejection button, the whole cockpit is shot clear of the plane. In the F-111, a 35,000-pound-thrust rocket motor blasts the two-man "crew escape capsule" away from the fuselage in less than 10 one-thousandths of a second. A 70-foot parachute mounted outside the pressurized capsule floats it to earth, where an odd-looking square balloon cushions the landing.

The XB-70 offers individual accommodations for escaping crew members. The huge research plane seats pilot and co-pilot in separate compartments that resemble a pair of telephone booths. Each crewman can seal himself into his compartment by pulling on a lever near his knee. He is then enclosed in an airtight compartment, complete with self-contained oxygen supply.

He can still watch the instrument panels and attempt to fly the plane to a safe altitude using remote controls inside the capsule. If all else fails, the ejection button will fire the capsule free. Once on the ground, the capsule becomes a shelter against the elements. If the pilot lands in the water, he is already enclosed in a "life raft."

• Science News Letter, 87:376 June 12, 1965

CE FIELDS

IMMUNOLOGY

Type of Common Cold Prevented by Vaccine

► A VACCINE AGAINST one of some 80 types of rhinoviruses that cause a large percentage of common colds was reported successful on 27 of 28 volunteers at the Common Cold Research Unit at Salisbury, England. HGP virus vaccine prepared by Pfizer Ltd. was used along with vaccine from an identical virus called PK.

The researchers referred to previous work with ECHO-28 virus done by a team of scientists at the National Institute of Allergy and Infectious Diseases, Bethesda, Md. Science Service reported a vaccine against this virus in November 1963 (see SNL 84:334, Nov. 23, 1963). Although a rhinovirus, ECHO is serologically distinct from HGP or PK.

The British researchers used ECHO virus on some volunteers who had been vaccinated with the HGP vaccine, but because ECHO is a different strain, the vaccine gave no protection.

An editorial in the British Medical Journal, May 22, 1965, in which the rhinovirus vaccination article appeared, stated that studies both at the Salisbury unit and in the United States have shown that there are at least two main strains of rhinoviruses or common-cold viruses. They are the M strains, which grow in cells from the monkey kidney, and the H strains, which grow only in human cells. The editorial cautiously concluded, in referring to the HGP virus vaccine, "So far, so good."

Although it is encouraging to note that an M strain of rhinovirus vaccine conferred protection, the question is posed as to whether the same results will be found with the H strain. Moreover, there is a production problem to be considered in the fact that the H strains grow only in human cells.

• Science News Letter, 87:377 June 12, 1965

CHEMISTRY

Origin of Mill Odor Sniffed Out in Tests

► A TEAM of researchers believe they may have sniffed out the origin of the "rotten egg" odor that fills the air near a paper mill.

The hydrogen sulfide or "rotten egg" odor emitted from the stacks of kraft paper mills may originate in the furnace in which the black liquor used in the pulping process is oxidized, reported F. E. Murray and H. B. Bayner, British Columbia Research Council, Vancouver.

The researchers told a meeting of the American Institute of Chemical Engineers in San Francisco that the emission of hydrogen sulfide during direct contact evapora-

tion of black liquor was studied using a pilot scale evaporator installed at a pulp mill. Results were submitted on several full-scale evaporators.

"It was found that a direct-contact evaporator may emit hydrogen sulfide or may absorb it from the flue gases depending on conditions in the liquor and in the incoming gas stream. Emission of hydrogen sulfide is favored by high concentrations of sodium sulfide and low pH levels in the liquor and low concentrations of hydrogen sulfide in the flue gases entering the evaporator," they reported.

Operating evaporators normally emit the hydrogen sulfide odors, but the amount escaping into the air varies greatly depending upon design and operating conditions.

• Science News Letter, 87:377 June 12, 1965

TECHNOLOGY

Electron Beam Directed By Deflection System

See Front Cover

► A NEW deflection system directs an electron beam from an electron-beam gun in a vacuum evaporator, as seen on this week's front cover.

The components of the system are a feed-through ring, a power supply and electromagnets which deflect the beam in either a horizontal or vertical plane. The beam spot can thus be moved onto, around or between targets by adjusting only two controls.

The system can be adapted to most evaporators without modifications, special shielding protects the beam gun from contaminations, and the system does not require water cooling.

It is a product of the Consolidated Vacuum Corp., Rochester, N.Y.

• Science News Letter, 87:377 June 12, 1965

GEOPHYSICS

Americas Were Split By Seaways, Islands

► THE AMERICAN CONTINENTS were separated by seaways and islands for millions of years.

For perhaps 50 million years, the area between North and South America was a shifting pattern of island groups and peninsulas attached to one continent or the other, believe Frank C. Whitmore Jr. of the U.S. Geological Survey and Robert H. Stewart of the Panama Canal Company, Balboa, Canal Zone.

Fossilized bones of ancient rhinoceroses, crocodiles, horses and deer-like creatures left a record that attests to upheavals and folding of this once turbulent Central American area, the scientists reported in Science, 148: 180, 1965.

During the Tertiary period, an age which stretched from about 11 million years to 60 million years ago, there may have been at least two major seaways separating the continents—one across the Isthmus of Panama, and the other across the Bolivar Trough in northwestern Colombia.

• Science News Letter, 87:377 June 12, 1965

CHEMISTRY

Moon Rocks May Give Fuel for Trip Home

► OXYGEN made from lunar rocks could save much precious weight on a round-trip flight to the moon.

The many varieties of silicate rocks that are likely to exist on the lunar surface can be treated with methane gas to produce oxygen, the main ingredient in rocket fuels.

The newly developed chemical process begins by piping methane gas over the silicates in a special high-temperature furnace to form carbon monoxide and hydrogen. The two gases then combine to make methane again, and water. The water is broken down by electrolysis into hydrogen and oxygen.

For the process to work, water does not have to be present in the rocks. The methane and hydrogen used to start the reaction do not become depleted, since they are reproduced during the process and continuously recycled as the reaction repeats itself.

The process, developed by scientists at Aerojet-General Corporation, Azusa, Calif., is called the Aerojet Carbothermal Process. It was described at a symposium in Chicago on post-Apollo space exploration.

• Science News Letter, 87:377 June 12, 1965

PUBLIC HEALTH

Fewer Premature Babies In USSR Than in USA

► PREMATURE BABIES in the Soviet Union number only four percent of births, while those in the United States run from seven percent in some states to 21% in others, Dr. Norman P. Kretchmer of Stanford University School of Medicine, Palo Alto, Calif., reported on his return from a 21-day visit to Moscow, Leningrad, Tbilisi, Kiev and Erevan as head of a U.S. delegation.

Dr. Kretchmer is chairman of the department of pediatrics at Stanford. His visit was sponsored by the U.S. Public Health Service under the cooperative program in medicine between the U.S. and the USSR.

The death rate in the first year of life is considerably less among Soviet babies and those born here, and this fact is linked to the fewer number of "premies." More widespread prenatal care through the Soviet system of doctor distribution is credited for the greater number of living infants. There is one doctor to every 350 people in the USSR, contrasted to one to 714 in the U.S.

One institute the delegation saw was the five-year-old Institute of Hygiene and Adolescence in Moscow, which Dr. Kretchmer said the United States could well emulate.

This institute studies the relationship of an adolescent's health to his future occupation. If the young person has high blood pressure or ulcers, for example, he will not be allowed to do certain types of heavy work. Most of the 200 young people who participate in this research live at home and come to the institute as outpatients. Sixteen "board in" and go to school at the institute.

• Science News Letter, 87:377 June 12, 1965