

Mud-Walled Village Oldest in World

► THE OLDEST village with mud walls still standing has been unearthed in Iran by Canadian anthropologists.

The village, judged to have been built by people of the New Stone Age nearly 10,500 years ago, has three or four levels, one upon another, each containing the remains of successive mud-walled villages.

The only Neolithic (New Stone Age) site older than this is Shanidar, discovered nine years ago in Iraq, said Dr. Philip Smith of the University of Toronto who headed the diggings.

The ancient Iranian village was erected at a time when man first began to till the soil and raise his own crops. At this time he also started to domesticate animals—mainly sheep, said Dr. Smith. The mud huts the Neolithic man fashioned were the beginnings of mud-walled architecture still typical of many Middle Eastern areas.

Discovered in southern Kurdistan, an area that extends through southern Turkey, Iraq and Iran, the village was unearthed from a small mound that has long been known to local tribes as Tepe Ganj-i-Dareh, or the Mound of the Treasure Valley. It is a small site, about 18 feet high and 120 feet in diameter.

Quantities of animal bones were found around the site, as well as much ash, charcoal and other debris from ancient hearth fires. If pollen spores or charred barley or wheat grains are found in any of the layers of soil, Dr. Smith hopes to answer many questions about the customs and behavior of earth's early man.

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TOXICOLOGY

DDT Lethal to Birds 40 Days After Eating

► IN CONTROLLED studies to investigate lethal effects of pesticides, Lucille F. Stickel and William H. Stickel of the Patuxent Wildlife Research Center, Laurel, Md., fed 27 cowbirds with a diet containing 500 parts per million of DDT dissolved in cottonseed oil and mixed with turkey food.

Thirteen birds died in 12 days, seven died in eight days after which time the remaining seven birds were put on a clean diet.

Four of these seven died after 2, 9, 40 or 93 days on a clean diet, three survived for 112 days and were sacrificed for observation. Severe tremoring, typical of DDT poisoning, was observed in the dying birds, the researchers reported in *Science* 151:1549, 1966.

Autopsies of all birds showed condi-

tions common to cowbirds succumbing to DDT: fat was essentially gone from the visible storage sites; there was no muscular emaciation; and the gallbladder was full.

In attempting to establish in the laboratory the exact lethal levels of pesticides, the scientists found that residue DDT levels varied widely. The lowest level, however, of pesticides taken to inflict serious damage and possible death was found to be 30 parts per million of DDT and DDD combined in the brain.

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AGRICULTURE

Chrysanthemum Imports Under Restriction

► THE DANGER of white rust disease has imposed a new plant quarantine regulation on the importation of chrysanthemums, reported the U.S. Department of Agriculture.

Chrysanthemums now imported into the United States must be grown for a specified time in control areas and inspected regularly for white rust before being released.

The disease has been found on imported plants on numerous occasions in recent years. White rust has been reported in the Republic of South Africa, Denmark, Norway and the British Isles.

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ASTRONOMY

Several Hypotheses Why Sky Is Dark

► WHY is the sky dark? The answer depends on whether the universe is in a steady state, unchanging, or expanding.

If a matter is being continuously created to give a steady-state universe, then the darkness of the night sky is a direct consequence of the cosmic expansion that constantly occurs to make room for the new stars and galaxies being formed.

If the universe is static, that is, if it has been and always will be as it is now, then the background radiation of the sky is limited by the lifetime of stars.

If the universe is expanding, all galaxies are flying farther and farther away from all others. No new matter is being created, and new stars are being formed only from the debris of dead stars. Under such conditions, the contribution of starlight to the background radiation is limited partly by cosmic expansion and partly the finite lifetime of stars.

Dr. David Layzer of Harvard College Observatory, reported these mathematical explanations in *Nature*, 209:1340, 1966.

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IN SCIENCE

ENTOMOLOGY

Hormone That Kills Insects Synthesized

► A JUVENILE HORMONE that kills insects at certain stages of their lives has been synthesized by scientists at Harvard University.

The highly active hormone was synthesized from chemicals in a two-step procedure by Profs. Carroll M. Williams, John H. Law, formerly at Harvard and now at the University of Chicago, and Dr. Ching Yuan.

The natural hormone, secreted by a pair of tiny glands located in the insect's head, is necessary for the normal growth of all immature insects. However, for immature insects to transform into sexually mature adults, the secretion of these hormones must stop.

At this time the insect is extremely sensitive to the hormone. If the synthetic hormone comes in contact with the insect it causes lethal derangement of development.

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GEOLOGY

Rock 'Fingerprints' Filed in Computer

► A SPACE-AGE detective investigating the moon is compiling his own file of geological "fingerprints."

Rocks and minerals can be recognized by the varying heat patterns they emit. Plants, likewise, give off distinguishing heat reflections and emissions. These are their spectral "fingerprints," said Dr. R. J. P. Lyon, professor of geophysics at Stanford University.

The prints are not made with an ink pad, but with a device called an infrared spectrometer, which detects accurate spectral patterns that are later filed in an electronic computer.

Lunar rock samples could be fingerprinted by a spectrometer carried aboard a moon-orbiting spacecraft. The computer could then compare the prints with those of rock samples from earth.

The infrared spectrometer is sufficiently refined to distinguish between solid layers, gravel-sized chunks and fine dust, even if they are all the same kind of rock.

Dr. Lyon has filed as many as five different prints in the computer for each kind of rock, ranging from large solid pieces to microscopic particles.

The system could be used on earth to locate diseased crops and other surface features. "Oil and mining companies are also interested in the program's possibilities," said Dr. Lyon.

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E FIELDS

PATHOLOGY

Lectin From Plant May Reveal Leukemia

➤ A SIMPLE PLANT may be the key to leukemia if the right one is found, the American Cancer Society reported.

Research by a Virginia scientist has revealed that some plants produce antibody-like substances which force particular white blood cells to clump together with selectivity comparable to an antibody fighting a virus.

If a plant sensitive to leukemic cells exists it can be used in detecting the disease and in searching for its cure.

Dr. Ali A. Hossaini, assistant professor of clinical pathology at the Medical College of Virginia in Richmond, has isolated 24 substances called lectins.

One of these lectins clumped all normal white cells but had no effect on the leukemic cells of three patients tested and the pathologist is now searching for one that will.

Dr. Hossaini told SCIENCE SERVICE that if such a lectin is found, it should be possible to use this to discover what chemical differences exist between normal cells and leukemic cells. "When you get to that stage," he said, "you can probably find an antidote."

Dr. Hossaini's research was supported by the American Cancer Society.

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NEUROLOGY

Brain Pathway Mapped For Message System

➤ HOW THE BRAIN receives and sends information has been mapped in new research reported in San Francisco.

Future applications to the treatment of spinal defects and injuries are seen in hitherto unknown anatomical details of the brain's receiving and transmitting network revealed in reports to the American Association of Anatomists' meeting.

Dr. Henricus G. J. M. Kuypers of Western Reserve University School of Medicine, Cleveland, said that it is primarily the forward part of the brain's upper hemisphere that is connected by nerve fibers with the brain's two motor pathways controlling movements. The other areas of the brain, receiving messages for touch, sight and hearing, are connected with this forward area that governs motor activity.

The brain's two motor pathways, one originating in the brainstem at the base of the skull and one coming from the surface of the brain, have different

functions in controlling the body's movements.

The details of these connections were traced in research reported by Peter Sterling, a predoctoral fellow at Western Reserve, and Dr. Kuypers.

Some nerve pathways end directly on the muscle nerve cells governing movements of fingers and toes. Others terminate on nerve cells interposed between the brain pathways and the muscle nerve cells that activate larger muscles. Those ending directly on the motor neurons are most numerous for muscles of the fingers and toes, thus allowing precise and separate movement of each one.

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PUBLIC SAFETY

Toothbrush Rams Throat Injures Neck Artery

➤ RAMMING the throat with a toothbrush is one of the most unusual accidents reported in the New England Journal of Medicine, April 7, 1966. The boy who suffered the injury recovered but not before the left artery of his neck was clotted and temporarily cut off.

Another throat accident in which a 22-month-old boy fell on the wooden end of a toy arrow resulted in death after the left carotid artery was shut off by internal bleeding.

These cases of internal carotid artery thrombosis were reported by a University of Tennessee physician to alert doctors to the possibility of such complications.

Dr. Samuel E. Pitner of Memphis said the diagnosis could be proved only by angiography, which makes possible X-ray of the blood vessel after injection of radiopaque material into the arterial blood stream.

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RADIOLOGY

Polonium 210 Unlikely To Cause Lung Cancer

➤ INHALATION of the radioactive ingredient of tobacco, polonium 210, is "rather unlikely" to cause lung cancer, two German scientists reported.

Prof. B. Rajewsky and Dr. W. Stahlfhofen of the Max Planck Biophysical Institute, Frankfurt on the Main, said in Nature, 209:1312, 1966, that their studies show the alpha-ray dose absorbed in the critical zones of the bronchia was much less than other investigators had found.

They compared their research with that of Drs. Edward P. Radford and Vilma Rose Hunt of the Harvard School of Public Health, whose studies of polonium 210 in cigarette smoke have indicated a relationship to cancer.

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GENETICS

Normal Children From Frozen Sperm

➤ EIGHTEEN women have become pregnant with sperm frozen for as long as a year and a half, a University of Michigan scientist reported.

The children of these pregnancies have been examined regularly since birth and show no defects traceable to the frozen sperm, Dr. S. J. Behrman told a meeting of the Michigan Society of Obstetricians and Gynecologists in Ann Arbor, Mich.

Although a few other laboratories are working on the subject of frozen sperm, Dr. Behrman has worked out a new preservative medium and freezing technique with more elaborate controls than previously. The Ford Foundation and the National Institute of Human Development has been sponsoring his research.

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PHYSICS

Timing Device Useful For 200-Bev Smasher

➤ A TIMING DEVICE that operates in one-third of a billionth of a second is helping scientists learn more about the structure of the atomic nucleus.

Although only two such radio frequency separators for atomic particles have been built so far, an improved version of this device is expected to be an important tool for the atom smasher that will accelerate particles to 200 billion electron volts.

The timing devices now in use are located at CERN, the European center for nuclear research in Switzerland, and at Brookhaven National Laboratory, Upton, N.Y. The separator selects, from some 15,000 sub-nuclear particles, the 10 or 15 most likely to reveal new information about the nucleus.

Design of the Brookhaven device was supervised by Dr. Jack Sandweiss, physics professor at Yale University.

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TECHNOLOGY

Phone-Booth-Size Battery Powers Laser

➤ A 25-MILLION-WATT battery the size of a telephone booth is being built to put out, pound for pound, almost as much energy as exploding dynamite.

The U.S. Army needs it to power lasers, light amplifiers which produce intense beams of "concentrated" light. Half a million fluorescent lamps could be lighted simultaneously by the super-battery, which the Army calls the most powerful in the world.

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