SCIENCE NEWS

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SCIENTIFIC PROGRESS DURING 1925

Agriculture

Chemical analysis of the cotton plant, and discovery that trimethylamine is the odorous substance that attracts the boll weevil, was reported by scientists of the United States Department of Agriculture.

Anthropology

A prehistoric skull, which may be another link in the chain of human evolution, was found at Taungs in South Africa. It is said to be older than the ape man of Java and half way between the higher apes and man.

Excavations in Florida revealed human remains closely associated with the bones of mammoth under circumstances thought to indicate that prehistoric elephants survived in America longer than previously supposed.

The Gobi Desert expedition of the American Museum of Natural History discovered in Mongolia abundant traces of Old Stone Age culture. Among other things, they learned that ancient man made ornaments out of the still more ancient dinosaur eggs.

Human remains of prehistoric times were found in a cave in Crimea together with skeletons of mammoths, cave hyenas and cave bears, characteristic of the later days of the Old Stone Age.

The skull of a hitherto unknown race of the Neanderthal type of ancient cave men was discovered near Capernaum in Galilee.

A French-American expedition explored northern Africa and found evidences of prehistoric men similar to those of southern Europe.

Dr. Edward Sapir, Canadian anthropologist, announced that he had discovered striking resemblances between American Indian dialects and the ancient Chinese language.

Ten prehistoric stone tombs containing valuable relics were unearthed from an ancient Indian mound near Cartersville, Georgia.

A hoard of valuable pearls was discovered in a prehistoric Indian mound in Ohio.

Archeology

An expedition to excavate Armageddon, famous ancient battleground in central Palestine, was organized by the Oriental Museum of the University of Chicago.

The Russian Geographical Society's expedition to Tibet returned with an extensive collection of ancient relics, some of which indicate that 2,000 years ago a Mongolian civilization flourished which had contact with Hellenic culture.

The antiquity of the Phoenician alphabet was set back from 850 B. C. to the fifteenth century B. C. by discovery of old inscriptions.

Astronomy

The total eclipse of the sun on January 24, 1925, was found by Professor Ernest W. Brown, of Yale University, to have been four seconds late, due partly to uncertainty as to the moon's actual position in space.

The puzzling shadow bands which appear before and after total eclipses of the sun were traced to rising warm air currents by Dr. Charles Clayton Wylie, of Iowa University.

Studies based on this eclipse showed that the sun's corona is approximately 5,000 degrees Fahrenheit, or only half as hot as earlier calculations had indicated.

The total eclipse of the sun, which was visible along a path from Buffalo, through Ithaca, Poughkeepsie, New Haven and Nantucket, was observed by more than 20,000,000 people, more than ever before observed such a phenomenon. For the first time in history such an eclipse was observed from a dirigible balloon, the *Los Angeles*, of the U. S. Navy, by a party of astronomers from the U. S. Naval Observatory. Astronomers from the Harvard College Observatory, Mt. Wilson Observatory, Sproul Observatory of Swarthmore College, Allegheny Observatory, Lowell Observatory and others went to points along the path of totality to photograph it, while astronomers at Cornell University, Vassar College, Yale University and Wesleyan University observed it from their own observatories.

Many spectrum lines, indicating the presence of oxygen and other chemical elements, were photographed at the eclipse for the first time by Dr. H. D. Curtis, of the Allegheny Observatory at Pittsburgh. These photographs were of the flash spectrum, which can be seen just before and after a total eclipse, and of the corona, which is seen during totality. They were made by red and infra red light.

Astronomers from the Naval Observatory at Washington, the Sproul Observatory at Swarthmore College, the Allegheny Observatory at Pittsburgh, the Mt. Wilson Observatory in California, Harvard University, the U. S. Bureau of Standards and institutions in Europe, sailed for Sumatra to prepare for the observation of a total eclipse of the sun which will be seen there on January 14, 1926.

Photographs made by Dr. Edwin P. Hubble, of the Mt. Wilson Observatory, California, with the great 100-inch telescope showed that the spiral nebulae, and certain irregular nebulae, consisted of great swarms of stars at vast distances. The nearest are so far away that their light takes about a million years to reach us, and they were therefore shown to be "island universes," similar to our own stellar system of which the sun and the other stars in the Milky Way and also those seen in other parts of the sky are parts.

Eleven comets, an unprecedented number for one year, were discovered; two by American astronomers, Professor George Van Biesbroeck, of the Yerkes Observatory, and Leslie C. Peltier, an amateur of Delphos, Ohio; two others by amateur astronomers in South Africa and two in Russia. Some of the eleven were old friends returning on

one of their periodic visits, while others were new ones. A "nova," or new star, was discovered in the constellation of Pictor, the "Painter," in the southern skies on May 25 by an amateur astronomer in South Africa, named Watson.

The sun's present mass will supply light and heat for the next fifteen trillion years, and, as the sun may gather up more matter as it passes among the stars, it may continue longer, according to reports made to the American Mathematical Society. Study of sunspots in relation to weather continued, and Dr. H. H. Clayton, former head of the forecasting department of the Argentine Weather Service, predicted that other nations would follow Argentina's example in applying observations of solar radiation to forecasting.

The craters on the moon were caused by the explosions of millions of meteors, after hitting the moon with a speed as high as 50 miles a second, according to a new theory proposed by A. C. Gifford, of New Zealand. The theory that the moon is made of material that was once part of the earth's crust and that was peeled off by attraction of the sun was advanced by Dr. R. H. Rastall, at Cambridge University.

A branch of the Harvard College Observatory was established in the nitrate desert of northern Chile, the highest driest desert in the world, to aid in the observation of stars too far south to be seen from Cambridge. A branch of the Yale University Observatory was established in South Africa with the completion of a 26-inch refracting telescope. This observatory will supplement the work done at New Haven, Conn., by Dr. Frank Schlesinger, director of the observatory, in finding the distances of the stars.

Aviation and Aeronautics

The U. S. dirigible *Shenandoah* was wrecked by a storm in Ohio, with great loss of life.

An attempt was made by U. S. airplanes to fly to the Hawaiian Islands, but it was not successful.

A new type of airplane, the autogiro, invented in Spain, was tested and praised by the British Air Ministry. It obtains its lift in part by large propeller-like rotating wings.

Biology

A chemical test by which the sex of plants or animals can be determined from a few drops of plant juices or blood was worked out in Russia and applied by scientists of the Carnegie Institution of Washington.

Evidence that a severed optic nerve can reunite and at least partially recover its function was obtained by study of rats at the University of Chicago.

The pituitary gland was completely removed from dogs by surgeons of Johns Hopkins Hospital without killing the animals, an operation previously considered as productive of certain death.

Star-fish and sea urchins were developed from unfertilized eggs at the University of Chicago with only ultraviolet light for a father.

Silkworms were successfully vaccinated against a bacterial disease by Dr. R. W. Glaser, of the Rockefeller Institute for Medical Research.

A new method of killing protozoa, the minute animals that inhabit the digestive tracts and blood systems of man, animals and insects, by an overdose of oxygen, has been discovered by Dr. L. R. Cleveland, of the Johns Hopkins University. While these minute animals are often harmless and sometimes helpful, there are some that are the cause of such diseases as malaria, sleeping sickness and dysentery.

Success in preserving the last herds of American bison from extinction was reported from Canada.

For the first time, male sex glands were successfully transplanted in animals and made to persist in normal condition.

A scientific survey of America's fresh water food resources was inaugurated by the National Research Council.

Chemistry

Mercury was transmuted into gold. Professor A. Miethe, of the Berlin Technical High School, found that mercury vapor lamps became obscured after long usage by a sooty substance which on analysis proved to be partly gold. Artificial production of gold from mercury by the application of strong electrical forces was also announced by Professor Nagaoka, of Tokyo.

Dutch scientists claimed to have transmuted lead into mercury and thallium.

Methods of reclaiming old automobile oil were reported by several investigators.

Vitamin C, the preventive of scurvy, was obtained for the first time concentrated into crystalline form.

Two missing chemical elements, numbers 43 and 75, were discovered by means of spectra obtained by passing a beam of X-rays through concentrated solutions of rare minerals. Dr. Walter Noddack, of Berlin, the discoverer, named them masurium and rhenium.

Production of methanol, or wood alcohol, from coal, was invented and developed in Germany. Experiments with this German synthetic methanol, at the Harvard Medical School, showed it to be as poisonous as wood or methyl alcohol.

A new process by which "pure" aluminum—containing less than two one hundredths of one per cent. of impurity—can be made commercially, was reported.

Rare elements, such as lithium, vanadium and nickel, were found in petroleum ash in quantities sufficient to warrant their extraction from the ashes of petroleum cokes and to be used as future sources of these substances.

Evolution

The state of Tennessee passed a law forbidding the teaching of evolution in public schools and universities. The testing of this law, by the trial of John T. Scopes, of Dayton, Tennessee, in July, was one of the most dramatic events of the year. The verdict of the lower court was conviction. The constitutionality of the law will be tested before the Supreme Court of the state in January, 1926.

Life existed on the earth when the oldest known rocks were formed. Dr. John W. Gruner, of the University of Minnesota, found fossil remains of blue-green algae in

Archaean rocks which were once believed to have been formed by the direct cooling of a molten earth.

The biggest lot of dinosaur bones ever found in one place was unearthed in Tanganyika, formerly German East Africa.

Chemical affinities between the blood of apes and man, much closer than that between the tailed monkeys and man, was shown by serological tests at the Rockefeller Institute.

Evidence of the process of evolution actively going on was discovered in snails of the South Seas. The divergencies shown did not produce distinct species, but the existence of divergent individuals of adult growth showed "that mutation is a real and contemporaneous process."

Geography

The *Maud*, Captain Amundsen's ship, returned after three years of drifting in Arctic ice and Dr. Harald Sverdrup reported tidal observations that indicate there is no land in the unexplored Arctic area.

A great submarine current which runs from the North Atlantic and comes to the surface again 2,000 miles south of the equator was discovered by the German ship, *Meteor*.

Experiments to see whether ships could detect hidden icebergs by the sonic depth recorder were made by U. S. Coast Guard cutters.

Perfection of a new sounding device especially designed for speedy mapping of the ocean floor by means of echoes from the sea bottom was announced.

Geology

The City of Santa Barbara, California, was badly damaged by a heavy earthquake in June; another earthquake shook Montana and neighboring states at the same time. New England and eastern Canada were shaken by an earthquake on February 28.

The U. S. Coast and Geodetic Survey, the Jesuit Seismological Association and Science Service of Washington, cooperating with seismological observatories in the United States and foreign countries, have perfected a method of quickly and accurately locating the epicenters, or points of greatest motion, of earthquakes.

Foot prints of animals that lived twenty-five million years ago were found in primitive rocks 950 feet below the top of the Grand Canyon of the Colorado River. They are believed to have been crustaceans and amphibians.

Rich deposits of platinum have been found in the Transvaal.

Inventions

A boiler in which the flame burns in direct contact with water, thereby eliminating much of the heat loss common in other boilers, was invented by a Belgian scientist.

An airplane gasoline tank which can be completely riddled by explosive bullets without bursting into flames or leaking was developed in Vienna.

A system of musical stenography by which the full orchestrated score can be taken down as it is played was devised by M. Henry Raymond in Switzerland.

The rotor ship, which uses wind power by means of rotating cylinders instead of by sails, was invented in Germany by Dr. Flettner.

C. Francis Jenkins, of Washington, D. C., reported that he had successfully sent moving pictures by radio from one room of his laboratory to another and that long range radio movies had been proved practicable.

Synthetic "wool" was commercially produced from wood by processing similar to that used in making rayon or artificial silk.

A gas mask effective against all poisonous gases, provided they are not too strongly concentrated, was developed by the U. S. Bureau of Mines.

Medicine and Physiology

The use of delicate electric needles to replace the surgeon's knife and render surgery less painful and dangerous was announced by Dr. Howard A. Kelly, of Johns Hopkins University.

A new chemical substance composed partly of arsenic and bismuth was found effective in the treatment of syphilis by scientists of the Pasteur Institute in Paris.

Successful use of radium in the treatment of leprosy was reported by the Kalihi Leper Receiving Hospital at Honolulu.

Eggs from hens deprived of sunlight were found to lack vitamin which prevents rickets in children, while the eggs of hens receiving sunlight had this important food factor.

Eggs do not have to be fresh to retain their vitamins, because nine-year-old eggs were still found rich in vitamin A, in experiments conducted by the U. S. Bureau of Chemistry.

The parathyroid gland, one of the ductless glands situated in the throat in the region of the Adam's apple, secretes a hormone that prevents tetany, a condition of spasms and stiffening of the muscles.

A new dietary factor that prevents pellagra has been found in fresh milk, brewers' yeast and fresh beef, by scientists of the U. S. Public Health Service.

(To be continued.)

ITEMS

A CAREFUL analysis of cancer statistics gathered by the U. S. Census Bureau over a period of about twenty years in ten Eastern states reveals definitely that cancer mortality is from 25 to 30 per cent. higher than it was about twenty years ago. This is the claim of Dr. J. W. Schereschewsky, of the U. S. Public Health Service, who made the statistical analysis and reported it to the American Medical Association. "There has been a pronounced increase in the observed death rate from cancer in persons forty years old and over in the ten states comprising the original death registration area," Dr. Schereschewsky said. "Part of this increase is due to greater precision and accuracy in the filling out of death returns, but the remainder is an actual increase in the mortality of the disease."