SCIENCE NEWS

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SCIENTIFIC ADVANCES DURING 1927

Astronomy

An amateur astronomer named Blathwayt, at Braamfontein, South Africa, discovered a new comet on January 13.

An amateur astronomer, William Reid, of Rondebosch, South Africa, discovered a new comet on January 26.

The Pons-Winnecke comet, which made one of its sexennial visits to the earth's neighborhood, was detected on March 3 by Dr. George Van Biesbroeck, of the Yerkes Observatory, Williams Bay, Wis. It came within 3,500,000 miles of the earth on June 27, closer, with one exception, than any comet had been known to come in the past.

A new comet was discovered on March 10 by Dr. Carl L. Stearns, of the Van Vleck Observatory of Connecticut Wesleyan University.

The Grigg-Skjellerup comet was discovered on March 30 by Dr. George Van Biesbroeck, of the Yerkes Observatory.

An Australian justice of the peace and amateur astronomer, Walter F. Gale, discovered a new comet on June 7.

Schaumasse's periodic comet was observed on its return on October 4 by Professor Van Biesbroeck, of the Yerkes Observatory, and possibly by Gerald Merton, of the British Royal Observatory, a little earlier.

Encke's comet, a periodic visitor, was found on November 12 as it came near the earth again, by Professor George Van Biesbroeck, of the Yerkes Observatory.

A naked-eye comet visible in both the northern and southern hemispheres was discovered on December 3 by J. F. Skjellerup, Australian amateur, and was visible just before Christmas.

A new star was located in the Milky Way by Dr. Max Wolf, of the Heidelberg Observatory in Germany.

A comet and a nova, or new star, were discovered within three days by two German astronomers, Drs. A. Schwassman and Wachmann.

Professor Joel Stebbins, of the University of Wisconsin, announced the discovery that the satellites of Jupiter always keep the same side turned toward their parent planet, just as the moon does toward the earth.

An eclipse of the sun on June 29, visible in England and Norway, was seen at certain points along the path of totality by astronomers from the British Royal Observatory and the Hamburg Observatory in Germany, though American astronomers in Norway were unable to see any of it on account of cloudy weather.

The aid of the Canadian Mounted Police, Catholic missionaries to the Eskimoes, fur trappers and others was asked by Dr. Willard J. Fisher, of the Harvard College Observatory, in observing the total eclipse of the moon on June 15.

Discovery of just how the solar radiation varies was announced by Dr. C. G. Abbot, of the Smithsonian Institution. Many large sunspots were observed, and magnetic storms on the earth took place in apparent conjunction with them.

The possibility that stars may be liquid was advanced by Professor J. H. Jeans, English astronomer.

Basalt, a rock common on the earth, is not present on the surface of the moon, Dr. Fred E. Wright, of the Carnegie Institution, told members of the National Academy of Sciences.

"The sun and the near-by stars may be in a vast cloud of cosmic 'dust,'" said Professor Edward S. King, of the Harvard Observatory, "thus causing the more distant stars to appear redder than the nearer ones," an effect that has actually been observed.

The radius of the universe was estimated as one hundred million light years by Professor E. T. Whitaker, of Edinburgh University, in a report to the British Association for the Advancement of Science.

In the hands of amateur astronomers in all parts of the world, his invention of the spectrohelioscope may go far towards solving outstanding solar mysteries, Dr. George Ellery Hale, honorary director of the Mt. Wilson Observatory, declared.

A 60-inch reflecting telescope, the largest in the southern hemisphere and the third largest in the world, was ordered for the new South African station of the Harvard College Observatory, which will replace the former station at Arequipa, Peru.

The solar wave-lengths in the unexplored regions of the spectrum were mapped by the U. S. Bureau of Standards in cooperation with Allegheny Observatory.

The largest disk of optical glass ever cast in the United States was made by the U. S. Bureau of Standards, the reflecting telescope blank being of borosilicate crown glass, 70 inches in diameter and 12½ inches thick.

Physics

A new theory of the mechanics of atoms was enunciated by the Swiss physicist, Schrodinger, which, in brief, holds that electrons and other units of matter are wave systems like ordinary light and X-rays.

The 1927 Nobel prize for physics was awarded jointly to Professor Arthur H. Compton, of the University of Chicago, and Dr. C. T. R. Wilson, of the University of Cambridge, for their researches on X-rays and radium radiation.

The tercentennial of the death of Isaac Newton was celebrated by scientists all over the world.

Dr. Dayton C. Miller, of the Case School of Applied Science, at Cleveland, Ohio, repeated experiments that may show that the earth is drifting through the ether.

Sound-waves vibrating far too rapidly to be heard produced such curious effects as the emulsion of a candle in water, Professor R. W. Wood, of the Johns Hopkins University said, in describing to the National Academy of Sciences work which he had performed in collaboration with Alfred L. Loomis.

Cathode rays from the tube recently invented by Dr. W. D. Coolidge, of the Research Laboratory of the General Electric Company, have been found to be like sunlight in their power to give certain substances the quality of preventing rickets.

An instrument known as the thermionic microammeter, able to measure one five-billionth of an ammeter, was developed by the laboratory of the General Electric Co., at Lynn, Mass.

The grid glow relay, invention of D. D. Knowles, Westinghouse engineer, which operates on a billionth of a watt of electrical power, was demonstrated.

Discovery of a new electrical insulator was announced by Dr. Abram Joffe, a Russian scientist visiting the United States.

A highly successful process of television, by wire and radio, the development of the Bell Laboratories under the direction of Dr. Herbert E. Ives, was demonstrated on April 7.

The televox, an apparatus by which the telephoned note of a tuning-fork can be used to extinguish lights, start and stop electric fans, and operate other devices, was exhibited by its inventor, R. J. Wensley.

The non-magnetic ship Carnegie was overhauled preparatory to a lengthy scientific cruise to begin next year.

Metal shrinks when it is magnetized, Professor S. R. Williams, of Amherst College, stated.

The conclusion that nebulium, the strange "element" supposed to exist in such bodies as the great cloud of glowing gas in the star group of Orion, is merely oxygen and nitrogen was reached by Dr. I. S. Bowen, of the Norman Bridge Laboratory of Physics.

Dr. Paul R. Heyl, of the U. S. Bureau of Standards, announced the determination after three years' work of the Newtonian constant of gravitation as the fraction 6.664 over a hundred million; a value ten times more accurate than the previously accepted value.

The "quantum," the "atom" of which modern physicists suppose that light and other radiations consist, may be divided was indicated by experiments by Dr. A. J. Dempster, of the University of Chicago.

The wind velocity of the hurricane that wrecked Miami on September 18, 1926, was determined as 132 miles an hour, which was stated to be the highest on record, by Benjamin C. Kadel of the U. S. Weather Bureau.

Chemistry

Experiments by H. S. Cooper, of Cleveland, Ohio, showed that the light-weight metal beryllium or its alloys is suitable for airship frames and light-weight pistons.

The new chemical element rhenium was obtained in pure form by its original discoverers, Drs. Walter and Ida Noddack.

Metallic vanadium was obtained for the first time by J. W. Marden and M. N. Rich, of the Westinghouse Lamp Co.

A record making deposit of borax, in the form of a new mineral called rasorite, was discovered in California by C. M. Rasor.

Professor David I. Macht, of the Johns Hopkins University, announced that polarized light speeded the growth of certain plants and had other effects on life.

That the germs of tuberculosis contain a previously unknown compound, a phosphorous-containing fat, was discovered by Professor R. J. Anderson, of Yale University.

Making of synthetic rubber from coal on a commercial scale was announced by the German chemical trust.

Electroplating of rubber from latex or colloidal solutions of rubber was developed upon an industrial scale.

Hydrogenation of coal to produce liquid fuels resembling petroleum reached the point of commercial application.

Progress in the further synthesis of chemicals from cheap raw materials was made.

Cornstalks were utilized experimentally as a source of cellulose for paper and artificial silk.

New denaturants for alcohol were developed, some of them being produced by synthesis from petroleum products.

The U. S. Bureau of Standards discovered that duralumin can be protected against corrosion by coating with pure aluminum.

Engineering

The U. S. Army developed a new fire-control instrument for anti-aircraft artillery, which makes it possible for one man to aim any desired number of guns.

A new 3-inch anti-aircraft gun firing 15-pound shells at the rate of about one every two seconds was developed by the U. S. Army.

The six-mile Moffat tunnel under James Peak, Colo., was completed.

The Holland vehicular tunnel between New Jersey and New York City was opened to traffic.

The United States Steel Corporation inaugurated an extensive program of research into the fundamental problems of the industry.

A device for detecting one part of mercury in 20,000,000 parts of the atmosphere was developed by the General Electric Company.

Diphenyl oxide, a white chemical with a powerful odor like geraniums, was experimented with as a substitute for water in steam boilers, in an endeavor to increase their efficiency.

More durable paper currency resulting from tests of the U. S. Bureau of Standards resulted in estimated savings of one million dollars a year.

An acoustical plaster which absorbs most of the sound falling upon it was developed by the U. S. Bureau of Standards.

Methods of making low-cost roads of gravel, sand and clay were developed.

Geology and Geography

Scientists of twenty-five nations, meeting at Prague, passed resolutions recommending an international cooperative study of "ocean deeps."

Floods in the lower Mississippi Valley and in New England were the worst that had ever been recorded.

That the Mississippi floods may be due to the gradual sinking of the lower valley of the river, closer and closer to sea-level, was suggested by Dr. David E. White, geolo-

gist of the National Research Council and the U. S. Geological Survey.

Disastrous tornadoes struck Louisiana, Mississippi, Texas, Oklahoma, Illinois, Arkansas, Kansas and Missouri; St. Louis was particularly damaged.

Large quantities of oil may be deposited below the bottom of the sea, said Dr. Parker D. Trask, of the American Petroleum Institute.

Discoveries of potash salts in Texas and New Mexico thick and rich enough for mines were discovered through test borings made by the U. S. Geological Survey.

Seven thousand square miles in southeastern Alaska were surveyed by aerial mapping through the cooperation of the Navy and the U. S. Geological Survey.

Two large areas in Alaska, totaling 7,800 square miles, were explored by scientists of the U. S. Geological Survey, discovering and mapping a high mountain region hitherto unknown and finding a volcano in eruption.

A great earthquake on May 22 in the Kansu province in interior China was announced to the world on the following day by Science Service, in cooperating with the U. S. Coast and Geodetic Survey and the Jesuit Seismological Association, though it was not for many weeks later that actual reports from the devastated region reached civilization.

Other severe earthquakes during the year that were immediately located by the cooperation of these three bodies included those in Chile on April 14 and November 14; Japan, March 27; Alaska, on October 24, and California on November 4.

The heat of Kilauea, the world's largest volcano, was measured by means of borings made in its floor by Dr. T. A. Jaggar, director of the Hawaii Volcano Observatory.

Biology

A ten-million dollar war was waged against the European corn borer in the Corn Belt states by the Department of Agriculture and declared successful.

Three botanists, Dr. A. B. Stout, Dr. Ralph McKee and E. J. Schreiner, announced the development of a fast-growing hybrid poplar to meet the demands for wood pulp.

Cells, usually assumed to be short-lived, were found still living in the heartwood of redwood trees a century old, it was reported by Dr. D. T. MacDougal, of the Carnegie Institution of Washington, and Dr. G. M. Smith, of Stanford University.

Small amounts of copper were found to make low-grade muck lands highly productive, according to E. L. Felix, of Cornell University.

The Tennessee State Supreme Court, in a decision on the appeal in the famous Scopes case, declared the anti-evolution law constitutional, but so worded its decision as virtually to nullify the law. John Scopes was excused from paying the fine levied against him for violating the statute, because of an error on the part of the judge presiding at his trial.

Efforts made in thirteen states to pass anti-evolution statutes were unsuccessful.

X-rays applied to the reproductive cells of animals and plants were found to speed up the rate of evolutionary change over a thousand per cent. This work was done on fruit flies by Professor H. J. Muller, of the University of Texas, and on tobacco plants by Professor T. H. Goodspeed and Professor A. R. Olson, of the University of California.

Natural evolutionary changes in shell-fish within sixty years, producing distinctly recognizable animal varieties in a lake in Wisconsin, were reported by Dr. Frank C. Baker, curator of the museum of natural history of the University of Illinois.

Chemical affinities between the milks of related animals were discovered by Professor H. R. Marston, of the University of Adelaide.

Eggs of the marine worm, Nereis, were fertilized without fathers, by the use of an electric current, by Ware Cattell, of Memorial Hospital, New York City.

Dr. Barnett Sure, of the University of Arkansas, has shown by experiments with rats that a poorly nourished mother, whose bodily stock of vitamin B is subnormal, becomes unable to pass along this necessary food element to her nursing offspring.

The female sex hormone, or gland essence that causes typically feminine reactions and development in animals, was discovered in male animals as well as female, by Dr. Otfried O. Fellner, of Vienna.

The tuberculin testing of fowls to weed out avian tuberculosis was advocated by Dr. John R. Mohler, chief of the U. S. Bureau of Animal Industry, at the Third International Poultry Contest held at Ottawa, Canada.

Mathematic studies of athletic records show that the one for the 880-yard run should be most easily broken, according to the statement of Dr. Earle R. Hedrick, of the University of California.

Dr. Raymond Pearl, director of the Institute for Biological Research at the Johns Hopkins University, announced a theory based on laboratory observation of yeast, bacteria and fruit flies, that biological and human populations rise and fall in accordance with a universal law.

Congress passed a bill to provide for the collection and care of a herd of the nearly extinct Texas longhorn cattle in the Wichita National Forest, Oklahoma.

A program for the scientific study and administration of the great elk herds of the Yellowstone region was planned by a cooperative committee of the national, state and private bodies interested.

The First International Congress of Soil Science was held in Washington in June and attracted scientists from many foreign countries.

A serious plague of mice occurred in Kern County, Calif., during January and February.

A new mosquito poison based on formaldehyde and said to be the most efficient yet devised, was announced by E. Boubaud, of the Pasteur Institute, of Paris.

Rediscovery of the straight-billed reed runner, a bird of Uruguay first noted by Darwin in 1831, of which all trace had been lost for nearly one hundred years, was made by C. C. Sanborn, of the Captain Marshall Field South American Expedition of the Field Museum.