SCIENCE NEWS

SCIENCE IN 1922

Science Service

INTERESTING developments in science during the past year have occurred in various fields of organized knowledge.

ASTRONOMY, PHYSICS AND CHEMISTRY

Researches determined that blue and yellow light pass through empty space at the same speed.

The toal eclipse of the sun on September 21, visible in Australia and the South Pacific, was the occasion of six astronomical expeditions to test the Einstein theory. A partial eclipse of the sun was visible on March 28 in Florida.

Ten years of solar radiation observations were announced and the average value of the sun's heat on the earth is 1.94 calories per square centimeter per minute, or enough heat to melt a layer of ice 424 feet in one year.

Mars made a close approach to the earth in June.

Invisible sun spots were discovered at Mount Wilson Observatory by means of their magnetic effects.

Professor Sir Ernest Rutherford, of the University of Cambridge, announced that he is able to disintegrate the chemical elements, boron, fluorine, sodium, aluminum and phosphorus as well as nitrogen, and to obtain hydrogen from them by bombarding them with the powerful alpha particles of radium.

It was determined that E is the easiest letter to hear and that all ears hear differently.

A new device for sounding ocean depths by sound waves without the use of the sounding lines was perfected by the Navy.

A liquid, called furfural, was produced from waste corn cobs at low cost and can be used in making synthetic resins and as a motor fuel, saving the more expensive alcohols and gasoline now used.

A mixture of cyanogen chloride, a tear gas, and the common disinfecting gas, hydrocyanic acid, was developed as a better fumigating agent that is deadly and yet gives warning of its presence.

MEDICINE

A common chemical, carbon tetrachloride, was found to be an efficient substance for use in removing hookworms, in man, and it may replace the drugs formerly used, chenopodium and thymol.

Post-mortems of human beings who lived 4,000 years ago were made by means of an examination of Egyptian mummies who were found to have many of the diseases of to-day.

Dr. Hubert Work, then president of the American Medical Association, was made postmaster general. He became the second scientific cabinet officer, as Herbert Hoover, secretary of commerce, is a mining engineer.

A tendency toward cancer was found to be inheritable.

Minute amœba, single-celled animals, in the bone marrow were found to cause joint rheumatism or arthritis deformans.

Direct sunlight, unimpeded by glass or clothing, was found to be an effective cure for rickets.

The use of glands and their aid in rejuvenation was the subject of experiment and discussion.

Mother's milk was found to act as an antitoxin and vaccine that protects the new-born baby against disease germs.

An extract of the pancreas was isolated at the University of Toronto and this substance, called insulin, when administered to a sufferer from diabetes allows him to eat normal food, thus promising to control this disease, which is usually fatal.

Encephalitis or inflammation of the brain was transmitted experimentally from man to rabbits by inoculating them with the clear contents of ordinary cold sores.

An antiserum for combatting the highly fatal Rocky Mountain spotted fever was produced at the Rockefeller Institute for Medical Research.

Spraying the throat with pneumonia vaccine produced considerable immunity against virulent pneumonia in monkeys during U. S. Public Health Service experiments.

German chemists announced that they had perfected a drug, called Bayer 205, that cures the African sleeping sickness.

The hundredth anniversray of Pasteur's birth was celebrated on December 27.

AGRICULTURE AND BIOLOGY

The white-pine blister rust, a fungus or parasitic plant disease, invaded the great pine forests of the northwest, threatening many feet of timber.

A very fine colloidal material, called "ultra-clay," was found to compose an important part of the soil.

An insect imported from France was found to attack the destructive native corn borer.

A new method of treating phosphate rock in the electric furnace gave promise of better fertilizer.

The rose was discovered to be one of the worst enemies of the potato because it harbors the eggs of aphids that carry disease.

By using alum it was found possible to neutralize the alkalinity of soil that becomes impervious after several years of irrigation due to the formation of insoluble salts.

The true wild species of potato, from which our cultivated potatoes come, was found in the mountains of northern Ecuador.

The mystery of why a heifer born twin with a bull is usually sterile was found to be due to the action of gland secretions before birth.

It was found that artificial illumination can entirely replace sunlight in growing any common crop plants and weeds and that as the seed is perfectly normal it will be possible to grow three generations in a year instead of one by this method.

The fishy taste in butter was traced to a chemical substance known as "trimethyl amine."

A cheaper method of combating the cotton boll weevil, consisting of treating the unblown buds of the plant, was developed in Florida.

An insidious marine foe, the shipworm or teredo, threatens the destruction of New York's wharfs and docks and study of the situation is begun.

In the case of a tiny water animal, the rotifer, it was found possible to make a female animal produce either all females or males by simply varying the food.

A platypus, an Australian animal that has the bill of a bird, the fur of an animal, lays eggs and yet suckles its young, was brought to America alive for the first time.

Differences in bacteria due to age were discovered and it was found that these minute organisms suffer from infant mortality.

X-rays by action on the chromosomes in the cells of flies will produce irregular progeny and control sex.

The essential oils that cause the fragrance of flowers were found to serve as a protection against extreme heat and chill.

A method of protecting wood from land and water insect damage by treating with paraffin and poisonous salts was discovered.

ENGINEERING AND RELATED SCIENCES

Methods of using the greatest potential power sources, the Colorado River, were considered and treaties between the states concerned were completed.

In three localities model experimental roads were built and worn out in order to obtain data for better design of highways.

The coal strike beginning April 1 shut off power equal to four hundred times the energy actually developed at Niagara Falls.

French experiments with motors of the Diesel type indicated that motor vehicles will be able to use heavy oils instead of gasoline.

The American Liberty aero engine was modified experimentally to use heavy oil instead of gasoline.

Writing in the sky by means of smoke sent out from airplanes in flight was perfected.

By using paper models, design of concrete buildings was improved.

In gliding and soaring contests in Germany, France and England, two motorless flights over three hours in length were attained.

The army airship C-2 was destroyed while on a trans-continental trip.

Prospecting and mapping by airplane came into more general use and was made more accurate.

Researches on the level of water in the Great Lakes lead to the conclusion that man would have to regulate their level artificially in order to secure their most economical use in power and transportation.

ANTHROPOLOGY AND PSYCHOLOGY

Finding of the Rhodesia skull of pre-historic man during the previous year revived interest and speculation in ancient man.

Evidence was presented that man existed before the Great Ice Age at least 520,000 years ago.

The finding of a fossil tooth thought to be that of an intermediate between ape and man, in the home state of William Jennings Bryan, principal opponent of the facts of evolution, started a search for further evidence of the animal.

Attention was turned toward the problem of giving the gifted or bright student better opportunities in our schools and colleges.

Leading psychologists formed a corporation for the advancement and practical application of psychology, the profits of which must be used for research.

RADIO

Radio broadcasting of speeches, music, entertainment and news became national in scope.

Life-saving boats of the Coast Guard were equipped with radio apparatus.

The national radio conference called by the Department of Commerce laid plans for the extension of this relatively new method of communication and recommended legislation.

"Wired wireless" or line radio was demonstrated by Major General George O. Squier to be

useful as an additional method of broadcasting over telephone or electric-light wires.

American radio amateurs established regular communication with Hawaii and Porto Rico and held successful trans-Atlantic tests for the third time.

Major E. H. Armstrong, inventor of the regenerative radio circuit, created a new super-regenerative circuit that produces signals 50,000 and more times greater than those ordinarily produced by the same apparatus wired in the ordinary way.

Alexander Graham Bell, inventor of the telephone, died.

EXPLORATIONS

Dr. D. B. MacMillan returned from his expedition to Baffin Land bringing important geographical, magnetic and other scientific data.

Captain Roald Amundsen and his expedition left on the *Maud* for a drift across the Arctic Ocean.

The discovery of an archaic pyramid in Mexico indicated that human history in America began as early as the primitive civilizations around the Mediterranean.

Five Mayan cities abandoned hundreds of years ago were discovered in the forests of Yucatan and Guatemala.

A rich collection of utensils and adornments was discovered in the tomb of King Tutankhamin, in the Valley of Kings, near Luxor, Egypt.

ASTRONOMICAL EVENTS IN 1923

By Isabel M. Lewis, U. S. Naval Observatory.

Science Service

Two astronomical events of exceptional interest that will take place in 1923 are the occultation of the planet Venus by the moon on January 13 and a total eclipse of the sun visible in California and Mexico on September 10.

There will be in all four eclipses in 1923, two of the sun and two of the moon. A small partial eclipse of the moon will take place on March 2 which will be visible in Europe, Africa, the Atlantic Ocean, South America and North America, except in the extreme northwestern part. At greatest eclipse thirty-eight per cent. of the moon's diameter will be covered by the earth's shadow.

On March 17 there will be an annular eclipse of the sun visible in the extreme southern part of South America, the South Atlantic Ocean and South Africa. The path of the annulus will cross Patagonia, the Falkland Islands, South Africa and Madagascar and the maximum duration of the annular phase of the eclipse on the central line will be nearly eight minutes. The partial phase will be visible over all of the southern part of South America, the South Atlantic Ocean and Africa.

Another small partial eclipse of the moon will occur on August 26, visible in the Pacific Ocean, Australia, western South America and in all of North America except the extreme northeastern part. At greatest eclipse only seventeen per cent. of the moon's diameter will be covered.

The total eclipse of the sun that will occur on September 10 will be visible in its partial phase over all of North America, Central America and the northwestern part of South America. The path of total eclipse starts a little to the south of Kamchatka at sunrise, crosses the Pacific to San Clemente Island off the coast of California, touches California in the vicinity of San Diego and the Mexican border, passes over Mexico and Yucatan and leaves the earth at sunset a little to the south of the West Indies. The circumstances should be particularly favorable for the observation of this eclipse both in Mexico, where the path will pass over many excellent points at high altitudes, and in southern California, where astronomers on the Pacific Coast are now planning to observe it.

The planet Venus, which will present an interesting and beautiful spectacle on the morning of January 13, when it will be occulted by the moon in the crescent phase will be a resplendent object in the eastern sky before sunrise for some time to come. It will reach its greatest distance west of the sun on February 4, when it will rise about three hours before sunrise. After that date its angular distance from the sun will decrease but it will continue to be visible in the east before sunrise until shortly before it comes into conjunction with the sun on September 10. From that time on to the end of the year it will be in the western sky after sunset.

Jupiter is now near the meridian at sunrise and Saturn is some distance to the west of Jupiter in Virgo. Saturn will remain in the constellation Virgo throughout the year and Jupiter will be in Libra until December, when it will pass into Scorpio. Both planets will be seen at their best in the spring when they come into opposition with the sun and will then be visible all night. Saturn will be in opposition on April 7 and Jupiter on May 5. They will be visible after sunset throughout the summer and into the fall until within a few weeks of their conjunction with the sun, which occurs for Saturn on October 17 and for Jupiter on November 22. Several weeks after

conjunction with the sun they will be seen in the east just before sunrise.

TOYS OF AMERICAN INDIANS

Science Service

TOYS of the American Indian tribes never before exhibited have just been placed on exhibition in the division of ethnology of the U. S. National Museum. These playthings of the papooses from Alaska to Mexico reveal that the redmen were efficient toy-makers and that their children found delight in the same imitation of their elders taken into consideration by the manufacturers of our modern Christmas amusement devices.

While little Indian girls, the exhibit shows, could not hug the talking, walking and sleeping dolls of our mechanical age, they did have plenty of dolls, with miniature teepees instead of doll houses, and little cradles to carry on their backs like the ones their mother carried them in when they were babies. Among these dolls is one of the tiny Eskimo which is a real stuffed wild duck for baby to play with.

Animal dolls were evidently very popular among the Indians. An ingenious beaver with a tail of leather marked in imitation of the big flat tail of the real beaver was made by an Appapaho papa for his papoose. Cute little woolly buffaloes made out of different colored beads are shown. Miniature elk and targets cut in the shape of buffaloes for little Indian boys to shoot at are also shown.

There are horse dolls and one doll is a tiny horse believed to have been made from the skin of an unborn colt on account of the lack of seams in the delicate hairy coat covering the little wooden image. These presents were sometimes exchanged when the families went visiting. The exhibit included material from Appapahos, Shoshones, Hopi, Utes, Apaches, Cheyennes and other Indians.

LEAGUE REVEALS DETAILS OF PLAGUE IN UKRAINE

Science Service

MORE than 1,300 bodies waiting burial, hospitals swamped with cholera victims, hundreds helpless in the homes, vermin swarming unchecked for lack of fuel and water, with inoculation rendered ineffective for want of food, are among the details of the epidemic of cholera now subsiding in the Ukraine as revealed by a report of the Health Section of the League of Nations published at Geneva.

At Odessa prophylactic inoculation was resorted to only after hundreds of cholera cases had been reported. The ten sanitary officers available found themselves unable to visit and isolate all the cases. Hospital accommodations were never adequate. There was but one auto truck available to remove the dead. Labor was hard to get to move the plague stricken dead. Bodies were pitched into a common pit and chloride of lime thrown on top of them. Lack of water and fuel made delousing and bathing practically impossible. Similar conditions were found at Kherson, once the chief town of the government, the streets of which are now all but deserted. Experience in this epidemic has also demonstrated that protection against cholera by vaccination varies according to the state of nutrition of the vaccinated population.

ITEMS

Science Service

"SEND me steel No. 50," will be the way in which manufacturers will order the particular kind of metal that they need if plans inaugurated by the American Engineering Standards Committee cooperating with other engineering organizations and steel producers and users are carried out. Much confusion due to the necessity of long and detailed specifications is experienced now and the number and standardization of common specifications will save much waste and time, it is declared. The Navy Department has a million pounds of unidentified steel which must all be analyzed and tested before use. A number system in general use would have prevented this situation. Switzerland, Germany and other European countries have taken steps toward numbering systems for steel.

THE principal meat eating nations of the world in order of per capita consumption are Argentine, Australia, and New Zealand, with the United States fourth.

AN experimental plant for the extraction of oil from shale in Sweden has done so well that expansion is planned.

DURABLE, noiseless, noninflammable factory flooring is being made from tanneries and shoe factory waste by a shoe company.

WATER carriers in the streets of Fez, Morocco, furnish the public with free water collected in pots made by lepers who live in caves outside the city's walls.

TESTS to determine a practical standard of illumination to make auto license tags readable at night at a reasonable distance are being conducted by the U. S. Bureau of Standards.