SCIENCE NEWS

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ASTRONOMY

EVIDENCE of gold in the sun was obtained by comparative study of gold spectrum lines and the solar spectrum.

Thorium, rare radioactive element, was discovered in the sun by detecting lines in the solar spectrum that matched lines of thorium produced in the laboratory.

The sun entered a new 11⅓-year sunspot cycle with the first new spot group appearing as expected well away from the sun's equator and one of the last spot groups of the old cycle still visible close to the equator.

New comets discovered were: Diamaca, Oterma III.

Periodic comets rediscovered were: Comas-Sola, last seen in 1935; Comet d'Arrest, last seen in 1923.

A nova or exploding star was discovered in the constellation Aquila.

Nova Puppis, discovered in November, 1942, faded below naked-eye visibility.

The shell of the star 48 Librae was found to be composed of separately rotating hot layers.

In February, Comet Whipple II increased its brightness by nearly two magnitudes in a sudden and unexplained manner.

Nitro-hydrogen molecules made up of more than two atoms and hitherto unidentified in comets were found by spectrogram measurements to be numerous in the heads of Comet Cunningham and Comet Whipple II.

One star of the binary Beta Cephei was found to be the brighter member in a double star with a period of 50 years.

CHEMISTRY AND PHYSICS

BIOTIN, recently discovered vitamin of the B group, was made synthetically, thus affording more ample supplies for research in human nutrition.

A new method of preserving vitamin C in evaporated milk by sealing the evaporated milk tins in an atmosphere of nitrogen or under vacuum was developed. This increases by 50 per cent. the vitamin C retained after six months' storage.

Riboflavin (vitamin B_2), important in the prevention of certain eye and skin diseases, was found to be present in the soil and in a special yeast first isolated from sour milk.

Two important vitamins, riboflavin and thiamin, were recovered in quantity from brewery wastes by the use of an insoluble synthetic resin, Amberlite IR–100.

An inexpensive process for recovering a billion pounds of food protein annually from wheat used for alcohol production was developed.

A process for obtaining large quantities of protein for possible human consumption from a "defatted" corn germ was developed.

A concentrated protein extract to be used as a substitute for scarce grain in livestock rations was obtained by chemical treatment of grass.

A method for quicker and cheaper removal of proteins from distillery wastes by use of bentonite, a fine clay, was developed, thus affording valuable protein cattle food.

A sticky starch, used as a substitute for tapioca and for textile sizing and finishing and for paper coatings was made from certain kinds of corn and sorghum.

Wheat gluten, a by-product in the manufacture of wheat starch, was found to make a good adhesive when dissolved in dilute ammonia.

Foods dried in a natural gas atmosphere, which is later burned to heat the dehydration unit, retained almost all their vitamin C and original color and taste.

The mechanism by which auxins, hormone-like substances, stimulate plant growth was discovered to be by the release of an enzyme, diastase, from protein colloidal substances.

A new kind of synthetic rubber, Paracon, was developed which will be valuable as a special replacement for natural rubber, particularly in the aircraft industry.

New war gases, nitrogen mustards, were developed and found to have a milder blistering action than mustard gas and to cause blindness.

For the first time 100,000,000-volt x-rays, 50 times greater than any previous voltage, were produced.

Radar, a locator using ultra-high frequency radio waves, although developed earlier, was announced.

A new phosphorescence microscope for the examination of objects by their own short-lived glow after ultraviolet irradiation was devised.

A huge optical glass disk, the largest prism ever made, measuring 26 inches in diameter, graduated in thickness from one and one half inches to three and one quarter inches and weighing 260 pounds, was successfully cast for use in an astronomical telescope.

EARTH SCIENCES

PARICUTIN, a new volcano 200 miles west of Mexico City, arose from a cornfield to a height of 1,000 feet and is the first whose entire life is recorded scientifically.

Evidence of a long wet spell 120 million years ago was found in fine white clays of the Southwest.

The 250 million-year-old fossil remains of a giant amphibian with a skull more than two feet long were found in Texas.

Legendary pit of Tasco, Mexico, known as Hell's Mouth, was found to be only 500 feet deep instead of a mile and was dynamited to close it and prevent its use as an illegal execution spot.

Issuance of daily weather maps and fuller forecasts by the U. S. Weather Bureau was resumed when it was concluded that this information would be of less value to the enemy than to our own war efforts and production.

There were 43 earthquakes of sufficient strength to record themselves on distant seismograph instruments; notable among them was a double shock off the coast of Japan in the same region where the disastrous tidal wave of 1933 started.

New deposits of quartz, suitable for use in military radio and radar apparatus, were discovered in North Carolina, Virginia, California and Arkansas.

Ancient ocean beds in Idaho and Wyoming were found to contain vanadium, estimated at millions of tons.

Biological Sciences

About 200,000 quinine-bearing cinchona plants, grown from seeds rescued from the Philippines during invasion, were sent to neighboring republics for planting.

Fresh evidence that virus disease particles are giant protein molecules capable of reproduction and parasitic feeding within living cells was obtained by means of the ultra-centrifuge, which whirls solutions at high speeds and separates and sorts the particles.

A strain of mold was induced by x-ray to undergo genetic changes from which were established many pure lines specifically deficient in ability to synthesize dietary essentials; these strains offer new approaches to the study of biochemistry and genetics and have also proved extremely valuable in delicate chemical analysis of food.

Plant tumor bacteria, when deprived of power to cause abnormal growths through use of glycine regained it when treated with hormones; bacteria from the tumors thus caused were unable to produce new tumors unless again aided by hormones.

A deadly poison, extracted from a microbe in the soil, was discovered as a possible rodent exterminator when laboratory tests revealed it not as a germ killer for mice, but a killer of the mice instead.

Large-scale use was made of an enzyme formed in mass-cultured mold for the splitting of starch into sugar for fermentation into industrial alcohol.

Special strains of yeast were developed, having nutritious qualities and flavors of meats and other foods.

A new synthesized female sex hormone was developed by combining sulfur with the natural female hormone, estrone.

Prenatal control of sex of fruitflies was accomplished by genetic selection.

Pellets of synthetic female sex hormone, diethylstilboestrol, inserted under the skin of young roosters, made them resemble hens.

Tests and experience of new tillage methods, dispensing with mold-board plows that turn all the vegetation under, proved highly successful.

Night-time temperature was found to affect differently blossom induction and other activities of warm-climate plants and cool-climate plants.

Engineering and Technology

The "pancake" Diesel engines now powering Navy ships were revealed to put out more than four times the power per pound of former Diesel engines and to occupy only a third of the space.

Gas turbines capable of initial temperatures of 1,500 degrees Fahrenheit were made possible by the development of heat-resistant alloys.

A speedy, economical process for food dehydration which for the first time reduced the moisture content to 1 per cent. was developed through use of radio-frequency energy.

Copper-covered steel wire for high frequency communication lines was developed and found as efficient as solid copper wire.

Special thick-walled tires built to be run without tubes were produced for Army use.

Tubeless tires completely filled with an anti-freeze solution of calcium chloride as an inner liner for preventing air diffusion were developed.

Speedy continuous tinplating processes, which save much tin, were developed by the use of new and improved chemicals in electroplating.

A non-skid, fireproof plastic material containing particles of garnets went into use on battleship decks to prevent slipping accidents.

The bazooka, using deadly rocket projectiles with highly brisant explosive charge, was announced as a new war weapon and proved effective in combat.

A new and superior optical glass, made without sand, was developed from common chemicals such as boric acid, zinc oxide and aluminum hydroxide.

A walnut-sized searchlight, projecting a 1,500 candlepower beam of light visible for 65 miles at sea, was designed.

Colored smokes from grenades aided American tanks in identifying themselves to friendly planes in the Tunisian campaign.

A new airplane compass, the Gyro Flux Gate Compass, which is not affected by bombload, motion of the plane, armor plate or other metal parts of the plane, was developed.

The Army's new submachine gun, M3, was scheduled to supplant all other weapons of the same type due to performance records and the fact that it can be produced without complicated machine tools.

"Electrical nurses" for the 20-inch pipeline between Texas and the East Coast were developed to record temperature of motors, pumps and bearings, pressure in the pipe and direction of fuel flow.

Plastic lithographic printing plates, replacing critical zinc and aluminum, were made from polyvinyl alcohol resin for use in printing colored maps and documents and in mobile field printing units.

Washing films and prints, after fixing with hypo, first with sea water and then with fresh water, was found to speed the job in photography.

A compact, easily portable mercury flash lamp outfit which takes photographs with an exposure of only one-millionth of a second was developed.

Stainless steel sheets were stitched together with an electric thread or current which shoots clear through the metal and fuses the sheets together at their inner surfaces.