

ASTRONOMY

Sees Sun Rise At Same Hour For Four Months

SUPERINTENDENT Preston P. Patraw of Zion National Park has had the unique experience of seeing the sun rise at almost exactly the same time every day for four months.

From April 20 to September 1, Mr. Patraw reports, the sun's rays stream first into Zion Canyon within a few minutes of 7 o'clock in the morning. The unusual phenomenon is explained by the park superintendent as follows:

About April 20 the sun rises at 7:01 A. M. at the base of East Temple, one of the huge formations making up the canyon wall. On June 21, it rises at 7:05 A. M. at the top of the Temple, and by the first of September it again rises at the base of the formation at 7 o'clock. During the intervening time, the slope of East Temple is such that each day the sun's rays must be a little higher on the horizon before they can reach past the great rock hulk. Since the sun rises earlier each day, it would reach the slightly higher point on the Temple at approximately the same time.

Science News Letter, January 1, 1938

PHYSICS

New "X" Particle Should Have No Fixed Mass

SCIENCE may be on the threshold of discovering a whole host of particles intermediate in mass between the electron and the proton nucleus of the hydrogen atom. This is the implication in the report of Prof. G. E. M. Jauncey, of Washington University, St. Louis, Mo. (*Physical Review*).

Under the title "Possible Origin of the X Particle," Prof. Jauncey describes a new theory which accounts for the new-found particle first discovered at California Institute of Technology by Drs. Carl Anderson and Seth Neddermeyer and confirmed by the Harvard scientists, Drs. J. C. Street and E. C. Stevenson.

Drs. Street and Stevenson found that the mass of the X particle was about 130 times that of the electron. But, says Prof. Jauncey, there is no special reason why the particle should have this particular mass. Other investigators, in fact, have determined that the particle may have a mass of 700 times that of an electron.

Prof. Jauncey's theory indicates that the X particle may well be formed in the intricate process of collision occur-

ring when cosmic rays strike the earth's atmosphere and scatter atomic "debris" in the form of electrons and photons through the air.

When a photon of radiation strikes an electron in the atmosphere, pictures Prof. Jauncey's new theory, the photon loses an enormous amount of energy. To create X particles like those observed by Drs. Street and Stevenson, the photon responsible would have to lose energy amounting to 4,306,000,000 volts.

This vast amount of energy is split two ways, suggests Prof. Jauncey. Of this, 4,240,500,000 volts go into kinetic energy of moving the X particle, and 66,000,000 volts energy goes into increased mass of the X particle. It has previously been found that energy and mass are different forms of the same thing and interchangeable.

The mass energy of an electron at rest, adds Prof. Jauncey, is 500,000 volts which is about one-130th of the mass of the X particle created or, said another way, the X particle has a mass 130 times that of the initial electron.

The point is, states Prof. Jauncey, that the X particle created cannot be expected to have any fixed, exact mass by his theory. Its mass depends on the energy in the initial photon of energy which created it. The higher the photon energy the greater the observed mass of the X particle and there should be, in fact, a whole range of masses for this new particle.

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SEISMOLOGY

Mexico's Christmas Quake Centered off Oaxaca Coast

MEXICO City's Christmas Eve earthquake had its epicenter, or point of greatest disturbance, 300 miles away from the city and 60 miles at sea, off the coast of the southern state of Oaxaca, U. S. Coast and Geodetic Survey scientists determined, after examination of data collected telegraphically by Science Service.

The epicenter was in latitude 15.5 degrees north, longitude 99 degrees west. The shock, which the seismologists described as "very strong", occurred at 8:17.9 a. m. eastern standard time, on Dec. 23.

The earthquake shook a large part of the Mexican peninsula and did considerable property damage. The capital itself, however, was little injured due to its situation on a cushioning ancient lake bottom.

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IN SCIENCE

PHYSICS

G-Men Help Detect Unidentified Art Treasure

A COPY of "Christ Blessing Bread," a painting by Carlo Dolci, has been identified in the Fine Arts Section of the National Museum with the aid of the Federal Bureau of Investigation.

Not stolen, but unidentifiable was an ancient chromolithograph turned over to the G-men by puzzled Museum experts. On its back was writing which, though perfectly visible, was still too faint to be read with the aid of a magnifying glass.

Infra-red photography, regular weapon of the F. B. I. investigators in battling crime, was resorted to. Infra-red filters and special photographic plates enabled the G-men to turn over to the Museum officials perfectly clear copies of the writing. The Museum then was able to identify its piece as a rare chromolithograph made directly upon canvas, a method popular between 1870 and 1880.

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GEOLOGY

One-Third of U. S. Found To be Ill-Watered

ADD to the one-third of the people who are ill-fed, ill-clothed, ill-housed:

One-third of all the land in the United States is ill-watered.

John C. Page, U. S. Commissioner of Reclamation, pointed this out in an address. From the hundredth meridian westward to the crest of the sea-facing mountains on the Pacific slope, average rainfall cannot support the same kind of farming that is familiar in the moister East. Hence, following the lead of the early Spanish missionaries and the earlier Indians, present-day Americans in the region practice irrigation.

The lands now under irrigation, and to be opened to irrigation in the future, do not offset in area more than a tenth of the acreage devastated and still menaced by erosion, declared Mr. Page. Even now, many farmers dispossessed of their holdings by water and wind erosion are being accommodated on irrigated land in the West.

Science News Letter, January 1, 1938

FIELDS

ENGINEERING

Lightning Protection Code Issued by Standards Bureau

NINE-TENTHS of the property damage caused by lightning occurs in rural areas, it is reported in the first sections of the Code for Protection Against Lightning, issued by the National Bureau of Standards.

Four hundred people on an average are killed each year in the United States by electric bolts from the sky, the handbook, which details methods of protecting buildings and other property from lightning, reports.

Proper use of lightning rods sharply cuts damage to buildings struck by lightning, it is asserted on the basis of tables printed in the pamphlet. Users of lightning rods are cautioned to see that they are properly connected to the ground, or else they will not perform their function adequately.

Placing lightning rods on small buildings in urban areas, particularly near large buildings, is uneconomical because of the protection afforded by the larger structures, it is stated. Large buildings should always, however, be rodged.

Persons caught out in the open during an electrical storm are advised to seek shelter in as large a building as possible. Failing that, they should head for the shelter of a cliff or of a dense forest. The code was prepared under the joint sponsorship of the American Institute of Electrical Engineers and the National Bureau of Standards and has been approved by the American Standards Association.

Science News Letter, January 1, 1938

ECOLOGY

Ecological Method Applied To Problems of Human Life

ECOLOGY is customarily defined as the study of the relations of plants and animals to their environment and to each other. This definition omits consideration of human relationships. H. G. Wells has extended it, by declaring that economics and sociology are only branches of ecology.

Comes now a scientist who is an ecol-

ogist in his own right, and makes direct application of the basic ideas of ecology to problems of human society, as lived in the modern civilized world. (THIS IS OUR WORLD—Paul B. Sears—*Univ. of Oklahoma*, 288 p., \$2.50.)

Prof. Sears explains compactly what ecology is, as it works in the subhuman world. Then he shows how civilization on the whole operates as "a disease of the environment." Man strips forests, rips up age-old grasslands, reaps the consequences in dust-storms, floods, and famines. His tools and technique have outstripped the evolution of his intelligence, so there's the very devil to pay.

Yet Prof. Sears is no mere Jeremiah, prophesying only inescapable doom. Ways out can be found by serious application of the community will. Authority is more efficient, but democracy surer in the long run, he thinks.

The duty of the leader in a democracy "is to inform, primarily. He must keep his people aware of the problems which confront them and upon whose existence all sane people of any political leaning can agree. . . . Then, by the decision of his people, fully informed, he must have the courage, and his followers to stand or fall."

Through such courageously democratic means, Prof. Sears believes, human society can achieve a stable culture pattern, comparable to the stability that slowly develops in organic communities in the subhuman world.

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ENGINEERING

Higher Test Fuels Promise Economies in Aviation

GREATER fuel economy, more power to enable bigger giants of the air to take off from America's relatively restricted airports, and smaller engines are the promise of high test fuels which will come into use in the near future. Gasolines with anti-knock ratings in excess of 100, when turned to by the aviation industry as the answer to present airplane limitations, will result in more power being derived from less fuel burned in less engine, S. D. Heron of the Ethyl Gasoline Corporation, told the American Petroleum Institute.

"Isoparaffins of higher anti-knock value than iso-octane are known. One of these at least appears to be in all respects a desirable aircraft fuel and to be not impossible of commercial synthesis," he stated.

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MEDICINE

Women Warned of Danger From Combs Used for Waves

WHAT starts out to be a ravishing water wave may easily turn into a ravaging fire. From the fire women emerge with burned hair and flesh.

Six cases of dreadful burns from ignition of celluloid combs are reported in the *Journal of the American Medical Association* as a warning to women who seek a beautiful coiffure by the popular water-wave method.

Dr. Howard Fox, well known dermatologist of New York City, describes the painful disfigurements of scalp, face and body that have come to his attention during the last few years.

In only one of six cases reported in detail did the accident occur in a beauty parlor; the others were home accidents.

Sources of heat used for drying were an electric lamp, a gas heater or a stove.

One woman, who is permanently bald over a large area of the scalp and has slowly healing burns on the forehead, hand and knee, thought she was using hard rubber combs. However, they burned suddenly in an explosive manner under a heat lamp. Investigation proved that the combs were made of celluloid.

The other women whose injuries required from a few weeks to a full year to heal and who are bald over areas of various sizes did not realize they were playing with fire when they put celluloid combs in their hair and sat near an electric lamp or stove.

Says Dr. Fox: "Celluloid combs burn almost instantaneously and noiselessly and set fire to the hair before the victim realizes what has happened."

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OPTICS

Range Finder Made For Those With Eye Defects

THE miniature camera enthusiast with defective eyesight can now secure a miniature camera equipped to take a correcting lens as a part of its range-finder.

Contax cameras, among the leaders in the present miniature camera field, can be secured with a ring into which the photographer inserts a special lens made to his prescription by his oculist, the Carl Zeiss concern has announced. The lens itself cannot be supplied with the camera as a different one is required by each individual, as is the case with ordinary spectacles.

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