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MOON'S TOTAL ECLIPSE IN WEE SMALL HOURS.

(By Science Service)

Washington, April 16. - The western hemisphere will be able to view a total eclipse of the moon, if it can keep awake long enough on the night of April 21-22. The earth will then get into the path of the light that travels from the sun to the moon, and for 42 minutes that dead planet will not be able to borrow illumination from the sun.

The eclipse begins at 11:57 p.m. Eastern Standard Time on April 21 when the moon enters the penumbra or outer shadow of the earth. The ordinary observer will hardly be able to tell that the moon's light has faded slightly. As the moon nears the real inner earth's shadow or umbra, its edge will darken and at 1:03 a.m. the moon will begin to be gradually swallowed by the shadow.

The first portion of the moon to be eclipsed will be completely hidden, but as more and more enters the shadow, the part of the moon immersed in the shadow may become visible by a reddish coppery light that is caused by the sun being refracted through lower parts of the earth's atmosphere. The total eclipse will begin at 2:23 a.m., and until 3:05 a.m. the moon will remain completely covered by the shadow. At 4:26 a.m. the moon will have crept entirely out of the umbra, and at 4:32 it will even be free from the outer shadow.

During the 42 minutes of total eclipse the moon may either disappear from view so completely that in its stead there will be an absolutely empty space devoid of all stars like a hole or tunnel in the sky, or it may be easily seen shining with a beautiful dull copper color. Just which will happen can not be predicted, because it depends on the cloudy or clear condition of the sunrise and sunset circle of the earth at the time. Either the sun's rays will not penetrate or they will be allowed free passage and will be bent by refraction and tinted with sunrise and sunset colors by selective absorption.

This will be the last total lunar eclipse visible in the United States for about six years, according to Prof. W. S. Eichelberger, of the Naval Observatory, who has charge of the computing of the Nautical Almanac. "There will be about 20 such eclipses in the next fifty years" he said in denying published statements that the coming eclipse will be the last until fifty years hence.

All who can see the moon above their horizon at the time will be able to see the shadowing of the moon. From far in the Pacific Ocean to the Atlantic, in both North and South America the phenomenon will be visible.

BACON CIPHER WILL BE REVEALED

(By Science Service)

Philadelphia, April .- Details of the surprisingly advanced scientific knowledge of Roger Bacon, monk-scientist, that have been hid until now by a cipher will be told by Prof. William Romaine Newbold of the University of Pennsylvania at the meeting of the American Philosophical Society that will be held here beginning Thursday (April 21.)

Nearly 50 leaders in America's science and research will announce important discoveries and the results of their work.

F. G. Pease of the Mount Wilson Solar Observatory will tell of further work on measurement of stars with the interferometer, the instrument used by Michelson when he determined the diameter of the star Betelguese.

New experiments in gravitation will be reported upon by Dr. Charles F. Brush of Cleveland, while methods of early communication between China and the Mediterranean will be told by W. H. Schoff, secretary of the Commercial Museum here. How Asia was peopled will be explained by Dr. Ales Hrdlicka of the Smithsonian Institution, and Prof. Raymond Pearl will tell of the growth of population.

"Following the Trail of Our Earliest Ancestors" by Prof. James H. Breasted of the University of Chicago, will bring to light details of earliest man.

PLAN NATIONAL RESEARCHES ON CALORIES AND VITAMINES.

(By Science Service)

Washington, April .- How to best utilize the foods that furnish the one hundred million million calories required annually to feed the people of the United States, and the five hundred million million calories needed each year for this country's live stock, as well as how to provide the proper quantity of "vitamines", is the object of extensive researches that have been planned by the committee on food and nutrition of the Division of Biology and Agriculture of the National Research Council.

These researches will extend over 5 years, and the committee of prominent experts on both human and animal nutrition are seeking to raise \$100,000 from the public who will benefit from the knowledge gained.

"The need for a thorough and scientific study of the selection of food for children may be seen, for instance, in the fact that probably more than 50% of the children in the United States suffer from rickets at some time during infancy or early childhood as the results of improper feeding", say these experts, "and when it comes to our meat resources it has been estimated that an increase of 20% in the efficiency of conversion by farm animals of foods now unavailable for man would add not less than \$500,000,000 worth of food to the country. Science is already converting the cheapest feeds into marketable livestock. It can change sunflowers into sirloin steaks. There may be millions of dollars in more scientific feeding of stock, while on the human side there is a whole world of immensely important information to be ascertained on such questions as the effect of food in industry and the behavior of the very essential substances known as "vitamines" with respect to the factors of canning, preserving, pickling, drying, ageing and other treatment to which foods are subjected in household and commercial use."

COMET PONS WINNECKE SIGHTED ON WAY TOWARD EARTH

(By Science Service)

Washington, April .- Pons Winnecke, a comet that will probably give the earth a shower of meteors on June 26 when its path will come very near that of the earth, has been located on photographic plates exposed through large telescopes at the Yerkes Observatory at Williams Bay, Wis., according to information received at the Naval Observatory here.

This comet has been "captured" by the most massive planet, Jupiter, and is one of its family of 19 periodic comets. Every 5.8 years Pons Winnecke has been coming near the earth, but the approach that it is just beginning is one of the closest yet.

This comet is named after its two discoverers, Pons and Winnecke. On January 12, 1819, Pons located it and assigned it a short period, but during the next six returns it was not located. Winnecke then rediscovered it in 1858 on March 8. Three of its ten returns since then have been missed.

Astronomers have not yet been able to tell whether or not the comet will be visible to the naked eye during this return.

EARTH SCIENTISTS TO
HOLD WASHINGTON MEETING

(By Science Service.)

Washington, April .- Scientists who study the behavior of various parts of the earth will convene here on Monday (April 18), at the Carnegie Institution. Various phases of physical oceanography, seismology, volcanology, geographical chemistry, and geodesy will be discussed at the three-day meeting.

WEATHER SCIENTISTS
CONVENE THIS WEEK.

(By Science Service.)

Washington, April .- Scientists are going to talk about the weather this week in Washington. Two national societies, the American Meteorological Society and the meteorological section of the American Geophysical Union will hold meetings to hear weather men from all parts of the country tell of the latest developments in weather science.

Just how the sun and its activity are linked with weather phenomena on the earth will be told by Dr. C. G. Adams of the Smithsonian Institution and Dr. C. F. Marvin, chief of the Weather Bureau. World weather maps and world meteorology will be discussed by Drs. E. H. Bowie and W. J. Humphreys.

The latest advances in predicting what sort of weather the aviator will find when he flies up into the heavens will be told by C. L. Meisinger and S. P. Ferguson. Why the skies are bright will be explained by H. H. Kimball and the use of wireless in spreading the predictions that the weather scientists have evolved will be discussed by E. B. Calvert. Dr. A. D. Hopkins, E. S. Johnson, and W. J. Sando will tell the relation of climate to agriculture and how various weather conditions affect fruit and crops.

INTERNATIONAL STANDARDIZING
CONFERENCE IN LONDON

(By Science Service.)

New York, April .- An international conference looking forward to world-wide standardization of engineering terms, specifications, dimensions, test methods, and safety codes will be held in London beginning April 25.

Engineers from United States, Great Britain, Belgium, Canada, France, Holland, Italy, Sweden, Switzerland, Czecho-Slovakia, Hungary, Japan, and several other countries will gather around the council table to discuss how the engineering standardizing of the various countries can best bring about a unification of specifications and codes that will promote and simplify foreign trade and commerce.

Dr. P. G. Agnew, secretary of the American Engineering Standards Committee, has just sailed as the representative of this country's standardizing organizations.

Organized during the war as a part of the effort to eliminate waste and duplicated work, the American committee has already accomplished much nationally by coordinating the work of the interested societies and manufacturers. Passenger and freight elevators that have formerly been built to special order are now being standardized. Long standing differences in the government and commercial specifications for Portland cement have been eliminated.

Its efforts have also reached across the water. The Belgian Standards Association has proposed international standardization of zinc, and America is aiding. The committee is cooperating with the Swiss on ball bearings and on nuts and boltheads, and the Canadians on gears and safety code work, and with the British on gages, machine tools, and steel shapes.

Over thirty safety codes are being formulated cooperatively by state commissions, engineering associations, industrial associations, and governmental agencies.

This is what standardization will do for the world, according to engineers: Enable buyer and seller to speak the same language; lower unit cost to the public by making mass production possible; make deliveries quicker; decrease litigation; stabilize production and employment; decrease selling expense; act as a powerful stimulus to research and development; eliminate practices which are merely the result of accident or tradition; concentrate on essentials.

DREAD FOOD DISEASE BORNE BY SOIL

(By Science Service.)

Berkeley, Cal., April .- Botulism, the food poisoning that caused the recent fatalities that followed the eating of ripe olives, is a soil-borne disease that can not be killed by boiling temperature such as is used in the ordinary sterilization of food products, K. F. Meyer of the University of California and J. C. Geiger, epidemiologist of the Public Health Service here, have discovered.

Tracing and studying the 130 cases that have occurred in 39 human outbreaks in California since 1900, they found that this intoxication, which is fatal in 72 cases out of a hundred, is not confined to man. Chickens, hogs and horses contract it, and the animal outbreaks were associated with the human outbreaks, and were often caused by feeding spoiled food. In the case of chickens the disease is known as "limberneck", while it is the so-called "forage poisoning" of horses.

"Any canned goods that show the least sign of spoilage should be discarded", these scientists warn. "Only by sterilizing the food product to be preserved at a temperature above boiling or under pressure, can protection against botulism be achieved."

Not only have the spores of the bacillus botulinus been found in the soil in certain localities of California, but Meyer and Geiger have found that peas, beets, radishes, asparagus, carrots, parsnips, and string beans purchased in the open market in San Francisco and neighboring towns were contaminated with the spores.

Animal manure carrying the spores and spread on the ground causes an infection of the food grown on that area in many cases, it has been found, and experiments have proved that animals can carry the disease from spot to spot.

"The occurrence of botulism cases is not confined to certain districts or countries, but may, in a manner characteristic for soil-borne infections, be restricted to certain streets or sections of a city or village," Meyer and Geiger declare. "In fact, the ripe olives that caused the recent outbreaks have been traced to two ranches in widely separated communities."

While present knowledge concerning soil-borne diseases is rather meager, it is known that anthrax and blackleg of domesticated animals are quite frequently confined to certain districts and areas. The careless burial of blackleg and anthrax carcasses and the fertilization of land with animal manure are evidently some of the factors which contribute to the pollution of the soil with disease-producing spores, the investigators say. It is known that horse manure can harbor tetanus germs, and a number of investigators have demonstrated the fact that certain horses can act as true "tetanus spore carriers."

WILL EVEREST, HIGHEST MOUNTAIN, BE CONQUERED?

(By Science Service.)

Washington, April .- Geographers are agog over the forthcoming attempt to scale Mount Everest, the world's highest mountain. At last the veil of mystery

that has surrounded this Malayan peak is to be lifted. There is no greater paradox in the history of geographical exploration than the fact that this giant mountain, though visible from points in British India, has never been closely approached by a European, much less climbed. The country for forty or fifty miles around it is quite unknown. A bulky treatise might be written on the subject "What We Don't Know About Mount Everest."

Of course the host of mountaineers who have done so much splendid work elsewhere in the Himalaya have often turned a wishful eye in the direction of Everest. Again and again plans have been made to climb this mountain, but political difficulties have always stood in the way. The mountain stands on the frontier between Tibet and Nepal; two countries that have never welcomed European visitors. Until lately another country, Russia, has viewed with suspicion the incursions of British explorers into the regions north of the boundary of India. Hence, out of regard for the susceptibilities of neighboring states, the British authorities in India have hitherto vetoed every proposal to send an expedition to explore Everest.

On January 10, Sir Francis Younghusband, president of the Royal Geographical Society, announced that permission had at last been obtained from both the Indian and Tibetan governments to undertake the enterprise so long desired, and that an expedition was accordingly being organized by the Royal Geographical Society and the Alpine Club. The British explorers are not planning a hasty dash into the unknown region. Their task is to be carried out with thoroughness and deliberation, and, whether or not the summit is ever reached, the surrounding country will be most carefully explored. No climbing at all is to be done this year, but about the end of May a party will cross into Tibet and blaze a way to the foot of the mountain, which is to be approached from the north. The leader chosen for this reconnoitring expedition is Harold Raeburn. Next year it is hoped that the actual ascent may be made, but if this crowning feat proves more difficult than now expected it may be postponed for yet another year.

An interesting point to be settled in connection with the ascent is whether mountaineers can live and climb at an altitude higher than that of any mountain hitherto ascended. According to the latest figures, the summit of Mount Everest is 29,140 feet above sea-level. At that altitude the density of the air is about one-third its density at sea-level. Aviators and balloonists have risen considerably higher, but only by carrying a supply of oxygen along with them. "Mountain sickness" is so erratic in its effects that it is impossible to predict how it will affect any particular climber. The expedition of the Duke of Abruzzi ascended another Himalayan mountain, Bride Peak, in 1909, to an altitude of 24,600 feet, and accomplished the even more remarkable feat of spending three weeks above an altitude of 21,000 feet. These achievements encourage the belief that the climbing of Everest is not a physiological impossibility.

The use of aeroplanes in connection with the coming expedition has been suggested, but the British authorities say that, though there are many places on the lofty Tibetan plains -- the "roof of the world" -- where planes might land, the rarefied air would make it impossible for any existing type of engine to rise again from the ground.

✓
\$1,000 PRIZE FOR
X-RAY RESEARCH.

(By Science Service.)

✓ Kalamazoo, Mich., April .- A prize of \$1000 has been offered by the American Roentgen Ray Society for the best piece of original research in the field of X-ray, radium, or radio-activity, performed by any person in the Western hemisphere. Dr. A. W. Crane of this city is chairman of the committee in charge of this competition, which will close July 1. The award has been instituted in an altruistic spirit for the promotion of useful research, in commemoration of Dr. Charles Lester Leonard, a martyr to pioneer research in the field of x-ray.

✓
VAIN REDBIRD
FIGHTS MIRROR FOE.

(By Science Service.)

Washington, April .- A vain cardinal or red-bird that watches his reflection in the window-pane has been an annual visitor to Dr. F. H. Knowlton's back yard for the past ten years. In the spring months from March to May when Mr. and Mrs. Cardinal take up their residence, the protector of the home not only primps before the window-glass mirror, but becomes jealous of his image.

All day long for ten years during these months Mr. Cardinal has been dashing his head against the pane, and the many headaches that he must have acquired have not yet taught him that his strutting adversary of the looking glass is in no danger of alienating Mrs. Cardinal's affections. He just keeps throwing himself at the stranger at the rate of about five times per minute, according to Dr. Knowlton's observations.

Pure science is not-yet-applied science.

During four months, the aerial mail and passenger service between London and Amsterdam flew 93,200 miles with no accidents of any kind.

Many dusts are inflammable and can be easily ignited with explosive violence by an electric spark.

An oil that may take the place of linseed oil to some extent is being extracted from the seeds of the Para rubber tree.

One hundred cases of typhoid fever developed in Pittsburg, Cal., when disinfection of the Sacramento River water supplied its 5000 inhabitants was stopped for one day to repair the chlorinating apparatus.

Alloys of magnesium and aluminum are being used in the aeronautics industry because of their lightness and resistance.

A by-product of the cotton industry, cotton seed oil, is used in the manufacture of lacquers, soaps, salad oil, celluloid, lard substitute and other materials and articles.

Pectin is the material that makes jelly "jell". Its acid and the lime salts in the fruit juice combine and cause the fruit juice and sugar to set.

The use of waste slate dust in asphalt road surface mixtures may profitably utilize a large part of the 80 to 95% of the gross slate production that is wasted.

Leaf beetles that destroy sugar beets can be trapped and destroyed by placing and burning piles of straw on which they hibernate during the winter.

The petroleum engineer is saving large losses of petroleum oil underground by predicting when invading water will be met and telling how to prevent it from doing damage.

One-third of the graphite produced in this country last year was produced electrically at Niagara Falls, but over twice as much as this country's annual production was imported, largely from Ceylon and Madagascar.

If migratory birds are to be increased in number, the small lakes, swamps, and marsh areas used by waterfowl for feeding, resting and rearing their young must be conserved.