

ASTRONOMY

Greatest Double Star Measured by Canadian

THE GREATEST double star yet measured, 184 times as massive as the sun, was described before the joint meeting of the Royal Society of Canada and the Royal Astronomical Society in Toronto last week by Dr. J. A. Pierce, astronomer at the Dominion Astrophysical Observatory at Victoria, B. C. Dr. Pierce's results were obtained with the collaboration of Dr. J. S. Plaskett, director of the observatory where he worked.

The star was first recorded at the great observatory at Mt. Wilson, Calif., between 1920 and 1924, when preliminary spectroscopic observations were made on it. Further investigations of the star fitted into the research program of the Victoria observatory, and today's announcement is the result of spectroscopic and other photographs made with the 72-inch reflecting telescope there.

Like all double stars, the newly-measured giant consists of two great glowing spheres, instead of a single one like our sun. These constantly circle round each other, the period for the full circuit in the present case being 56 days. The two component spheres are of unequal size, one being 134 times as massive as the sun, the other only 50.

The star is receding from the part of the universe we are in at the rate of nearly five miles a second.

Science News Letter, May 30, 1931

MEDICINE

Better Meningitis Treatment Promised by New Toxins

STEPS toward the possible improvement in the treatment of acute spinal meningitis were made known to the scientific world when Dr. Newell S. Ferry of the research department of Parke, Davis and Company, Detroit, reported his latest research to the American Association of Immunologists and American Association of Pathologists and Bacteriologists.

The four types of meningococcus, the organisms causing this form of meningitis, were studied by Dr. Ferry. He discovered that contrary to the prevailing notion each of these four types of the organism produces a soluble or true toxin specific to each type as well as a soluble toxin common to all types.

As these toxins are released into the culture media in which the bacteria are

growing, it is thought possible also that during the disease they are released into the body, giving rise to some of the more severe symptoms which heretofore have not been controlled by the ordinary antimeningococcus sera.

It was found also that these toxins are capable of producing specific anti-toxins which will neutralize the toxins and hope is entertained that in this way a more effectual treatment may be the outcome of the work.

As yet the antitoxic properties of this serum have been tested only on the animal. No human cases have been treated.

Science News Letter, May 30, 1931

GEOLOGY

Engineers Unearth History of Lake Superior

LAKE SUPERIOR is now the shrunk-
en remainder of a larger Lake Algonquin that was left in the same area by the melting ice of the great Ice Ages, it has been proved by excavations for a dam of the Algoma District Power Company, on the Michipicoten river that empties into northeastern Lake Superior.

Dr. E. S. Moore, geologist of the University of Toronto, told the Royal Society of Canada at its recent meeting that his examination of this engineering work confirms the geological idea that there was a much larger prehistoric lake filling the Superior basin.

As he followed the ups and downs of the geological history of this most northern of the Great Lakes, Dr. Moore found also that during the glacial era there was a smaller lake where Lake Superior now lies.

The power company engineers sinking shafts for the dam at High Falls on the Michipicoten found a natural dump or pre-glacial valley filled with sand, gravel and silt and other glacial debris.

Science News Letter, May 30, 1931

METEOROLOGY

Mirage Shows Ship Turned Upside Down

A REMARKABLE mirage prevailed recently off the Carolina coast, the U. S. Hydrographic Bulletin reports. It caused the Diamond Shoal lightship to appear upside down, and also played weird tricks with passing ships, causing them to disappear and reappear with great suddenness and distorting their outlines in most fantastic fashion.

Science News Letter, May 30, 1931

IN SCIEN

ARCHAEOLOGY

Expedition Reaches Tomb Of Haroun-al-Rashid

THE SACRED CITY of Meshed, in northeast Persia, has been reached over flooded, mud-washed roads, by the seven tractor cars of the Trans-Asia Expedition led by Georges-Marie Haardt, the National Geographic Society has been advised by radio dispatches.

Meshed is a sacred city of the Moslem world because it contains the tomb of Imam Riza, one of the great leaders of Mohammedanism in Persia. Riza is believed by many people to have been poisoned. Hence the name Meshed, which means "place of martyrdom." Beneath the tomb of Riza is buried Haroun-al-Rashid, caliph of "Arabian Nights" fame.

The hundred mile journey toward the Afghanistan border, one of the most arduous sectors, has just started. The goal of this stage of the expedition will be Herat, in western Afghanistan. In the middle ages, Herat was a city of some half a million people, when the Mongol conqueror Genghis Khan swept down upon it and left less than a hundred alive. Less than two hundred years later, Tamerlane attacked the city again, almost annihilating it.

Science News Letter, May 30, 1931

ENGINEERING

German Inventor Devises Flexible Steel Railroad Tie

A STEEL railroad tie that gets away from the disadvantage of rigidity that handicaps most metal ties and still retains its advantages of strength and permanence, has been devised by a German inventor. It consists of a tube of approximately elliptical cross-section, slotted along its lower side. This slot allows a certain amount of "give" when a load passes over. It is intended to fill the hollow interior with ballast material, to give the track greater stability. The ties will be prevented from side-slipping on curves by stopping the ends with steel plates.

Science News Letter, May 30, 1931

CE FIELDS

ASTROPHYSICS

Fire Interrupts Study Of Solar Constant

FIRE destroyed the computing room of the Smithsonian Institution Astrophysical Observatory station on Montezuma Mountain, Chile, and as a result the study of the sun's radiation conducted by observers there will be delayed slightly.

Each day on that mountain peak, nearly 9,000 feet above sea level, two scientists measure the radiation of the sun, and cable the results to Dr. C. G. Abbot and his associates of the Smithsonian Institution at Washington, D. C. The solar constant so determined is distributed to scientists throughout the world by radio and promises to be a fundamental "inconstant" of nature, of use in making long-range weather forecasts.

The fire loss just reported to Washington by Clay P. Butler, director, and Walter Watson, Jr., assistant, did not affect the actual observing instruments but the loss of charts and records will prevent computation of the daily cable for about two weeks.

Science News Letter, May 30, 1931

PHYSIOLOGY

Study Shows Sunlight Increases Nutrition

STUDIES showing how sunlight increases the nutrition of the human body have just been reported to Science by W. W. Lepeschkin of the Desert Sanatorium and Institute of Research at Tucson, Ariz.

Mr. Lepeschkin studied the action of sunlight on red blood cells. When these cells are suspended in a salt solution and exposed to direct sunlight, they gradually disintegrate and are destroyed. Their resistance to poisons is very much reduced. Only the visible rays of the sunlight reduce this resistance, however. Ultraviolet rays, if they are weak or act for a short time, increase the resistance of the red cells and protect them against the harmful effect of visible rays, Mr. Lepeschkin found.

Visible rays of sunlight affect red

blood cells in another way. Cells that have been exposed to this light are more permeable to water-soluble substances. Such irradiated corpuscles can take up increased quantities of sugar, the experiments showed.

"It may therefore be assumed that the nutrition of red cells is enhanced by sunlight," Mr. Lepeschkin concluded. "As the chemical and physical structure of red corpuscles is similar to that of colorless cells, the results obtained on red corpuscles can be extended to all cells of our organism, and it is likely that sunlight increases the nutrition of our organism in general."

Science News Letter, May 30, 1931

BACTERIOLOGY

Orchard Disease Found Hiding in Beehives

BEES HAVE been proved foes as well as friends of orchards, by researches recently brought to a climax by Dr. H. R. Rosen of the University of Arkansas. He has found the bacteria that cause fire blight, an exceedingly destructive disease in apple and pear orchards, are carried home by bees and that the infection is thus kept warm and alive over winter in the hives, ready for re-distribution in spring.

The theory that the disease is spread by the organism over-wintering in the tree itself is discarded by Dr. Rosen. He sought for the bacteria in the sap that oozes out of the injured places on the branches, and found only one canker containing them. In general, these oozing spots were not found to appear in spring until the bees were in flight. Although the bacteria can over-winter in injured tissue, Dr. Rosen found no evidence that they caused outbreaks of fire blight in the spring.

The theory that fire blight outbreaks are due to bacteria over-wintering in the wood has been responsible for the methods used for combating the disease. At present injured places on the branches are cut out or pruned away before the development of new spring growth.

Dr. Rosen's work has shown this method to be quite useless. The way to stop fire blight is to make sure there is no infection in the bee-hives which must be maintained to insure the proper pollination of the flowers. He is at present working on methods for detecting the presence of the bacteria in the hives and for removing the infection when found.

Science News Letter, May 30, 1931

ASTRONOMY

Comet Seen at 588 Million Miles Promises New Record

OBSERVATIONS made at the Yerkes Observatory, Williams Bay, Wis., recently of a comet at the great distance of 588,000,000 miles, or about 6.33 times the distance of the sun from the earth, have given astronomers ground for thinking that it will be observed completely around its orbit, and that it will return to the neighborhood of the sun without ever having been out of sight. The ordinary comet, like Halley's, is only visible near perihelion, the time of close approach to the sun. As it leaves this region of the solar system it disappears from view, possibly to be picked up on its next trip.

A study of the Schwassmann-Wachmann comet, discovered last winter by two German astronomers, indicates that it will probably establish this new record, Dr. George Van Biesbroeck, of the Yerkes Observatory, has announced. When first photographed, on December 16, it was of the sixteenth magnitude, far too faint to be visible to the naked eye. A second photograph, made on February 11, showed that it had brightened to the twelfth magnitude, which is also much below naked eye visibility. A month later it was again of the sixteenth magnitude. It is now so far away that it will probably not become greatly fainter. Only about two years will elapse before it reaches aphelion, the point of greatest distance from the sun. If seen until then, it should be possible to keep it under observation until its next return. Dr. Van Biesbroeck thinks that this will happen.

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ENGINEERING

Booster Aids in Handling Of Bulk Materials

BY FIXING a resilient high carbon steel plate to the end of a coal chute, Charles G. States, a miner of Cedaredge, Colo., has made an ingenious device that deflects a stream of coal and piles it several feet from the end of the chute. A patent has been granted for the invention, which is called the States booster.

It is expected that the booster will improve the efficiency of handling other bulk material such as corn and wheat and decrease the resistance of air rounding corners in ventilating shafts.

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