

SCIENCE NEWS

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THE CONSTELLATION OF CEPHEUS

A STAR in the constellation of Cepheus has been found to be the bright member of a double star team with a period of about fifty years. The eccentricity of the orbit of this binary, Beta Cephei, is equal to 0.66, according to the report of Dr. Burke Smith, of the Yerkes Observatory, in the *Astrophysical Journal* for July.

The average period during which the star alternately seems to approach and recede from the sun is slowly lengthening. During the past twenty-five years this increase has amounted to 0.43 seconds. This is at a rate of 1.7 seconds a century, which is a decided change when one considers the life of an average star. The data available are so limited, however, that Dr. Smith finds it impossible to decide if this increase is occurring spasmodically or at a constant rate.

This star is typical of a small group of B-type stars with variable radial velocity. Their periods are less than half a day and the velocity ranges so small that they can scarcely be explained in terms of binary motion.

An abrupt change in the length of the period of Beta Cephei occurred when the orbits of the two components brought them closest together in 1914-16. After periastron the period began to lengthen and is now found to be 0.1904886 day. There seems to be no conclusive evidence of a change in ionization or excitation with the change in phase. The ionized helium lines are visible on a few plates, but no definite correlation of the visibility of these lines with phase was found.

During the period considered the star has gone through some seventy thousand complete cycles. Dr. Smith's study was based on measurements of Yerkes plates taken in 1940-42, and a review of all published radial-velocity measurements of the year since 1906.

REPORT ON THE OTERMA COMET

THE comet reported earlier this year by Miss L. Oterma, astronomer of Turku Observatory, Finland, may actually be an asteroid, according to a report received at the Harvard College Observatory.

A preliminary investigation of the elements of the comet, made by George H. Herbig and Miss Delia McMullin, of the department of astronomy at the University of California at Los Angeles, showed that the eccentricity appears to group this object with the asteroids rather than the comets.

The stellar object in this case may be one of the multitude of minor planets revolving between the orbits of Mars and Jupiter and shining entirely by reflected light, instead of belonging to the highly eccentric comets which shine partly by reflected light and partly by light of their own.

"Attention should be called to the resemblance between Comet 1943a and Minor Planet 334 (Chicago)," is pointed out by Dr. Herriek. "If the two objects are identical," he adds, "the eccentricity of the minor planet has again passed through 0, as it did before the conjunction of 1894."

The Oterma Comet was first seen on April 8 in the constellation of Virgo. It is not bright enough to be seen without the aid of a telescope, the magnitude remaining about 16.3. Miss Oterma is credited with discovering two comets last year.

These elements are essentially the same as those obtained first by L. E. Cunningham, and R. N. Thomas, and reported to the Harvard College Observatory.

IMPROVED INSULIN TREATMENT FOR DIABETES

A MIXTURE of two forms of insulin which simplifies treatment of diabetics and gives better control of blood sugar is announced in the *Journal of the American Medical Association*. Slow-acting protamine zinc insulin, already in use for several years, is mixed with the original type of rapid-acting insulin to make a single daily injection having many of the advantages of both types.

Protamine zinc insulin has been used to reduce the number of injections necessary for most diabetics compared to the use of ordinary insulin. But since the insulin is slowly released from the protamine zinc compound at a steady rate throughout the day and night, moderate and severe cases of diabetes have not always received adequate control of the blood sugar level after meals when the need for insulin is greatest. To combat this condition, physicians have been prescribing an additional second injection of regular insulin along with the protamine zinc form usually to be taken just before breakfast. Thus the prolonged action of protamine zinc insulin protects against too much blood sugar at night, while the regular insulin tends to control the rise of blood sugar after meals.

Objections to this solution of the problem are that it is a compromise method requiring two injections a day, thereby partly nullifying one of the chief advantages of protamine zinc insulin, and it requires the patient to use two different forms of insulin with two different doses, thus increasing the possibility of error.

Following the lead of earlier workers, two groups of physicians report successful clinical trials using a mixture of the two insulins in a single injection. Drs. Cyril M. MacBryde and Harold K. Roberts, of St. Louis, conducted a comparative clinical study on sixty-two patients using a mixture of three parts of fast-acting insulin to one part with slow effect.

It was discovered, however, that acidity or alkalinity affected the amounts of the two kinds of insulin found in the final mixture. To avoid this uncertainty, the insulins were mixed and adjusted to a slight alkalinity about the same as that found in body tissues, which produced a final product of the proper composition.

Use of the new insulin mixture on severe diabetes not only controlled blood sugar as well as when both insulins were given separately, the physicians report, but gave better regulation in most cases. Less expected were results on mild cases which showed that the 3:1 insulin gave better effects than the usual treatment of these cases in which protamine zinc insulin alone is administered.

Another study, using a different mixture of the insulins containing two parts of regular and one part of protamine zinc, is reported by Drs. Arthur R. Colwell and Joseph L. Izzo, of Evanston, Ill. Their studies on sixty patients show that a single injection of this mixture also gives better control than that obtained with standard insulins injected more often.

The insulin is released at a rate which causes moderate increases in intensity when needed after meals and allows decreases when desirable during sleep. Dosage is about 10 per cent. less than with ordinary methods because of improved efficiency.

CACAO AND OTHER FOOD CROPS GROWN IN EL ORO PROVINCE, ECUADOR

Cocoa, chocolate and other cacao products for the United States may soon be obtainable in increasing quantities from Ecuador in equatorial South America. Other tropical and semi-tropical products which in pre-war days came from the Far East, may in post-war days come more largely from the Western Hemisphere, from its tropical regions on the Pacific coast. This project is being carried out under the leadership of the Office of the Coordinator of Inter-American Affairs in cooperation with the government of Ecuador. The area concerned, the province of El Oro on the south coast of Ecuador, was laid waste in 1941 in the century-old boundary dispute between Peru and that country. The actual rehabilitation work in the field started a year ago.

At the end of a year, El Oro now has a good cacao crop for export, as well as some tobacco and coffee, and a record-breaking crop of rice for feeding its own people. It is harvesting rubber from native trees, and gathering native fibers and making bags for packaging its export materials. Poultry and cattle are assisting in its home economies. America's investment in capital, technical assistance, and in good-will may be amply repaid.

El Oro province is about half the size of Connecticut. Its population is about 77,000. It has tropical lowlands near the coast and a high, cool mountainous area inland. It is capable of producing all its own needs in food and much for export. By way of the Panama Canal, it is about 3,000 miles from New York.

HEALTH DURING THE WAR

"AMERICA at war continues in good health," statisticians of the Metropolitan Life Insurance Company report in a summary of mortality experience of its millions of industrial policy holders in the 19 months since Pearl Harbor.

In 1942 the mortality was the lowest ever recorded for any year. Although the monthly death rates have been higher each month this year than for the preceding year, the rate for the first six months of 1943 is only 7 per cent. higher than for the same period in 1942 and appreciably lower than in any year before 1938. Aside from the mounting toll of war deaths the only other unfavorable features are the higher-than-ever-before death rates from cancer, cerebral hemorrhage and diseases of the heart and arteries.

Gasoline rationing has rolled back the auto accident death rate to 11.6 per 100,000 population which is about what it was for the first half of 1922, and 37 per cent. below the first half of 1942.

American women, now playing an important role in war production, are healthier than ever. In the two years before our entry into the first World War the death rate among the company's women industrial policy holders was 13 in every 1,000 of ages 15 to 74 years, while in the 1940-1941 period it was less than half that, seven per 1,000.

Married people, the statisticians find, live longer, this being especially true for married men. At ages 30 to 44 years the death rates among married men are just about half those among the bachelors. Between 1929-1931 and 1939-1941 the death rates declined somewhat more rapidly among the married than among the single at ages under 40 years. Those whose marriage is broken by death, however, experience a mortality even higher than those who remain single. Here again the men are slightly worse off than the women.

ITEMS

THE Polish Medical Center in Scotland is prepared to move its staff and equipment to Poland as soon as peace is declared. In this manner Poland may once again become the health frontier for post-war Europe. The double objective of the center is relief to suffering Poles who can be reached to-day and constant training for Poles in Scotland for the immense relief job to begin the day Poland is free. Scots, Poles and Americans are co-operating to make the Paderewski Polish Hospital and Polish Medical School of the University of Edinburgh possible. A number of graduates of the medical school are already interning in the hospital. The idea of the center was originated by Dr. Anthony Jurasz, formerly professor of surgery and dean of the medical faculty at the University of Poznan. Polish specialists in various branches of medicine and surgery have been attracted to the center. The 200-bed hospital has such specialized equipment as a pathological laboratory and X-ray tuberculosis research ambulance. The Paderewski Testimonial Fund, Inc., of which Mrs. Vernon Kellogg, of New York City and California, is chairman, is arousing interest in this center in the United States.

WHEN the Allies entered Sicily Germany lost all chances of getting any more Sicilian sulfur for her war industries, sumac tannin for leather making, and citrus products for her submarine and other naval crews, for soldiers, and for privileged civilians. When the Allies control Italy itself Germany will no longer be able to obtain foodstuffs from that country. She has been getting quantities of early potatoes, fresh vegetables, nuts, fruit and other agricultural products. Even in pre-war days German buyers bought much of Italy's surplus food products for export to Germany. They bought 55 per cent. of the fresh fruit exported from Italy, 42 per cent. of the almonds, 41 per cent. of the rice, 37 per cent. of the lemons, and 34 per cent. of the oranges. In addition they purchased large quantities of fresh vegetables, early potatoes, wines, olives, table oils and cheeses.