SCIENCE NEWS

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THE "NEW" SOUTHERN STAR

NOVA PICTORIS, the star that flashed out from previous obscurity in May, 1925, and has since proved more and more puzzling to astronomers, may be an example of an event which occurs, on the average, once in ten billion years—the actual encounter of two stars. So thinks Dr. Harlow Shapley, director of the Harvard College Observatory.

New stars, with which this outburst was first classed, are rather common. Every year half a dozen or more are observed, though one reaching the first magnitude does not occur nearly so often, perhaps there are not more than five or six in a century. But even this frequency has been thought to effectually dispose of one theory of their origin, namely, that when two faint stars happen in the course of their wanderings to collide, the explosion results in a temporary object far brighter than either. So thinly are the stars scattered through space that it has been figured that such a collision of stars could not happen oftener than about once in ten billion years on the average. Therefore this theory can not account for the ordinary nova, or new star.

In the case of nova Pictoris, which is so called from its position in the constellation of Pictor, the painter, a group not visible from northern latitudes, a number of things have occurred to show that it is no ordinary nova. The first noticed peculiarity was that it was changing much more slowly than the ordinary new star. They usually rise from very faint to very bright within a few hours. Nova Pictoris was discovered on May 25, 1925, and was then of the second magnitude. A photographic plate was then found, taken 42 days before its discovery, that showed it to be of the third magnitude on April 13. For years before it had been of the thirteenth magnitude. Though it could not be determined just when the increase in brightness began, it was, for a nova, very slow.

After discovery it continued to brighten and, by June 7, was of the first magnitude. Then it should have quickly diminished in brightness, but by the beginning of September it was still of the third magnitude. Even now, three years after discovery, it is of the seventh magnitude, and appears as if it might never return to the original brightness.

Another unusual feature of nova Pictoris was the appearance, a few months ago, of a companion body beside it, which was discovered by South African astronomers. In the opinion of Dr. Spencer Jones, a British government astronomer at the Cape of Good Hope, this indicated that there had been an actual encounter of two stars. The latest peculiar feature has been the discovery around it of a series of rings. The outer one, discovered by Dr. J. S. Paraskevopoulos, Harvard astronomer in South Africa, was about a tenth of the diameter of the full moon, while inside it are now seen two smaller rings. The inner rings were discovered by Dr. Harry E. Wood, of the Union Observatory at Johannesburg. As the star became bright after discovery, diminished, and then increased, then diminishing and increasing to maximum a third time, these rings may consist of material thrown out at each outburst, and just now getting sufficiently clear of the star to be visible from the earth.

The star has been found to be at a distance of 540 light years, a light year being the distance (some six trillion miles) that a beam of light will travel in a year. Hence the nova is being viewed by light that has been on its way for more than five centuries. The explosion, or collision, occurred about the year 1390, but earthly astronomers are just learning about it. This distance, not extraordinarily great for a star, shows that the rings are not due to light traveling outward from the star and illuminating successive rings of previously dark stuff around it, for in that case the rings would have appeared much more shortly after discovery. A ring that was observed around a nova seen in 1901 was ascribed to such a cause.

According to Dr. Shapley, the outer ring is now about six billion miles in diameter, and the stuff is traveling outward from the star at a speed of about 60 miles a second. All these peculiarities of nova Pictoris indicate, in his opinion, that the nova is most unusual, and that it might be the once-in-ten-billion-years encounter of two stars that we are witnessing.

IRRADIATED ERGOSTEROL

IRRADIATED ergosterol, the potent new rickets remedy, one ounce of which will do the work of six tons of cod-liver oil, is one of the most powerful specific substances which has thus far been isolated.

Dr. Alfred Hess, of Bellevue Hospital, New York City, told the American Pediatric Society meeting in Washington on May 1, that one twenty-five thousandth of a milligram of this parent substance of vitamin D, an amount almost inconceivably small, is sufficient to protect a rat from rickets when added to his daily ration.

The curative effects of irradiated ergosterol were discovered about a year ago by the combined efforts of Dr. Hess and Professor A. Windaus, of the University of Göttingen in Germany. English investigators working independently also achieved the same results at about the same time.

Dr. Hess has been using the new remedy in his clinical work and reported to-day that babies that receive from two to four milligrams a day are almost regularly cured of rickets.

"The question arises," declared Dr. Hess, "as to whether this substance may not to a large extent replace cod-liver oil in view of the fact that it can be given in any desired potency and that it has the advantage of being tasteless and odorless. Subsequent clinical tests carried out during the past year have served only to emphasize the practical usefulness of this new remedy. It is an absolute specific for rickets as well as for tetany, disorders which are so often associated, and it brings about healing of the bones more quickly than any sub-

stance which has heretofore been used. The appetite and general condition of the child also show a marked improvement.

"A word of warning should be uttered in this connection. Irradiated ergosterol is so powerful that there is a temptation to use it in exceedingly large doses. It is being frequently prescribed in doses which are 100, or even 500, times greater than cod-liver oil. Such amounts are quite unnecessary and may even be harmful. A remedy which is so potent for good may, when given in excess, bring about changes which are as yet unknown and unsuspected."

A VITAMIN VIRUS

THE formation of the antineuritic vitamin B somewhere in the digestive system of laboratory rats that have previously been deprived of this necessary factor is an unexpected development in vitamin research recently reported in London.

Dr. L. S. Fridericia and a group of workers at the university department of hygiene at Copenhagen found in the course of working with rats deprived of vitamin B that one rat did not die as usually happens with animals on this deficient diet. While making observations on this unique specimen it was discovered that other rats weakened by lack of vitamin B recovered if they fed on secretions from the immune rat that had gotten well spontaneously.

After large numbers of experiments, Dr. Fridericia came to the conclusion that the apparently spontaneous cure is infectious, just as diseases are infectious. He believes that the rats are cured by being infected with a virus which forms vitamin B in the rat's alimentary canal. In this way, the rat is really obtaining a supply of vitamin B, although it is completely absent from its diet. From the evidence that large numbers of undigested starch grains are found in the secretions of the cured animals it is thought that the action of the virus is also linked up in some way with the digestion of starches.

Independent work by Miss Margaret Roscoe, at the Lister Institute, London, and by Dr. R. Adam Dutcher, at State College, Pennsylvania, has confirmed some of the remarkable results of the Danish investigators. While the significance and application of these various experiments is not yet clear, they are so contradictory to all that has yet been learned about vitamins that it is felt that they will have an important bearing on future developments in vitamin research.

ITEMS

THE Food Investigation Board, a government bureau under the direction of the British Department of Scientific and Industrial Research, reports that the refuse from fish may amount to as much as 30 per cent. of the total quantity of material brought on board. At present it is thrown back into the sea and wasted, but it is hoped that future arrangements will be made for utilizing it on land as a feed for animals. One of the objections to the present method of dumping the refuse in the sea is that this drives the fish away from the area, rendering it useless from the fisherman's point of view. Work on fish meal and fish oils is at present in progress under the Food Investigation Board at the Imperial College of Science and Technology, London, and at Liverpool University.

AIRPLANE photographs taken by two officers of the Royal Air Force flying over Oxfordshire have disclosed a number of evidences of buried archeological remains whose existence has never been suspected, though the fields where they are situated have been in cultivation for many years. The bird's-eye view effect of a photograph taken from the air enabling the observer to perceive as a whole what can be seen from the grounds only as obscured details, is credited for the discovery. Two great circles, one within the other, lying under a field planted partly in barley and partly in beans, were among the finds. The bean-field portions of the circles were discovered first, for the rest was concealed by the growing grain. Near the circles was a rectangular enclosure which had no relation to existing field divisions. A semicircular enclosure, possibly prehistoric, and a track some forty feet wide of Roman-British origin, were also shown up on the plates.

IF the open season for taking fur-bearing animals were limited to the comparatively brief period when fur is at its best, more money would actually be realized and the killing of many valuable animals would be appreciably decreased. This concrete argument for the preservation of wild life was advanced at the meeting of the American Society of Mammalogists by Dr. Ernest P. Walker, of the U. S. Biological Survey. It would be possible to adjust the hunting and trapping seasons so that a greater profit could be derived from a small number of animals taken at the proper time than would be made by killing a larger number of animals when their pelts are not at their best. Thus it is possible for 950 mink taken in Southeastern Alaska in a two-months open season to be worth $8,693.75, whereas 1,000 taken in the same region over a three-months' season would be worth only $7,868.75, or $825 less.

THE danger of introducing hoof-and-mouth disease infection by means of bone marrow imported in the bones of chilled meat and bacon, was discussed by Sir George Courthope, at a recent meeting of the Council of Agriculture for England. It has been found that the virus of hoof-and-mouth disease remains active for exceedingly long periods even when the meat has been chilled, frozen or salted. Since chilled meat has been coming into England evidence is continually being piled up which shows that the bone marrow is frequently infected with the disease. Since the chilled meat trade of England amounts to some $250,000,000 annually, an embargo is not practicable. Sir George urged that the bones should be removed from all chilled meat in the country of origin, thereby confining this source of infection to areas already infected. One large packing firm in Argentina, he said, is already following this practice.