SCIENCE NEWS

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DISCOVERY OF NOVA PUPPIS

A NEW star or nova brighter than all but ten stars in all the heavens has burst forth and may be seen in the early morning sky. It is somewhat brighter than first magnitude. This is the brightest nova since 1918 and is the most striking and unexpected of astronomical events.

Discovered by an American astronomer in Argentina, the brilliant new star will be known as Nova Puppis, because it is located in the constellation of Puppis, meaning the stern of the ship.

It may become known as this year's Christmas star because one of the explanations of the star of Bethlehem is that it was such a nova.

The new star was discovered the past week end by Bernhard H. Dawson, of the University Observatory at La Plata, Argentina. He is an American astronomer, born and educated in Michigan. News of the discovery was received at Harvard Observatory in the form of a brief telegram signed by Enrique Gaviola, director of the Argentine National Observatory at Cordoba, Argentina.

The constellation Puppis, in which the nova is located, is in the southern sky, rising about 2:00 A.M. during November and crossing the meridian about 5:00 in the morning. The nova is situated near the second magnitude star Zeta Puppis, sometimes called Naos.

But the nova, according to Leon Campbell, recorder of the American Association of Variable Star Observers, outshines all stars in its vicinity, for on the morning of Armistice Day it was of magnitude −0.8 (minus zero point eight) which makes it brighter at present than the star Altair in the eagle.

Those who can find Sirius can easily find the new star. Sirius, brightest star in the sky, rises after midnight in the southeast. An hour and a half later Nova Puppis rises, but much farther to the south. Sirius is in Canis Major, the constellation of the big dog, the southern part of which is a triangle of three second magnitude stars. A line from Sirius through the triangle prolonged about its own length will end near the nova.

Not since 1918 has a star of the first magnitude blazed forth. In that year it was during the eclipse of the sun in June that a nova was discovered in the daytime sky.

The nova now in the skies may remain at its peak brightness for several weeks, or it may decline rapidly. Its behavior can not be predicted exactly. Meanwhile, it alters the appearance of the sky in its vicinity greatly.

Only 20 stars in the whole sky are of the first magnitude. Thus, this star takes its place among the first 20; in fact, it is now the eleventh brightest star in the entire sky and the seventh brightest to be seen from Washington's latitude. It may even get brighter, but usually novae are not seen much before their maximum brightness.

Astronomers will check the position of the nova with those of stars on earlier photographs of the same region to determine which of the faint stars in this part of the milky way suddenly flared up so bright. Novae are not really new at all, but old stars which suddenly increase in brightness hundreds of thousands of times.

Nova Cygni, reported earlier by Science Service this year, reached only the eighth magnitude. Nova Puppis is about six hundred times as bright as this was, and Nova Cygni has now faded to the 15th magnitude.

The first glimpse of Nova Puppis was obtained by Dr. Edison Pettit, of the Mount Wilson Observatory, on the morning of November 10. This was an independent discovery of the nova, first report of which came from Argentina.

Dr. Pettit, who specializes in observations of the sun and not the stars, sighted the nova by accident and not during the course of regular astronomical work. He immediately checked its position with a 6-inch telescope in his backyard observatory. A photometer happened to be attached to the instrument so that he was able to make an accurate measurement of the nova's brightness. It was then about as bright as Rigel, the brightest in the constellation of Orion, just north of the nova.

The star was seen too late to photograph at the observatory on Mount Wilson that morning, but preparations were made during the day and many photographs of the spectrum of the nova were taken at the 100-inch telescope the following morning. The nova is too far south to observe with the 60-inch telescope on Mount Wilson.

On the morning of Thursday, November 12, astronomers estimated the nova was still of the first magnitude.

SPECTRUM OF NOVA PUPPIS

NOVA PUPPIS is now in the midst of its most violent phase of ejection of gas, is indicated by observations of its spectrum by Dr. A. D. Maxwell and Dr. Dean B. McLaughlin, of the University of Michigan Observatory. This may mean that the brilliant star will become even brighter before it begins a decline in light which will finally return it to stellar oblivion. Already it is surpassed by only ten stars in the whole sky.

The Michigan spectra show strong interstellar calcium lines and allow estimates that the distance of the nova is such that it took light 1,600 years (traveling 186,000 miles per second) to reach earth and that the actual brilliance of the star is 150,000 times that of our sun.

Dr. Maxwell discovered the new star independently on Armistice Day morning before news of its discovery in Argentina had been received. It was then too late to take photographs of its spectrum. The next morning Drs. Maxwell and McLaughlin took successful spectrographs despite the difficulty of observations because the star is low in the southern sky.

The star's spectrum shows strong hazy bright hydrogen bands, conspicuous bright ionized iron and a neutral oxygen band at 6155, with their centers undisplaced. These are bordered on the edges of shorter wavelength by diffuse absorption lines. Absorptions of ionized titanium, magnesium and silicon are also present. No traces are seen of helium or other "hot star" lines. Displacements of absorption lines are discordant. Hydrogen is shifted the equivalent of a motion of 1,100 kilometers (700 miles) per second toward the earth, iron and titanium about 900

kilometers (550 miles) per second and magnesium somewhat less.

THE SUPPLY OF PHYSICIANS

"BUSINESS as usual" is out for the private physician and the health officer just as it is for industrial concerns and small manufacturers and dealers, according to a statement made by Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, at the Richmond meeting of the Southern Medical Association.

Even if available medical services are rationed under National Service legislation, as has been proposed and discussed in recent weeks, great efforts must be made to increase the supply of personnel. This means keeping enough physicians in medical schools to teach and train more students. Medical students and, if the draft age is lowered, premedical students could, he suggested, be enrolled as a special category of professional manpower and, upon completion of internship, allocated among the Army, Navy and civilian services.

"This," he said, "would eliminate the present uneconomical procedure under which the Army and the Navy compete for medical students by commissioning them in numbers which may later prove disproportionate to the needs of the respective services. Much depends now and more will depend after the war upon a continuing flow of young, able-bodied physicians of the highest caliber."

The Medical and Health Committee has recently approved a plan for increasing the number of graduate nurses and meeting the growing deficiency in hospital nursing services. The plan calls for speeding up the basic training course for completion in twenty-four months, after which third-year students would go on the payroll of the parent hospital or affiliated institutions. They would live outside the hospital, thus leaving dormitory and classroom space for more students. They would not receive their certificates until after three years of training, but their release in the last year would supply civilian hospitals with replacements for the general duty nurses who have been drawn into war service. The physical facilities for nurse training would be increased by a third and hospitals would be provided with an augmented staff for war duty.

The difficult task of supplying medical services in critical areas now lacking them can best be handled one by one. Following this thought, plans for meeting needs in different communities will be worked out individually. Such plans are now being made by the Procurement and Assignment Service and the Public Health Service.

INVENTIONS OF WORKERS IN THE U. S. DEPARTMENT OF AGRICULTURE

SUGAR from sorghum, fireproofing, better insecticides and over 50 other inventions have been developed by workers in the U. S. Department of Agriculture in the past year. Most of the devices were developed to increase farm efficiency, officials stated, but many will have direct importance to every one in meeting wartime needs.

Sugar yield from sorghum comparable with that obtained from sugar cane, for example, will now be possible for the first time. The process was patented by Emil K. Ventre and Howard B. Paine, of the Agricultural Research Administration.

Establishment of an industry to relieve the sugar shortage will result, it is hoped, from research to develop improved sorghum varieties. Some varieties of high sugar content mature early enough, it is pointed out, so that sugar factories could process the sorghum before the sugar-cane harvest, using the same equipment.

An improved insecticide has been developed by Samson R. Dutky, of the Agricultural Research Administration, for combatting the Japanese beetle, a destructive insect in many areas. The new insecticide consists of an inert powder mixed with large numbers of germ spores which produce a milky disease fatal to the larvae.

A trap for moths of the tobacco and tomato worms, developed by Lincoln B. Scott and Joe Milam, of the Bureau of Entomology and Plant Quarantine, is another device for insect control.

A method for checking the development of rancidity in oils and fats, a process which increases the resistance of nails to withdrawal from wood, and a chemical preparation for fireproofing fabrics are covered by other patents.

Of the inventions listed by the Department of Agriculture, about half were dedicated to the public and the remainder were assigned to concerns for development, with control retained by the department.

ITEMS

VISITORS to the American Museum of Natural History can get a glimpse of what life on Guadalcanal was like in more peaceful times, in a new habitat group showing typical birds of that remote but now familiar island. The exhibit is one of four showing birds and their homes in South Pacific islands, collected by a scientific expedition four years ago, under the leadership of the late Lieutenant A. B. Fahnestock and his brother, Captain J. S. Fahnestock. Among the strangest of the birds shown are the brush fowl, which buries its eggs in a mass of fermenting dead leaves which act as a natural incubator; and the dwarf climbing parrot, a little bird no bigger than a sparrow, that climbs trees like a woodpecker and makes its home in the nest of termites which appear to be its principal food.

ROTENONE, needed in our unending defense against insects, is an essential ingredient in fly sprays and other insecticides. It is extracted from the roots of certain tropical plants of the bean family, that grow both in southeast Asia and in the Amazon basin of South America. Before the war, we used to get a large part of our requirements from Malaya and the East Indies, the rest from South America. Now the two South American nations are coming to the rescue by greatly increasing their exports. The rotenone-bearing roots will be supplied through regular trade channels and the Commodity Credit Corporation will act as sole purchaser for the United States, paying agreed-on prices.