SCIENCE NEWS

Science Service, Washington, D. C.

A PLANET OUTSIDE OUR SOLAR SYSTEM

THE first evidence ever produced for the existence of any planet among the billions of suns that swarm outside our own little solar system was presented at Philadelphia before the meeting of the American Philosophical Society by K. Aa. Strand, research associate at the Sproul Observatory of Swarthmore College. No one has ever seen the planet. Probably no one ever will. Like many other things of whose existence we are fairly well assured, this extra-solar-system planet manifests its presence by what it does.

Mr. Strand was making a study of a comparatively obscure double star in Cygnus, the Swan or Northern Cross. As with all objects of its class, the two stars that form the double one circle around and around each other in an eternal dance. But Mr. Strand noticed on the many photographic plates he examined that the orbits of the two stars were not exactly smooth. Something caused irregularities in the star paths—perturbations, astronomers call them.

The only thing that could explain the irregularities was the presence of a third object, close enough and massive enough to drag one or both slightly out of orbit by gravitational pull. Calculations indicated that this must be an object far smaller than any known star—only one sixtieth the mass of the sun, which is one of the smaller stars. This gives it a mass about sixteen times that of Jupiter in our own system. It swings around the star that is its sun once every 4.9 years, and has a decidedly lopsided orbit, contrasting strongly with the nearly circular paths of the planets of our own system.

NOVA PUPPIS

ASTRONOMERS at the Harvard Observatory searching their longest exposure photographs taken through their largest telescopes are unable to find any star that existed in past years where Nova Puppis flashed forth in the sky. This means that the star increased in brilliance at least 6,000,000 times, a rise of 17 magnitudes at least, because it must have been fainter than the 18th magnitude that can be detected by stellar photography.

Miss Constance D. Boyd and Dr. Fred L. Whipple made preliminary measures of plates going to the 16th magnitude, and found no star present where the nova is located.

And even on three-hour exposure plates taken with the Bruce 24-inch camera at Harvard's southern station at Bloemfontein, South Africa, which goes nearly to the 18th magnitude, they fail to find a trace of the star.

The great increase in brilliance almost puts the star in the ranks of the supernovae, which are usually observed only in the far spiral nebulae. These are galaxies like our own Milky Way, but they are very numerous. Consequently, supernovae are fairly frequent, but only about every 300 or 500 years does one appear in a galaxy. However, further studies of magnitude changes and spectrum must be made before the character of this latest nova can be ascertained.

Meanwhile, Nova Puppis is fading rapidly, nearly a magnitude every 24 hours. It reached its peak on November 12. Amateur astronomers, particularly members of the American Association of Variable Star Observers, are being urged to watch it regularly, to see if it suddenly increases its light again. Fluctuations may be expected.

Spectra of the nova are being taken at all the large observatories. Such spectra show the rapid changes which are taking place in the condition of the star following its maximum light. There is indication that a shell of gas may be expanding around the star at a speed of possibly 1,000 kilometers per second. The star's distance also seems to be very great, probably on the order of several thousand light years. This is more or less confirmed by the extreme faintness before its outburst.

COLOR VISION

OBSERVERS with weak color vision do have an advantage in detecting faulty camouflage, was pointed out by Dr. Deane B. Judd, of the National Bureau of Standards, at a recent meeting of the Washington Academy of Sciences.

Men who are completely colorblind or even partially colorblind do not have this advantage. Since, out of every 20 men, about one man has weak color vision and another is colorblind, the Army probably already has a good share of men capable of spotting the enemy's blunders in camouflage.

The most common form of colorblindness is the inability to distinguish red from green. Men with this color vision defect find it difficult to pick out ripe strawberries from green or to pick a rotten apple from a barrel of red apples. Since the vision of such persons for blue and yellow is normal, they are said to be only partially colorblind. To hide a military position from such a person it would be necessary to see that it was no lighter and no darker than the surrounding country. And it must be no bluer and no yellower.

But the partially colorblind person would not notice if the position happened to be a little redder or a little greener than objects around it, or if it were lacking in those colors.

The partially colorblind person, therefore, usually has no advantage over the man with normal color vision in detecting camouflage. If a roof or a gun-shield is painted so that the normal eye can not tell it from the ground or the foliage, the partially colorblind person can not distinguish it either.

Since nature provides the best camouflage, the Army usually prefers to use actual vegetation or dirt whenever possible to hide positions. But cut branches change color when they dry out and the leaves wilt. Dirt used in this way may dry out more rapidly after a rainstorm than the dirt on the ground. This produces slight differences in color and results in imperfect camouflage. Another fault in camouflage is in paint intended to match the surroundings. Such paint, even when it is a close match,

is likely to differ in reflectances in some portions of the spectrum. It is such imperfections, not noticeable to the normal eye, that are picked up by the man who has weak color vision.

There are a few situations in which the red-green colorblind man has an advantage in detecting camouflage. In a variegated pattern made up of patches of reddish brown earth and yellowish green foliage, areas that are a little too light or too bluish are lost to the normal eye because of the larger red-green differences in the scene. But the colorblind observer doesn't see a variegated pattern of irregular red and green splotches. To him, there is a nearly uniform yellowish-brown field. A spot that is too light or too bluish would show up conspicuously to his eyes.

The normal individual can not make use of filters to fake weak color vision in order to detect camouflage. In order to screen out red and green, a filter would also screen out most of the light and make it very difficult to see anything. And the filter would not accurately duplicate the color vision of the partially colorblind person at that.—MARJORIE VAN DE WATER.

USE OF THROMBIN TO STOP BLEEDING

THROMBIN, natural clotting agent of the blood which is formed when blood is shed, is being widely used in the U.S.S.R. as a means of stopping dangerous bleeding from war wounds and is credited with saving the lives of many wounded men.

In 1941, after long research in the laboratories of Moscow University, I discovered a method of obtaining large quantities of sterilized, dissolved thrombin. When mixed with blood this solution will clot it within three to five seconds. Experiments on laboratory animals with this preparation confirmed the theoretical assumptions. Parenchymatic bleeding from injured liver, spleen or kidneys rapidly ceased after the wound was irrigated with thrombin solution. The preparation was then tested in surgical clinics and hospitals with good results, after which it began to be manufactured in large quantities for use in hospitals and dressing stations at the front.

Several soldiers with head wounds were brought to the neurosurgical clinic. In the case of two of them, shell splinters had penetrated deep into the brain and their removal was fraught with great danger, as they had lodged in the immediate vicinity of blood-carrying sinuses of the brain. The surgeon nevertheless decided to operate. When the splinters were removed, blood began to gush profusely from the sinuses, but in both cases swabs steeped in thrombin and inserted into the apertures of the wounds quickly stopped the blood flow. When the swabs were removed bleeding was not resumed and recovery proceeded rapidly. One of the men had his skull shattered in the region of the temple and part of the brain protruded in the form of a large blood-filled swelling. Cutting the swelling would have caused profuse bleeding. The surgeon injected a small quantity of thrombin with a syringe. The protruding part of brain was then opened and the blood removed in the form of a clot. There was no further bleeding and the operation was quite dry.

In the short period thrombin has been in use there have been numerous instances of this kind. It has proved a valuable means not only of saving blood but also lives of wounded men. The effect of this blood-stopping preparation in no way differs from natural blood clotting. When applied locally thrombin merely accelerates blood clotting—ten and in some cases even one hundred times without, moreover, deleterious effects on the wound or on the patient. It is absolutely harmless.

Production of thrombin has now been placed on solid industrial lines on a scale fully adequate to meet the demands of the front.—Cable from Russia by BORIS KUDRYASHOV.

ITEMS

FOR the second time within the year, a Finnish woman astronomer, Miss L. Oterma of Turku Observatory, has discovered a new comet. This one is in the constellation of Taurus, the Bull, and it is 13th magnitude, much too faint to be seen without telescopic aid. The new comet is near the celestial equator and moving northward. It is not far from the famous star cluster, the Hyades, shaped like a V, which rises in the eastern sky early these autumn evenings. More observations and considerable mathematical computations will be necessary before it is determined whether the new comet will become brighter.

A NEW test that tells more exactly the spot for operation on the back in cases of sciatica and low back pain is reported by Dr. Walter E. Dandy, of the Johns Hopkins Hospital, in the forthcoming issue of the *Journal* of the American Medical Association. In almost all cases of sciatica with low backache, the trouble is due to rupture or defect of an intervertebral disk, the layer of fibrocartilage between the bodies of the vertebrae. Treatment by operation is "absolutely safe and a cure is practically assured." The diagnosis, he believes, can be made solely on the patient's story of attacks of sciatica and low backache occurring after a relatively trivial injury, such as a lift, bend or strain, with the pain made worse during attacks by coughing or sneezing. In almost all cases the affected disks are at the fourth or fifth lumbar vertebra.

ANNOUNCEMENT that the National Foundation for Infantile Paralysis had 100 per cent. wool available for patients getting the Kenny treatment resulted in a deluge of requests to headquarters. Consequently the foundation now announces that the wool can only be shipped to hospitals where the need is immediate, that is, where patients in the early stages of infantile paralysis are actually under treatment when the request is made. The material, available through the cooperation of the National Paperboard Association, can not be shipped in anticipation of cases that may occur in the future. In communities where there are only one or two cases, it is suggested that sufficient material, such as old blankets, lightweight woolen suiting and the like, can be obtained without calling on the supplies of the foundation. An average of five pounds of woolen material is required for each patient. Those requesting it from the foundation are asked to order only as much as is needed.