SCIENCE NEWS

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A "NEW" STAR IN THE MILKY WAY

A "NEW" star, flashing out from previous obscurity, has just been found in the Milky Way, according to Dr. Harlow Shapley, director of the Harvard College Observatory. The discovery of a strange celestial object was made by Dr. Max Wolf, of the observatory at Heidelberg University in Germany. Photographs made at the Harvard Observatory have confirmed the fact that it is really a "nova" or new star.

However, though the discovery has just been made, the new star might have been detected several months ago. It first appeared sometime between June 8 and June 21, and was photographed on plates made at the Harvard Observatory during that period. As it is in a region of the sky where thousands of stars can be photographed in a single exposure, it is not surprising that its unusual character was not noted at the time. Plates made before June 8 showed no record of it, though they were capable of showing stars as faint as the sixteenth magnitude. From such an exceedingly faint object, it quickly rose to the eighth magnitude, too faint to be perceived by the unaided eye, but visible in a small telescope.

Now its light is on the wane, and it is of the ninth magnitude. An effort is being made to have American astronomers observe it, to measure its variations in light before it gets too faint to be readily observed. Photographs of its spectrum will also be made.

Astronomically, the position of the nova is given as 18 hours and 52 minutes right ascension, and 3 degrees 25 minutes south declination. This is in the constellation of Antinous, a group visible in the southern sky in late August evenings. It is just below and to the west of the bright star Altair, in the Eagle, which towards the end of August is directly south at about 8:00 P. M.

A nova is really the explosion of a star, and is the most vast of all known physical catastrophes. But despite the violence, the stars that are affected seem to be pretty much the same after the outbreak as before. Though they are not all bright enough to be observed, it is estimated that ten novae occur in our stellar system in a year. This precludes the possibility of one theory that has been suggested for their origin, that they are caused by collision between two stars. The stars are so sparsely scattered in space that such a collision would be millions of times rarer.

The tremendous energy which is liberated is now believed to be due to a breaking up of the atoms of which the star is made. Some internal condition might start it, or some collision with a very small body in space might act as the trigger to set it off.

HEAT GIVEN OFF BY THE HEART BEAT

A QUITE normally beating heart, like an automatically equipped storage battery, "discharges" and "recharges" within the period of each beat. From his researches on the hearts of turtles and king crabs at the Johns Hopkins University, Dr. Charles D. Snyder and his associates have found that even a single beat of the heart will produce heat in proportion to the energy expended.

"This explains at last," Dr. Snyder declared, "the wonder of the heart's great regularity, its constant vitality and the age-long mystery of its indefatigability."

In their experiments every precaution was taken to exclude heat from outside sources. The hearts of turtles and king crabs were used because they will keep beating a long time after the animal itself has been killed. A small thermos jar was placed inside a larger one and in the cap of the smaller jar were fixed hard rubber posts to which the muscles were attached. Through the cap were perforations for the wires connecting the thermopile with the galvanometer for recording heat and for a thread connecting the muscle with the lever outside that recorded the tension. The desired temperature in the inner jar, usually 1 to 3 degrees Centigrade, was maintained with ice. The sensitive thermopile, or heat detector, was placed in close contact with the surface of the muscles, and both heat and tension were finally recorded on a moving photographic film.

It was found that the heart of the king crab produced on the average 71 millionths of a calory per centimeter of length for each gram of tension exerted and that the ratio of heat produced to the tension exerted per gram of weight of muscle was fairly constant throughout the series of experiments.

THE USE OF ULTRA-VIOLET RAYS IN ANIMAL DISEASES

How ultra-violet radiation, used on sick humans, saved the lives of five valuable and desperately ill animals in the New York Zoological Park, is told by Dr. Charles V. Noback, of the department of comparative medicine.

His furry patients consisted of a red howling monkey, a grivet monkey and three lemurs, which are small animals belonging to the same order as monkeys but lower in the evolutionary scale. They are all expensive animals, and their threatened death from "cage paralysis," which is a disease very similar to rickets in human beings, was regarded by the zoo authorities as a genuine impending calamity. When they had reached a state in which they refused all food and could hardly move, Dr. Noback was called in.

The helplessness of the animals at the outset simplified the treatment. Dr. Noback simply placed his quartz-tube mercury vapor lamp behind their bowed and immobile backs and turned on the current, without needing to tie or constrain them in any way.

The treatment was kept up for a month in the case of the red howling monkey, and from three to four weeks with the others. In all cases the stiffness and decrepitude that marks the disease in its extreme stages soon disap-

peared, the eyes became bright again, the hair glossy and the patients displayed a manifest renewal of their interest in food.

Dr. Noback notes that the doses of the rays to which he subjected the hair-covered skins of his animals were much more intense than those intended for the bare skin of a human being. For this reason he had to be careful about hairless and non-pigmented areas, such as the region around the eyes, to avoid producing severe sunburn.

EPIDEMIC OF PELLAGRA IN THE FLOOD REGIONS

PELLAGRA, the poverty disease that visits the South when times are hard, is expected to exact its toll from the states inundated by the flood.

Foreseeing the possibility of a grave epidemic of this disease, which is caused by insufficient food, the U. S. Public Health Service has detailed its dietary expert, Dr. Joseph Goldberger, to the flood area to make a preliminary survey of conditions among the hundreds of homeless survivors. Upon the information that he will collect a relief program will be built up to check, in so far as is possible, wide outbreaks of pellagra such as have always afflicted the South in times of economic depression in the past.

Since pellagra is caused by a faulty, unbalanced diet the ammunition to be used against it is food. Fresh lean meat, milk, cheese, green vegetables and eggs taken regularly are both the cure and the preventive for this disease. Some investigators have thought that pellagra was caused by a germ, but tests made by Dr. Goldberger have proved that it is due to diet alone.

"The three M's, meat, meal and molasses" are its commonest cause in the estimation of the Public Health Service experts. In the southern states when times are hard fat meat with corn meal and molasses are the principal foods of many people. If they continue to live on this diet for any length of time they are very likely to become weak and nervous, have indigestion and break out with an eruption that at first looks very much like sunburn.

The worst epidemic occurred in 1915 just after the outbreak of the European war, when cotton could not be sold and business in the South was at a standstill. In 1917, when the rise in food prices began to affect the tables of the South, there was another aggravation.

While doctors know that proper food will cure pellagra, they are unable to tell just what factor in an unbalanced diet is the cause. Dr. Goldberger believes that he has found what he calls a "dietary factor P–P" that is present in fresh milk, yeast and fresh beef, that will prevent the disease. While it may be a vitamin, it is not identical with any of the vitamins hitherto discovered and described. Dried yeast, which is believed to contain this element, has proved very satisfactory in treating severe cases.

VITAL STATISTICS

So far 1927 has been an exceptionally healthy year, judging by figures just issued by the Metropolitan Life Insurance Company.

Fewer people have died in the first half of this year in the representative slice of the population included among the company's policy holders than during the corresponding period of any previous year. The white death rate for the six months was 8.6 as compared with 9.7 for the first half of 1926. The colored mortality figures, though higher than those for whites, also showed a decided improvement.

The nearest approach to the present figure occurred in 1921, when the rate for the first six months was 8.7. The statisticians point out, however, that the gain made in 1927 is greater than appears from mere comparison of figures, since the company has recently adopted the policy of insuring infants under one year of age, the period during which susceptibility to disease is greatest. Consequently the gain in lives of 1927 is considered a most encouraging indication of health conditions in the light of the fact that some 492,000 infants are included in the calculations.

The outstanding feature of the year's health record to date is the big drop in deaths from tuberculosis. The season of the year when the most deaths from tuberculosis occur is past, and it is hoped that 1927 will show a new low-water mark for deaths from this disease.

Mortality from influenza and pneumonia were lower than they have been in several years. While the typhoid rate rose, due probably to the outbreak in Montreal, there has not as yet been any notable increase from conditions arising from the Mississippi flood. Measles, scarlet fever and whooping cough have claimed fewer victims, but diphtheria has made a slight gain. The cancer situation is unimproved and shows a slight increase in the number of deaths among whites and a bigger gain among colored people.

In spite of the generally hopeful conditions with respect to disease, the record for violent deaths is high. One fourth of all the accidental deaths were automobile fatalities, while the drownings registered a ten per cent. gain among whites and actually doubled among Negroes.

THE FISH IN AN ACRE OF WATER

AN acre of cultivated land will produce on the average about 140 pounds of beef and 300 pounds of pork. Our knowledge of the productiveness of similar water areas is very meager and those who have had the hardihood to suggest that such areas could be made as productive as equal areas of land have usually been considered unduly optimistic.

During the past summer the U. S. Bureau of Fisheries devoted several ponds at its Fairport, Iowa, station to determining how much fish an acre of water will produce. In water farming, consideration must be given to the best species of fish to use, the proper amount of fertilizer necessary to produce an abundant plant and animal life to serve as food, the introduction of forage fishes which will serve as an additional food supply for the market stock, etc.

According to the U. S. Fisheries Service, a pond 3,200 square feet in area was stocked on May 4 with 300 select blue-gill yearlings. The pond was fertilized

throughout the season, the total used being at the rate of 650 pounds per acre. The vegetation in this pond was very good, but not too abundant.

On October 13 the pond was drained and 257 fish of the original stock were removed, the increase in weight of these fish was over 11 pounds greater than the weight of the original 300. In addition, the pond produced 12,000 fingerlings with a combined weight of 9 pounds. The computed production of fish flesh per acre from this stock was therefore about 272 pounds.

Animal proteins (meat, fowl and fish) are the high-priced items of our diet. If we are to satisfy the appetite of our growing population we shall have to supplement land crops with water crops to a larger degree, the Bureau of Fisheries points out. Such experiments as these will in time enable us to determine more definitely the productiveness of water areas. It is regarded as quite possible that we may also find that some of our reclaimed areas would have been far better suited to water farming.

A PRONGHORN ANTELOPE COLONY IN THE GRAND CANYON

THE placing of twelve young antelope fawns on the Tonto Plateau in the Grand Canyon National Park marked the beginning of an interesting experiment by the government in restocking this area.

Many years ago the antelope, or pronghorn as it is sometimes called, roamed the western plains in almost countless thousands. Included in its range was the Grand Canyon region. But by the time the park was created, in 1919, not one of these animals was found within its borders.

The National Park Service, believing that the Grand Canyon provided a good range for antelope, secured six young bucks and six does from the game preserve at Reno, Nevada, as the nucleus for a future herd. They had been caught when they were fawns only a day old and raised on a bottle. When brought to the Canyon they were about five months old. The animals were placed in crates and carried on pack mules, eight miles down the trail to the Tonto Plateau. Eleven arrived safely; one little buck, which broke his leg on the way down, had to be shot.

While it is too early yet to know whether or not the experiment will be a success, the outlook seems promising. Last spring five fawns were born, proving that the antelope were able to breed under new conditions. Two of the fawns died, but the three that remain are does. Four of the original herd have also died, leaving ten animals at the present time.

An interesting feature of the herd is that while the original antelope are as tame as any domestic animals, the little fawns, in spite of the tameness of their elders, are quite wild and can not be approached closely.

ITEMS

THAT making laws for the United States is still chiefly in the hands of the Nordics, as it was in Revolutionary days, is shown by a racial study made by Frank L. Babbott, president of the Eugenics Research Association. The convention of statesmen that met in Philadelphia to frame the federal constitution was 90 per cent. English, Scotch and Irish. In the most recent session of the Senate, a group almost twice as large, 81 per cent. of the members were of similar racial descent. The last Senate included two members of French origin, Thomas F. Bayard and Edwin S. Broussard, and several of partly French ancestry. There was one Norwegian, Henrik Shipstead, and two Swedes, Irvine L. Lenroot and Peter Norbeck. Mr. Babbott obtained his figures by inquiring into the racial descent of each of the four grandparents of the 96 senators, which showed the racial origin of 384 grandparents.

THE Dornier "Whale" airplane used by Captain Courtney is dwarfed in size by the latest product of its makers. The Dornier Company, at Friedrichshafen, has just completed their "super Whale." It weighs nearly ten tons, or about half again as much as the "Whale." A wing-spread of 95 feet, length of 80 feet and height of 17 feet make it the largest flying boat ever constructed. Empty, the "super Whale" weighs nearly 13,000 pounds, while a maximum load of 13,270 pounds can be carried in addition. It will accommodate a crew of four and twenty-one passengers. With 6,000 pounds of fuel it can travel 1,368 miles, while with all the possible fuel that can be carried it is capable of going 3,610 miles without stopping. The engines are of the Rolls-Royce make. There are two of them, of 650 horsepower each, and are able to push the plane along at a speed of 118 to 130 miles an hour.

SUNSHINE is at such a premium in England that valuable reptiles in their new house at the Zoological Gardens are furnished with the artificial variety. In addition to the electrical supply of ultra-violet light the cages are equipped with heating apparatus controlled by automatic thermostats so that the current is shut off when the temperature arises above 83 degrees Fahrenheit and is turned on again when it falls below 77. Glass separates the public from the cages and helps conserve the summer atmosphere necessary to the health and happiness of snakes. As if this were not luxury enough, windows made of glass that admits ultra-violet light help the big boa-constrictors and their formidable brethren to enjoy life when the real sun shows his face.

BY-PRODUCTS of raisins and oranges can now be used for feeding dairy animals, according to a statement from the University of California, with assurance of good results. It was reported by the Exchange Orange Producers that for a single year there was a by-product of 9,000 pounds of pulp, and it was computed that by 1930 50,000 pounds would be wasted from oranges in a single orchard section. Use was sought for this material. The experiment station used sheep in the tests. Alfalfa was mixed with the pulp for feeding. In the case of raisin pulp it was found that digestibility equalled about two thirds the value of barley or beet roots, while with the orange pulp the value was approximately the same. Dairies situated near factories where oranges or raisins are made up into jellies, marmalades, syrups and other products are profiting from reduced cost of feeding.