ASTRONOMY

New Exploding Star Duplicating Its Behavior

➤ THE NEW exploding star visible to the unaided eye in the northern heavens (*see SNL,* Feb. 16), is staging an almost perfect duplication of its behavior 80 years ago. Dr. Dean B. McLaughlin of the University of Michigan Observatory said that the fact that the star, I Coronae Borealis, can repeat the earlier performance so closely makes it quite certain that the previous outburst has not altered it appreciably.

The star, previously visible only with a telescope, was first noted without a telescope early in the morning of Saturday, Feb. 9, by Armin J. Deutsch of the Yerkes Observatory of the University of Chicago. Following this report, it was observed at the Michigan Observatory the mornings of Feb. 10 and 11.

Whatever causes the explosion must be beneath the surface of the star, Dr. McLaughlin said. It does not appear likely, however, that it is deep inside, since only a minute fraction of the star's total mass is thrown off as a shell of gas and the remains of the star quiet down in a few years to the same brightness as before the explosion.

T Coronae Borealis, which can be seen after midnight in the northern sky, is the fourth star to be recognized with certainty as a recurrent nova. It seems probable that in the course of time people here on earth will observe repetitions by many more old novae.

Such repeated explosions, Dr. McLaughlin believes, gives a coup de grace to theories of an accidental cause of the nova outburst, such as a collision of two stars, a collision of a planet with a star, or the plunge of a star into a dark nubula. The companion star, a giant red star, takes no part in the violent variations of light.

Science News Letter, February 23, 1946

AERONAUTICS

Blind Landing in Bad Weather Will Be Possible

➤ BLIND LANDING in bad weather will be possible with relative safety for aircraft equipped with a new electronic device which automatically guides a plane to the airway by means of very high frequency radio waves transmitted from ground stations. The new airborne control picks up beamed radio waves from the transmitters and directs the plane to follow them down to the airfield. The device was developed by the Minneapolis-Honeywell Regulator Company.

In use, an official of the company states, a plane, equipped with this specialized radio receiver, is guided in the usual way to within a short distance of the field at which it is to land. When close to the field the electronic device picks up radio waves from marker beacons and indicates this contact by a flashing light. The pilot then throws a switch on the autopilot that immediately puts the plane under flight control of "localizer" beams being continuously transmitted from the airport.

The plane is automatically guided toward the landing strip until a second signal indicates that it has intersected an additional, or "glide path" beam which is also necessary for instrument approach. Throwing another switch puts the plane under control of both the glide path and localizer beam, and steers it toward the landing field at a fixed rate of descent until it contacts the runway.

Science News Letter, February 23, 1946

AERONAUTICS

New Airplane Engine Gives Greater Speed

➤ NEW AIRPLANE engines, the first of the kind ever produced in the United States, will soon be in use in Douglas DC-4 transports and will give these airplanes a 20 to 25 mile-an-hour increase in cruising speed and a payload gain of more than half a ton.

The new power unit can be installed in the DC-4 without modifying the frame of the airplane in any way, being equipped with a prefabricated nacelle that attaches directly to the present DC-4 wing and firewall.

This engine, designed by engineers of the Wright Aeronautical Corporation, will be known as the Cyclone 9HD and is said to be the world's most powerful air-cooled engine per pound of weight in production today. Each engine weighs 1,352 pounds and produces 1,425 horsepower.

Engine maintenance problems also will be simplified by use of the new Cyclone installation. The cowl panel, built in three sections, is held together by special type fasteners that take only a moment to snap open or shut. Rear cowl panels may be quickly opened by removing four pairs of bolts.

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IN SCIEN

GEOLOGY

Crater Lake Volcano Is Not Dangerous

➤ ANY FUTURE eruptions of Mount Mazama, the Crater Lake volcano, probably will not be violent enough to do any damage beyond killing a lot of fish and spoiling the color of the lake.

This is the opinion of Dr. Howel Williams, University of California geology professor, who is one of the foremost authorities on the crater. Dr. Williams studied the crater for five years, and considers it a classical caldera type volcano.

"An eruption of the lake today would not kill people," says Dr. Williams. "Furthermore, I doubt if there is enough activity in the volcano to produce a cone high enough to rise above the level of the lake, which is 2,000 feet deep."

Speculation that the dormant crater might erupt again has been prompted recently by the presence of vapor clouds hovering over the middle of Crater Lake.

Dr. Williams explained that Crater Lake caldera was built up gradually over a period of 60 million years of intermittent activity. Late in its activity the center of the cone collapsed, a characteristic of all calderas, filling in the great void beneath the earth caused by colossal eruptions of magna in the form of pumice. This was how Crater Lake was created.

"Once collapse occurs there is little chance of violent activity in a caldera," Dr. Williams declared, "although occasional periods of minor activity may occur for an indefinite period."

The studies by Dr. Williams show that man entered the Oregon region before the close of the violent period of activity of Mount Mazama. In his studies he found artifacts, such as obsidian knives and arrow tips of an ancient Indian race, buried in deep deposits of pumice near the crater. He places the time of this eruption at 5,000 to 10,000 years ago, after Ice Age glaciers began to recede.

The last eruption of the volcano occurred about 1,000 years ago, when Wizard Island was formed.

Science News Letter, February 23, 1946

CE FIELDS

ENGINEERING

Telephone Operates On Push-Button Principle

➤ AMERICANS of the present generation are used to automatic machinery that works when you push a button. Yet the one mechanism probably most often used, the telephone, departs from the push-button principle: you have to stick a finger or pencil-tip into holes in a dial and turn it around. Putting the automatic telephone on a push-button basis is undertaken in an invention on which U. S. patent 2,394,926 has been issued to Rudolph F. Mallina of Hastings-on-Hudson, N. Y.

On the front of the new instrument, instead of the familiar dial, are ten keys arranged in two banks and numbered from 1 to 0, like the keys of a small adding machine. Within the base, the mechanism is not very much different from that of the dial telephone, for each key is so geared that it turns a master-wheel a different number of spaces. Springs return the mechanism to starting position after each push.

The inventor has assigned his patent rights to the Bell Telephone Laboratories, Inc.

Science News Letter, February 23, 1946

GEOLOGY

Geological Servicemen To Get Retraining

➤ YOUNG GEOLOGISTS who have been so long in the armed forces that their geology may have become a bit rusty are offered on-the-job retraining under a new program that has been set up by the U. S. Geological Survey. This will be available both to members of the Survey who are returning to their jobs after war service, and to new members whom it will be necessary to add to the field forces. The retraining instruction will be limited to the types of operation required in the regular work of the Geological Survey, and expenses will be met out of the Survey's regular funds.

Young geologists whose scholastic or professional training was interrupted by the war are expected to complete this, as far as possible, in regularly established university departments of geology. Scholarships available under the G. I. Bill of Rights can be used for this purpose. Heads of geology departments in a number of leading universities have indicated their willingness to cooperate in the present program by offering study courses pointed especially at the Geological Survey's immediate needs. Among these universities are Chicago, Columbia, Harvard, Johns Hopkins, Princeton and Yale.

Science News Letter, February 23, 1946

ELECTRONICS

Large Lathe Produces Super-Voltage X-ray Tubes

➤ THE WORLD'S largest glass-working lathe, as far as known, has been designed and constructed by the General Electric X-ray Corporation in Chicago, and is now in use producing super-voltage X-ray tubes, including doughnut-shaped tubes for betatrons which may have a capacity of 100,000,000 volts. The lathe weighs two tons.

The lathe is so exactly constructed that it may be called a precision tool. Its spindles have a normal capacity of seven and a quarter inches, but it has a possible swing of 42 inches with special chucks. It can handle any piece of glass up to 84 inches in length, and tubes small enough to pass through its spindles are limited in length only by the size of the room.

The unit is equipped with a system whereby high frequency current will be passed through its heating flames in order to more effectively heat and seal the glass. To withstand the high temperatures used in working with this machine, its heads are equipped with special grease seals capable of withstanding heat up to 200 degrees Centigrade.

Science News Letter, February 23, 1946

GENERAL SCIENCE

Stalin Award Made to Russian Ship Designer

➤ REAR ADM. PETER Papkovich, corresponding member of the USSR Academy of Sciences, has received the first prize of 200,000 rubles for his work in shipbuilding mechanics, in the latest Stalin prize announcement.

A Russian naval veteran, Admiral Papkovich has studied problems of naval architecture and ship strength. His latest work for which the award was made sums up many years of research on ship design.

Science News Letter, February 23, 1946

CHEMISTRY

Blanket Patent on Synthetic Weed-Killers

➤ A PATENT covering a multitude of things that all perform the one function of weed-killing is No. 2,394,916, obtained by Franklin D. Jones of Llanerch, Pa., chemist associated with the American Chemical Paint Company, to which firm he has assigned his rights.

The weed-killers patented by Mr. Jones all belong to the general family of chemicals commonly described as synthetic hormones or growth-promoting substances. In very small doses they act as stimulants; in higher concentration they are deadly to plants on which they are sprayed or dusted. As described in the patent, the herbicides belong to "the group consisting of phenyl, naphthyl, tetralyl, and anthracene monocarboxylic alphatic acids, their salts and esters."

The very sweeping claims made in this patent may provoke some tense legal battles.

Science News Letter, February 23, 1946

CHEMISTRY

Gold Plating Measured By New Method

➤ THE THICKNESS of the gold layer on plated jewelry and other articles may be accurately measured by a new chemical-physical method developed by W. Stanley Clabaugh of the National Bureau of Standards in Washington, D. C. Limited equipment only is required.

In this method a very small sample of the material is cut out with a punch and die. This sample is about 15 ten-thousandths of a square inch in area. It may be of any thickness up to one thirty-second of an inch.

Then the base metal is dissolved away with nitric acid, leaving a small circular piece of the gold. After washing, the gold is dissolved in a few drops of aqua regia and dried. A measured volume of a solution of o-tolidine dissolved in normal sulfuric acid is added to the dried residue.

The gold causes the solution to turn yellow, and the intensity of this yellow color is a measure of the quantity of gold present. Modern scientific methods are used to determine the intensity of the yellow color. Knowing the quantity of gold and the area of the sample, the thickness of the original gold layer is easily calculated.

Science News Letter, February 23, 1946