

## ASTRONOMY

# Encke's Comet Seen Again On Return Visit to Sun

**This Visitor, Which Returns With Great Regularity Every 3 1-3 Years, Is Visible Only Through Big Telescope**

**E**NCKE'S comet, most frequently returning of these visitors from space, has been picked up for the first time on its present visit to the sun's neighborhood. The discovery was made by Dr. Hamilton M. Jeffers of Lick Observatory.

One of the most reliable of all the comets as well as shortest in period, Encke's comet has been observed to make its return every three and a third years for more than a century.

It is now very faint and visible only through the largest telescopes. It is a diffuse spot of light without a tail. It was spotted at just about the place in the heavens that computations made months ago indicated that it would appear.

Details of the re-discovery of this comet have been relayed through Harvard College Observatory to astronomers throughout the world.

The returning "prodigal" is a diffuse, faint object far outshone by thousands of stars. It is just visible to the naked eye under the most favorable conditions and nearest approach to the earth. Now it is detectable through only the largest telescopes.

Yet it is a remarkable celestial object because it alone among the comets seems to meet with some sort of resistance that retards its motion in its travels through planetary space.

The fact that it returns to the sun's vicinity more frequently than any other comet, every 3.30 years, also makes it noteworthy.

Encke's comet was discovered in 1786 but it takes the name of the astronomer who first recognized its periodicity in 1819. Since then it has been observed at every one of the 34 visits that it has made to the earth's part of the solar system where it can be seen by astronomers.

In 1931 the rediscovery was made by a Spanish astronomer, while in both 1924 and 1927 it was first picked up by Dr. George Van Biesbroeck of

Yerkes Observatory, Williams Bay, Wis.

Ability to predict by computations where a comet will reappear after months and years of absence amazes laymen but is a common and successful practice among astronomers.

It may seem paradoxical that the unknown resistance that Encke's comet encounters in its path near the sun makes the visits of the comet more frequent and actually increases its speed over most of its orbit. It gains more speed by falling nearer the sun than it loses by the direct effect of the resistance.

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## GEOLOGY

## Granite Changed To Sandstone and Shale

**R**OCKS that were originally sandstones, limestones, and slates have been found mysteriously changed by nature into granite. This is a most surprising phenomenon, since geologists heretofore have classed granite as a type of igneous rock that developed from a molten mass of material formed at considerable distances below the earth's surface.

Dr. G. H. Anderson, research geologist of the California Institute of Technology, made this discovery in the Inyo Mountains of California, during a study of the rock material composing the core of the range.

Batholiths, essentially masses of igneous rock, are common to almost every mountain range and invariably are composed of granite rock. Rising from the depths of the earth, the molten batholithic material engulfs and melts rocks in its path, but solidifies before reaching the surface. Other dynamic forces produce shears or faulting in the crust and eventually uplift a tremendous rock mass, forming the mountain with the batholith as its core.

In the Inyo Mountains, during pre-Cambrian time, over 500,000,000 years

ago, sedimentary rocks were being deposited in a sea that occupied the present position of the range. Since the recession of the sea and the present development of the mountains, certain chemical substances in solution, emanating from a batholith in the earth's interior, caused alterations and replacements in the sediments, making them virtually indistinguishable from a true granite.

Some of the striking features upon which Dr. Anderson based his conclusions are the preservation of the apparent bedding of the original sediments, the sedimentary relics found in the transposed granite, and the gradation of remnant sedimentary material into the granite. Numerous chemical analyses of different samples of the granite combined with petrographic studies substantiated Dr. Anderson's discovery.

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## SEISMOLOGY

## Earthquake Rocks Sea Floor in Caribbean

**A**S THOUGH to celebrate the presence of President Roosevelt in the Caribbean Sea, the sea floor of a portion of that area was shaken by an earthquake on Monday, July 9. The location of the center of this submarine quake has just been determined through the use of earthquake messages gathered by Science Service from seismograph stations.

The weak shock was remote from the course of the President's voyage as it was about 125 miles northwest of Jamaica and 150 miles south of Cuba. Even if the Presidential flotilla had passed over the earthquake area when the quake happened, there would have been felt no more than a harmless jolt. Aboard a ship at sea is one of the safest places during an earthquake.

The Coast and Geodetic Survey determined the epicenter of the July 9 quake as about 19 degrees north latitude and 80 degrees west longitude.

A sharp earthquake rocked the sea bottom about one hundred miles off the northern coast of California on Friday, July 6, at 5:48.3 p. m., Eastern Standard Time, according to data received telegraphically by Science Service and interpreted by scientists of the U. S. Coast and Geodetic Survey. The epicenter was located at 42 degrees north latitude, 126 degrees west longitude.

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