ASTRONOMY

Find Odd-Ball Radio Star

An individual radio star has been pinpointed for the first time. It emits radio signals ten million times stronger than the sun but seems to contain no hydrogen.

➤ FOR THE FIRST TIME, an individual star that sends out radio signals has been detected.

The radio star, known as 3C-48, is an "odd-ball." Its peculiar properties baffle the astronomers who found it was the first true radio star.

It was located by scientists at California Institute of Technology's Radio Observatory in Owens Valley, Calif. Its identification was confirmed, using the 200-inch Hale telescope at Mt. Palomar Observatory. The radio star may be relatively close, as astronomical distances go, to the solar system.

It is believed that 3C-48 emits radio signals ten million times stronger than the sun which is also a radio source. The star is of 16th magnitude so it can be seen only with a large telescope. It is located in the constellation Triangulum which is close in the sky to the Andromeda Nebula.

If 3C-48 is surrounded by high-energy electrons moving in a magnetic field at near the velocity of light, the resulting synchrotron radiation would produce both its light and its radio signal.

The star's emission of light in ultraviolet wavelengths is unusually high for its yellowish color, astronomers reported. This also indicates synchrotron action. The faint gaseous cloud that surrounds the star may be many times the diameter of the sun.

Spectrograms were made at Mt. Palomar to find out the composition of 3C-48. The results were unlike that of any other star now known. The star itself or its gaseous cloud contains ionized calcium, ionized and neutral helium and possibly oxygen, ionized many times. Its spectral lines do not show hydrogen, generally the main fuel in stars and almost always seen in stellar spectra.

Thomas A. Matthews of Caltech obtained the precise location for 3C-48. The Hale telescope spectrograms were taken by Dr. Jesse L. Greenstein, Dr. Guido Munch and Dr. Allan R. Sandage of Mt. Wilson and Palomar Observatories.

• Science News Letter, 79:67 February 4, 1961

ASTRONOMY

New Jupiter Spot Theory

➤ THE FAMED RED SPOT on the planet Jupiter is not free-floating in the atmosphere, as many astronomers have suggested since it first was observed 83 years ago.

The red spot, as seen from earth, is the top of a fluid column of the planet's heavy poisonous atmosphere confined above a surface peak by surrounding whirling winds, the British astronomer, Dr. Raymond Hide, believes.

Dr. Hide of Kings College, University of Durham, England, is a visiting professor at Massachusetts Institute of Technology.

He discounted the long-held floating object theory because the spot remains in the same latitude, even though its rotation rate is not uniform with that of the planet.

The change in rotation rate is caused by the atmosphere of Jupiter, which is so thick that it can move solid parts of the planet, thus changing the rotation rate of the moved part, Dr. Hide said.

"There is very little motion of the red spot itself. It moves with the peak to which it is attached," Dr. Hide said.

He noted that the spot, red when first seen in 1878, now appears brown. It is estimated to be 25,000 miles long and 8,000 miles wide.

Dr. Hide calculates that the height of the peak to which it is attached is "probably less than six miles." But the thick noxious atmosphere of ammonia, hydrogen, methane, helium and nitrogen "may be 6,000 miles deep." Such a deep atmosphere in motion is quite capable of moving solid parts of the planet Jupiter, just as a tornado on earth can move and tear up parts of the earth, Dr. Hide said.

Jupiter is the largest planet in the solar system with a total mass 300 times that of earth. Its solid surface is obscured from view by heavy clouds, believed to be ammonia crystals.

Gravity on Jupiter is three times the force of earth's gravity.

• Science News Letter, 79:67 February 4, 1961

ASTRONOMY

No Full Moon Will Shine In February Skies of 1961

➤ THERE WILL BE no full moon in February. February is the only month that can come and go without a full moon occurring.

When did this happen before, and when will it happen again? Prof. Charles H. Smiley of Brown University reports that it happened in 1866, 1893 and 1915, and that it will happen again in 1980 and 1999, and then not again until after 2066. Thus, a February without a full moon will have occurred only six times in two centuries.

However, just because there is no full moon in February does not mean that the year 1961 will have fewer full moons than usual, Prof. Smiley said. On the contrary, such a year will almost always have two full moons in January and two in March, with 13 (the maximum possible) for the year's total.

The year 1961 will have its full quota of 13 full moons, despite February's lack.

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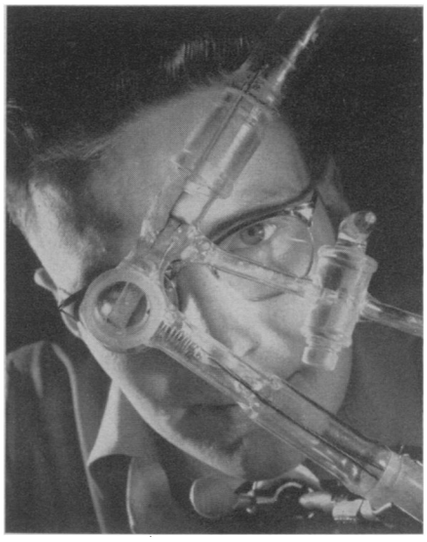

TESTING MOLTEN SALT

TECHNOLOGY

Salt as Raw Material In Electronic Components

➤ MOLTEN SALTS, tested on a tiny platinum screen, may be used as raw material for electronic components. Minneapolis-Honeywell scientists have developed advanced infrared measuring techniques to determine the basic structure of salts when heated to the liquid stage. Molten salts have already been used to generate electricity and as electric switches.

• Science News Letter, 79:67 February 4, 1961

TECHNOLOGY

Rocket Engine Fuel Tanks Made from Spun Glass

See Front Cover

➤ ROCKET ENGINE FUEL TANKS are now being made on an experimental basis from spun glass threads one-tenth the diameter of a human hair. 180 individual glass fibers are spun together, then wound around a pattern and bonded together with a plastic resin. When the resin is dry, the pattern is removed and the tanks capped.

The tanks, produced by the Boeing Aero-Space Division, are 21 feet long and hold 3,100 gallons. They are designed to withstand a pressure of 665 pounds per square inch.

The principal advantage of fiber glass is lower costs and light weight.

• Science News Letter, 79:67 February 4, 1961