ASTRONOMY

Radio Stars Probably Nearer Than Those We See

➤ RADIO STARS probably are not as near the earth as astronomers originally estimated. Yet some of these stars whose noisy hisses are picked up here on earth may be nearer our solar system than the closest of stars that shine brightly in the night sky.

Four of the noisiest stars are probably at least ten million million miles from the earth, F. G. Smith of Cavendish Laboratory of Cambridge University reports in the British scientific journal NATURE (Dec. 1). These stars are in the constellations of Taurus the bull, Virgo the virgin, Cygnus the swan, and Cassiopeia.

None of these four stars can possibly be closer than a million million miles, Mr. Smith's observations indicate. The ones in Cygnus and Cassiopeia cannot be nearer than four million million miles.

The sun, our own private star, is both bright and noisy. The next nearest visual star is Proxima Centauri in the southern constellation of the centaur. This star, too faint to be seen without a telescope, is some 25 million million miles away. Any of these four radio stars, which are heard but probably have never been seen, may be nearer us than Proxima Centauri.

To pinpoint the exact location of these noisy stars against a background of distant visual stars is most difficult. So Mr. Smith estimated the change in the position of these radio stars in relation to each other, rather than figuring how they move against a background of more distant stars as the earth speeds around the sun.

Science News Letter, January 19, 1952

TECHNOLOGY

All-Glass Paper Is Effective Air Filter

➤ ALL-GLASS PAPER, a new product composed entirely of glass fibers with nothing added, has been developed at the National Bureau of Standards.

It is the first all-glass paper ever made, Bureau officials state. In it commercially available fine glass fibers were used. This raw material was mixed with water and formed into continuous sheets on a semi-commercial paper-making machine.

This all-glass paper seems particularly suitable for use as filters in gas masks and respirator used by fire fighters, industrial and medical workers and military personnel. In gas-mask tests in a smoke-filled room only one smoke particle in 100,000 passed through it.

The development of this paper was a joint project of the Bureau of Standards and the Naval Research Laboratory. The scientists of the Bureau responsible for it are M. J. O'Leary, J. K. Missimer, J. J. Erving, and B. W. Scribner. The Navy scientists are T. D. Callinan and R. T. Lucas.

Science News Letter, January 19, 1952

AUDIBLE EARTHQUAKES—Dr. Hugo Benioff is shown here with the seismic tape recorder he devised for continuously recording the different vibration frequencies of earth shocks.

SEISMOLOGY

Quakes' Sound Recorded

Earth's vibrations, amplified and recorded on magnetic tape, then played back at an increased speed, give new method of measuring energy distribution of shocks.

➤ EARTHQUAKES ARE being sound recorded at the Seismological Laboratory of the California Institute of Technology in Pasadena.

The earth's vibrations acting on a pendulum seismograph generate a small electric current. This is amplified and fed into a magnetic tape recorder, which operates at the slow speed of one-half millimeter per second.

When this is played back, speeded up to about 15 inches per second, the low frequency vibrations are raised to a frequency that can be heard through a loudspeaker.

When quakes are speeded up in this way 600 times, a local shock sounds like a pistol shot and a distant quake like a ten-strike in a bowling alley.

Dr. Hugo Benioff, who devised the new recorder, was not interested in making quakes audible but in having a new method of measuring the energy distribution of the different vibration frequencies in the shocks recorded.

To aid earthquake research, Dr. Beno Gutenberg, director of the Laboratory, announced that new equipment is being installed on Palomar Mountain. This will enable the station there to record more earthquake characteristics than received by any other seismographic station, Dr. Gutenberg states.

As the nearby 200-inch Hale telescope of the Palomar Observatory furnishes information on previously unexplored reaches of space, so will the newly-equipped station reveal more of the earth's secrets than ever before.

The equipment will include two electromagnetic linear strain seismographs. These instruments record strains—rather than ground displacement—to which the earth is subjected by seismic waves. They provide information which cannot be obtained from the usual pendulum type of seismograph.

The new instruments are sensitive to a strain as small as one billionth of an inch per inch. Their sensitivity is indicated by the performance of similar devices installed underneath the Caltech Laboratory in Pasadena. These record not only the footsteps of a person walking through the Laboratory but also compression of the rock beneath it resulting from the person's weight.

Another new instrument being installed at Palomar is a vectorial recorder which photographs a pattern—roughly 5,000 times