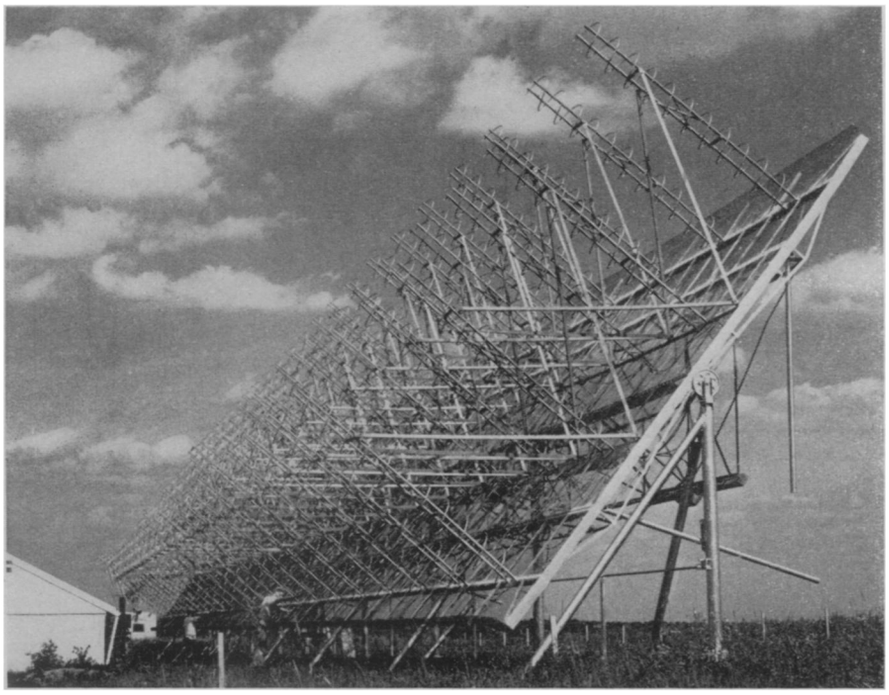

MESSAGES FROM SPACE—Ohio University's radio telescope was one of the four instruments to fix the center of our galaxy. The giant antenna picks up radio waves from space. With it astronomers can "see" some parts of the universe where light telescopes cannot penetrate.

RADIO ASTRONOMY

Pinpoint Galactic Center

Radio waves of various lengths broadcast by the nucleus of our Milky Way galaxy allow astronomers to locate its position more accurately than ever before.

➤ RADIO ASTRONOMERS have tuned in on radio waves being broadcast by the center of the giant pinwheel of stars that make up our Milky Way galaxy to pinpoint its position more accurately than heretofore possible.

Measurements made by scientists at the Naval Research Laboratory, at Ohio State University, and by Australian and Dutch astronomers have been combined to give the new precise location.

They used radio waves ranging from 56 inches to just over an inch in length (140 to 3 centimeters), compared to ordinary radio waves, which are about 1,000 feet long for the middle of the standard broadcast band.

The center of the Milky Way galaxy, it is concluded, is 8,500 parsecs from the sun, or 166,260,000,000,000,000 miles, at a right ascension of 17 hours, 42 minutes and 40 seconds and a declination of minus 28 degrees, 50 minutes and 55 seconds.

This confirms previous less exact positions that also put the galactic center in the constellation of Sagittarius, the archer, which becomes visible low in the southeast sky in May.

The distance figure is based on studies of radio waves 21 centimeters long being broadcast by the sparse hydrogen that fills the space between the stars. Dutch astronomers, led by Dr. Jan H. Oort of Leiden Observatory, the Netherlands, measured the shift in this radiation caused by motion of the gas.

The position is based on the variations in intensity of the different radio-wave frequencies at the center, and is a weighted average of the different measurements at four institutions.

The exact location of the nucleus of our galaxy has long been sought by optical astronomers, but it is hidden from view by vast clouds of interstellar dust. Radio waves, however, penetrate these dust clouds, even though light waves do not.

The sun, which is a star, and thousands of millions of other stars revolve around the galactic center, taking more than 200,000,000,000 years for one rotation.

Radio waves from the galactic center were studied by Naval Research Laboratory scientists, under the direction of Dr. John P. Hagen, at 3 and 9.4 centimeters as well as at 21 centimeters.

Drs. John D. Kraus and H. C. Ko of Ohio State University used radio waves of 140 centimeters for their determination of the center. The Australian scientists, led by Dr. J. L. Pawsey of the Commonwealth Scientific and Industrial Organization, used radio waves of 75 centimeters for their measurements.

Astronomers at Harvard College Observatory are also studying the radio radiation at the galaxy's center at 21 centimeters, using a 25-foot parabolic antenna. Dr. Bart J. Bok heads this project.

The discovery, made last year by the Naval Research Laboratory group, that there are one or more discrete sources of radio waves precisely in the direction of the galactic center showed that ionized hydrogen exists near or at the nucleus.

Astronomers are puzzled, however, as to why radio waves of 50 centimeters and less should be so strong from the center of the galaxy, since ionized hydrogen responsible for it is not usually thought to be heavily concentrated in the nuclear regions of galaxies.

Science News Letter, January 22, 1955

AERONAUTICS

1,000 Mile-an-Hour Planes Predicted

➤ PLANES THAT fly 1,000 miles an hour will be produced within the next few decades, it was predicted at a meeting of the Society of Automotive Engineers in Detroit.

At that speed a plane could circle the earth at the equator in one day.

Such planes should be completed long before 50 years elapse, Dr. Arthur L. Klein, professor of aeronautics at California Institute of Technology and consultant for Douglas Aircraft Company, Santa Monica, Calif., said.

He also predicted that the helicopter will come into its own within the next half century and that structural metals for aircraft will be at least twice as strong as the ones used today.

Science News Letter, January 22, 1955

ENTOMOLOGY

Museum Receives Gift Of 182,000 Insects

➤ THE LARGEST single collection of its kind, 182,000 moths, butterflies and other insects, has been acquired by the American Museum of Natural History in New York, Dr. Mont A. Cazier, chairman of the department of insects and spiders has announced.

A bequest of John Lowell Sperry, an amateur collector who died in January, 1954, the insect collection includes 165,000 moths from North America, Central and South America, Europe, India and Africa; about 16,000 butterfles and 1,100 miscellaneous insects.

Science News Letter, January 22, 1955