to John Alden when he came a-courting for Captain Miles Standish. In the movie, which gives her very few lines to say, she has little more to do than to take a bath (*right*) and get herself rescued by John Alden from the sweaty embraces of a brutish member of the *Mayflower*'s crew.

PRISCILLA AND FELLOW PILGRIMS PUT CLEANLINESS NEXT TO GODLINESS →

RADAR ANTENNA ON A TELESCOPE MOUNT "LISTENS" TO SOUND FROM SPACE AS VISIBLE STARS CIRCLE SKY, FORMING STREAKS OF LIGHT IN THIS 90-MINUTE TIME EXPOSURE

RADIO ASTRONOMY

Celestial sounds reveal invisible stars and new facts about the sun

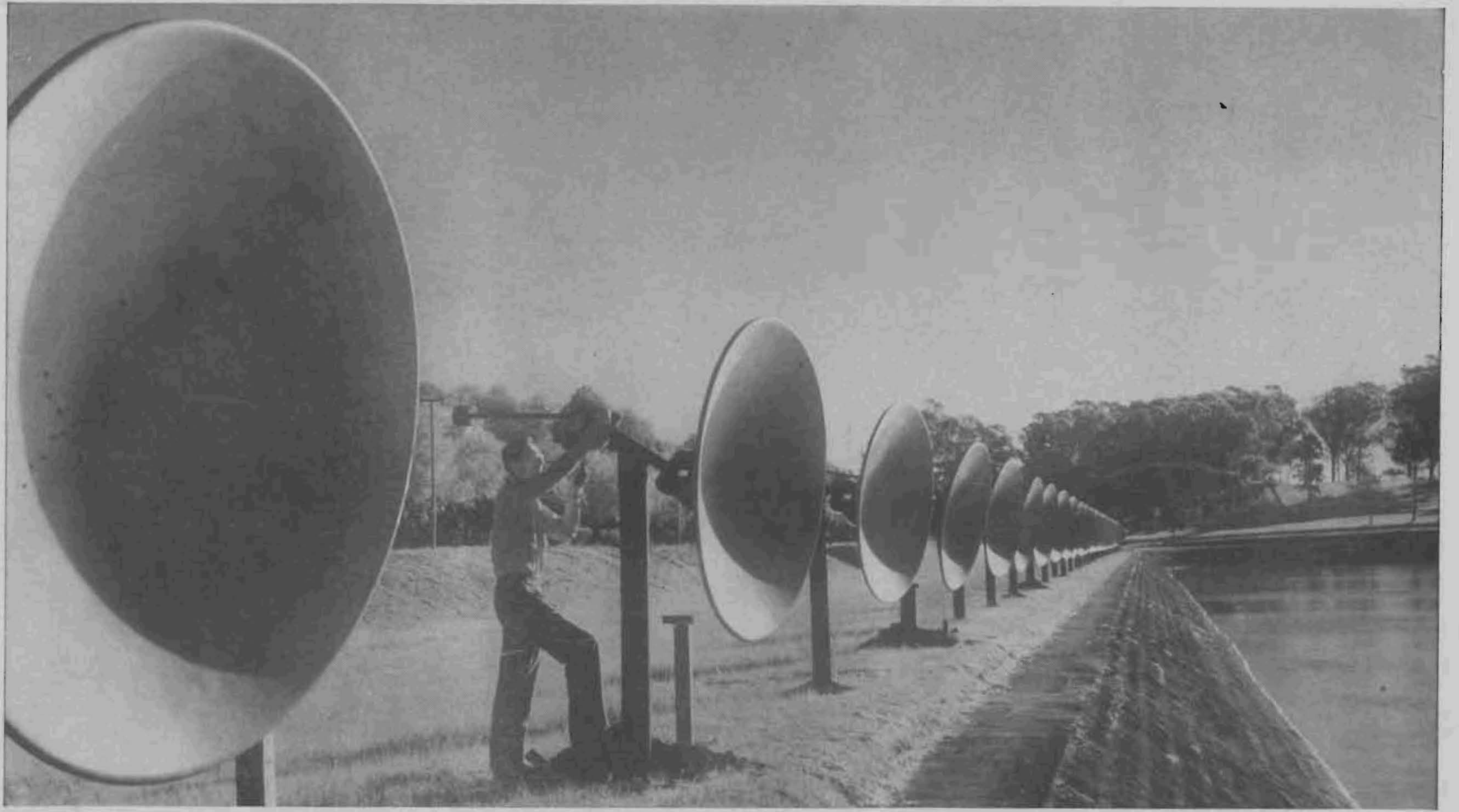
Mingled among the visible stars in our galaxy and beyond are strange, huge objects that cannot be seen and might never have been detected if they did not make a curious cosmic "noise." These are the "radio stars," which emit a faint "hiss" that is picked up by radio receivers. The first man to become aware of them was K. G. Jansky, who in 1932 began investigating mysterious noises from space which hampered radio reception. Nearly 100 radio stars, whose exact nature still is unknown, have been located and the study of celestial sounds, which is reshaping man's idea of the cosmos, has become a new science called radio astronomy.

Scanning the sky with wire nets (*above*) and other odd antennae (*pages following color*), astronomers found that all stars, including our sun, radiate a variety of energy waves. Shorter waves are invisible ultraviolet light. Slightly longer waves are seen by the human eye as light. The longest waves emitted can be translated into sound by radio receivers, or "radio telescopes." Some sound comes from ordinary stars. But the strongest noise comes from the radio stars, which seem to be masses of gas radiating up to 100 billion times as much long-wave energy as the sun. Possibly they are whorls of gas that eventually will condense into great glowing bodies like our sun.

Radioastronomers have also discovered that gigantic clouds of hydrogen atoms are drifting about in our galaxy, emitting a steady "hum." They are so tenuous a matchboxful of space in the clouds would contain but six or seven atoms. Yet the clouds' total mass equals that of all the stars in our galaxy.

Some radioastronomers have turned their radar scanners out toward the distant reaches of space and have picked up sounds that seem to result from wild collisions between entire galaxies. Others have focused on the sun. It makes a steady noise which rises to crashing crescendos when solar storms, sunspots or other outbursts occur. Analyzing the sun's sound, radioastronomers found that the fiery sphere man sees is surrounded by six even hotter gaseous envelopes which bombard the earth with radio and radar waves. How this furious emission would appear to human eyes if they could see the radiation in terms of colors is shown in the painting on the opposite page.

RADIO ASTRONOMY CONTINUED



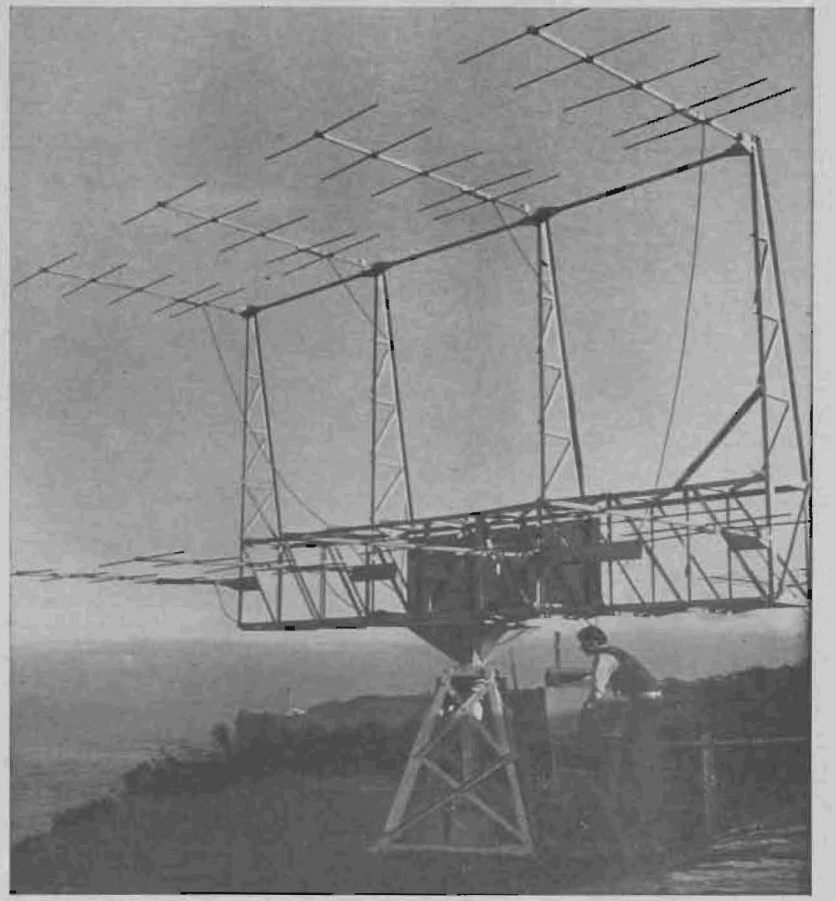
AN 800-FOOT ROW OF RADIO TELESCOPES, EACH A SIX-FOOT METAL SHELL, IS SET AT EDGE OF AN AUSTRALIAN RESERVOIR TO CATCH RADIO WAVES COMING FROM THE SUN

NEW 'EARS' ARE HUGE AND COSTLY

The unusual scientific excitement stirred up by the radioastronomers' discoveries can be judged by the hurried construction of new receivers. Five years ago most radioastronomers had to use common military radar sets obtained from war surplus. Today more radio telescopes than conventional light telescopes are being built, many of them huge installations. The greatest of all will be a $950,000 giant (*p. 138*) that can both send and receive, making it possible to bounce signals off nonradiating bodies like Mars to measure its exact distance from Earth.

One pay-off the equipment should soon produce is a precise map of the extensions on our galaxy's rim (*pp. 132, 133*). This will tell whether the great starry spiral is unwinding or winding tighter, giving the first solid clue to our galaxy's dynamics and thus, perhaps, its fate.

SAUCERLIKE ANTENNA, a 50-foot aluminum dish recently installed at Naval Research Laboratory, Washington, D.C., can swing to track sun across the sky.



TV-LIKE ANTENNA measures size of radio stars by analyzing radio star signals that bounce off ocean along with those signals that strike the antenna directly.

CONTINUED ON PAGE 138

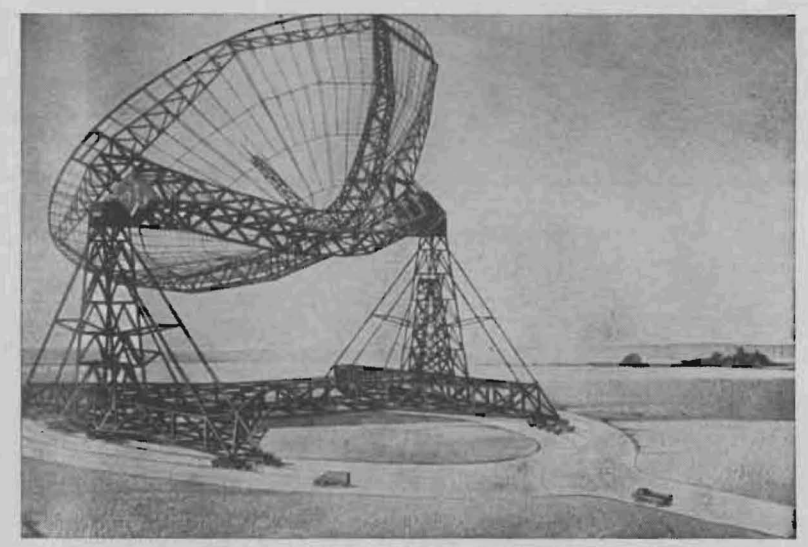
RADIO ASTRONOMY CONTINUED

PIONEER RADIOASTRONOMERS who located the hydrogen clouds are Edward M. Purcell (*left*)—who last week won a 1952 Nobel Prize for work in nuclear physics—and H. I. Ewen (*right*), here meeting with Australia's E. G. Bowen. Striped flask is crude model showing earth's tilt away from plane of our galaxy.

AIR EXPERT Martin Ryle of Cambridge University has proved that moving clouds of electrons in upper atmosphere of the earth cause variations in noise from radio stars, is now studying effect of cosmic

noise on human radio broadcasts.

GALAXY EXPERT Hendrik van de Hulst, professor at Leiden University, Netherlands, measured length of extensions reaching out from the edge of our galaxy, proved that they contain exceptionally large numbers of the great hydrogen clouds.



LARGEST RADIO TELESCOPE, shown in this drawing, is being built for $950,000 near Manchester, England under the direction of A.C.B. Lovell, one of Britain's most eminent radioastronomers. A 1,270-ton, 250-foot-wide shell of wires, it will be able to pick up signals impossible for other receivers to catch.