

RADIO ASTRONOMY

Radio Dish Completed

See Front Cover

► THE WORLD'S second largest radio telescope, a 210-foot saucer located 200 miles west of Sydney at Parkes, New South Wales, Australia, is now undergoing its shakedown tests. The telescope, seen on this week's cover, stands in a field where sheep ranchers graze their herds. In this remote spot a minimum of electrical interference exists.

Scientists from other countries are being invited to carry out investigations with the giant new radio telescope, believed to be earth's most far-seeing astronomical instrument. The telescope is reported capable of searching ten times farther into the universe than the world's largest optical instrument, the 200-inch at Mt. Palomar, Calif.

The Australian radio telescope's only rival is the British saucer near Manchester, England, which is 250 feet in diameter. However, the Australian instrument can outperform its larger rival because it has a higher surface accuracy and because its control system is extremely accurate.

The new telescope cost \$1,800,000, of which the Rockefeller Foundation and the Carnegie Corporation contributed \$500,000. It was built for Australia's Commonwealth Scientific and Industrial Research Organization, known as CSIRO.

The Parkes telescope will be available for participation in such programs as Project Ozma, in which astronomers listened for intelligent radio signals from other worlds in space. However, the formal agenda for

the instrument does not so far include this task.

The Australian instrument is the only large radio telescope in the Southern Hemisphere. At least three larger telescopes are under construction in the Northern Hemisphere.

Dr. E. G. Bowen, head of CSIRO's radio-physics division, has reported that the radio telescope will have an important role in tracking the scientific probes that will be sent into interplanetary space in coming years. Also scheduled for the instrument, he said, are:

1. A detailed mapping of the spiral arms of the Milky Way galaxy in which the sun and its planets, including earth, are located.

2. Mapping the structure of the Clouds of Magellan and the Andromeda Nebula.

3. A search for new radio sources in space and charting their distribution. Astronomers hope that such a new survey will yield information allowing them to settle the question of the origin of the universe. As of now, they cannot decide between the theories of continual creation, of an explosive beginning and a continuing expansion, or of an alternately exploding and contracting universe.

Of the three receivers mounted on the telescope, the one tuned to radio waves of 21 centimeters will be the most used, since this is the wavelength at which hydrogen in space radiates and the universe is composed mainly of hydrogen.

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GEOPHYSICS

Urge Geophysical Months

► A NEW PLAN to learn more about the earth—its land, air and seas—by means of several International Geophysical Months was urged in Washington, D.C.

These short periods of cooperative study could yield much useful information about the earth as a planet, and serve as a means of consolidating the gains made during the International Geophysical Year.

Every effort should be made to schedule the first International Geophysical Month during June, 1962, Drs. R. A. Helliwell and L. H. Martin of Stanford University, Stanford, Calif., reported in *Science*, 134:1737, 1961. They said that some of the main advantages of the IGM plan included:

1. Most organizations can mount and support intensive field operations for short periods.

2. High-quality data would be obtained, and the data could be processed more promptly than in long-term projects.

3. Laboratory equipment could in many instances be made available for field operations.

4. Top-caliber researchers would be available for field operations.

5. The participation of small research groups and of research workers from government and industry would be fostered.

6. Student participation would improve educational programs in, and attract needed talent to, the geophysical sciences.

7. Ship, satellite and rocket observations could be scheduled for IGMs.

8. International scientific conferences scheduled to follow IGMs would attract working scientists.

The June, 1962, IGM could be followed by one in December, 1962, and another in March, 1963. These short-term exercises would provide information important to plans for the International Year of the Quiet Sun to be held during 1964-65, when sunspot activity is low.

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PHYSICS

A-Bombs No Help To World Security

► A FOREIGN-BORN physicist, Dr. Hans A. Bethe, who helped develop the atom bomb, said that atomic weapons have not

contributed to security and urged continued efforts toward world disarmament.

He made this statement at the White House where President Kennedy presented him with the Enrico Fermi award for his contributions to the development of atomic energy. The award, the highest given by the Government, consists of a gold medal and \$50,000 tax-free.

In an interview with *SCIENCE SERVICE*, Dr. Bethe said, "I do not think we should resume atmospheric testing. I believe and I hope we can do all we need underground. There are quite good methods that were developed at the University of California's Radiation Laboratory, Livermore, for underground tests and we must learn to extend these methods for weapons development."

He believes that present East-West weapons strength is balanced, "but we must work to maintain this balance."

Dr. Bethe said that despite the size of some of the Soviet tests, he believes that they were designed mainly to develop lighter and more efficient weapons.

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SYNTHETIC FIBER SHEET—being tested for strength.

TECHNOLOGY

New Synthetic "Paper" Made of Acrylic Fiber

► A SYNTHETIC FIBER sheet similar in appearance to paper and made entirely of acrylic fiber was developed by the American Cyanamid Company in New York. The sheet, which does not require a bonding agent to hold the fibers together, can be produced on a conventional paper-making machine. The "paper" picks up negligible moisture compared to typical wood pulp paper. It is resistant to ultraviolet light, all common solvents and most chemicals, and has superior electrical insulation properties.

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