

galaxy and the general background radiation of the galaxy. A large aerial such as that being constructed at Manchester may be expected to give better information concerning the contribution from a specific source of galactic radio waves relative to the general background than has been possible with other radio telescopes now in use. This seems even more likely since provision has been made for rotating the aerial so that a source may be kept under constant observation for a considerable period of time.

The overcast state of British skies, which is an inhibiting factor in observing astronomical events with ordinary optical telescopes, may be said to have played a large part in the spectacular development of radio astronomy in Great Britain during the past several years. Until recently astronomers had been limited to observing events by means of the visual and near visual wavelengths of the electromagnetic spectrum. The only other significant band of the spectrum not ruled out for such observations by the opaqueness of the earth's atmosphere is the radio wave region covering wavelengths from approximately one centimeter to twenty meters, a considerably wider band than that of the visual wavelengths.

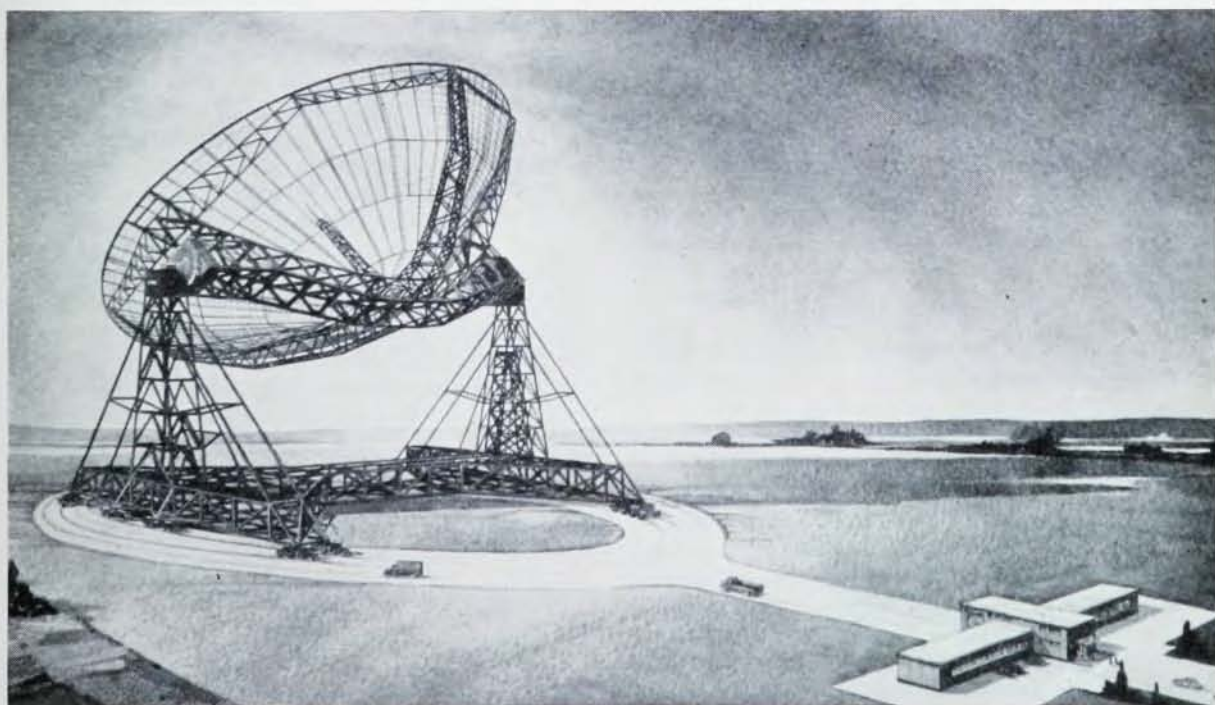
The particular importance of radio astronomy lies in the fact that there are regions of great astronomical interest which cannot be seen by means of conventional telescopes but which may be observed with the help of radio waves. The atmospheres of the sun and stars, consisting largely of low density, ionized gases, are ordinarily transparent to light waves but may reflect,

absorb, or emit radio waves, and one of the more intriguing problems in modern astronomy concerns the great difference in apparent intensity of radiation from the Milky Way depending upon whether observations are made visually or by means of radio waves. Visible sunlight is far brighter than starlight, but radio studies have indicated that the radiation from the Milky Way is usually far greater than that from the sun. The discovery during the past several years of a number of apparently discrete sources of intense radiation at various points in the galaxy has raised a series of questions concerning their origin which have never been conclusively answered. Although it has not been possible to identify these sources with outstanding visual stars, it has been suggested that some may in fact be stars having atmospheres of high temperature and on the whole having an entirely different character from the sun. Other sources, it is suspected, may be associated with various nebulae. The new radio telescope at Manchester, which will add materially to the facilities now available for mapping the galactic and solar radio noise, may give results that will do much to clear up the unresolved questions.

Materials Testing Reactor

In Operation at AEC's Idaho Site

The materials testing reactor, designed to produce a flow of intense neutron radiation, is now in operation at the National Reactor Testing Station, according to L. E. Johnston, manager of the Idaho Operations Office



Artist's conception of a mammoth radio telescope which is to be constructed for Manchester University in England. With a paraboloid aerial 250 feet in diameter, it will be the largest instrument of its kind in the world. *British Information Services*

of the Atomic Energy Commission. While the reactor operates primarily on thermal neutrons, it also can produce neutrons of higher energies, thus providing a means for determining the effects of radiation of different intensities on materials considered for use in the structures, cooling systems, and shields of new reactors. An enriched uranium reactor, it uses water circulating at high velocity as a coolant. Excavation for the reactor was started at the station in May 1950 and on March 31st of this year it became critical.

New Geomagnetic Station

To be Built in Virginia

The Senate adopted a House-passed bill early in May authorizing construction of a \$1,575,000 geomagnetic station to replace a Commerce Department station at Cheltenham, Maryland which has been described as obsolete. The new station will be built on the A. P. Hill Military Reservation near Fredericksburg, Virginia, and will be operated by the Coast and Geodetic Survey.

New Signal Corps Laboratory

Research Center Will Consolidate Work

The Army Signal Corps has announced plans to consolidate all scientific work now carried out in four widely separated laboratories in a single research and development center at Eatontown, N. J. The new laboratory, to be housed in a \$22,000,000 hexagonal building, will centralize research and development work now conducted at the Signal Corps' Watson Laboratories, Coles Signal Laboratory, Squier Signal Laboratory, and Evans Signal Laboratory. Construction of the five-story, six-wing research center will provide more than 700,000 square feet of laboratory space.

National Science Foundation

Grants in Aid of Basic Research

The second group of research awards to be announced this year under the National Science Foundation's program for the support of basic research brings the total number of NSF research grants to sixty-nine. On April 23rd the Foundation reported that forty-one grants, amounting to \$406,660, had been approved for aid in research in the physical and biological sciences. Additional proposals are being evaluated by the staff of the Foundation with the help of advisory panels of outstanding American scientists.

The most recent grants were made to institutions in California, Connecticut, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, Tennessee, Texas, Utah, Vermont, Wisconsin, and Hawaii. The research fields included are biochemistry (2 grants), biophysics (4), chemistry (11), comparative physiology (1), developmental biology (1), endocrinology (1), engineering (1), enzyme chemistry (1),

experimental plant biology (2), genetics (2), microbiology (2), oceanography (1), physics (5), pharmacology (2), and systematic biology (5). Duration of research grants in the group ranges from one to five years, with an average length of 1.8 years. The average grant amounts to \$9,919 per year.

In physics, a \$31,700 grant has been awarded to the University of Missouri for a program of acoustic cavitation research; Arthur R. Laufer of the Missouri physics department is listed as the "principal scientist", and the project is to last two years. The Pennsylvania State College is to receive \$12,800 for a one-year project in upper atmosphere research using long radio wave pulse techniques to be conducted under Arthur H. Waynick of the Ionosphere Research Laboratory. At Reed College in Portland, Oregon, \$3500 has been made available for one year's research on conduction and trapping processes in ionic crystals under Frederick C. Brown, and an additional \$6200 has been awarded for a two-year cosmic-ray study under Kenneth E. Davis. St. Olaf College, Northfield, Minnesota, is to receive the fifth grant in physics (\$4300) for a one-year research program to study the mechanism of transport through living and nonliving membranes. Marvin E. Wyman of the department of physics is principal scientist.

In biophysics, St. Louis University is to receive \$3960 for research on the survival of vitrified and dried tissues and organisms under the direction of Basile J. Luyet of the Institute of Biophysics; Brooklyn College is awarded \$3600 for a study under biologist George S. Tulloch of the nature of certain ultramicroscopic bodies associated with insects; and Bryn Mawr College is to be granted \$3400 for a research program under Rosalie C. Hoyt of the physics department to examine the bioelectric behavior in filamentous algae, to be investigated with the aid of a new analogue computer. Each of the foregoing grants has been awarded for one year. A two-year grant of \$13,300 has been given to the California Institute of Technology for a biophysical study of the central nervous system of lower animal forms. The program is under the direction of C. A. G. Wiersma of Caltech's division of biology.

The single engineering grant is for a two-year program of research in three-dimensional photoelastic techniques to be conducted at Brown University under the guidance of Daniel C. Drucker of applied mathematics. NSF has set aside \$10,000 for the project.

A program of research education in the sciences, scheduled to continue for eight months, is to be supported by a \$7200 grant to the Woods Hole Oceanographic Institution, Woods Hole, Massachusetts. Alfred C. Redfield, associate director of the Institution, is the principal scientist for the program, which will be concerned with research and training in oceanography.

Guggenheim Fellowships

Five Physicists Receive Awards

Grants totaling \$860,000 have been awarded to 191 scientists, scholars, writers, and artists by the John