

RESEARCH FACILITIES AND PROGRAMS

New magnets available

This summer, the National Magnet Laboratory at the Massachusetts Institute of Technology began operating several new high-field water-cooled dc magnets. One of them, a modified Bitter-type magnet with a 1½" working bore, has reached 156 kG. It has been used in experiments on the Mössbauer effect and ultrasonic attenuation in metals. Another new magnet, with a four-inch bore and high homogeneity, utilizing a radially cooled plate structure, has been operated at 65 kG. It is designed to reach a field of 100 kG, but will be operated at a lower level for some time to allow evaluation of its performance and to permit its use in a program of nuclear magnetic resonance research.

The outer section of the magnet planned to operate at 250 kG is now operating at 47 kG in a 14-inch diameter bore. This magnet is being used in a variety of ways including tests of superconducting solenoids. The two inner sections of the 250 kG magnet are under final construction, the innermost of these having operated at 95 kG.

Qualified scientists throughout the country may use the magnets, free of charge, for experimental programs in any discipline. A wide variety of experiments in solid-state, low-temperature, and plasma physics are now being conducted at the laboratory, by its staff and visiting scientists. Those interested should write to Dr. Donald T. Stevenson, Assistant Director, National Magnet Laboratory, Bldg. NW 14, MIT, Cambridge, Mass. 02139.

Astronomers collaborate

The formation of the Cornell-Sydney University Astronomy Center has been announced. The instruments available for members of the new center are:

1. The Arecibo Ionospheric Observatory in Puerto Rico, which has the world's largest dish-type radar-radio telescope with a 1000-foot diameter bowl-shaped antenna.
2. The new Mills Cross radio tele-

scope being built twenty miles from Canberra, Australia, at the Molonglo Radio Observatory. The arms of the cross are each about one mile in length and 40 feet wide. The telescope will be the largest of its type in the world. The E-W arm is scheduled to begin operating in a few months, and will be used in an observational program even before the N-S arm is finished.

3. Three other cross-type radio telescopes: the Criss Cross, the Shain Cross, and the original Mills Cross, all located near Sydney.

4. A new stellar intensity interferometer which recently began operating at Narrabri, Australia. The instrument has two 22-foot composite mirrors, mounted on trucks, which run on a circular railway track 600 feet in diameter. The reflectors are aimed at a particular star by automatic controls, and the signals received are electronically correlated.

Cornell and Sydney also each have cosmic-ray astronomy installations which will be allied with the joint radio-astronomy group.

Under the joint plan, selected graduate students in astronomy may pursue study and/or research at either university's facilities.

Writing in *Nature*, Oct. 3, 1964, Thomas Gold of Cornell and Harry Messel of Sydney, who will serve jointly as directors, described the research possibilities of the new center. The first major project will be a study of the statistical distribution of discrete radio sources. Since data on the same sources will be derived through the use of different types of radio telescopes, namely the Arecibo dish and the Australian crosses, the data can be cross-checked and the level of precision is expected greatly to exceed that of any previous work. The authors also noted that extended radio sources could be studied in far greater detail by utilizing two different radio telescopes.

Isochronous cyclotrons

A new sector-focusing cyclotron, which will accelerate protons over the energy range of 5 to 75 MeV, is being built at the US Naval Research Lab-

oratory. It is expected to produce a circulating beam adjustable from zero to about one milliamperere, and an extracted beam several tenths of this amount. The machine, which is a copy of the Oak Ridge National Laboratory isochronous cyclotron, will have 76-inch diameter magnetic pole pieces. It is planned to use the cyclotron for the study of interaction mechanisms, nuclear structure, heavy-ion research, polarization studies, neutron physics, ion-induced fission, and radioisotope production.

The cyclotron facility is scheduled for completion late in 1965, at a cost of \$5.5 million.

An isochronous cyclotron which will produce deuterons whose energy may be varied between 45 and 90 MeV will be built by Allgemeine Elektrizitäts-Gesellschaft in Frankfurt. The machine is expected to have an internal beam intensity of 50 μ A and an extracted beam intensity of 10 μ A. The cyclotron is scheduled for installation at the Jülich Nuclear Research Center in North Rhine-Westphalia beginning early in 1966.

Astronomers invited

Kitt Peak National Observatory has announced the availability of new facilities for the use of visiting astronomers. The equipment includes: an 84-inch stellar telescope with an f/7.6 Cassegrain camera and a photoelectric photometer and the McMath Solar Telescope (f/60, 300-foot focal length), also useful for planetary and lunar observations. A Coudé spectrograph (dispersions of 2 to 24 angstroms/mm) and a Cassegrain spectrograph (dispersions of 40 to 400 angstroms/mm) are expected to be in operation soon in conjunction with the stellar telescope. Visitors may also utilize sounding rockets for astronomical observations. Further information is available from the Office of the Director, Kitt Peak National Observatory, PO Box 4130, Tucson, Arizona.