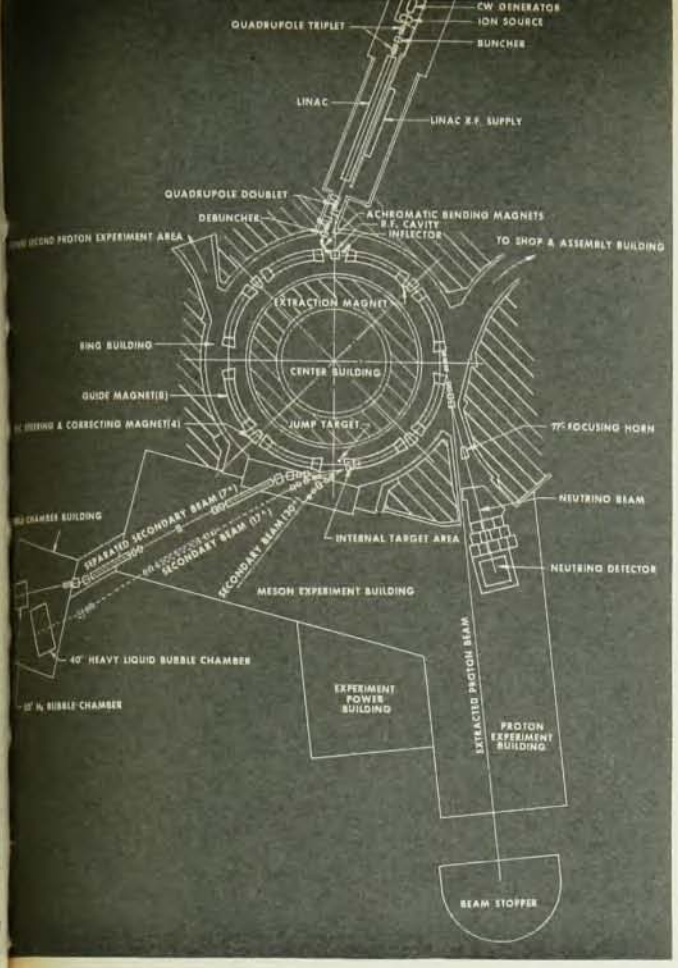

lambda helium (G. L. Burleson, David Cohen, L. G. Hyman, R. C. Lamb, R. A. Schluter, Argonne National Laboratory).

5. Study of the polarization of μ mesons and tests of time-reversal invariance in $K_2^\circ \rightarrow \pi^\pm + \mu^\pm + \nu$ (A. Abashian, B. Nefkens, J. H. Smith, A. Wattenberg, University of Illinois).

6. $\pi^+ + d \rightarrow p + p$ (C. T. Coffin, L. W. Jones, M. J. Longo, D. I. Meyer, O. E. Overseth, K. M. Terwilliger, University of Michigan).

Members of the Users Group Program Committee are W. F. Fry and M. L. Good, University of Wisconsin; J. E. Jackson, University of Illinois; D. I. Meyer, University of Michigan; J. J. Sakurai, University of Chicago; and R. A. Schluter, Argonne and Northwestern University. Dr. Hildebrand and Dr. Teng are ex-officio members of the committee.

NBS Standard Signal Broadcasting Stations

An increasing need for greater precision in broadcasting standard time and frequency signals has led the National Bureau of Standards to construct new transmitting facilities for standard broadcast stations WWVB and WWVL at Ft. Collins, Colo.

Operated by the NBS Boulder Laboratories, the new low-frequency stations transmit standard frequencies whose higher degree of accuracy is better suited to satellite and missile tracking programs and basic research on atmospheric and ionospheric phenomena than those of NBS high-frequency stations WWV and WWVH. The latter two stations will continue to be used but will be complemented by WWVB which broadcasts at 60 kc from Boulder and WWVL which broadcasts at 20 kc from Sunset, Colo. Low-frequency transmissions are monitored by a phase-lock system which automatically synchronizes the signals of the Ft. Collins stations with the US Frequency Standard at the Boulder Labs.

WWVB, which provides more stable coverage at distances up to 2000 miles than WWVL, is designed to serve the continental United States. WWVB is intended to serve the Air Force, the US Geological Survey, geophysical and seismic laboratories, missile ranges, and high-precision frequency-calibration laboratories. The 20 kc signal of WWVL provides intercontinental reception particularly important to the National Aeronautics and Space Administration, which partially supported construction costs of this station.

The antenna array for each station consists of four guyed steel towers, 1900 feet long and 750 feet wide. Counterbalances are arranged at the inside and base of each tower to maintain proper tension at the top of the tower and to compensate evenly for Rocky Mountain winds. A transmitter building is located between the two antennas, and a helix house for resonance tuning terminates each antenna.

The dedication of the new stations was held on August 13 at Boulder during the symposium on the ionospheric propagation of very-low-frequency radio waves sponsored by the NBS Central Radio Propagation Laboratory.

Dallas Magnetic Observatory

A combined magnetic observatory and laboratory has been completed near Dallas through the cooperation of the Graduate Research Center of the Southwest, the US Coast and Geodetic Survey, and Texas Instruments Incorporated. The installation is located about 15 miles north of downtown Dallas at latitude 32° 58′ 55″ North and longitude 96° 45′ 00″ West on land provided by the Graduate Research Center. The site was chosen after magnetic surveys revealed that man-made magnetic noise intensity was less than that of natural fluctuations, and that 60-cycle magnetic fields generated by ground currents were less than 1 gamma (10^{-5} gauss). Field inhomogeneities were less than 0.1 gamma/foot. Since the location is part of GRC's 1400-acre campus, its environs can be kept free of ferromagnetic material indefinitely.

The observatory portion of the facility consists of three small buildings designed and located according to the specifications of the Coast and Geodetic Survey. The first of these buildings houses the variometers used to measure changes in the components of the earth's field. Two smaller buildings contain the equipment needed to furnish an absolute calibration reference for the variometer base lines.

The laboratory area, located 216 feet from the

observatory buildings, consists of a central structure 40 feet long by 20 feet wide and two smaller structures. Constructed of nonmagnetic materials, the laboratory is designed to provide space for experiments requiring a quiet magnetic environment. Office space and darkroom facilities are provided in the main building.

All buildings on the site were constructed by Texas Instruments Incorporated and donated to the Graduate Research Center. The observatory has been equipped and staffed by the Coast and Geodetic Survey, and all its records will be in the public domain, i.e., they will be available to any scientist or group of scientists of US citizenship. The laboratory may be used by qualified organizations whose proposed programs are approved upon application to the Graduate Research Center.

University of Maryland Radio Observatory

The Department of Physics and Astronomy of the University of Maryland has taken over the operation of General Dynamics Corporation's Clark Lake Observatory, located near Borrego, California. The radio observatory's main piece of equipment is a specially designed antenna array, which operates at a wavelength of 11.4 meters with an aperture of two miles, and thus allows investigation of a hitherto largely unexplored spectral region.

The observatory is located in a valley in the Southern California desert approximately 50 miles north of the Mexican border and 75 miles inland from the Pacific Ocean on a plot encompassing 2000 acres. According to William C. Erickson, who will direct research programs at Clark Lake, the site is "ideal for our observations since the 25 by 10 mile valley is shielded from interference by 5000 foot mountains and is inhabited only by observatory personnel and one hermit".

Dr. Erickson, who is now associate professor of astronomy at the University of Maryland, was associated with General Dynamics from 1957 to 1961 and supervised the construction of the Clark Lake facility. A native of Duluth, he holds degrees in mathematics and physics from the University of Minnesota. In addition to his appointments with General Dynamics and with the University of Maryland, he has taught at other institutions and was for a time associated with the Benelux Cross Antenna Project at the University of Leiden.

Research plans call for the study of radio-wave scattering by irregularities in the sun's corona, observations of solar radio emission, and the investigation of the emission from distant radio sources. Initial work will be supported by a $75 000 grant to the Department of Physics and Astronomy from the National Science Foundation. All of the facilities at the California site will be purchased from General Dynamics by the university.

Pioneer Nuclear Reactor Shut Down

The world's oldest operating nuclear reactor, the Graphite Reactor at Oak Ridge National Laboratory, was shut down last month after twenty years of continuous operation. Advancing technology has provided more modern means for performing its functions. In the two decades that it has functioned, the reactor has operated about 90 percent of the time, with shutdowns for routine maintenance accounting for the 10 percent time out.

The Graphite Reactor was originally called the Clinton Pile and later was known as the X-10 Pile. Its construction was begun on February 2, 1943, two months after Enrico Fermi, working at the University of Chicago, had successfully operated the world's first controlled nuclear chain reaction. The Graphite Reactor went into operation on November 4, 1943, and shortly thereafter began to fulfill its primary function, the production of the first gram quantities of plutonium-239. After World War II, the reactor became a prime commercial source of radioisotopes. The first commercial shipment of isotopes left Oak Ridge in August 1946, and the Graphite Reactor continued to supply them to domestic and foreign users through the late 1950's.

Seismological Computing Center

The University of Edinburgh has received a grant of $280 700 from the US National Science Foundation to assist in establishing a seismological computing center within the University's Department of Astronomy. The NSF grant will be supplemented by £10 000 capital and £6500 recurrent from the British Treasury.

The project was conceived following studies by the Committee for the International Seismological Sum-

Antenna array at the Clark Lake radio-astronomy facility near Borrego, Calif., which has recently been acquired from the General Dynamics Corporation by the University of Maryland.