

stimulus without changing the energy. Fission is expected to have the same character as the giant resonance, and so far experiments show that in fact it does.

Toledo Commences Operation Of 102-cm Coudé Telescope

Just going into use at the University of Toledo, Ohio is a 40-in. (102-cm) Coudé reflecting telescope especially designed for high-dispersion spectroscopy. An unusual hollow-pier support enables it to accommodate the largest spectrograph one can design with available and contemplated gratings. Also unusual are its optics: All of them (primary, secondaries, folding flats, collimators) are made of a new material, CER-VIT, developed by Owens-Illinois just in time for the Toledo telescope.

The photograph and drawing show the telescope and its mounting. Two and a half floors at the top of the tower are available in the hollow pier, and the entire height of the pier can be made available later. Here will be

mounted the reflection grating for high-dispersion analysis. John J. Turin, chairman of physics and astronomy, explains that such research can be carried out despite the inconveniences of a large city; surrounding lights are not a great concern, and Turin estimates that 30-50% of the Toledo nights should be suitable for observation.

The new material for optical parts has so small a thermal coefficient of expansion (less than 10^{-7} per degree centigrade at all temperatures) that the telescope is limited only by diffraction and atmospheric distortion. If you use fused silica for a 102-cm mirror, a temperature nonuniformity of 4° across a diameter or 0.1° front to back will warp the mirror beyond acceptable tolerances. With the new CER-VIT such nonuniformities are completely insignificant.

CER-VIT is cast as a glass and then processed to produce a transparent polycrystalline material. Because it is transparent, one can easily inspect it for stresses. Makers of three giant telescopes have recently selected the material for their instruments: the 400-cm AURA (Association of Uni-

versities for Research in Astronomy) telescope at Cerro Tololo (PHYSICS TODAY, December, page 59), the 380-cm telescope to be constructed in New South Wales by the Scientific Research Council acting for British and Australian governments and the 360-cm southern France telescope for the French National Center for Scientific Research.

Jodrell Bank Plans Fully Steerable 120-Meter Dish

The world's largest fully steerable radio-astronomy paraboloid, the 250-ft (76-meter) Jodrell Bank radio telescope, will soon have a bigger, fully steerable companion if developing plans mature. Sir Bernard Lovell, professor of astronomy at the University of Manchester and director of Jodrell Bank, recently told PHYSICS TODAY that a final-design contract has been negotiated with Husband and Co. for a 120-meter paraboloid. Husband and Co. are the engineering designers of all the existing telescopes at Jodrell Bank.

For some years British astronomers have been making plans for a tele-

TOLEDO TELESCOPE has all CER-VIT optics; so images are limited only by diffraction and atmospheric distortion. Hollow pier will hold equipment for high-dispersion spectroscopy.

