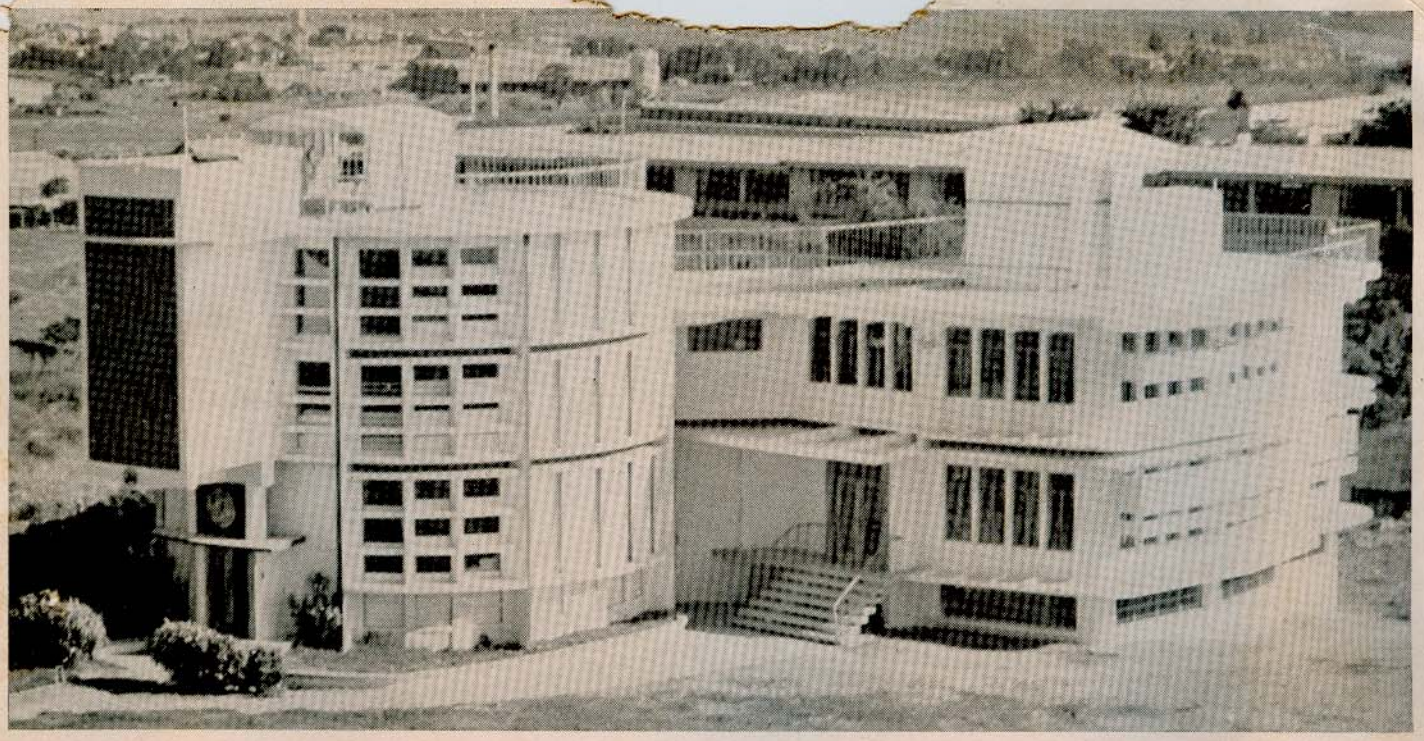


Optical solar research is carried on in this building complex on the Loyola Heights campus of Ateneo de Manila University. Completed first, in 1963, was the structure at left, for an American Optical Co. spectroheliograph. The 10-inch Razdow solar-patrol telescope is housed on the roof of the new addition, at right. Magnetometers and an ionosonde are also used by Manila Observatory to monitor the terrestrial effects of solar activity.

Solar Astronomy at Manila Observatory

RICHARD A. MILLER, S. J., *Manila Observatory, Republic of the Philippines*

MANILA OBSERVATORY is a 103-year-old Jesuit-operated organization that was long known chiefly as the Philippine Weather Bureau. Late in World War II, however, its buildings and instruments were completely destroyed, and the Philippine government alone now handles the meteorological work.

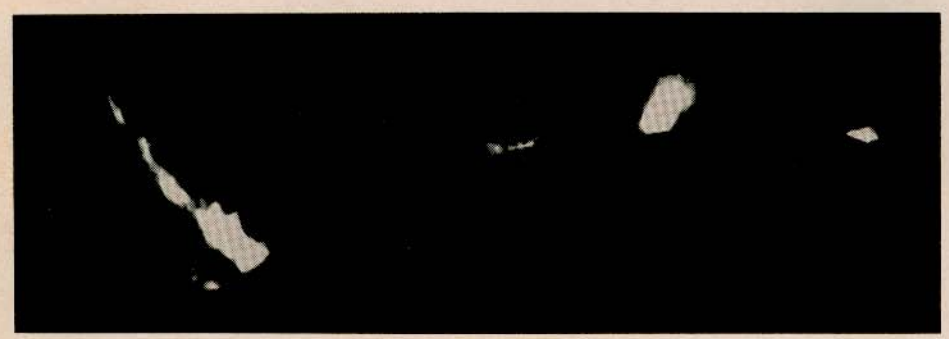
Our postwar redevelopment has retained a long-standing program in seismology, and we conduct research in terrestrial magnetism, ionospheric physics, and solar astronomy. A 4-inch telescope has been used for solar photography, and five years ago we erected a new building for a large spectroheliograph. This instrument has taken daily spectroheliograms and served, with a Lyot filter, for the visual patrol of flares on the sun.

But the full potential of the spectroheliograph as a research instrument was not realized, owing partly to its being used for the flare patrol. Such surveillance is now being done by a Razdow automated solar telescope that we installed this year under an Air Force Cambridge Research Laboratories contract. It is one of nine in operation around the world, and is part of a monitoring system of the U. S. Air Force Weather Service. The immediate purpose of this chain is to warn high-flying supersonic aircraft and astronauts on space missions whenever a major flare on the sun may produce dangerous radiation. The earth's atmosphere normally acts as an adequate shield at low levels and on the surface of the earth.

Of course, many other solar and geophysical studies need the flare-patrol data, particularly during the present maximum of solar activity. Our location in the Far East (longitude 121° east) enables us to monitor the sun when darkness covers the big solar observatories of Europe and the United States. Furthermore, our tropical latitude (14½° north) means that the sun daily attains a favorable observing altitude, never as much as 40 degrees from the zenith at noontime. Telephone and teletype facilities enable us to report immediately any violent solar outbursts to several American research centers, as well as to the World Data Center at Boulder, Colorado.

Our first solar research building was designed as a double housing, the outer cylinder protecting the inner structure from wind vibrations. The inner structure rises on steel beams from the foundation to the roof slab. To control effects of temperature on local seeing, the cylinder was surrounded by a moat and there is provision to flood the cement roof with water. The coelostat has two 16-inch mirrors.

A 17-foot vacuum tank that contains the other mirrors and grating fed by all-



An occulting cone was used to reduce scattered light while recording this flare last June 14th at 23:44 UT. The eruption, which was at 56° south latitude on the sun's east limb, appears 230,000 kilometers high on this photograph (south is up and east to the left). Illustrations for this article were supplied by the author and by Yardney Electric Corp.