

THE SOLAR INSTRUMENTS OF THE PIC-DU-MIDI OBSERVATORY

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Apart from sunspot records in the last decades of the last century, solar work began at Pic-du Midi just fifty years ago, when Bernard Lyot first observed the corona, thanks to his coronagraph, without a total eclipse of the Sun. This instrument with its wooden tube built on the spot, although very primitive (apart from the optics!) yielded outstandingly new results and was succeeded in 1936 by a more elaborated one which was then operated continuous for nearly forty years, covering, from 1943 on, three cycles of photometric measurements of the green and red lines.

By now, the status of the solar instruments at Pic-du-Midi is as follows :

1.- Four instruments are the successors of the above mentioned coronagraph or other instruments invented by Bernard Lyot:

- a/ A new coronagraph for emission lines has been built (but still with the excellent original 20 cm objective), aiming at photoelectric measurements of intensities of three Fe XIII lines (3388, 10747 and 10798 Å) which can yield good values of the electron density in the coronal features. Monochromatic images of the 5303 line are used as a reference frame for the location of the points observed.
- b/ A 10 cm polarimeter for the electron corona provides data on the electron density along the line of sight, using the same reference system to the green line as the coronagraph; it is installed on a different but nearby mounting, so that independent but simultaneous observations are feasible.
- c/ Another polarimeter (26 cm) has been built by J.L. LEROY and G. RATIER to measure the polarization of prominences and relate it to the magnetic field through the Hanle-effect.
- d/ The Lyot coronameter has been developed by P. CHARVIN and is now currently used by J. ARNAUD to extract magnetic maps from the polarization of the green line.

- 2.- The 23 cm refractor which Lyot used to try some pictures of the granulation has been succeeded by the 38 cm objective which he had applied to the Moon and planets. This objective has been installed under the so-called "Turret Dome", and, later on, replaced on the same mounting by a very good 50 cm objective ($f = 6.50$ m) now used by R. MULLER and other observers.
- 3.- On the occasion of the IGY in 1957-58, R. MICHARD and his group had built two large spectrographs fed by a coelostat and a 40 cm mirror. One of them (high dispersion) is still on the place. But, considering the good resolution provided by the 50 cm refractor, and the progress in the spectroscopic techniques, the DASOP has recently built and associated to this refractor a modern spectrograph which is very likely to replace the old one.