I. TELESCOPES AND INSTRUMENTATION

b) Poster papers

THE INSTRUMENTATION AND OBSERVING PROGRAM AT GRINNELL COLLEGE'S GRANT O. GALE OBSERVATORY

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Many small observatories are associated with undergraduate colleges at which research programs must be integrated with a broad spectrum of educational programs. The instrumentation and observing programs of Grinnell College's Grant O. Gale Observatory have been designed with this constraint in mind. Although modest by large observatory standards, the instrumentation incorporates contemporary technology such as solid state detectors and microcomputer control. Because a variety of student projects as well as a multi-faceted research program must share the telescope, often during a single night, the auxiliary instrumentation has been designed to eliminate almost all hardware changes associated with changes in observing technique (spectroscopy vs. photometry, for example). The auxiliary instruments are all interfaced to the data acquisition computer, which can also communicate with the telescope control system. Research programs have been selected both on the basis of scientific merit and compatability with our capabilities and constraints. We therefore concentrate on long-term observing programs which cannot be carried out at most large observatories and attempt to take advantage of our flexible instrumentation and computer-processing capability.

The telescope is a 61cm F/13.5 Cassegrain reflector designed and built by DFM Engineering, Inc. of Longmont, Colorado (USA). Mounted to the telescope is a guide-acquire-module which provides multiple instrument capability and guiding and acquisition. A low cost but high performance television system (detecting 16.1 magnitude stars) has been built using a multichannel plate intensifier and a Sony CCD television camera.

A computer-controlled photometer and Reticon spectrograph are under construction.

An Intel 86/380 microcomputer is used for data acquisition and instrument control. This microcomputer can also command the telescope control system to perform telescope motions such as slew to coordinates and offset.