berg (*Lund Medd.* II, No. 136, 1958) and the apparent modulus $m-M=28.4$, $M_T=-18.7$, and the apparent mass-luminosity ratio is $\mathfrak{M}/\mathfrak{L}=5.1$; if the internal absorption is $\delta m\approx 0.5$ mag. the corrected ratio is $(\mathfrak{M}/\mathfrak{L})_0\approx 3.2$. Systematic departures of up to ± 40 km sec^{-1} from a regular rotation curve are tentatively interpreted as evidence of large-scale streaming motions of the gas in the central regions of the system, in particular of a flow away from the center and along the bar.

The Coudé Spectrograph of the Mount Stromlo Observatory. THEODORE DUNHAM, JR., *Mount Stromlo Observatory.*—The coudé spectrograph of the 74-inch telescope at Mount Stromlo has been installed within an insulated concrete enclosure 35 ft long and 12 ft wide, extending 10 ft above ground and 20 ft below ground. The main frame of the instrument is carried on three steel balls. Dispersion is vertical, partly because of space limitations imposed by vertical columns supporting the dome and partly to facilitate access from both sides.

One Mt. Wilson-Palomar grating and two Bausch & Lomb gratings can be mounted interchangeably on a cradle with provision for accurate rotation by means of a worm and 45-inch radius sector. Three reflecting cameras are being used: an 8-inch Meinel-Pearson Schmidt camera, a 32-inch off-axis Schmidt camera, and a 120-inch camera without a correcting plate. The Mt. Wilson-Palomar grating is being used in the third-order blue-violet to yield spectra with dispersions of 27, 6.7, and 1.8 A/mm with the three cameras. Spectra of stars of the 11th, 8th, and 5th mag., 0.5 mm wide, on baked IIa-O emulsion, have been exposed to suitable density with these cameras in 4 hr. A calibration spectrum is photographed on each side of the stellar spectrum.

The grating cradle rotates on precision roller bearings, and the worm-sector has been machined with particular care, in the hope that rotation of the grating can be used for high-resolution spectral scanning.

Plans are being made for the installation of a 40-ft focus collimator to provide a 16-inch beam for a mosaic grating. Several additional Schmidt cameras are under construction.

Observations of the Solar Corona between 5 and 40 Solar Radii. W. C. ERICKSON, *Convair Scientific Research Laboratory.*—The scattering of 26 Mc/sec radiation in the solar corona was measured during the 1961 occultation of the Crab nebula by the solar corona. These measurements were performed with several instruments. One was a fan-beam antenna which measured the total apparent intensity of the scattered distribution. When the scattering became large in the central portion of the occultation this antenna also provided measurements of the angular width of the scattered distribution. Very small amounts of scattering in the outer portions of the corona approximately 40 solar radii from the sun were also obtained with three interferometers. These interferometers each had base lines approximately two miles in length oriented in the *E-W, NE-SW* and *NW-SE* directions. The measurements provided data concerning the angular width of the scattered distribution in various directions. In the portions of the solar corona beyond 20 solar radii, the scattering was found to be fairly symmetrical. However, a small amount of asymmetry appears to be present. The axial ratio of the scattered distribution appears to be about 2:1 with the long axis oriented tangentially. This is consistent with the assumption of a radial solar magnetic field in the equatorial region 30 to 40 radii from the sun. These measurements do not provide data concerning possible asymmetry in the scattering within 20 solar radii.

223 Variables in the Andromeda Nebula. SERGEI GAPOSCHKIN, *Harvard College Observatory.*—The variables, all discovered by Baade, were investigated on 72 photographic plates taken with the Palomar 200-inch. The variables are situated in and projected on the southern parts of the central bright coil and its dark lane, on the second (still more south) bright coil and its dark lane, and on the following third bright coil and its dark lane. 59% are classical Cepheids, 28% reddish and red irregulars, 5% eclipsing and the rest of indefinite character, some probably not variables. An epitome of the results is as follows: (1) The period-luminosity relation for more than a hundred stars is similar to that for the Magellanic Clouds; only the scope is different. (2) The period-amplitude relation is almost a striking duplicate of that for the Galaxy. (3) The period-color relation in rather weak but with a definite reddening toward the periods over 15 days. (4) The period-frequency relation is such that two maxima are obvious: one at $P=6.3$ and the other 12.7 (5) The period-shape relation is rather confused due to the small number of observations per light curve. (6) The new and unexpected result is in reference to the distribution of the Cepheids along and in bright "coils" (arms) and dark "lanes" (obscure regions). A conspicuous difference is between the stars in a coil and an associated lane; also in reference to the distance of variable from the center. There is a probable similarity also with the distribution of RR Lyrae stars in the Galaxy. (7) A few eclipsing variables show that they are on the average as bright as the Cepheids with their average median magnitude indicating that Andromeda nebula is rich in binaries.