SPECIAL CHARACTERISTICS OF A FEW LATE-TYPE DWARF STARS

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Principal discussion is limited to three stars, all late-type dwarf emission stars, the eclipsing variable YY Geminorum, the sub-dwarf Ross 248, and the flare star BD +20°2465.[1] I attributed a light-variation of YY Geminorum secondary to that caused by the eclipses[2] to the combined effects of the rotation and a non-uniform illumination of the surface of one or both components. Photometric evidence indicates that the areas of non-uniform illumination are small compared with the projected area of the stellar disk.

The star Ross 248 varies in light with a period of approximately 120 days and an amplitude of 0.06 magnitude. The shape of the light-curve simulates the secondary variation of YY Geminorum during the 1948–49 season. It is concluded that the light-variation of Ross 248 is caused by rotation of the star, whose surface, like that of YY Geminorum, is non-uniformly illuminated.

The star BD +20°2465 was observed by Gordon and Kron nearly to double its light within a few minutes.[1] It was concluded that only a very small portion of the surface area must have been involved in the flare.

Various evidence leads to the following conclusions:

1. The non-uniformity of illumination is in the form of small areas that are brighter or dimmer than the average surface brightness.
2. The bright H and K lines probably originate in the small areas.
3. The flare of BD +20°2465 and several other similar ones probably originate in the small areas.

The similarity of these phenomena to activity on the surface of the sun permits the conclusion that many of the spectrographic and photometric peculiarities of the dwarf Me stars may be caused by activity similar or identical to that associated with sunspots.

REFERENCE

1. Gordon and Kron, *Pub. A.S.P.* **61**, 210, 1949.
2. *A. J.* **54**, 190, 1949.

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ABSTRACTS *

Adel, Arthur. Temperature of the atmospheric nitrous-oxide layer.

The emissivity and radiation intensity of the atmospheric nitrous-oxide layer have been measured at 7.8 microns. Reduction of the observations yields effective radiation temperatures ranging between 0°C and 10°C.

This evidence, in conjunction with the well developed distribution of rotational intensities displayed by the atmospheric nitrous-oxide bands, suggests that the N_2O layer resides largely in the troposphere.

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Aller, Lawrence H. The abundance of light elements in early-type stars.

Equivalent widths of absorption lines in 11 B-type stars with sharp lines have been measured on coudé plates obtained at the Mount Wilson Observatory. The objects include ϵ CMa, 55 Cyg, χ^2 Ori, φ Ori, 15 CMa, ξ CMa, HD 36960, σ Sco, 22 and 42 Ori, and 114 Tau. The data are supplemented by McDonald coudé plates of φ Ori, ϵ CMa and χ^2 Ori. The character of the hydrogen lines and the spectral types indicate the electron pressure and temperature. Theoretical strengths for the observed lines have been computed from the table of Bates and Miss Damgaard, while the continuous absorption is calculated on the assumption it is produced by bound-free transitions in hydrogen and electron scattering. The data are analyzed with the aid of Wrubel's curve of growth. Excluding the three supergiants, ϵ CMa, 55 Cyg, and χ^2 Ori, the logarithms of the mean abundances with respect to oxygen are as follows:

Element	log N
Carbon	−0.82
Nitrogen	−0.64
Magnesium	−1.03
Aluminum	−2.34
Silicon	−1.42
Sulphur	−1.65

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