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THE ABSENCE OF INTERCHANGES IN AC HERCULIS

Several statements concerning AC Her published by C. Payne-Gaposchkin, V. Brenton and S. Gaposchkin in their study of RV Tauri stars (Harvard Ann., 113, No.1, 1943) proved to be incorrect. These statements are "Interchanges (between the primary and secondary light minima - G.E.) are quite uncommon, for instance, for AC Herculis ..." on page 37, the average interval between the interchanges 50 epochs (with the total observation interval about 200 epochs) and the amplitude of fluctuation of light maxima $1^m.6$ in the table XVII. The statement in the paper by Preston et al. (Ap.J., 137, 401, 1963) with reference to Harvard Annals 113, No.1, 1943 is neither true that "... the depth of secondary minimum for AC Her, as predicted from a uniform ephemeris, was found to exceed that of primary minimum only five times in a 40-year period." These statements were quoted partially by Magalashvili and Kumsishvili (Abastumani Bull., No.43, 1972), Nakagiri and Jamashita (Tokyo Bull., No.260, 1979), Baird (Ap.J., 245, 208, 1981) and even GCVS (1969).

The revision of the photographic observations of AC Her from Payne-Gaposchkin et al.'s paper showed that the interchanges of minima were not detected. The period changes are small, therefore the possibility to miscalculate the predicted phases of primary and secondary minima can be excluded. The improved mean elements

$$\text{Min I} = \text{J.D. } 2\,435\,052 + 75^d.439\ E$$

were used. These elements were obtained by the author on the basis of 587 primary and secondary light minima. No shallow minima were observed at the phases of primary minima. The deepest secondary minima did not reach the depth of primary ones. These minima are as follows:

J.D.	I_{pg}	Number of obs.	Phase
2 415 632	8.9	4	0.577
16 155	8.94	1	.510
20 680	8.9	4	.491
26 260	8.85	4	.457
26 648	8.84	1	.600

The mean magnitudes of light extrema from Harvard observations are as follows:

Min I = $9^{m}.18 \pm 0^{m}.08$
Min II = 8.63 ± 0.10
Max I = 8.09 ± 0.18
Max II = 8.28 ± 0.14

The mean quadratic deviations of the extrema are also given. The absence of the interchanges between minima of AC Her was already noted earlier in my paper (Variable Stars, Moscow, 18, 301, 1972). No interchanges were found from numerous photoelectric observations of the recent years.

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