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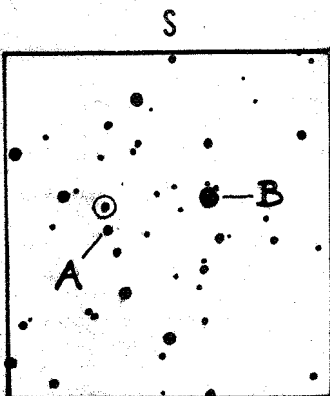
SYMBIOTIC STARS IN SAGITTARIUS EXAMINED FOR VARIABILITY

A paper by G.H.Herbig, "Emission-Line Objects Projected Upon the Galactic Bulge" (Contr.Lick Obs. No.299: Proc.Nat. Acad. Sci., U.S.A., 63, 1045, 1969) lists six probable symbiotic stars not previously examined for variability that are within or close to the boundaries of VSF 193 in Sagittarius. Dr. Herbig kindly supplied identification charts made from the Palomar Sky Survey. The results of the examination of the plates available at the Maria Mitchell Observatory are summarized in the Table. The first four columns are taken directly from Herbig's paper; in column 3, SS stands for symbiotic spectrum.

SYMBIOTIC STARS EXAMINED FOR VARIABILITY

Name	R.A.(1900)	Dec	Class	m _{pg}	Variability	Plates	Observer
T53	18 ^h 01 ^m 19 ^s 7-25°54'23"		SS?	13	Susp.	200	3
AS 281	04 25.5-27 58 56		SS?	15	Not Var.	50	3
AS 293	08 10.6-29 51 03		SS?	14	13.2-15.2	350	1-2
T21	14 05.5-26 25 17		SS	12	Not Var.	600	2
AS 316	36 33.9-21 23 31		SS	14	Susp.	500	1
MWC 960	42 00.2-20 12 22		SS?	13	Susp.	50	1

1: D.Hoffleit, 2: Martha Clarke, 3: Marcia Keyes



Only one of the six stars has been found to be conspicuously variable, AS 293. Merrill and Burwell (Ap.J. 112, 72, 1950) described the star as being 1¹/₅ South of CoD -29° 14.700. Figure 1 is an identification chart based on Nantucket plates having a scale of 248"/mm. The observations, covering the interval July 1957 to September 1970, are satisfied by the relation

$$\text{Min} = \text{J.D. } 2437485 + 243^{\text{d}}\text{n.}$$

Fig.1: AS 293 marked with circle.
 A=CoD-29° 14700 B=CoD-29° 14714

Although the period is typical of Mira-type stars, the light curve is not necessarily of this type. With the comparatively short duration of minimum (one third of the period) the star may be somewhat similar to the symbiotic stars, CI Cygni and AS 313, whose periods, however, are much longer, 850^d (Hoffleit, Irish Astr. Jour., 8 149, 1968). For AS 293 there seems to be some evidence for a shorter period superposed on the long period. On the other hand, the star is far from the center of the plates (18^h23^m, -23°3) and accidental errors may be large.

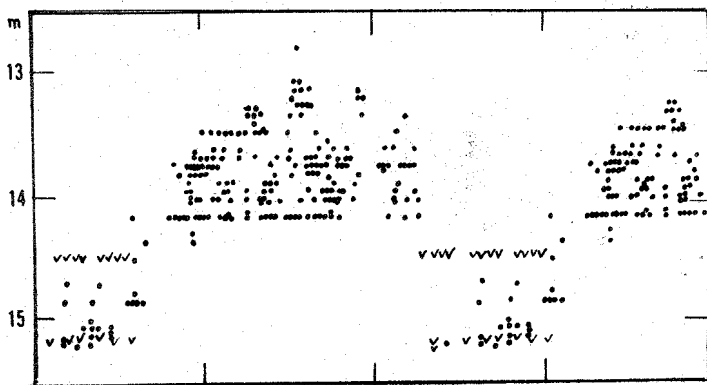


Fig. 2: Light curve of AS 293

Three of the other stars in the Table are suspected of variability, as noted in column 5. In all cases the estimates on our small scale plates were adversely affected by unresolved optical companions. Plates of higher resolution are necessary for definitive conclusions.

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