

Provisional elements of FS Carinae, by *Ejnar Hertzsprung*.

The variability of this star, which is C. P. D. - 58°24'58", was discovered by Miss WALTON (*H. B. 848*, 13; 1927), who published 8 epochs on which the star was found faint. I estimated the object on 638 Johannesburg plates of which the results are given below.

The comparison stars used are indicated on the accompanying diagram. Their brightnesses in my scale of steps are: *a* s°000, *b* s°296 and *c* s°663.

The phase was calculated according to the formula  

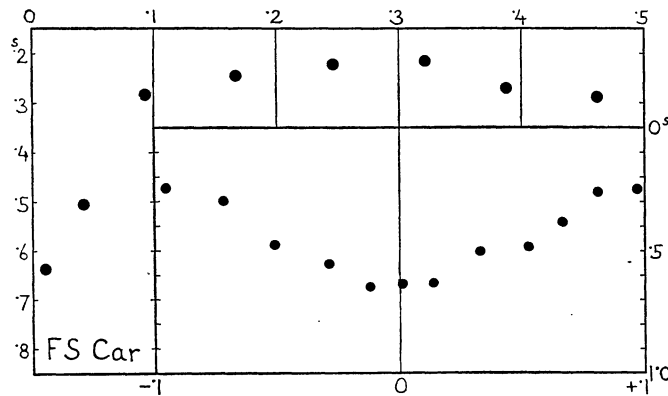
$$\text{phase} = d^{\cdot}465874 \text{ (J. D. - 2420000)}$$

The minimum occurs at phase .362 or at J. D. 2424182<sup>d</sup>.165.

The mean results thus obtained are shown in Table I and concerning the primary minimum in the lower right part of Figure 1.

The range is s°4 or about half a magnitude. The minimum occupies about .16 of the period.

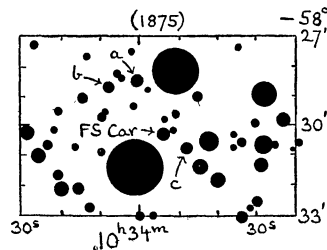
FIGURE 1.



The 64 groups of 8 or 10 plates each were then arranged according to the difference in phase from the primary minimum and mean values of larger groups formed. The results thus obtained are given in Table 2 and represented graphically in the left and upper part of Figure 1. The form of the light-curve outside primary minimum indicates that the period must not be doubled, but the observations are not accurate enough to separate the effects of secondary minimum, ellipticity and reflection.

Subsequently a more accurate period was determined according to least squares including the 8

FIGURE 2.



minima given by Miss WALTON. These are listed in Table 3 together with 11 minima found on Johannesburg plates. The resulting ephemeris is

$$\text{Min. at J. D. } 2422746^{\cdot}d105 + 2^{\cdot}d146587 (E - 3557) \pm \cdot 008 \pm \cdot 000006 \text{ (m. e.)}$$

TABLE I.  
F S Carinae.

number of plates	phase	brightness	mean values of larger groups		number of plates	phase	brightness	mean values of larger groups	
			P	S				P	S
n	P	S	P	S	n	P	S	P	S
10	'983	'21			10	'508	'24		
8	'994	'26			10	'521	'26	'526	'236
10	'005	'30	'000	'254	10	'532	'24		
10	'018	'24			10	'544	'20		
10	'026	'19			10	'558	'26		
10	'035	'20			10	'572	'23	'577	'236
10	'047	'19	'041	'192	10	'583	'24		
10	'057	'19			10	'595	'21		
10	'070	'22			10	'610	'27		
10	'085	'18			10	'624	'17		
10	'099	'21	'093	'214	10	'639	'26	'633	'224
10	'117	'25			10	'660	'19		
10	'136	'21			10	'676	'22		
10	'162	'22			10	'693	'23		
10	'184	'26	'172	'233	10	'710	'29	'702	'254
10	'204	'23			10	'726	'28		
10	'218	'28			10	'749	'25		
10	'239	'33			10	'770	'26	'780	'273
10	'266	'25	'253	'289	10	'792	'34		
10	'290	'30			10	'809	'25		
10	'311	'48			10	'824	'26		
10	'332	'55			10	'840	'33	'848	'286
10	'350	'65			10	'855	'31		
10	'363	'64			10	'874	'24		
10	'377	'63			10	'889	'28		
10	'395	'50			10	'901	'30	'907	'289
10	'414	'49			10	'913	'29		
10	'428	'36			10	'926	'29		
10	'443	'26			10	'944	'27		
10	'459	'25			10	'956	'25	'960	'284
10	'475	'24	'467	'250	10	'966	'35		
10	'492	'25			10	'975	'27		

TABLE 2.  
F S Carinae.

number of plates	phase	brightness
n	P	S
30	± '009	'638
40	'041	'504
70	'092	'284
100	'166	'246
100	'246	'223
100	'321	'216
98	'388	'270
100	'462	'288