

## THE DOUBLE STAR DISCOVERIES OF FEARON FALLOWS

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The Royal Observatory at the Cape of Good Hope was completed in late 1828, the working instruments being a Transit and a Mural Circle. Fearon Fallows, the first Astronomer Royal at the Cape, immediately started on a program of observing in order to prepare a positional catalogue of the bright Southern Stars. His observations were made only during 1829 and 1830, after which an illness incapacitated him which led to his death in July 1831.

At that time, the Southern celestial hemisphere had not been searched systematically for double stars - this only occurred during the visit of Sir John Herschel to the Cape in 1834 - 38. La Caille, however, had found a few doubles during his visit to the Cape in the mid-eighteenth century.

It was inevitable that Fallows, observing with larger instruments than those used by La Caille, should accidentally stumble upon some of the more obvious double stars. Unfortunately, he had no equatorially-mounted instruments by which he could measure the systems that he found.

In the back of Fallows's observing ledger for 1829 (stored in the Archives at the Royal Greenwich Observatory) is a list of doubles found that year and extracted by Fallows from the general observations. A further list exists on a piece of paper (in the Fallows papers at the Cambridge Observatories) and probably refers to the 1830 discoveries. These lists have one star in common (2f Eridani). The stars represent the independent but unpublished discoveries of Fearon Fallows, and in most cases pre-date the usually recognised discoverer - as listed, for instance, in the Index Catalogue of Double Stars.

The list of Fallow's doubles is given below. We have included the Bright Star Catalogue numbers, the discoverer and his catalogue number as given in the IDS, and the date (from the IDS) of the "first satisfactory measurement", which in general gives the date of discovery.

Fallows	BSC	Discoverer	Date
13 Sgr	6812	J.Herschel	2822 1836
2f Eri	1189/1190	Dunlop	16 1836
16 Arg	3582	Dunlop	74 1836
$\mu$ Arg	4216	Russell <sup>1</sup>	155 1880
$\gamma$ Pis Vol	8695	J.Herschel	5367 1835
$\alpha$ Cru	4729	La Caille <sup>2</sup>	5147 1752
$\mu$ Arg	3890/3891	Rumker	11 1836
$\zeta$ Aql	8558/8559	Struve <sup>3</sup>	2909 1781
32 Eri	1211/1212	Struve	470 1833
12 Eri	963	J.Herschel	3555 1836
$\zeta$ Phe	338	Rumker	2 1835
Rigel	1713	Struve <sup>4</sup>	668 1831

**NOTES**

1. On the assumption that  $\mu$  Arg =  $\mu$  Vel, this star had a separation of 2".2 in 1880, but the IDS states that the companion was invisible after 1942. Apparently Fallows picked it up when it was much wider. It is strange that Sir John Herschel did not see it.

2. Fallows states "Cannot find any account of this accompanying star of the 4<sup>-</sup> mag." A and B are both of the second magnitude, C is magnitude 5.1 and is distant 90" so this is presumably the star to which he refers. In that case it was already known to La Caille.

3. Sir William Herschel originally found this to be double, and it should therefore have been given a Herschel designation.

4. Fallows's sketch of this double shows it to have a position angle  $\sim 200^\circ$ ; the companion is therefore Burnham's close double BC (and not Mitchell's companion D).

**SECTION REPORT****GRAZING OCCULTATIONS SECTION****Director: J. Hers**

Too faint, too far, or too cloudy: this sums up most of the grazing occultation scene during the past year. Especially to new observers it has been a disappointing period, and one can only hope for a more favourable series of events during the coming year.

As in previous years, the CSIR computer has been used to prepare graze predictions and profile diagrams, not only for South Africa, but also for Australia and New Zealand. The existing computer programmes have been further improved by incorporating a number of changes suggested by Dr. David Dunham (one of the original authors of the programmes) and they have been modified for use with the new CDC computer.

The following is a list of grazing occultations observed during the year (unsuccessful attempts included):

	Date	Star	Location	Organiser	No. of stations	No. of timings
1976	August 28	ZC 1886	Kroonstad	M.D. Overbeek	8	52
	September 29	ZC 2573	Mapleton	J. Hers	6	12
	October 30	ZC 3111	Bloemfontein	G.N. Walker	4	0
1977	February 14	ZC 2653	Durban	W.S.W. Spiers	12	0
	March 15	SAO 163189	Durban	W.S.W. Spiers	4	0
	March 15	SAO 163189	Bloemfontein	G.N. Walker	2	0
	April 28	ZC 1518	George	J. Hers	1	2
	May 6	ZC 2647	Irene	J. Hers	2	3
	June 7	SAO 145761	Salisbury	A.G.F. Morrisby	3	3
	June 11	SAO 109699	Salisbury	A.G.F. Morrisby	3	6
	June 27	SAO 159096	Salisbury	A.G.F. Morrisby	2	7