

every case I was borne out in my contention that the spots can in no sense be called cavernous. Nay, I make bold to say, that instead of the penumbra of a spot possessing *shelving sides*, sloping down towards the umbra, it (the penumbra) presents a *convex* surface; that is to say, a curve conformable to the general contour of the solar orb.

Observation leads me to the conviction that the photospheric stratum (save where faculæ occur) consists of merely one layer of the so-called "rice-grain" entities—say about 1000 miles at most in thickness—in close contiguity to the subjacent penumbra; which, again, can possess no greater thickness than the photosphere, or the umbræ (whose depth I do not profess to estimate) could not be seen *central* in the penumbra (as I assert they do) when very near the limb. By "very near" I mean not more than some 40 or even 30 seconds only of arc.

Lastly, in contravention of statements put forth on high authority, no spot, however large, or supposing it to have ever so shelving sides, could possibly present the appearance of a *notch* when passing round the limb, but only the slightest possible *flattening* of the sphere at that point, unless indeed the spot were accompanied by a most abnormal and extraordinary piling up of facular matter north and south (but not at the same time east or west) of the penumbra. But this I have never myself witnessed, save in one rather doubtful case on 1862 August 4, as shown in sheet No. 86 of vol. ii.

The appearance of a notch has occasionally been seen in a *photograph*; but that was simply in consequence of the lack of sufficient power in the already degraded light near the limb to depict the yet more degraded dusky spot.

The Annular Eclipse of the Sun 1894 April 6.

By C. Michie Smith.

The first contact was lost through clouds, but the last contact was well observed, as follows:—

					M.M.T.		
					h	m	s
Prof. R. Ll. Jones	...	...	...	...	21	17	43.8
C. Michie Smith	...	...	...	...	21	17	42.3
K. V. Sivaramiah	...	...	...	...	21	17	43.4

A number of photographs were taken during the eclipse with the hope of obtaining signs of the Moon against the corona, but without definite success. The eclipse was not annular at Madras; but as the magnitude of the eclipse was 0.96, the reduction in light was very marked and the meteorological effects were considerable, as is shown by the following table:—

Meteorological Observations at the Madras Observatory 1894 April 6.

h	m	Reduced Barom.	Thermometer in Shade.		Humi- dity.	Sun. Maximum Thermometer.	Remarks.
			Dry.	Wet.			
19	0	29.926	76.9	75.1	92	...	
19	15	...	78.1	75.8	90	...	
19	30	...	79.1	76.2	87	...	Dew began to be de- posited about 19 ^h 30 ^m and continued for nearly an hour.
19	45	29.947	79.8	76.8	87	82.1*	* In the shed.
20	0	.957	79.0	76.6	89	86.5	
20	15	.960	79.0	76.8	90	86.8	
20	30	.961	80.4	77.4	87	96.5	
20	45	.962	81.9	77.8	83	109.8	
21	0	.969	81.8	77.5	82	115.3	
21	15	.973	83.5	78.8	80	120.5	
21	30	.971	84.4	78.8	77	128.3	

The normal rise of the barometer between 7 A.M. and 9 A.M. at this season is 0.028 in. Many of the observers who have to telegraph to Simla the weather observations at 8 A.M. used the code word for "dark gloomy weather"!

A number of photographs taken by amateurs throughout the presidency, including one of the annular phase taken at Cuddapah, were forwarded to the Observatory, but none of them contained any features of special interest.

The Solar Eclipse of 1894 September 29.

The following observations were obtained:—

Observer	First contact. M.M.T.			Last contact. M.M.T.		
	h	m	s	h	m	s
C. Michie Smith	21	3	27.6	22	29	29
K. V. Sivaramiah	...			22	29	23

Madras Observatory :
1894 October 25.