

stances as myself. After a long and anxious look-out from the south end of the Peterborough railway station for any appearance of the sun, I noticed, shortly before 1 o'clock, and in the midst of the very remarkable gloom which prevailed at the time, some slight openings in the clouds, through one of which the sun was very distinctly visible for some 15 or 20 seconds. Being furnished with an excellent little telescope (magnifying about 15), and able to rest it firmly against a pier of the station, I saw through it Baily's beads, I should imagine, to the utmost perfection, the thin passing cloud rendering any coloured eye-glass unnecessary.

"I am unable to describe their beauty, projecting to the number of some six or eight from each cusp of the sun, and resembling little irregular and constantly increasing and decreasing globules of bright quicksilver. (I shall presently give you another illustration.) The sky, after the above interval, became obscured for about a minute, when another break in the clouds exhibited for some 5 to 10 seconds *the perfect annulus* to the naked eyes of some two or three hundred spectators around me, and who, as it were, by one common impulse, greeted the phenomenon with a cheer of delight. On looking at the annulus through my telescope, I found the beads had vanished, being replaced by a well-defined continuous ring of light.

"The sky became again obscured, and I saw no more of the eclipse, congratulating myself, however, upon my extraordinary good fortune in observing it to the utmost advantage within the five minutes when it was peculiarly interesting.

"In walking some two or three Sundays afterwards to the Abbey, along the river-bank at Durham, I observed the sun shining brightly upon the irregular surface of the water, falling over the edge of the dam or weir across the river some 150 yards south of the place of observation. On arriving at the same spot on two or three successive Sundays, I was, on each occasion, very forcibly reminded of the Baily's beads of the eclipse by the line of little tremulous reflexions of the sun upon the edge of this weir; and believe that no better illustration of them can be discovered than the line of radiant sparks which may be observed on the upper edge of an artificial dam of water under similar circumstances."

The following is the substance of observations of the Solar Eclipse of March 15, which were forwarded to the Astronomer Royal from various parts of the country :—

Major-General Oliver observed the eclipse at London, and forwarded results of observations with the aneroid barometer and thermometer, and also results of observations for ascertaining the amount of humidity in the atmosphere.

Observed at Dunmow, Essex, by H. Eden Cockayne, Esq.

The thermometer fell about 10° in the sun, being $58^{\circ}5$ before the eclipse commenced, and 48° from one o'clock to half-past one. In the shade it fell 4° . The barometer appeared slightly to rise.

Observed at Litlington Vicarage, near Basingbourne, by the Rev. J. Power.

"The obtuseness of the cusps in the middle of the eclipse, compared with their well-marked acuteness a little before and a little after, was observed by our whole family party on my calling on them to notice the phenomenon. I suppose this arises from a lunar atmosphere, but there was certainly not a trace of polarization."

Observed at Ramsgate, by Robert Cramp, Esq.

Mr. Cramp forwarded results of observations with a self-registering thermometer. They commenced at $11^h 46^m$ A.M., and terminated at $2^h 30^m$ P.M.

Observed at the Devil's Dyke, near Brighton, by P. S. Rickardo, Esq.

Mr. Rickardo sent results of observations with the thermometer and hygrometer. His daughter informed him that at Brighton, where the eclipse was seen more favourably, she saw the *entire* disk of the moon between half-past twelve o'clock and one o'clock.

In the evening, about half-past eight o'clock, one of the tutors in Mr. Rickardo's establishment was on the cliffs at Worthing, and saw a fire-ball of the size of a cannon-ball, $3\frac{1}{2}$ inches in diameter. He is unable to state exactly whence it fell, as, when his attention was attracted by the flash of light, it had already begun to move; but it appeared to him about 60° from the southern horizon, falling in a south-west direction, and burning with a blue light (not unlike burning zinc), and changing into violet. It constantly decreased, and passing under a dark cloud below which it reappeared, finally vanished without noise about 8° from the south-west horizon. The whole duration of the phenomenon amounted to five seconds. There were several persons present who witnessed the phenomenon, and whose observations fully agreed with his own.

Observed at Hardingham Rectory, Norfolk, by the Rev. Challis Paroissien.

The eclipse was well seen until the moon reached the group of spots near the centre of the solar disk. Afterwards the clouds became more dense, but still the sun continued to reappear at intervals of two or three minutes. A little before the time of

greatest obscuration, the clouds cleared away, and the thin crescent was brightly and distinctly seen. I soon witnessed, as I imagine, the appearance which is usually described as 'Baily's beads.' The cusps were evidently divided, as I have endeavoured to represent them in the accompanying rough sketch.* There were three upon one of the cusps, and two upon the other. They appeared, disappeared, and reappeared three or four times. They seemed as if caused by the peaks of lofty mountains on the moon's surface with the sun seen through the intervening spaces between them. The remaining portion of the crescent was brilliant, continuous, and without interruption.

"When a considerable portion of the sun had reappeared, I observed distinctly a circular band, as represented in sketch 2, surrounding the portion of the moon's dark limb that was projected on the solar disk. Could this be the boundary of an atmosphere surrounding the moon? The space included between this circle and the dark edge was the slightest possible shade darker than the sun's disk. This circle or band continued distinctly visible until after the group of spots had reappeared. A thick cloud then intervened, and the termination of the eclipse was entirely lost to us. At the time of greatest obscuration, it was sufficiently clear to observe the dull leaden appearance of the violet sky in the zenith and in the north. It seemed very near upon the earth.

"I also observed at this time an apparent alternate contraction and elongation of one of the cusps, as if some undulating surface of land of lower elevation than the mountains were passing in review between the spectator and the sun."

Observed at Ramsgate, by Captain Martin, Harbour Master.

The phenomenon was observed with a four-foot telescope. The variations of the barometer and thermometer were noted. During the whole time the observer had three highly sensitive compasses and four dipping needles, and a powerful magnet weighted to its extreme capability, but there was apparently not the slightest influence exerted on them during the eclipse.

Observed at Colchester, by J. A. Tabor, Esq.

The indications of the barometer and thermometer were noted, and the results forwarded to the Astronomer Royal, but the state of the weather was not favourable for observing the eclipse.

Observed at Peterborough, by George S. Lefevre, Esq.

"I was stationed on one of the smaller towers of Peterborough Cathedral. From the commencement of the eclipse till a short time before its close, the sun was frequently visible at intervals

* This sketch, and the other referred to afterwards, will be exhibited at the next meeting of the Society.

varying from two to five minutes, and for periods varying from one to four seconds. The clouds, which were rolling quickly over the sun's face, formed a natural shade for the eye, and once only was the brightness such as to make it necessary to use a coloured glass, and then only a pale yellow single glass. The sun was on that occasion more than half covered, and the sky around it for the nonce was blue. At other times the sun was of a very pale colour, and could hardly be seen through a red glass. The sun was plainly visible about three minutes before the maximum of obscuration, and then again for about two seconds when the annulus was complete, and to all appearance uniform. It was also plainly and distinctly visible to the naked eye without the use of a coloured glass. The clouds then closed over it again, and when next visible the moon had again crossed the edge of the sun."

Observed at Figheldean Vicarage, Amesbury, Wilts, by the
Rev. Henry Caswall.

"My observation was made without a telescope, and while standing and moving in the street at Devizes. I went to Devizes with the hope of witnessing the eclipse; but after seeing the earlier part of it five or six times, the clouds took away all hope of observing the annularity. Suddenly and unexpectedly they cleared away sufficiently to enable me to see the most interesting part, while at the same time the haze obviated the necessity of using coloured glass.

"The town clock pointed to about two minutes to one, when the growing darkness greatly increased. I saw many people in the market-place looking upwards, all with solemn countenances, in the direction of the sun, which was just struggling through the clouds. I passed onwards, still looking at the sun, for about another minute, when *suddenly* the thin crescent rapidly extended itself. For an inconceivably minute portion of time it took the

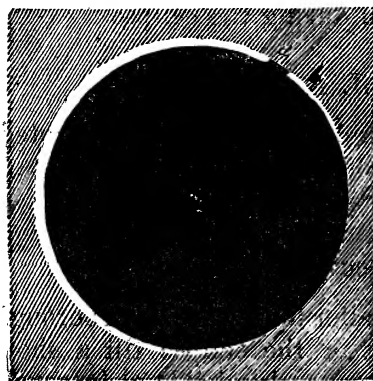


Fig. 1

form of Fig. 1, there being a break at *a*, as if from an inequality in the surface of the moon or the sun. I could not, of course, determine which. At the same instant, the isolated part at *b* seemed to *blaze*. This may possibly have been occasioned by a break, or partial break, in the cloudy haze at that moment, or from a depression on the moon's surface allowing a greater flood of light to pass than at other parts of the crescent. It did not strike me as corresponding with the phenomena described as Baily's beads; but the *fact* of a superior

brilliancy (a *white blaze*) at that point is certain. In less than a second the circle was formed, as at Fig. 2, with an effect like

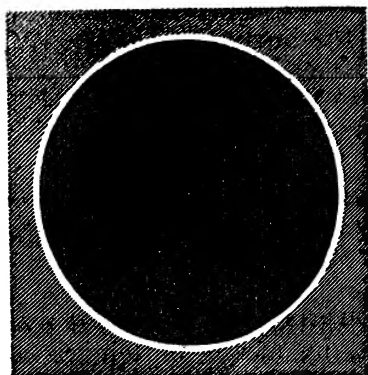


Fig. 2

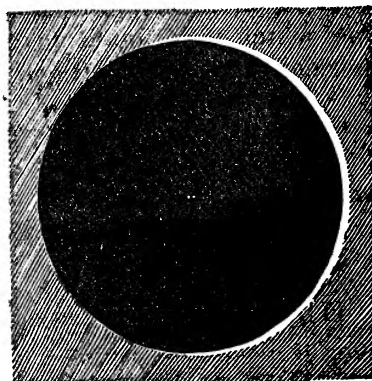


Fig. 3

that of a mechanical movement, so rapidly did it take place. I made involuntarily a loud exclamation of astonishment, which directed the eyes of the people in the street to what was going forward. As I was gazing upon it in intense admiration, the circle suddenly broke, and the crescent appeared reversed, Fig. 3, as if by another mechanical action. I saw no interruption (as before at *a*). Immediately a flood of light seemed to diffuse itself, and the next minute the light was fully equal (apparently) to that of a not very bright day.

"I do not think the annulus continued more than four or five seconds. I could not have taken more than half-a-dozen steps during its continuance."

Observed near Laycock Abbey, Wilts, by J. D. Smith, Esq.

"I am desirous of placing an observation made during the eclipse on record if it be of any value. I am not aware of the phenomenon having been previously noticed.

"About 0^h 54^m on the 15th of March, the darkness rapidly increasing, both my brother and myself were distinctly impressed with the conviction that the withdrawal of light was not continuous but by pulsations, or, as it were, waves of obscuration, the darkness increasing by strokes which sensibly smote the eye, and were repeated distinctly some five or seven times after we had remarked the phenomenon and before the time of greatest obscuration. This did not occur on the return of the light, which came back continuously and without shock or break."

The following photographs of the eclipse, which had been transmitted to the Astronomer Royal, will be exhibited at the next meeting of the Society :—