

b. Comparison of B and C.

Periods.	Duration of ascent (B).	Periods.	Duration of descent (C).
I. 1833·92 to 1836·98	3·06 years	1836·98 to 1843·75	6·77 years.
II. 1843·75 to 1847·87	4·12 „	1847·87 to 1856·31	8·44 „
III. 1856·31 to 1859·69	3·38 „	1859·69 to 1867·12	7·43 „

	Ratio $\frac{C}{B}$.	Difference from mean.
I.	2·212	+ 0·061.
II.	2·044	— 0·107.
III.	2·198	+ 0·047.
	} Mean 2·151	

The agreement of these ratios with each other, and the small differences from the mean of the single ratios, justify us in the mean time, until a greater number of periods are before us, to state the connexion between the two branches of the periodic curve from one minimum to another in the following more precise terms:—

If T be the time of duration of sun-spot increase from a minimum to a maximum, then $2·15 \times T$ (with a probable error of less than $\pm 0·05$) will be the duration of the sun-spot decrease until the next minimum.

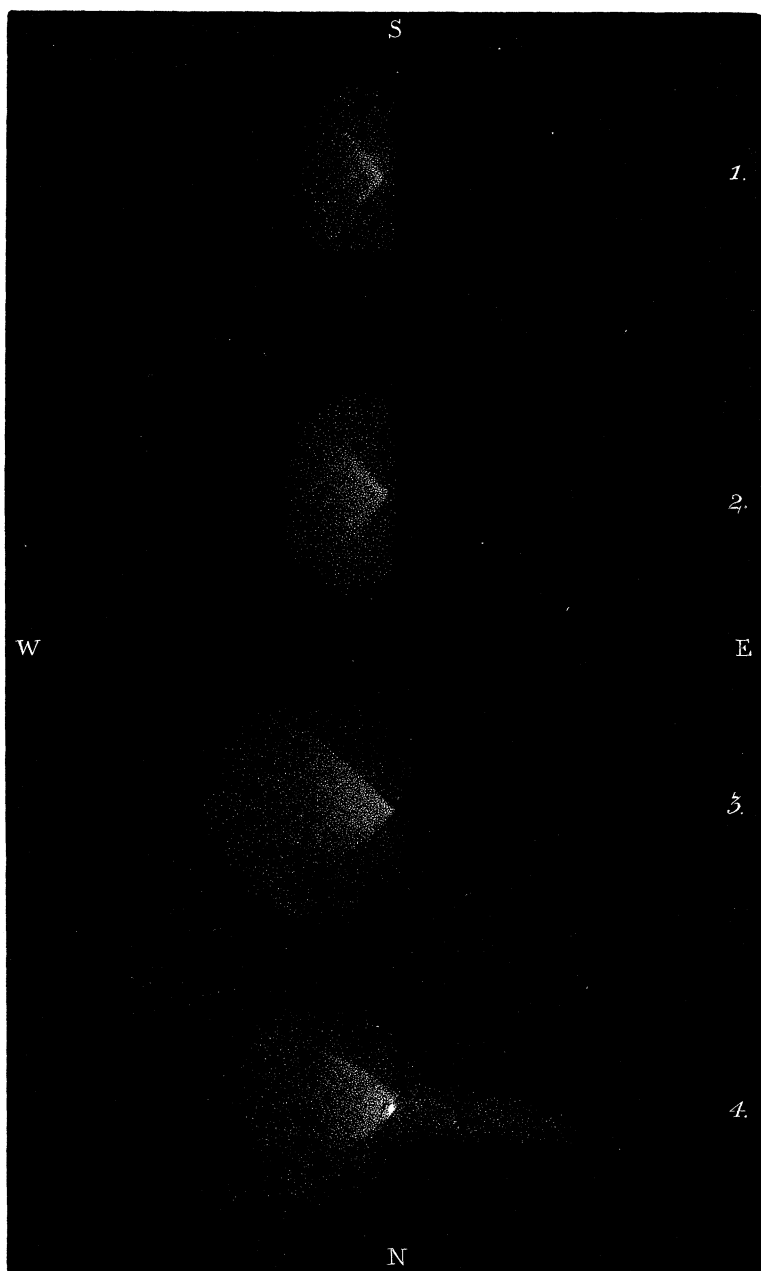
This law, together with the fact which we have previously established, that a longer period shows generally a depressed curve, while a shorter is characterized by great peaks, points strongly to the conclusion that *the energy of the ultimate causes of sun-spot production, whether these causes be intrasolar or extrasolar, is for every period constant.*

IV. “Note on the Telescopic Appearance of Encke's Comet.” By
WILLIAM HUGGINS, D.C.L., LL.D., F.R.S. Received December 16, 1871.

The first three figures which accompany this note represent the comet on evenings on which its appearance was described in a note on the spectrum of the comet which I had the honour to present to the Royal Society*. A continuance of bad weather prevented me from making later observations of the comet, with the exception of one evening, December 5, when figure 4 was obtained under unfavourable circumstances.

Fig. 1. November 7, 7.30 p.m.—From Oct. 17, when the comet consisted of a nearly round nebulosity without condensation in any part, to Nov. 7 no observations could be obtained. At the latter date, the remarkable fan-form which distinguishes this appearance of the comet was already distinctly presented. The faint light by which the comet was surrounded terminated on the side from the sun, that from which the tail is usually projected, in a straight boundary at right angles to the longer axis of the comet. At the opposite side, that towards the sun, the faint nebulosity expanded and became fainter until it could be no longer traced. The

* *Suprà*, p. 45.



minute stellar nucleus which was suspected at the eastern extremity of the fan is not marked in the figure.

Fig. 2. November 8, 7 P.M.—The fan was now brighter and more defined in form. The nucleus, as a minute bright point, appeared to be situated not at the extreme western point, but a little within it, towards the north.

The sides of the fan were slightly curved, suggesting an approach to a parabolic form.

The fan was brighter on the southern side. The eastern edge of the faint light by which the comet was surrounded still preserved a right line from north to south.

Fig. 3. November 14, 6.40 P.M.—The appearance of the comet was essentially the same as on Nov. 8.

The bounding lines of the fan were perhaps less curved; they enclosed an angle of from 85° to 90° .

The nucleus had become brighter, and now appeared to form the extreme eastern point of the fan.

No prolongation of the eastern boundary, where the tail is usually formed, was seen.

Fig. 4. December 5, 5.30 P.M.—Thin mist in the atmosphere allowed the brighter parts only of the comet to be satisfactorily observed.

The condensation of light was now much stronger at the eastern end, but a defined nucleus was not detected.

The fan form was less marked; the brighter part of the comet more resembled a brush-like flame.

The atmospheric haze nearly concealed the faint light surrounding the comet, but, by glimpses, a tail was now seen to project towards the east; it was traced to a distance of about twice the length of the bright brush.

The tail appeared to come from the northern side of the longer axis of the comet, and to consist of a faint ray with sides nearly parallel.

As I am at present without a suitable micrometer, I was not able to take measures of the comet.

The Society then adjourned over the Christmas Recess to Thursday, January 11, 1872.

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