

The violence with which false interpretations were put upon this Theory and a function was assigned to it which it could never fulfil, will some day be recognised as one of the least creditable episodes in the history of science. With a curious perversity it was the weakest elements in the Theory which were seized upon as the most valuable, particularly the part assigned to blind chance in the occurrence of variations. This was valued not for its scientific truth,—for it could pretend to none,—but because of its assumed bearing upon another field of thought and the weapon it afforded for expelling Mind from among the causes of Evolution.

There have been many symptoms that this Philosophy is breaking down. Mr. Herbert Spencer, although he has worked out the consequences of Evolution with enthusiasm, has never been blind to some of its defects. His mind is too closely analytical not to be brought into contact at many points, with its manifest inapplicability and its wordy hollowness.

But in these two articles we have for the first time an avowed and definite declaration against some of the leading ideas on which the Mechanical Philosophy depends; and yet the caution, and almost the timidity, with which a man so eminent approaches the announcement of conclusions of the most self-evident truth—is a most curious proof of the Reign of Terror which had come to be established.

I cannot in this letter indicate the breadth and sweep of the admissions now made by Mr. Herbert Spencer in the two articles referred to,—fatal to the adequacy of the Mechanical Philosophy as any explanation of organic evolution. They cluster round, and follow from the central admission that “the words ‘natural selection’ do not express a cause in the physical sense.” Another great admission is that the “co-operation” which is required in the growth and development of useful parts, cannot be accidental.

Of course, now that so eminent a man as Mr. Herbert Spencer has opened his eyes and his mouth to these—and many other—admissions, we shall have all the *Dii Minores* following suit.

I have read with great pleasure an article in your last number (p. 314) on “Physiological Selection,” with an “additional suggestion on the origin of species.” I rejoice that the author has at last discovered that “natural selection has been made to pose as a theory of the origin of species, whereas in point of fact it is nothing of the kind.” This has been my contention for many years.

ARGYLL

### Aurora

WITH reference to the aurora of July 27, accounts of which appear in NATURE, vol. xxxiv. pp. 311 and 312, the following particulars of the accompanying magnetic disturbance recorded here may be of interest. The disturbance commenced about 3 p.m. on July 27 with small fluctuations in declination and horizontal force, followed by larger movements which commenced sharply at 10.20 p.m. in all three elements, and continued to about 7 a.m. on July 28. The greatest movement was between 10.20 and 11.30 p.m., amounting to 45' in declination, 0.11 of the horizontal force, and .005 of the vertical force. Corresponding earth-currents were recorded as usual.

W. H. M. CHRISTIE

Royal Observatory, Greenwich, August 10

### Mock Suns

KINDLY add the following, to make up for omission of my figure in your issue of July 29 (p. 289):—

The “arched eyebrows,” as I called them, can best be described thus—

Resting on the top of the halo circle, where the third mock light stood, was a bow of peculiar curve. It was like two well-arched eyebrows flowing together by a curve of gentle dip at the point where it touched the halo. Each arch was about equal to one-eighth part of the halo circle in every respect except that its centre lay about the middle of the chord joining the upper mock light with the mock light on that side of the sun. The contrariflexure, and the anomalous positions of the two centres of the two arches, strike me as very noteworthy. I cannot presume to guess at an explanation.

May I add that a correspondent of the *Standard* states that he too saw the white ray on the left side; and that it stretched, to use his expression, “round the sky almost to the east, and at the end of it was another mock sun much less brilliant,” where

it “seemed about to begin a fresh series of mock suns and circles.” This too seems to me too striking a feature to be lost to record in NATURE.

W. J. HERSCHEL

Littlemore, August 2

### Meteors

ON August 4, 10h. 40m., a beautiful slow meteor was seen here threading its way from about 2° S. of  $\alpha$  Ursæ Majoris to very slightly below  $\beta$  Aurigæ. Its light fluctuated greatly, but at its best it must have been brighter than Jupiter, though the effect was much marred by mist. The most noteworthy feature was its extreme slowness of movement; a careful determination gave 8 seconds as the time it remained in sight. There was no train of any sort; the meteor rolled along with a star-like aspect, and its velocity near the end point became so much impeded that it seemed almost stationary. I observed fifty-seven other meteors during the same night, but none of these could be associated in appearance and direction with the one specially described. Its radiant-point was probably in Ursa Major, close to  $\beta$ , at about  $162^\circ + 59^\circ$ .

On August 6, 10h. 3m., a meteor equal to Jupiter was seen pursuing a long path just south of and nearly parallel to  $\alpha$  and  $\epsilon$  Pegasi. It left a bright streak, and was a conspicuous object, notwithstanding the moonlight. The radiant-point was at about  $32^\circ + 17^\circ$ , nearly 6° S.S.E. of  $\alpha$  Arietis, or possibly in the extreme east boundaries of Aries.

It would be important to hear of duplicate observations of these large meteors. In the eastern parts of England they must have appeared very bright, and being visible at a convenient hour in the evening many persons will have noticed them.

Bristol, August 9

W. F. DENNING

LAST night at about eleven o'clock a fine meteor was visible here through an opening in clouds. Its path was in Aquarius, commenced a little to the east of  $\eta$ , and seemed to be in the direction of a line joining  $\eta$  and  $\delta$ . In three or four seconds the meteor passed over about  $20^\circ$ , and it left momentarily a trail over the last  $10^\circ$ . This was slightly curved, the convex side being to the east, and the colour varying from yellow for a quarter of the curve to red during the remainder. At first the meteor resembled Saturn in size and colour, then became larger, whiter, and afterwards pale blue, and when it finally disappeared behind the clouds it considerably exceeded Venus at her brightest, both in size and brilliance.

L. J. H.

Ramsey, Isle of Man, August 5

### PHYSIOLOGICAL SELECTION: AN ADDITIONAL SUGGESTION ON THE ORIGIN OF SPECIES<sup>1</sup>

#### II.

NEXT, let it be observed that we cannot expect to meet with much direct evidence of physiological selection from our domesticated varieties. For, first, breeders and horticulturists keep their strains separate artificially, and preserve many kinds of variation other than those of the reproductive system with which alone we are concerned; and, secondly, it is never the aim of these men to preserve this particular kind of variation. Therefore, all that we can here learn from our domesticated productions is the paramount importance of preventing intercrossing with parent forms, if a new varietal form is ever to gain a footing. No one of these domesticated varieties could have been what it now is unless such intercrossing had been systematically prevented by man; and this gives us good reason to infer that no natural species could have been what it now is unless every variety in which every species originated had been prevented from intercrossing with its parent form by nature. For the cases are extremely rare in which one species differs from another (living or extinct) in respect of any feature so highly utilitarian in character as to justify belief that the newer species owed its differentiation to natural selection having been able to overcome the swamping effects of free intercrossing.

<sup>1</sup> Abstract of a Paper read before the Linnean Society on May 6, by George J. Romanes, M.A., LL.D., F.R.S. &c. Continued from p. 316.