The introduction of a new word or phrase has often marked an epoch in the history of a science; many of the theories systematised by Darwin are to be found in the writings of others before the happy phrase "natural selection" gave them a simple and enduring shape. Of like importance is Mr. Grove's expression, "correlation of forces," and we find in these proceedings several words, the introduction of which appears likely to play an important part in the development of the science.

The word "quantic" for a "rational and integral function" has been for many years in use, but "deficiency" for the number by which the double points of a curve (including cusps) fall short of the maximum $\frac{1}{2}(n-1)(n-2)$, and "unicursal curves" for those curves in which the deficiency = 0, or, in other words, curves in which the co-ordinates (x, y, z) can be expressed as rational and integral functions of a parameter θ, were first used by Prof. Cayley before this society.

The history of mathematics is enriched by an interesting paper by Mr. Merrifield, showing that the Arabs were acquainted with the property of the radical axis.

Prof. Sylvester's proof of Newton's celebrated rule for the discovery of imaginary roots, hitherto undemonstrated, and Prof. DeMorgan's simple proof that every function has a root (which we should be glad to see in a fuller form) are the principal gains in the mere demonstration of known truths. We could wish to see in print the other communications made to the society by Professors Sylvester and DeMorgan, especially those by the former relating to unicursal derivation of successive points on cubic curves, and to residuals.

We heartily congratulate the society on the vitality and enthusiasm evident in every page of its proceedings, and join with them in their hope that they may shortly obtain a tenement of their own worthy of the great, albeit unostentatious, work in which they are engaged.

H. A. N.

Jahrbuch der K.-K. Geologischen Reichsanstalt. Band XIX. Nos. 3 and 4. 1869.

OF this admirable repertory of memoirs on the geology of the Austrian Dominions, the last two numbers for 1869 have lately reached us. This publication contains the cream of the communications made by members of the Imperial Geological Institution, to which the carrying out of the survey of that great and varied tract of country subject to the Austrian sovereign is entrusted; it always includes many papers of great importance to the student of general geology, and the portions now before us present no falling off in this respect. Of strictly geological papers Prof. D. Stur is the principal contributor. He describes the occurrence of brown coal in the district of Budafa, in Hungary; reports at considerable length on the results of the geological survey of the environs of Schmöllnitz and Göllnitz, also in Hungary; and contributes two other papers of more strictly local interest; but the most important of all the geological memoirs is F. von Hauer's notice of the geology of the Western Carpathians, a most interesting district in every respect. Dr. M. Neumayr's contributions to the knowledge of indigenous fossil faunæ contain descriptions of the univalve shells of the freshwater marls of Dalmatia, and of the Congerian strata of Croatia and Western Sclavonia; the species, many of which are new, are well represented on four plates. Five plates are also devoted to the illustration of another palæontological paper, which will probably possess the most interest of all for extra-Austrian geologists—namely, Dr. E. von Mojsisovics's memoir on the Cephalopod-fauna of the Alpine Muschelkalk, some of the species included in which are remarkable for their wide geographical distribution, especially the characteristic species of the zone (*Arcestes* or *Ammonites Studeri*), which ranges to the Himalayas in one direction, and to Spitzbergen in another.

LETTERS TO THE EDITOR

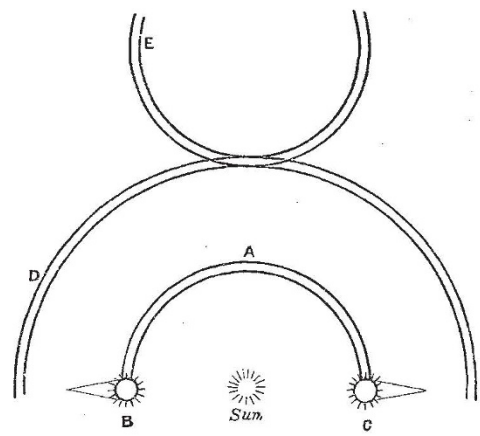
[*The Editor does not hold himself responsible for opinions expressed by his Correspondents. No notice is taken of anonymous communications.*]

Parhelia

(1.) *Seen near Llandudno on 23rd of June, by* JOSEPH PAGET

THIS evening the phenomenon of which a sketch is enclosed was seen here, viz.:—

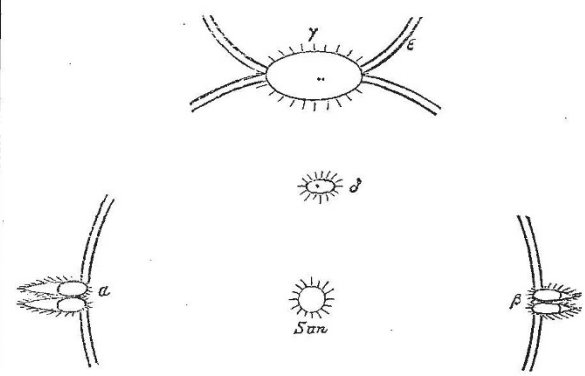
A B C, a portion of a circle of 45° diameter, resting at B and C on mock suns from which a sheaf of light proceeded outwards.



D, a portion of another circle of 90° diameter, at the apex of which was an inverted portion of another circle E of 45° diameter.

(2.) *Seen at Highfield House, near Nottingham, on 23rd of June*

At $7^h\ 36^m$ P.M., there was an extraordinary appearance in the heavens. Immediately above the true sun, at a distance of 23°, was an oval-shaped mock sun δ, colourless and not bright; at the distance of 90° from the true sun, and on its horizontal level were two double mock suns, α β, strongly prismatic and very brilliant. They were oval, and from each a flame-like ray extended in the opposite direction to the true sun, portions of a circle of 90° in diameter passed through these mock suns and



also through an unusually large mock sun γ, situated 45° immediately above the true sun, and which was prismatic and almost too brilliant to look at; from this mock sun there was also a portion of a circle of 45° in diameter.

The phenomenon faded away at $7^h\ 53^m$ P.M. The weather had been hot from the 13th inst., reaching 86·8° in the shade on the 21st, and 86·6° on the 22nd; whilst on the 23rd (the day of this occurrence) it was only 72°, and on the morning of the 24th, the minimum temperature had fallen to 42·9° at four feet, and to 38·2° on the grass, or a fall of 43·8° in temperature in