

and unique position of Mr. Darwin, the scientific historian of the future will recognize how much the development of the modern theory of evolution, from its first conception in the mind of Mr. Darwin, was facilitated by the interaction upon one another of the work and minds of Darwin, Hooker, and Lyell. It was due to the earnest efforts of his two friends that Mr. Darwin was induced to publish the first sketch of the origin of species at all. And no one, had he been alive, would have more cordially recognized than Mr. Darwin how vast an armoury of facts the wide botanical experience of Hooker constantly placed at his disposal in fortifying and supporting his main position.

Of the two Royal Medals, it is customary, though it is not an invariable rule, to award one for mathematics or physics, and the other for biological science.

The medal, which, in accordance with the usual rule, has been devoted to mathematics and physics, has this year been awarded to Colonel A. Clarke for his comparison of standards of length, and determination of the figure of the earth.

Colonel Clarke was for some twenty-five years the scientific and mathematical adviser for the Ordnance Survey, and whilst acting in that capacity he became known to the whole scientific world as possessing a unique knowledge and power in dealing with the complex questions which arise in the science of geodesy.

His laborious comparison of the standards of length, carried out under General Sir Henry James, R.E., are universally regarded as models of scientific precision.

His determination of the ellipticity and dimensions of the earth from the great arcs of meridian and longitude involved a very high mathematical ability and an enormous amount of labour. The conclusion at which he arrived removed an apparent discrepancy between the results of pendulum experiments and those derived from geodesy, and is generally accepted as the best approximation hitherto attained as to the figure of the earth.

The accounts of these investigations have been published in a number of memoirs, several of which have been communicated to the Royal Society.

In 1880 he published a book on geodesy, which, besides giving an accurate account of that science, embodies the main results of the work of his life.

In the biological division of the sciences the Royal Medal has this year been awarded to Prof. Henry N. Moseley for his numerous researches in animal morphology, and especially his investigations on Corals and on Peripatus.

The result of his elaborate investigations on Corals, an account of which has been published in the Philosophical Transactions, was to show that the Milleporidæ and the Stylasteridæ were not, as had been thought, Anthozoan in nature, but were composite coral-forming hydroids. Many new genera and species were described by him in these memoirs, and in fact a new group of organisms, the Hydrocorallinæ, was not merely indicated, but the complete morphology and systematic subdivisions of that order were worked out.

Moseley's memoir on Peripatus is not less remarkable. He was the first to point out the true nature of this remarkable animal, and to demonstrate that it was in reality an archaic Arthropod. The subsequent investigations of Balfour and Sedgwick have further increased the importance of Moseley's discovery.

Moseley's memoir on the Land Planarians of Ceylon (Phil. Trans., 1872) is an important contribution to the anatomy of the Turbellaria. He was the first to apply the method of section-cutting to the Planarians, and his paper is full of new facts of great importance, which have stood the test of subsequent work over the same ground.

Besides these three great memoirs published in the Philosophical Transactions, Moseley has published numerous minor discoveries, and his spectroscopic observations on the colouring matters of marine organisms have proved the starting-point of valuable investigations.

Mention must not be omitted of Moseley's admirable book, "Notes of a Naturalist on the *Challenger*," which has been justly compared, for the varied ability, interest, and activity which it evinces on the part of the author, to Darwin's "Voyage of the *Beagle*."

Since the date of the works above referred to, Moseley has been chiefly active in the discharge of his duties as Linacre Professor, and the success with which he has directed the work of his pupils is evinced by the important memoirs on zoological

subjects which several of them have produced whilst working under his direction. He has himself also published a remarkable discovery with regard to the Chitons. In the shells of many genera and species of these mollusks he has detected highly developed eyes, of which he has described the minute structure.

The Davy Medal for the year 1882 was awarded by the Council to Profs. Mendelejeff and Lothar Meyer conjointly, for their discovery of the periodic relations of the atomic weights. This relation, now known as "the Periodic Law," has attracted great attention on the part of chemists, and has even enabled Prof. Mendelejeff to predict the properties of elements at the time unknown, but since discovered, such as gallium for instance.

But while recognizing the merits of chemists of other nations, we are not to forget our own countrymen; and accordingly the Davy Medal for the present year has been awarded to Mr. John A. R. Newlands, for his discovery of the Periodic Law of the chemical elements. Though, in the somewhat less complete form in which the law was enunciated by him, it did not at the time attract the attention of chemists, still, in so far as the work of the foreign chemists above mentioned was anticipated, the priority belongs to Mr. Newlands.

#### SCIENTIFIC SERIALS.

*Rivista Scientifico-Industriale*, October.—On the crepuscular phenomena of 1883–84, by Prof. Annibale Riccò. These remarks are made in connection with the author's comprehensive work, now nearly ready for the press, on the remarkable after-glow of the years 1883–84. One of the chief conclusions arrived at in this work, after a careful consideration of all the evidence, is that the volcanic theory, first advanced by Mr. Norman Lockyer, is the only one that can be now accepted. The light-effects appeared soon after the great eruption of Krakatão on August 27, 1883, were propagated from the neighbourhood of the volcano to the most distant parts, and then gradually died out, precisely in the same way that similar manifestations were made immediately after the eruption of the island of Ferdinandea (Julia) in 1831. It is further concluded that the after-glow were due, not to the ashes or scorïæ ejected by Krakatão, but to the condensation of the aqueous vapours caused by the volcano, which condensation increased the quantity of solar light reflected by the atmosphere.

*Bulletin de l'Académie Royale de Belgique*, October.—On the mass of the planet Saturn, by L. de Ball. By a comparative study of its satellites, made at the Observatory of Cointe during the winter of 1885–86, the author finds the mass of Saturn to be  $1/3492.8$  that of the sun, which is rather less than the values obtained by Meyer, Hall, and Struve, which are  $1/3482.5$ ,  $1/3481.3$  and  $1/3490.8$  respectively.—Experimental researches on the sense of vision in the Arthropods, by Felix Plateau. Of this elaborate memoir the first part only appears in this issue, dealing first with the work already accomplished down to the year 1887 on the structure and functions of simple eyes; secondly, with the eyes of Myriapods. The four remaining parts, to be published in subsequent numbers of the *Bulletin*, will treat of vision in the spiders, and in larvæ generally; of the part played by the frontal eyes in perfect insects; of compound eyes and the perception of movements; with an anatomico-physiological summary, and experiments with insects.—Remarks on the total solar eclipse of August 19, 1887, by L. Niesten. A comparative study of the photographs obtained by M.M. Niesten and Karlin at the station of Jurjewetz, shows that with Van Monckhoven's sensitive plates an almost instantaneous image is obtained not only of the protuberances but also of the corona; and further that a pose of thirty seconds gives no more detailed images of the corona than those obtained at the end of eight seconds. Hence it would appear that photographs of the corona obtained after an exposure of over a minute should be attributed to physical phenomena due to the atmospheric conditions, or to light-effects produced in the photographic apparatus itself.

#### SOCIETIES AND ACADEMIES.

##### LONDON.

Linnean Society, November 3.—W. Carruthers, F.R.S., President, in the chair.—Mr. J. H. Hart, of Trinidad, was elected a Fellow of the Society.—The President called attention