

in the Indian eclipse. It is Mr. Brothers's opinion, I believe, that all you see on the screen round the dark moon, all that enormous mass of light, nearly uniform in texture, and these beautiful broad rays between the rifts are really and absolutely parts of the solar corona. I confess I do not wish to commit myself to such an opinion. We want more facts, and the *onus probandi* lies with those who insist upon that view, and I have yet to hear an explanation of them on that basis.

h.—The Corona sometimes seems to be *Flickering or Rotating*.

We now come to the next point. Time out of mind, that is, for the last two centuries, the corona has been observed to be flickering, waving, or rotating, moving in every conceivable way and direction. In 1652 it was described as "a pleasant spectacle of rotatory motion." Don Antonio Ulloa remarked of the corona observed in the eclipse of 1788, "It seemed to be endued with a rapid rotatory motion, which caused it to resemble a fire-work turning round its centre." The terms whirling and flickering were applied in the eclipse of 1860. This extraordinary condition of things was also thoroughly endorsed by the late observations. It certainly exists, and is among the observations we have to take into account. When I saw an officer of one of the ships at Catania, I asked him if he had taken a drawing of the corona. "No," he said. I asked him, "Did you see any rays?" "Yes." "Then why did you not make any drawing of them?" His answer was, "How on earth could you draw a thing that was going round and round like a fire-work?" This was not the only observation of the kind, and the tendency of such observations I need hardly say is to strengthen a belief in the unstable, and therefore uncosmical, nature of their rays.

Is this variation of light due to the brilliancy of the corona, and the rapid change of the rays, which is one of the results which comes out clearest? In 1842 the brilliancy of the corona was stated to be insupportable to the naked eye. A similar remark was made to me by several of those officers who saw the last eclipse in Sicily.

J. NORMAN LOCKYER

(To be continued.)

SCIENTIFIC INTELLIGENCE FROM AMERICA*

PROF. LEIDY has lately announced to the Philadelphia Academy of Natural Sciences the existence of some new fossil mammals from the Tertiary formations of Wyoming Territory. One was a lower jaw, discovered by Dr. J. Van A. Carter in the vicinity of Fort Bridger. The animal to which it belonged was as large as a hog, but was more nearly allied to the rhinoceros or tapirs. It was especially remarkable for the possession of a large pair of front teeth, resembling, both in form and construction, the incisors of the beaver. The name proposed for it was *Togurus castoroides*, or the beaver-toothed gnawing-hog. Another of the fossils indicates a carnivorous animal, a contemporary of the former, and about the size of the gray fox. The animal was related to the weasel and canine families, and was called *Sinopa rapax*, the former name being that applied by the Blackfeet Indians to a small fox. Prof. Leidy also exhibited photographs of the lower jaw of the American mastodon, recently received from Prof. W. C. Kerr, State Geologist of North Carolina. The jaw was found in Lenoir County of that State. It belonged to a mature male, and was of special interest from its retaining both tusks, as well as the molar teeth.—Among objects of great ethnological import are the aboriginal inscriptions or carvings upon rocks, which are met with in North America and elsewhere, and are sometimes of a very remarkable character. Ordinary copies of such inscriptions, unless they be photographs, are rarely of sufficient accuracy to be of much value; and those of our readers who are likely to come across such inscriptions may like to know a method by which an absolutely perfect fac-simile can be made. This process has been applied with much success in copying carvings in Egypt and other places, and it will be equally serviceable in our own country. For this purpose the inscription is to be first well cleaned from dust or mud by means of a hard, stiff brush; stout, unsized paper is then to be wetted rapidly, but uniformly, in a tub of water, and applied to the inscription, and forced into the irregularities by repeated and forcible strokes with a hard brush, an ordinary clothes-brush being as good as any for the purpose. If the stone be clear of

* Communicated by the Scientific Editor of *Harper's Weekly*.

dust, the paper adheres, and, when dry, falls off, forming a perfect mould of the inscription. If the carving be deep or broad, it is sometimes advisable to apply several sheets of paper, one after the other, brushing over the surface of one with glue or gum before applying the next, so as to obtain, when dry, a firm body. By making a plaster cast of the paper relief thus prepared a fac-simile of the inscription will be obtained.—The present year seems to be marked with a great deal of activity and enterprise in researches connected with the natural history and physics of the deep seas, especially on the coast of America. We have already referred to the enterprise proposed by the Coast Survey, of sending a steamer, especially adapted to this purpose, around Cape Horn to the California coast, on a ten-months' journey, to be accompanied by Professor Agassiz and Count Pourtales, and a corps of assistants, all prepared to make observations and collections on the most perfect scale. The expense of the scientific work will, it is understood, to the amount of 15,000 dollars, be defrayed by Mr. Thayer (the same gentleman who supplied the funds for Professor Agassiz's expedition to Brazil), a sum which will probably enable Professor Agassiz to accomplish his object in the most perfect manner.—Professor Verrill and party, from Yale College, will also, it is expected, prosecute an exhaustive research into the deep sea and littoral fauna of the Vineyard Sound and the adjacent waters, in connection with the inquiries of the United States Commission of Fish and Fisheries relative to the decrease of the food fishes of our coast. Corresponding researches will also be carried on in the deeper waters of Lake Michigan, where, it may be remembered, the interesting discovery was made last year of crustaceans and fish of marine types at a depth of 300ft. and over. The inquiries this year will be under the immediate direction of Dr. Stimpson and Mr. Milner in a still deeper part of the lake, and it is not at all improbable that discoveries of the highest interest will be made.—The Arctic expedition of Captain Hall will also undoubtedly do its part in the general work, as the naturalist of the party, Dr. Emil Bessels, has had large experience in such labours, and is practically conversant with the fauna of the arctic seas from his connection with the Spitzbergen expedition of 1869.—At the June meeting of the California Academy of Sciences the subject of inviting the American Association for the Advancement of Science to meet in San Francisco in 1872 was discussed, and the treasurer was instructed to call upon the trustees, and to solicit the co-operation of the Chamber of Commerce in taking measures toward this object. The meeting for the present year will be held in August next in Indianapolis, and a large attendance is expected, especially of Western members, to whom the places of meeting in the East have generally proved too remote to suit their convenience.

SCIENTIFIC SERIALS

THE *American Naturalist* for June contains no article of very striking value, though several of interest in special subjects. Dr. Elliott Coues contributes an account of the yellow-headed blackbird, *Xanthocephalus icterocephalus*, first described by Prince Buonaparte in his continuation of Wilson's Ornithology.—An article on Cuban Seaweeds, by Dr. W. G. Farlow, includes outline drawings of a number of distinct types.—Dr. Lebaron describes a new species of moth, the larva of which is extremely destructive to young apple trees, which he calls *Tortrix malis orana*, or the Lesser Apple Leaf-folder.—Mr. E. L. Greene contributes June Rambles in the Rocky Mountains, with special reference to their flora.—From Dr. Henry Shimer we have "Additional Notes on the Striped Squash Beetle," and from Prof. W. H. Brewer, "Animal Life in the Rocky Mountains of Colorado."—A larger space than usual is occupied by Reviews, among which is one of Mivart's "Genesis of Species," comparing the views of the author with those of the American writers, Cope and Hyatt.

The first article in the *Journal of Botany* for June is an important one, by Prof. A. H. Church, on Sugar in Beet-root, with a record of investigations on the effect of the amount of rainfall in the development of the sugar.—Dr. Henry Trimen discusses the question, "Is the Sweet Flag, *Acorus calamus*, a Native?" showing that it was unknown in this country before 1596, and that it was not till about 1660 that it was reported as a wild plant from Norfolk. The plant appears to be originally a native of south-east Europe.—Prof. Dickson has an article on the Phyllotaxis of *Lepidodendron*, and the allied, if not identical,

genus *Knorria*.—Mr. A. G. More continues his Supplement to the "Flora Vectensis;" and the Rev. Jas. M. Crombie his additions to the British Lichen-Flora.

The number for July contains Mr. Ernst's "Jottings from a Botanical Note-book," and concludes Mr. A. G. More's "Supplement to the Flora Vectensis." Dr. Trimen contributes some notes on plants observed in Jersey and Guernsey in April. There are several other short papers and notes of special interest to British botanists.

Or the *Bibliothèque Universelle et Revue Suisse*, one of the most valuable of continental periodicals, whether we consider the quality of its original articles, or the admirable extracts of scientific memoirs which it contains, we have just received the part published on May 15, which forms the commencement of a new volume. The first and most important of the three papers contained in it is on the action of magnetism on gases traversed by electrical discharges, by MM. A. de la Rive and E. Sarasin, in which the authors describe a long series of experiments made by them, leading to the following conclusions:—1. The action of magnetism exerted only upon a portion of an electric jet traversing a rarefied gas, causes an augmentation of density in this portion. 2. This action exerted upon an electric jet placed equatorially between the poles of an electro-magnet, produces in the rarefied gas an augmentation of resistance proportional to the conductivity of the gas itself. 3. On the contrary, it causes a corresponding diminution of resistance, when the jet is directed axially between the two magnetic poles. 4. When the action of the magnetism is to impress a continuous movement of rotation upon the electric jet, it has no influence upon the conductivity if the rotation be in a plane perpendicular to the axis of the iron cylinder detaining the rotation, and diminishes it considerably if the rotation takes place so that the jet describes a cylinder round the axis. 5. These effects do not seem to be due to variations of density, but to perturbations in the arrangement of the particles of the rarefied gas.—A second paper is an excellent abstract and discussion by M. Emile Gautier, of the observations of solar protuberances, made at Rome by Prof. Respighi; and the third consists of an account of geological, meteorological, and archæological explorations made in the province of Constantine (Algeria), by M. Tissot.

THE first part of the twenty-third volume of the *Zeitschrift der deutschen geologischen Gesellschaft*, containing the proceedings of that society for the months of November and December 1870, and January 1871, includes one paper which will be of especial interest to British geologists, namely, "Some Geological Sketches from the East Coast of Scotland," by Prof. F. Zirkel, extending over 124 pages of text, illustrated with four plates. In this paper the complicated geology of the islands of Arran, Mull, Iona, Staffa, and Skye is discussed in considerable detail, and the author winds up with a description of the east and west section of the north of Scotland. Another long paper is the first part of a geological description of the annular mountain of Santorin, by M. K. von Fritsch.—M. C. Struckmann describes the *Pteroceras* beds of the Kimmeridge formation at Ahlem, near Hanover, which he divides into three series (upper, middle, and lower), indicating the characteristic fossils of each deposit. M. R. Richter publishes a fourth notice on the Thuringian slates, for which he claims an Upper Silurian age, an opinion here supported chiefly on the evidence of Graptolites. The author discusses the affinities of the Graptolitiidæ, and adopts an opinion expressed by Leuckart (MS.) that this group is to be regarded as nearly allied to the Bryozoa. The author describes a new genus, *Triplograptus*, the chief character of which is that the canal has three vertical rows of alternating cells, of which the type is *T. neritarum* (Richt.), and also as new species *Diplograptus pennatulus* and *Monograptus crenatus*. These and some other species are figured in the plate accompanying the memoir. A new species of *Nautilus* (*N. veles*) is also described and figured in this paper (p. 243). From M. Emanuel Kayser we find a notice of the occurrence of *Rhynchonella pugnus* with traces of colour in the limestone of the Eifel (Devonian), to which is appended a tabular list of those fossil shells on which traces of colouration have been observed.

SOCIETIES AND ACADEMIES LONDON

Geological Society, June 21.—Joseph Prestwich, F.R.S., in the chair.—R. J. Watson, W. T. Scarth, Gen. A. C. Bentinck, and John Brooke were elected Fellows of the Society.—"On some supposed Vegetable Fossils," by William Carruthers,

F.R.S. In this paper the author desired to record certain examples of objects which had been regarded, erroneously, as vegetable fossils. The specimens to which he specially alluded were as follows:—Supposed fruits on which Geinitz founded the genus *Guilielmites*, namely, *Carpolites umbonatus* Sternb., and *Guilielmites permianus* Gein., which the author regarded as the result of the presence of fluid or gaseous matter in the rock when in a plastic state; some roundish bodies, which, when occurring in the Stonesfield slate, have been regarded as fossil fruits, but which the author considered to be the ova of reptiles, and of which he described two new forms; and the flat, horny pen of a Cuttlefish from the Purbeck of Dorsetshire, described by the author as *Teudopsis Brodiei*, sp. n. Mr. Seeley remarked on the compressed spheroids found in so many rocks, that there was a difficulty in accepting the view of their originating in fluid vesicles, though he was unable to suggest any other theory by which to account for them. He observed that the eggs from the Stonesfield slate closely resemble those of birds, and that it was of the highest interest to find such eggs in strata containing so many remains of ornithosaurian forms, such as *Rhamphorhynchus* and *Pterodactylus*, of which genus probably these were the eggs. Prof. Rupert Jones fully recognised the ingenious explanation of the bubble-formed limited slickensides, that looked so much like possible fossil fruits, and Mr. Carruthers's masterly treatment of the other specimens. But he wished that the author would take up the subject exhaustively, and define the nature of other supposed vegetable fossils, such as the so-called fucoids, *Palæochorda*, *Palæophyton*, *Oldhamia*, &c., many, if not all, of which Prof. Jones thought to be due to galleries and other tracks made by Crustaceans. Prof. Ramsay had known many instances of such blunders as those pointed out, made, not by experienced geologists, but by those unacquainted with the science. Though he had never regarded the flattened spheroids as fossils, he was unable to account for their presence in the clay-beds of different ages. Mr. Hulke inquired whether Mr. Carruthers considered the limited slickensides common in the Kimmeridge shales as due to gaseous origin. He remarked on the rarity of Pterodactylian remains as compared with those of other Saurians in the Wealden beds, in which the presumed eggs of Pterodactyls were found. Mr. Seeley did not regard the Wealden egg as being that of a Pterodactyle. Mr. Carruthers, in reply, remarked that the local slickensides mentioned by Mr. Hulke differed in character from those to which he had referred.—"Notes on the Geology of part of the County of Donegal," by A. H. Green, F.G.S. In this paper the author described the geological structure of the country in the neighbourhood of the Errigal Mountain, with the view of demonstrating the occurrence in this district of an inter-stratification with mica-schist of beds of rock, which can hardly be distinguished from granite, the very gradual passage from alternations of granitic gneiss and mica-schist into granite alone, and the marked traces of bedding and other signs of stratification that appear in the granite, to which the author ascribed a metamorphic origin. He also noticed the marks of ice-action observed by him in this region, and referred especially to some remarkable fluted bosses of quartzite, and to the formation of some small lakes by the scooping action of ice. Mr. Forbes stated that none of the facts of this communication were new, but he dissented altogether from the conclusions arrived at by the author in regarding these rocks as originally of sedimentary origin, and for the following reasons: (1) That this district has been studied in detail by Mr. Scott and Prof. Haughton, who declare the rock to be undoubtedly intrusive, as it not only sends out veins into the neighbouring strata, but also encloses fragments of the rocks through which it has broken. (2) Because the author starts from the idea that if such rocks are found to lie conformably on beds of undoubted sedimentary origin, it is a proof of their being themselves sedimentary or stratified,—a conclusion which is totally unwarranted, since there are innumerable instances, not only of beds of lava or other igneous rocks being conformable to fossiliferous strata, but of their also being found intercalated with such beds even for considerable distances. (3) The strata, so far from being proved by him to be of truly sedimentary origin, are of a most questionable origin, since they are neither in themselves fossiliferous, nor can they be correlated with any containing fossils as proofs of true sedimentary deposition; and the description of his section is sufficient to show this; for although it looks well on paper on a scale of three feet to the mile, the author has so little confidence in it that he is not even certain as to which is the top or bottom of the section on which so much generalisation is based. (4)