

SOCIETIES AND ACADEMIES

LONDON

Royal Society, March 10.—The following paper was read: "On some elementary principles in animal mechanics. No. 3.—On the muscular forces employed in 'parturition,'" by the Rev. S. Haughton.

March 17.—Papers were read as follows:—"On the law which regulates the relative magnitude of the areas of the four orifices of the heart," by D. H. Davies; and "On the estimation of ammonia in atmospheric air," by Mr. H. T. Brown. The process recommended is by the absorption of the ammonia by extremely dilute sulphuric acid, and the results obtained are said to be far more concordant than those procured by other means.

The Royal Astronomical Society, March 11.—Mr. W. Lassell, president, in the chair. Sixty-three presents were announced as having been received since the third meeting, and the thanks of the society were voted to their respective donors. A communication from Mr. Marsh was then read, in which that observer records the position-angles and apparent distances of the satellites of Uranus. It was ordered that this paper be printed forthwith.—The next paper was by Lieut. Herschel. In a letter to his brother, Prof. Alexander Herschel, the writer remarked on certain singular objects seen to traverse the sun's disc on October 17th and 18th, 1869. He was about to apply his spectroscope to the observation of a solar prominence when his attention was attracted to certain shadows traversing the disc of the sun, which became bright streaks when they had passed beyond it. At first he thought these appearances were due to sparks in the tube of the telescope, but the phenomenon lasted too long for this explanation to be available. He next thought that perhaps a system of meteors might be in transit, and prepared to subject the phenomenon to careful scrutiny. The equatorial was set in motion, the sun's disc being projected on a screen. The shadows were seen persistently traversing the solar disc, but at different velocities, the larger ones travelling most swiftly. There appeared to be two streams. He noticed that when the sun was in focus the objects were indistinct, and that they appeared very distinctly when he focussed on a distant cloud. At length, while he was attentively scrutinising the phenomenon he saw one of the objects come suddenly to a standstill, and then whisk off in a different direction; and then he perceived that the phenomenon he had been examining with such anxious care was not in reality an astronomical phenomenon at all, but consisted merely of a flight of locusts. He considered, however, that not only was the existence of so enormous a swarm of locusts as the duration of the stream indicated, an interesting fact in itself, but that we might find in the occurrence the explanation of many statements which had been made respecting meteors supposed to have transited the sun, and also of some peculiarities noticed by astronomers in America during the total eclipse of last year. Mr. Stone said that it was important when appearances of this sort were noticed that the observer should examine, as Lieut. Herschel had done, whether the objects seen in transit required the same focus as the sun. This was the best way of determining whether the objects were terrestrial or not.—Capt. Noble communicated three short papers to the society. The first had reference to occultations of stars by the moon. The second referred to the visibility of Venus near her inferior conjunction. He could detect only an arc of light less than a semi-circle, and saw the body of the planet projected on the sky beyond, the planet appearing sensibly darker than the sky. On March the 3rd he saw the Zodiacal Light for the first time. He was struck by the fact that instead of appearing nearly coincident with the ecliptic, the light seemed inclined at an angle of about twenty degrees to that circle. It seemed, in fact, almost perpendicular to the horizon.—Mr. Browning exhibited some more drawings of Jupiter, remarking on the changes of form and colour which the belts on the planet had exhibited during the past few months. The president inquired whether a picture by Mr. Browning, in which the equatorial belt appeared twice as wide as usual, was not slightly exaggerated; but Mr. Browning remarked that it presented the planet exactly as he had seen it.—Mr. Procter then read a paper entitled "Notes on the Corona and the Zodiacal Light, with suggestions respecting the modes of observation to be applied to the Eclipse of next December." He remarked that if we have in reality sufficient evidence to determine whether the corona is or not a solar appendage, it would be a misfortune, and in a sense discreditable, to science,

were the short time at the disposal of observers wasted in futile observations directed to settle a point determinable beforehand. He then expressed his conviction that the corona cannot be a terrestrial phenomenon. He pointed out that the very blackness of the moon as compared with the corona showed that the coronal light is behind the moon. The moon is, in fact, projected on the corona as a background, he urged, whereas the theory that the light is due to atmospheric glare requires that the corona should be a foreground. But passing over this argument, which is liable to the fatal objection of being too simple, he proceeded to inquire whether air which lies between the observer and the corona is in reality illuminated. He showed that all round the sun, for a distance of many degrees, there should be perfect darkness if the illumination of the atmosphere by direct solar light were in question. As to the atmospheric glare due to the chromosphere and prominences, he argued that it must be relatively small because it could bear no higher proportion to the actual light of the chromosphere, than ordinary atmospheric glare bears to actual sunlight, and we know this proportion is very small indeed. Again, as to light reflected from the atmosphere outside the shadow-cone, or from the surface of the earth, he urged that that also must be small, since not any part of the atmosphere above the observer's horizon was illuminated by more than a half-sun, while all the parts near the shadow-cone were in nearly total shadow. But a fatal objection to the view that the corona could be due to either the glare from the prominences or to light reflected from the surrounding air consisted in the fact that such glare ought to cover the moon's disc. He then referred to a number of observations confirming the view that the coronal light is not terrestrial; as the appearance of glare during partial eclipses, this glare always trending on the moon's disc; the relatively greater darkness of the central part of the moon's disc in annular eclipses; the visibility of that part of the moon's disc which lies beyond the sun in partial eclipses, the limb being seen dark on the background of the sky; the visibility of the corona in partial eclipses, even its most distinctive peculiarities having been recognised when the sun's disc is not wholly covered; and several other phenomena. He then adduced evidences to show that a solar appendage which one would expect to appear during total eclipses, actually does exist. First the Zodiacal Light shows that the sun is surrounded by such an appendage. Dr. Balfour Stewart's theory of this object, however physically sound, was opposed, he urged, by too many astronomical objections to be accepted for a moment: an object which exhibits no appreciable parallax, which rises and sets as the celestial objects do, and maintains a position in the heavens having a nearly constant relation to the ecliptic, cannot by any possibility be due to any peculiarity of the earth's atmosphere. Then Leverrier has shown that the motion of Mercury's perihelion indicates the presence of a ring of bodies in the sun's neighbourhood; and Mr. Baxendell has drawn a similar conclusion from the meteorological records of well-known observatories. Lastly, judging of the meteor systems according to the laws of probability, we have every reason to believe that for each one our earth encounters there must be millions whose perihelia lie within the earth's orbit. Since the earth encounters fifty-six such systems, it will be seen how enormous must be the total number. These should be visible during total eclipses, and since they would shine in part by reflected light, and in part through their intrinsic light (for those which come as near the sun as some comets have been observed to do, must be melted or even vaporised by the sun's heat) we have an explanation of the contradictory accounts given by those who have applied the polariscope and the spectroscope to the solar corona. Mr. Stone remarked that there ought to be three sets of observations made with the polariscope next December, since if there were but two the result would probably be contradictory, as was the case with regard to the observations made in India in 1868, and in America last year. Different parts of the corona ought also to be examined.

Zoological Society, March 10.—John Gould, F.R.S., V.P., in the chair. The secretary spoke of the additions to the society's menagerie during the month of February, amongst which were particularly noticed a collared fruit-bat (*Cynonycteris collaris*), born in the society's monkey-house on the 25th inst., being the first instance on record of a birth amongst these animals in captivity, and a kangaroo, believed to belong to a new species, for which the name *Macropus eruleus* was proposed.—Prof. Flower exhibited a drawing of a Cetacean animal lately captured in a

mackerel-net off the coast of Cornwall, which he identified with *Globocephalus rissoanus*—a species hitherto only known to occur in the Mediterranean. The specimen was stated to be an adult female, about eleven feet long.—Mr. Sclater gave some additional details as to the correct locality of Amherst's pheasant (*Thaumalea Amherstiae*), in reference to Mr. Swinhoe's communication on the same subject at the previous meeting.—Prof. Owen read a memoir containing descriptions of various bones of *Aptornis defossor*, *A. otidiformis*, *Notornis Mantelli* and *Dinornis curtus* obtained from deposits in different parts of New Zealand, and forming the fifteenth part of his series of memoirs on the extinct birds of the genus *Dinornis* and their allies.—Mr. R. Swinhoe read three papers on new or little known birds obtained by him in different parts of the Chinese Empire. The first of these related to new species obtained during a recent voyage up the Yangtze, amongst which were species of *Parus*, *Lanius*, *Egithalus*, and other genera of *Passeres*. The second contained supplementary remarks on the pied wag-tails (*Motacilla*) of China, in continuation of a former paper on the same subject. The third paper contained a notice of the different species of shore-plovers (*Egialitis*) found in China, amongst which was a conspicuous new species obtained on the Yangtze, and proposed to be called *Egialitis Hartingi*.—Mr. H. B. Sharpe read the second of a series of papers on the birds of Angola, containing an account of collections forwarded from that country by Mr. Monteiro. Amongst these was a bush-shrike belonging to the genus *Laniarius*, supposed to be new, and proposed to be called *Laniarius Monteiroi*.—Dr. Günther read a note on the locality of the Batrachian recently described by him as *Megalixalus robustus*, which was stated to be from the Seychelles.—Dr. Günther read a paper on the genus *Prototroctes*, which contains two species of fishes from the fresh waters of Southern Australia and New Zealand. In general appearance these fishes resemble *Coregonus*, but their internal structure had led Dr. Günther to constitute them along with the South American genus *Haplochiton*, a distinct family, *Haplochitonidae*, which appeared to be the representative of the Salmonoid group in the southern hemisphere.—A communication was read from the Rev. O. P. Cambridge, containing descriptions of three new species of the Arachnida of the genus *Idios*, in continuation of a former paper on the same subject.

Mathematical Society, March 10.—Professor Cayley, president, in the chair. Mr. E. Bradshaw Smith was elected a member, and Messrs. A. and W. M. Ramsay were admitted into the society. Mr. Tucker (hon. sec.) then read two communications by Mr. Clerk Maxwell, F.R.S.; the one on topographical geometry, which led to a discussion in which Mr. Archibald Smith, F.R.S., and the president took part; the other a note on a case of fluid motion. "In most investigations of fluid motion we consider the velocity at any point of the fluid as defined in magnitude and direction as a function of the co-ordinates of the point and of the time. We are supposed to be able to take a momentary glance at the system at any time, and to observe the velocities, but are not supposed able to keep our eye on a particular molecule during its motion. This method therefore properly belongs to the theory of a continuous fluid alike in all its parts, in which we measure the velocity by the volume which passes through unit of area rather than by the distance travelled by a molecule in unit of time. The molecular theory, as it supposes each molecule to preserve its identity, requires for its perfection a determination of the position of each molecule at any assigned time. As it is only in certain cases that our present mathematical resources can effect this, I propose to point out a very simple case with the results. Let a cylinder of infinite length and of radius a move with its axis parallel to z , and always passing through the axis of x with a velocity v , uniform or variable in the direction of x through an infinite homogeneous incompressible perfect fluid." The solution of the problem involved work hardly suited for the columns of NATURE.—Mr. S. Roberts then discussed the following problem which occurred in his paper on the pedals of conic sections. If two circles are given, one of which passes through the centre of the other, and if a line equal in length to the radius of the latter circle moves with an extremity on each, the locus of any point rigidly connected with the moving line will be composed of a circle and a bicircular quartic having a finite double point. His account of the communication closed with a discussion of the following problem, intimately connected with the subject-matter of the paper:—Given the paths of two points of an indefinite plane, moving in plane space, to find the path of an arbitrary

point of the plane. If $F(x,y)=0$, $\phi(x,y)=0$ are the equations of the given path, we have to eliminate θ from

$$F(l \cos \theta + p \sin \theta + X, l \sin \theta - p \cos \theta + Y) = 0$$

$$\phi(l \cos \theta - q \sin \theta + X, l \sin \theta + q \cos \theta + Y) = 0$$

The president, Professor Hirst, Mr. Cotterill, and the author, took part in a discussion on the paper.—Mr. Archibald Smith then made some remarks on the scale for compensation in the Irish Land Bill.

MANCHESTER

Philosophical Society, March 8.—Dr. J. P. Joule, president, in the chair. Sir James Cockle, President of the Queensland Philosophical Society, was elected a corresponding member of the society. A letter was read from Mr. Dancer, on Dr. A. Ransome's paper "On the Organic Matter of Human Breath." Mr. E. W. Binney called the attention of the meeting to the frightfully high death-rate of Manchester and Salford, which continued to increase, notwithstanding the appointment of officers of health, and the doings of the councils of the two towns. A paper was read, "On the Suspension of a Ball by a Jet of Water," by Osborne Reynolds, Professor of Engineering, Owens College.

Microscopical and Natural History Section, February 28.—A paper was read "On some Shell Deposits at Llandudno," by Mr. Joseph Sidebotham.

Physical and Mathematical Section, January 4.—Mr. E. W. Binney, president of the Section, in the chair. A paper was read "On the Rainfall of 1869, at Old Trafford, Manchester," by Mr. G. V. Vernon.

March 1.—Mr. E. W. Binney, president of the Section, in the chair.—A paper was read "On the Results of Rain-gauge and Anemometer Observations made at Eccles, near Manchester, during the year 1869," by Mr. Thomas Mackereth.

HEREFORD

Woolhope Naturalists' Field Club, February 22.—Annual meeting; Mr. James Rankin in the chair. After the usual club business had been transacted, and a committee appointed to report upon the practicability of establishing a local museum, the Rev. F. T. Havergal detailed the progress that had been made with reference to the publication of the *Mappa Mundi*, one of the chief curiosities of the Cathedral. It has been satisfactorily established that the date at which the map was executed was the very commencement of the fourteenth century. It is drawn in accordance with the prevailing notions of geography at that period; the habitable earth is represented as a circular island with the "ocean-stream" flowing around it. Jerusalem is placed in the centre. Asia occupies nearly the whole upper (or eastern) half of the circle, while Europe holds the lower quarter on the left hand, and Africa that on the right. The Hereford map is distinguished from most mediæval maps not only by its great size, but also by its illustrations of objects in natural history, and its numerous inscriptions. It is proposed to publish a fac-simile (obtained by photography) in colours, accompanied by an exhaustive account of the history of the map, and of the legends upon it. The price has been limited to two guineas, and Mr. Stanford, of 6, Charing Cross, London, has been empowered to receive orders.—A paper upon the Reproduction of the Mistletoe, by the Rev. R. Blight, was read, and drawings exhibited which showed the gradual penetration of the parasite through the bark of the Magnolia in search of the sap.—A new *Clavis agaricorum*, by Mr. Worthington Smith, F.L.S., was also exhibited. Its principle of classification is based on the colour of the spores, and the book is divided into sections respectively coloured white, pink, brown, purple, and black. In each of these sections the typical forms of the different agarics are given, and the identification of any species is thus the work of a moment.—Dr. Bull communicated the discovery of an Agaric entirely new to Britain, the *Cortinarius russus*, which he had met with in several woods near Hereford. He had also collected specimens of the rare *Asarum Europæum*, or *Asarabacca*, near the ruins of Limebrook Priory, a habitat which confirms the belief in its having been a cultivated plant.—At the evening meeting the President reviewed in his address the progress of science during the past year, and referred to the contributions made by different members of the club to various branches of natural history and archaeology.—Dr. Bull read an interesting paper upon Deerfold Forest which, when published, will form a very valuable addition to the topography of the county.—The Rev. H. Cooper Key was elected president for the ensuing year.

EDINBURGH

Edinburgh Botanical Society, January 13.—Mr. Robert Brown, V.P., in the chair. The following communications were read:—

1. "Note on the embryo of *Ruscus aculeatus*." By Professor Dickson.

2. "Notice of plants collected in Spitzbergen and Nova Zembla in the summer of 1869." By William Livesay.

3. "Notice of some botanical excursions with pupils during the summer of 1869." By Professor Balfour.

At the last meeting of the Edinburgh Botanical Society, Dr. Balfour stated that during the course of last summer he made several botanical trips with his pupils, the results of which seemed not unworthy of notice. On 12th June, a party visited Manuel, Woodcockdale, Carriber Glen and Castle, Bowdenhill, Cockleroy and Linlithgow. On 19th June, a party visited Denny, and proceeded up the banks of the Carron as far as the Hermitage. On 26th June, a party of 94 proceeded to Cleghorn, and walked along the banks of the Mouse as far as Cartland Crags, dividing then into two parties, one of which visited Stonebyres and the other Corra Linn. On 3rd July, a party of 50 proceeded by Stirling to Dollar, and thence to the Ochils. On 17th July, an excursion was undertaken to Perth and Dunkeld, and some of the party visited Methven bog. On 22nd July, a party proceeded by Perth and Forfar to Kirriemuir, and thence to Clova, and next day visited Loch Brandy and the mountains above it. In the course of two days a large number of the rarer alpine plants of Scotland was gathered, and in all the other excursions many interesting and rare plants were gathered.

4. "On the botany of the Dominion of Canada and adjacent parts of British America (Part I., *Ranunculaceae*)." By Professor Lawson, Dalhousie College, Halifax, Nova Scotia.

5. "On the introduction of *Ipecacuanha* plant (*Cephaelis Ipecacuanha*)." By Mr. M'Nab.

6. "Notice of *Sicana odorifera*, Naudin (*Cucurbita odorifera*, Velloso, Flor. Flum.)" By Senhor Joaquim Correa de Mello, Camprinas, Province of St. Paulo, Brazil. Communicated by Mr. Daniel Hanbury.

7. Hints for Collecting Cryptogamia. By Prof. Dickie.

8. Miscellaneous communications.—*Ruscus aculeatus*.—*Cones of Abies*.

GLASGOW

Philosophical Society of Glasgow—*Chemical Section*, January 31.—Dr. William Wallace, F.R.S.E., F.C.S., vice-president, in the chair. A paper was read by Mr. John Christie, on "the history of Madder, the various investigations relating to its character and composition, and the proposed sources of Artificial Alizarine." After giving an elaborate account of the progress of the art of dyeing, by the use of the two madder plants, *Rubia cordifolia*, or munjeet, of Bengal, and *Rubia tinctorum* of various European countries, the author proceeded to mention the various persons who had undertaken scientific investigations with a view to determine the number and nature of the colouring ingredients of madder-root. He stated that these investigations commenced about the end of last or beginning of the present century. Watt, Bartholdi, and Haussmann were amongst the earliest investigators. Kuhlman, in 1823, published a complete approximate analysis of madder. He obtained two colouring matters, his *matière colorante rouge*, and a fawn colour, which he did not consider worthy of investigation. Robiquet and Colin published the results of their researches on Alsace madder in 1826. The particular colouring matter of madder they named *alizerine*, and another body, which they considered to be a modification of alizarine, they termed *purpurine*. Gautier de Clanbry and Persoz obtained two colouring matters in the following year—*matière colorante rouge* and *matière colorante rose*. They were the first chemists to prepare madder extract, or *garancine*, a substance which was first manufactured largely at Avignon in 1829. Dr. Schünck obtained no fewer than seven substances from madder, two of them being colouring matters, having the composition indicated by the formulæ $C_{14}H_{10}O_8$, and $C_{22}H_{22}O_{10}$. His results were published in 1848. Debus, by treating Zealand madder, obtained two colouring bodies, which he called *Lizalic acid* and *Oxylicaric acid*. Wolff and Strecker obtained alizarine and purpurine; the latter they regarded as oxide of alizarine. The author next enlarged on various series of researches made by Strecker, Schützenberger, and Lanth, P. and E. Depouilly, Dr. Anderson (Glasgow), Rochleder (Prague), and Graebe and Laubermann, which seemed to indicate an approximation towards the accomplish-

ment of a long-wished-for desire—namely, the production of artificial alizarine. Anthracene, one of the coal-tar products, came to be regarded as the starting-point. Graebe and Laubermann obtained a product closely allied to alizarine, and in December 1868 they obtained provisional protection for their process in this country. They employed anthracene ($C_{14}H_{10}$), converting it into anthrachinon ($C_{14}H_8O_2$) by using bichromate of potash. They transformed that body into bibromanthrachinon, ($C_{14}H_6Br_2O_2$), a substitution product; and, by subsequent treatment with potash and an acid, they obtained from it a body which they termed artificial alizarine. In the course of last year other patents were secured by Brønner and Gulzkow, of Frankfort-on-the-Maine, and by W. A. Perkins, F.R.S.; and recently Messrs. Lucius & Co., of Hoechst, near Frankfort, have prepared artificial alizarine by a secret. Mr. Christie concluded his paper by giving an account of numerous investigations which he had made with commercial artificial alizarine in order to test its colorific and other properties, and stated his reasons for regarding the natural and artificial compounds as not being identical. In the discussion which followed, Mr. Hogg and other speakers mentioned facts in support of the identity of the two products, one of the facts being that mordanted cloth dyed with pure artificial alizarine stands soaping better than that dyed with garancine.

PARIS

Academy of Sciences, March 14.—M. Faye presented a memoir on the photographic observation of the transits of Venus, and on an apparatus of M. Laussedat's.—The author noticed the imperfection of Halley's method of observation, which has already been recognised by the German astronomers, suggested the employment of photography as a means of observing the transit of Venus which will take place in 1874, and communicated a letter from M. Laussedat, describing an arrangement by which photographic observations may be taken.—A letter from M. Wolf, of Zurich, accompanying a printed memoir, was read. The author stated that the invention of the bubble-level was to be ascribed to a Frenchman named Capotos, and suggested that a search should be made in France for documents relating to this subject, and to some others to which he referred.—A memoir was read by M. Phillips on the changes of condition of a mixture of a saturated vapour and of its liquid, according to an adiabatic line.—A note by M. Zaliwski was communicated, on the selection of the bodies which should be placed in contact with carbon as the positive pole of a battery. The author stated that these should be oxidising bodies, and among these such as are impressionable by light, such as nitric acid and the manganates of potash, seem to be most efficacious. He described a battery in which the carbon is impregnated with an ammoniacal solution of chloride of silver, dried and treated with nitric acid to remove the excess of ammonia; with pure water this forms a battery of great intensity.—M. de Saint-Venant communicated a note by M. F. André, containing an account of experiments on the velocity of propagation of sound in water in a cast-iron conduit of 0.80 M. in diameter. The author found the velocity of propagation to be only 897.80 M. per second.—M. H. Sainte-Clair-Deville communicated a second memoir on the "nascent state," in which he discussed the phenomena observed when zinc is brought in contact with a mixture of sulphuric or hydrochloric and nitric acids.—M. E. J. Maumené read a second memoir on a general theory of chemical action.—M. Combes presented a note by M. L. Gruner on the mechanical properties of phosphuretted steels. The author referred to the statements of Sir W. Fairbairn as to Heaton's steel, and showed by analysis that it contains from 0.002 to 0.003 of phosphorus. He remarked that the favourable character of this steel under the ordinary tests was negated when the test of a shock was applied to it. M. Bousingault supported the opinions of M. Gruner.—M. A. Milne-Edwards communicated a note on the Ornithological fauna of the Bourbonnais during the middle Tertiary period, in which he stated that the birds of the Miocene deposits of that district possessed a tropical, and especially an African character. He noticed remains of a parrot, a trogon, a sand-grouse, a swift of the group of the Salanganes, a Marabou stork, and a Secretary bird.—M. Leveillé presented a note on the discovery of remains of quaternary man in the manufactories of stone implements at Grand-Pressigny; and M. Richard noticed the discovery of instruments of the Stone age in Arabia and Egypt. The author stated that he has found worked stones at the foot of Mount Sinai, near Cairo, and at Thebes.—M. C. Woestyn presented a memoir on

the means of destroying the contagious miasmata of hospitals, upon which MM. Dumas and Bouillaud made some remarks.—M. Wurtz presented a note by M. Verneuil on the cure of trumatic tetanus by chloral.—Several other communications were made of which the titles only are given.

BERLIN

German Chemical Society, March 14.—M. Schultz-Sellak has obtained a liquid modification of sulphuric anhydride, which, under ordinary circumstances, speedily passes into the solid form.—M. Tiemann has converted trinitrotoluol into tolylen-diamide. The same, conjointly with Mr. Judson, has studied several isomeric dinitrobenzoic acids.—Mr. Genz reported on some derivatives of xylidine.—Dr. Rüdorff showed large crystals of carbonate of ammonium deposited from coal gas.—M. Bornemann exhibited glass tubes which had for some months been exposed to the action of steam under a pressure of eleven atmospheres. The glass showed deep notches and furrows when acted upon by the steam, but was not attacked in those parts which had remained immersed in the water of the boiler.—A curious transformation of forged iron into large crystals has been observed by M. Egelts. A cylinder used in a cotton-mill proved to consist of crystals apparently affecting the form of pentagonal dodecahedra of two or three millimetres in diameter.—Prof. Hoppe Seyler reported on the colouring matter of blood. He has found that hæmato-globulin does not pass directly into hæmatine, as has been supposed until now, but that the latter product derives by oxidation from hæmatochromogen discovered by the author.—Prof. Kekulé and Hideck have converted diazoamidobenzol into azobenzol.—Dr. Köhler attacked the views lately published by Wanklyn, on the atomicity of sodium.—Dr. Schaer reported on the presence of ozone in the fluor spar of Wölberndorf, Saxony.

PHILADELPHIA

Academy Natural Sciences, January 11.—Professor O. C. Marsh, of Yale College, exhibited a series of specimens of the remains of birds from the Cretaceous and Tertiary of the United States, which showed that this class was well represented during these periods, although no species have yet been described from these formations in this country, and none indeed from older rocks, since it now appears to be well established that the bird-like footprints in the Connecticut Valley were made by Dinosaurian reptiles. Among the specimens shown were the remains of at least five species of Cretaceous birds, although but one or two species have hitherto been described from strata of this age in Europe. The present Cretaceous specimens were all found in the greensand of New Jersey, and with one exception in the middle marl-bed. They are all mineralised, and in the same state of preservation as the bones of extinct reptiles found with them in these deposits, and hence are readily distinguished from the remains of recent birds which have occasionally been found near the surface in the marl excavations of New Jersey. The most interesting of the specimens exhibited was the distal portion of a large and robust tibia, apparently of a swimming bird, about the size of a goose. It was found in the greensand at Birmingham, New Jersey, in the pits of the Pemberton Marl Company. For this new genus and species Professor Marsh proposed the name *Laornis Edwardsianus*. Two species of small wading birds, which appear to have been allied to the Curlews, were also represented each by the distal end of a tibia, and probably by some other less characteristic portions. The larger of these species, which was found in the greensand of the middle marl-bed at Hornerstown, New Jersey, was named *Palastringa littoralis*. The smaller species, which was called *Palastringa vetus*, was founded on the specimen mentioned by Dr. Morton in his "Synopsis of Cretaceous Fossils," p. 32, which has since, however, been generally regarded as a recent species. The specimen was found in the lowest marl-bed at Arneytown, New Jersey, and is now in the collection of the Academy. Portions of the humeri of two small and closely-related species, apparently of the Heron family, were part of the series shown. They were found deep in the greensand of the middle marl-bed near Hornerstown, New Jersey, in the pits of the Cream Ridge Marl Company. For the species thus represented the names *Vetardea elegans* and *Vetardea affinis* were proposed. The remains of several species of Tertiary birds were also exhibited by Professor Marsh. Among these was the lower extremity of tibia, closely resembling that of some of the Cranes. It was found in the Miocene of the Niobrara River, by Dr. F. V.

Hayden, and is interesting as the only representative of a fossil bird yet detected in the Tertiary deposits west of the Mississippi. This specimen, which belongs to the Academy, indicated a new species, which was named *Grus Haydeni*. Another species of extinct birds was represented by portions of a humerus and radius, also in the collection of the Academy; they were found many years since in the Miocene of Maryland by Mr. T. A. Conrad. This species, which appears to be closely related to the Gulls, was named *Larus Conradii*. Several other interesting specimens of bird remains were shown, but most of them were not sufficiently characteristic to admit of determination. With the exceptions already mentioned, the fossils exhibited belonged to the museum of Yale College.

DIARY

THURSDAY, MARCH 24.

ROYAL SOCIETY, at 8.30.—On the Madrepora dredged up by the expedition in H.M.S. *Porcupine*: Prof. Duncan.
ROYAL INSTITUTION, at 3.—Chemistry of Vegetable Products: Prof. Odling.
ZOOLOGICAL SOCIETY, at 8.30.—On the Birds of Veragua: Osbert Salvin.
—Exhibition of a metamorphosed Axolotl: W. B. Tegetmeier.—On two rare species of Pheasants recently added to the Society's Collection: Mr. Sclater.
LONDON INSTITUTION, at 7.30.—Geology: Dr. Cobbold.
SOCIETY OF ANTIQUARIES, at 8.30.—On the Greek Inscriptions found at Autun: Rev. W. B. Mariott.

FRIDAY, MARCH 25.

ROYAL INSTITUTION, at 8.—Anglo-Saxon Conquest: Prof. Rolleston.
QUEKETT MICROSCOPICAL SOCIETY, at 8.30.

SATURDAY, MARCH 26.

ROYAL INSTITUTION, at 3.—The Sun: J. Norman Lockyer, F.R.S.

MONDAY, MARCH 28.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.
ROYAL INSTITUTE OF BRITISH ARCHITECTS, at 8.
INSTITUTE OF ACTUARIES, at 7.
LONDON INSTITUTION, at 4.—Chemistry: Prof. Bloxam.

TUESDAY, MARCH 29.

ROYAL INSTITUTION, at 3.—Nervous System: Prof. Rolleston, M.D., F.R.S.
INSTITUTE OF CIVIL ENGINEERS, at 8.—Description of the St. Pancras Station, Midland Railway: W. H. Barlow, M.I.C.E., F.R.S.

WEDNESDAY, MARCH 30.

SOCIETY OF ARTS, at 8.
CHEMICAL SOCIETY, at 8.—Anniversary Meeting.

THURSDAY, MARCH 31.

ROYAL SOCIETY, at 8.30.
SOCIETY OF ANTIQUARIES, at 8.30.

BOOKS RECEIVED

ENGLISH.—The State, the Poor, and the Country: R. H. Patterson (Blackwood and Sons).—Quarterly Journal of the Geological Society (Longmans).—Photographic Art Journal, No. 1: illustrated (S. Low, Son, and Marston).—Choice and Chance: Rev. W. A. Whitworth (Bell and Daldy).—The Arts in the Middle Ages; illustrated: Paul Lacroix (Chapman and Hall).—United States Geological Survey of Colorado and New Mexico: F. D. Hayden (Washington).—Introductory Text-book to Physical Geography: D. Page (Blackwood and Sons).—Mrs. Loudon's First-book of Botany. Edited by D. Woosten (Bell and Daldy).—Principles of the Science of Colour: W. Benson (Chapman and Hall).
FOREIGN.—Handbuch der Lehre von den Geweben: S. Stricker.—Für Baum und Wald: M. F. Schleider.—Die Eiszeit der Erde: A. Braun.

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