Let Q O P be this limiting angle. Take R on O P, and draw R S to Q at ∞ along O Q.

Then if S is at ∞, the perpendicular S P falls at an infinite distance from R.

∴ Angle P R S not greater than P O Q, and it cannot be less (Eucl., I., 16 and 27).

Hence it must be equal.

Hence R S making the angle S R P = Q O P meets O Q at ∞ at both ends.

And any other straight line through R becoming infinitely distant from R S must cut O Q in some finite point.

Thus from R only one parallel, R S, can be drawn to a given line, O Q.

By moving O P along O Q always at the same angle, Q O P, we can show that

From a given point only one parallel can be drawn to a given line.

This theorem, therefore, must be true. E. BUDDEN

SCIENTIFIC SERIALS

American Journal of Science, October.—A dissected volcanic mountain; some of its revelations, by James D. Dana. Here the author returns to the subject of Tahiti, largest of the Society Islands, already described by him in 1850 from materials supplied by the Wilkes Exploring Expedition of 1839. The old cone, some 7000 feet high, is now a dissected mountain, with valleys cut profoundly into its sides, and laying bare the centre to a depth of from 2000 to nearly 4000 feet below the existing summit. As shown on the accompanying map, the valleys, due to erosion, are so crowded on one another, that the dissection is complete, thus disclosing the inner structure of a great volcanic mountain. The interior is shown to be composed, not of lava-beds, there being no horizontal lines, but of imperfect columnar formations, rising vertically in the unstratified mass quite to the summit. The uniform massiveness through so great a height at the volcano's centre is attributed to the cooling of continuously liquid lava in the region of the great central conduit of the cone. A comparative study of Mauna Loa (Hawaii), shows that such a massive central structure is a common feature of the *greater* volcanic mountains, the extremely slow cooling process under great pressure causing the lava to solidify into a *compact* crystalline rock, and often into a *coarsely crystalline* rock.—Origin of the ferruginous schists and iron ores of the Lake Superior region, by R. D. Irving. Rejecting the igneous theory, now held by few, the writer, after a careful survey of the whole field, concludes that these rocks were once carbonates analogous to those of the coal-measures, which by a process of silicification were transformed into the various kinds of ferruginous formations now occurring in this region.—Further notes on the artificial lead silicate from Bonne Terre, Montana, by H. A. Wheeler. An analysis of this interesting substance, which was found under the hearth of an old reverberatory roasting-furnace, yielded 73·66 PbO, 17·11 SiO_2, NiO 3·06 (coarse crystals), 72·93 PbO, 18·51 SiO_2, and smaller quantities of nickel, cobalt, and other ingredients.—Limonite pseudomorphs after pyrite, by John G. Meem. The paper gives a short account of the pseudomorphs occurring in Rockbridge County, Virginia, where they are associated with Lower Silurian limestones. These crystals, varying in colour from a very light to a very dark brown, and sometimes almost black, are hydrous, and yield a yellow powder, showing them to be limonite, most commonly of octahedral form.—Note on the hydro-electric effect of temper in case of steel, by C. Barus and V. Strouhal. The object of this inquiry is to determine directly the carbon relations of steel as a function of the temperature (0° to 400°, 400° to 1000°) and of the time of annealing, with full reference to the physical occurrences observed in the first and second phases of the phenomenon.—On the crystalline structure of iron meteorites, by Oliver Whipple Huntington. It is shown that the usual classification of these meteorites into octahedral and cubic crystals cannot be natural or fundamental. A careful examination of the large collection belonging to Harvard College, containing types of all the characteristic meteorites of this class, leads to the conclusion that masses of meteoric iron are cleavage crystals, broken off probably by impact with the air, and showing cleavages parallel to the planes of all three fundamental forms of the regular system (octahedron, cube, and dodecahedron); further, that the Widmanstättian figures and Neumann lines themselves are sections of planes parallel to these same forms, exhibited in every gradation from the broadest bands to the finest markings, with no natural break, the features of von Widmanstätten's figures being, moreover, due to the eliminations of impurities during the process of crystallisation.—A new meteoric iron from Texas, by W. Earl Hidden. The specimen here described and illustrated was discovered by Mr. C. C. Cusick on June 10, 1882, near Fort Duncan, Maverick County, Texas. It weighs over 97 pounds, is quite soft, being easily cut with a knife, and consists of iron 94·90; nickel and cobalt, 4·87; phosphorus, 0·25, with traces of sulphur and carbon; specific gravity, 7·522.—On pseudomorphs of garnet from Lake Superior and Salida, Colorado, by S. L. Penfield and F. L. Sperry. The Lake Superior specimen is essentially an iron alumina garnet, with formula $Fe_2Al_2Si_3O_{12}$. That of Colorado is higher in protoxides and water, the increase being perhaps due to the presence of ripidolite.—Further notes on the meteoric iron from Glorieta Mount, New Mexico, by George F. Kunz.—On the Brookite from Magnet Cove, Arkansas, by Edward S. Dana. These crystals, first described in 1846 by Shepard under the name of *arkansite*, are especially remarkable for the great variety of their forms, which is most unusual for crystals occurring in the same locality.

SOCIETIES AND ACADEMIES

LONDON

Zoological Society, November 16.—Prof. W. H. Flower, F.R.S., President, in the chair.—An extract was read from a letter addressed to the President by Dr. Emin Bey, dated Wadilai, Eastern Equatorial Africa, January 1, 1886, and containing some notes on the distribution of the Anthropoid Apes in Eastern Africa.—A letter was read, addressed to the Secretary by Dr. Chr. Lütken, of Copenhagen, F.M.Z.S., containing some information as to the locality of *Chiropodomys penicillatus*.—A letter was read from Dr. A. B. Meyer, C.M.Z.S., communicating some remarks by Mr. K. G. Henke on a specimen of a hybrid Grouse in the Dresden Museum.—Prof. Flower, F.R.S., exhibited and made remarks on a specimen of a rare Armadillo (*Tatusia pilosa*) belonging to the Scarborough Museum.—Prof. Bell exhibited, and made remarks on, an object (apparently of the nature of an amulet) made from a portion of the skin of some mammal, and received from Moreton Bay, Australia.—Mr. H. Seebohm, F.Z.S., exhibited a skin of what he considered to be a young individual of the Lesser White-fronted Goose (*Anser albifrons minutus*), shot in September last on Holy Island, off the coast of Northumberland, and observed that it was the first recorded example of the small form of the White-fronted Goose which had been obtained on the coasts of our islands.—Mr. Blanford, F.R.S., exhibited, and made remarks on, a mounted specimen of a scarce Paradoxure (*Paradoxurus jerdoni*) from the Neilgherry Hills in Southern India.—A communication was read from Colonel Charles Swinhoe, F.Z.S., containing an account of the species of Lepidopterous insects which he had obtained at Mhow, in Central India.—A communication was read from Dr. R. W. Shufeldt, C.M.Z.S., containing an account of the anatomy of *Geococcyx californianus*.—Mr. Lydekker described three crania and other remains of *Scelidotherium*, two of the former being from the Argentine Republic, and the third from Tarapaca, in Chili. One of the crania from the first locality he referred to the typical *S. leptocephalum* of Owen, while the second, which had been described by Sir R. Owen under the same name, he regarded as distinct, and proposed to call *S. bravardi*. The Tarapaca form, which was characterised by the extremely short nasals, was also regarded as indicating a new species, for which the name of *S. chilense* was proposed. The author concluded that there were not sufficient grounds for separating Lund's proposed genus *Platyonyx* from *Scelidotherium*.—Mr. G. A. Boulenger pointed out that two distinct forms of the Batrachian genus *Bombinator* occur in Central Europe, and read notes on their distinctive characters and geographical distribution.—A communication was read from Dr. R. W. Shufeldt, containing a correction, with additional notes, upon the anatomy of the *Trochili*, *Caprimulgi*, and *Cypselidæ*.—A communication was read from Dr. R. A. Philippi, C.M.Z.S., containing a preliminary notice of some of the Tortoises and Fishes of the coast of Chili.—Mr. Sclater exhibited the head of, and made remarks upon, an apparently undescribed species of Gazelle from Somali Land.

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Geological Society, November 3.—Prof. J. W. Judd, F.R.S., President, in the chair.—Henry Howe Arnold-Bemrose, Richard Assheton, Francis Arthur Bather, Rev. Joseph Campbell, M.A., John Wesley Carr, Thomas J. G. Fleming, Thomas Forster, Edmund Johnstone Garwood, George Samuel Griffiths, Dr. Frederick Henry Hatch, Ph.D., Robert Tuthill Litton, Frederick William Martin, Richard D. Oldham, Forbes Rickard, Albert Charles Seward, Herbert William Vintner, and Charles D. Walcott were proposed as Fellows of the Society.—The following communications were read:—On the skull and dentition of a Triassic Saurian, *Galesaurus planiceps*, Ow., by Sir Richard Owen, K.C.B., F.R.S. The author referred to a fossil skull from the Triassic sandstone of South Africa, which combined dental characters resembling those of a carnivorous mammal with the cranial structure of a Saurian. The structure was described and figured in Owen's "Catalogue of the Fossil Reptilia of South Africa," under the generic title of *Galesaurus*, as belonging to a distinct sub-order of Reptilia termed *Theriodontia*. The characters of the skull and teeth of the original specimen of *Galesaurus* have been brought to light by further development. In both the type-specimen and that lately received, the reptilian nature of the fossil is indicated by the single occipital condyle and other features. The chief difference from a mature male of a placental or marsupial carnivore is the evidence of a primordial "gullet-tract." Further details as to the structure of the skull were given, more especially with reference to the orbits and nasals. The palatal region repeats the same general characters as in previously described Theriodonts. The angle of the jaw is not produced, as in the crocodile, beyond the articular element. In general shape and bony strength the mandible of *Galesaurus* resembles that of a mammal. The dentition is so much better preserved in the new specimen than in the type Galesaur as to call for description and illustration. In four of the upper molars the entire crown is preserved; it shows less length and greater breadth than appears in the previous restoration, is moderately curved externally, and triangular; the base is flanked by a short cusp before and behind, and the corresponding margins are finely crenulate, as in the molars of *Cynodracon*. The incisors are eight in number in both upper and lower jaws, four in each premaxillary, opposed or partially interlocking with the same number in each mandibular ramus; they have longish, slender, simple-pointed crowns. The canines, one on each side of both upper and lower jaws, have the same laniariform shape and size of crown as in the original fossil. In the right maxillary bone the long deeply-planted root is exposed; the corresponding part of the lower canine is similarly exposed in the left mandibular ramus. No trace of successional teeth, as in ordinary Saurians, has been found. Both crocodiles and alligators have two or more teeth of canine proportions; but the author shows how they differ from those of mammalian carnivores and *Galesaurus*. A similar character and disposition of destructive canines is shown by the fossil jaws of the oolitic great extinct carnivorous Saurians, *e.g. Megalosaurus*. In the Triassic Labyrinthodonts the destructive and prehensile laniaries would, by position, rank as incisors rather than canines. In existing lizards the dental series has more uniformity, and the cement-clad roots contract bony union with the jaw-bone. In *Galesaurus* the teeth, besides being distinguished, as in mammals, by their differential characters, are implanted freely in sockets, the cold-blooded character being chiefly manifested in the greater number of teeth following the canines, and in their want of distinction. Lastly, the author remarked on the earlier reptilian character shown by the oolitic mammal *Amphitherium*, and also by the existing Australian *Myrmecobius*. He speculates on the degree of resemblance manifested by the teeth of the old Triassic reptile of South Africa with the exceptional characters of some of the low Australian forms of mammals.—The Cetacea of the Suffolk Crag, by R. Lydekker, B.A., F.G.S. This paper commenced with notices of previous contributions to the subject by Sir R. Owen, Prof. Ray Lankester, Prof. Huxley, and Prof. Flower. In the preparation of a catalogue of the specimens in the British Museum, the author had had occasion to examine the collection of Cetacea from the Crag, not only in that Museum, but also in the Museum of Practical Geology, that of the Royal College of Surgeons, and in the Ipswich Museum, besides visiting the collections at Brussels. In consequence, several additions to the fauna, and also numerous emendations of specific names, were noticed in the paper now laid before the Society. Prof. Ray Lankester's views as to the Diestian affinities of the English-Crag Cetacea were confirmed by this comparison. Detailed notes on the specimens examined and the species identified were given.—On a jaw of *Hyotherium* from the Pliocene of India, by R. Lydekker, B.A., F.G.S. Colonel Watson, the Political Resident in Kattiawar, had recently sent to the author a fragment of a left maxilla with the three true molars, from Perim Island, in the Gulf of Cambay. The specimen belonged to *Hyotherium*, and apparently to an undescribed species, the differences between which and the several forms previously known from various European and Asiatic beds were pointed out. The author also called attention to the peculiar association of types found in the beds of Perim Island, and to the affinities of the genus *Hyotherium* with the recent *Sus* and *Dicotyles* on the one hand, and with the Upper Eocene *Chœropo'amus* on the other.

Physical Society, November 13.—Prof. Balfour Stewart, President, in the chair.—In opening the proceedings, the President referred to the great loss which the Society had recently sustained by the death of Prof. Guthrie, F.R.S., the founder of the Society, and his predecessor in the chair. In the capacity of Demonstrator, Prof. Guthrie contributed materially to the success of the Society's meetings, and his decease is deeply regretted. The President also announced that the Council were considering what steps should be taken to commemorate the late Dr. Guthrie, and that a circular containing their views would be placed before the members in the course of a few days.—The following papers were then read:—On the peculiar sunrise shadows of Adam's Peak, in Ceylon, by the Hon. Ralph Abercromby, F.R.Met.Soc. The author prefaced his description by an extract from a paper on the same subject by the Rev. R. Abbay, read before the Physical Society, May 27, 1876, in which the explanation proposed is that the effects are caused by total internal reflection, as in ordinary mirage, the difference of air-density being, in this case, due to the lower temperature at high altitudes. The author pointed out that Mr. Abbay neglects the difference of density due to elevation, and that his own thermometric observations disprove conclusively any idea of mirage. The chief phenomena observed were: (1) the appearance of a circular rainbow with spectral figures near the top of the shadow of the peak; and (2) a peculiar rising of the bow and shadow, which seem to stand up in front of the observers. Both these effects are traced to the existence of mist-clouds in the vicinity of the shadow. Two dark rays or brushes were seen to shoot outwards and upwards from the circumference of the bow in directions nearly coinciding with the prolongations of the edges of the shadow, when seen projected on the lower mist-clouds, but the author does not attempt to explain this phenomenon. On one occasion a second and outer bow was seen. The times during which the phenomena were visible were too short to permit sextant observations being taken, but the diameter of the inner bow was estimated at 8° to 12°. A totally distinct kind of shadow is sometimes seen from Adam's Peak just before, and at the moment of sunrise, which seems to stand up against the distant sky. The author found a similar effect at Pike's Peak, Colorado, which is visible only at sunset. Mr. G. Griffiths remarked that he had often seen similar appearances in Switzerland. In answer to questions by the President and Prof. S. P. Thompson, the author said the reason why the shadows were seen from Adam's Peak at sunrise, and from Pike's Peak at sunset, was that the configuration of the land on the west side of the former was similar to that on the east side of the latter, both being low, whereas the opposite sides were high, and therefore unsuitable for showing the phenomena. In all cases he believed the appearances were due to the shadows being projected on clouds of suspended matter in the air at various altitudes. He had not noticed whether the colours were reversed in the second bow seen from Adam's Peak, but observed that this bow nearly, but not quite, touched the inner one.—Note on the internal capacity of thermometers, by A. W. Clayden, M.A. (Read by Prof. Reinold, Secretary.) The author proposes to determine the volume, V, of the mercury by measuring the capacity, c, of a detached piece of the same tube of known length, and thence inferring the volume of t degrees of the thermometer tube, the length of which is equal to that of the piece of tube taken. By assuming the value of α (the coefficient of *apparent* expansion of mercury in the particular kind of glass) to be known, the volume of the mercury in the thermometer can be calculated, since $c = t\alpha V$. Prof. Rücker remarked that there were often considerable differences in the sectional area of different parts of the same tube, and hence the

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method would probably not be very reliable.—On the motion of the President, a vote of condolence to Mrs. Guthrie in her sad bereavement was passed unanimously.

Royal Meteorological Society, November 17.—Mr. W. Ellis, F.R.A.S., President, in the chair.—The following were elected Fellows:—Mr. B. A. Dobson, Mr. T. Gordon, Mr. H. Mantle, Rev. J. Watson, and Mr. F. Wright.—The papers read were:—The gale of October 15-16, 1886, over the British Islands, by Mr. C. Harding, F.R.Met.Soc. The storm was of very exceptional strength in the west, south-west, and south of the British Islands, but the principal violence of the wind was limited to these parts, although the force of a gale was experienced generally over the whole kingdom. By the aid of ships' observations, the storm has been tracked a long distance out in the Atlantic. It appears to have been formed about 250 miles to the south-east of Newfoundland on the 12th, and was experienced by many ocean steamers on the 13th. When the first indication of approaching bad weather was shown by the barometer and wind at our western outposts, the storm was about 500 miles to the west-south-west of the Irish coast, and was advancing at the rate of nearly 50 miles an hour. The centre of the disturbance struck the coast of Ireland at about 1 a.m. on the 15th, and by 8 a.m. was central over Ireland. The storm traversed the Irish Sea, and turned to the south-east over the western Midlands and the southern counties of England, and its centre remained over the British Isles about 34 hours, having traversed about 500 miles. The storm afterwards crossed the English Channel into France, and subsequently again took a course to the north-eastwards, and finally broke up over Holland. In the centre of the storm the barometer fell to 28·5 inches; but, as far as the action of the barometer was concerned, the principal feature of importance was the length of time that the readings remained low. At Geldeston, not far from Lowestoft, the mercury was below 29 inches for 50 hours, and at Greenwich it was similarly low for 40 hours. The highest recorded hourly velocity of the wind was 78 miles, from north-west, at Scilly on the morning of the 16th; but, on due allowance being made for the squally character of the gale, it is estimated that in the squalls the velocity reached for a minute or so the hourly rate of about 120 miles, which is equivalent to a pressure of about 70 lbs. on the square foot. On the mainland the wind attained a velocity of about 60 miles an hour for a considerable time; but, without question, this velocity would be greatly exceeded in the squalls. In the eastern parts of England the velocity scarcely amounted to 30 miles in the hour. The force of the gale was very prolonged. At Scilly the velocity was above 30 miles an hour for 61 hours, and it was above 60 miles an hour for 19 hours, whilst at Falmouth it was above 30 miles an hour for 52 hours. The erratic course of the storm and its slow rate of travel whilst over the British Islands were attributed to the presence of a barrier of high barometer readings over Northern Europe, and also to the attraction in a westerly direction, owing to the great condensation and heavy rain in the rear of the storm. The rainfall in Ireland, Wales, and the south-west of England was exceptionally heavy. In the neighbourhood of Aberystwith the fall on the 15th was 3·83 inches, and at several stations the amount exceeded 2 inches. Serious floods occurred in many parts of the country. A most terrific sea was also experienced on the western coasts and in the English Channel, and the number of vessels to which casualties occurred on the British coasts during the gale tell their own tale of its violence. The total number of casualties to sailing-vessels and steam-ships was 158, and among these were five sailing- and one steam-ship abandoned, five sailing- and one steam-ship foundered, and forty-two sailing- and two steam-ships stranded. During the gale the life-boats of the Royal National Life-boat Institution were launched fourteen times, and were instrumental in saving thirty-six lives.—The climate of Carlisle, by Mr. T. G. Benn, F.R.Met.Soc. This is a discussion of the observations made at the Carlisle Cemetery. The mean temperature for the twenty-three years (1863-85) was 47°·5; the absolute highest was 95° on July 22, 1873, and the lowest −5°·5 on January 16, 1881. The mean annual rainfall was 29·80 inches; the greatest monthly fall was 7·84 inches in July 1884, and the least 0·30 inches in January 1881. The average number of rainy days was 174.—Results of hourly readings derived from a Redier barograph at Geldeston, Norfolk, during the four years ending February 1886, by Mr. E. T. Dowson, F.R.Met.Soc.—Results of observations taken at Delanasau, Bua, Fiji, during the five years ending December 31, 1885, with a summary of results for ten years previous, by Mr. R. L. Holmes, F.R.Met.Soc.

Anthropological Institute, November 9.—Mr. Francis Galton, F.R.S., President, in the chair.—The election of the following new Members was announced:—G. W. Hambleton, D. F. H. Hervey, W. R. Reid, M.D., R. J. Ryle, M.A., M.B., and W. F. Stanley, F.G.S.—Prof. Flower exhibited some of Dr. Otto Finsch's casts of natives of the Pacific Islands, and made some general remarks on the collection.—A paper by Dr. E. T. Hamy, entitled "An Interpretation of one of the Copan Monuments," was read. In this paper the author traced a resemblance between the symbol found upon a large and regular convex stone at Copan and the Chinese "Taï-Ki," and argued that the presence of such a symbol in the ruins of Copan, where there exist so many manifestations of a strange and curious art so closely allied to the Eastern arts of the Old World, furnishes a fresh proof in support of the theory of an Asiatic influence over American civilisation.—An exhaustive paper by Mr. H. Ling Roth, on the aborigines of Hispaniola, was read.

SYDNEY

Linnean Society of New South Wales, September 29.—Prof. W. J. Stephens, M.A., F.G.S., President, in the chair.—The following papers were read:—A revision of the Staphylinidæ of Australia, part ii., by A. Sidney Olliff, F.E.S., Assistant Zoologist, Australian Museum. This part, containing the members of the sub-family, *Tachyporinæ*, is another contribution to a general revision of the family. No marked Australian forms have been found, and the new forms are of the ordinary type. The genera *Tachyporus*, *Tachinus*, and *Bolitobius*, are added to the Australian fauna. With this instalment is issued the plate (vii.), which would have accompanied the first part, but for an unfortunate accident to the artist.—Notes on the bacteriological examination of water from the Sydney supply, No. I., by Dr. Oscar Katz.—On a remarkable Bacterium (Streptococcus) from wheat-ensilage, by Dr. Oscar Katz. This paper contains a brief description of a Micrococcus (Streptococcus), obtained from a sample of mouldy wheat-ensilage which, some time ago, it will be remembered, came under public notice in connection with an epidemic which attacked some horses at Coonong, N.S.W. This micro-organism shows characteristic features in its pure cultivations on or in different nutrient soils. Inoculations of this and other microbes found in the samples are intended to be made shortly upon living animals.—Notes on *Lindsea trichomanoides* and *Eriostemon Crowei*, by the Rev. W. W. Woolls, M.A., Ph.D. Dr. Woolls makes some remarks on the first of these, a fern common in New Zealand, but not recognised until of late in New South Wales. He also exhibited a specimen of *Crowea exalata* (*E. Crowei*, v. M.) from the Currajong, and showing marked differences from the *C. saligna* of the flora. Mr. Bettche, however, of the Botanic Gardens, had collected a specimen which was distinctly intermediate, and which probably may unite the two species, *E. salignus* and *E. exalatus* again, according to the Baron's first determination.—Note on a Labyrinthodont fossil from Cockatoo Island, by Prof. Stephens, M.A. The President read a notice of a fossil Labyrinthodont, probably *Mastodonsaurus* sp., recently found at Cockatoo Island, and pointed out the conclusions to which this fossil, the *Ceratodus* of Queensland, and the *Hatteria* of New Zealand, lead in regard to the ancient geographical conditions of the southern hemisphere.—Notes on Australian earthworms, part ii., by J. J. Fletcher, M.A. In this paper descriptions are given of nine new species of earthworms, of which five are indigenous to New South Wales, one is supposed to have been introduced from the Mauritius, two are from Queensland, and one is from Darnley Island, Torres Straits. They include a new species of Perrier's genus *Digaster*, a new species of *Cryptodrilus*, and seven species of *Perichæta*. The last-named are separable into two well-marked groups: the one characterised by the possession of complete circles of setæ, and by the presence of two cæcal appendages of the large intestine in segment xxvi.; the other characterised by having incomplete circles of setæ, and no intestinal cæca. To the first group belong the species from North Queensland and Darnley Island; and the introduced species. Remarks are also made upon a few worms from Percy Island, which were collected during the Chevert Expedition, and which are now in the Macleay Museum, but are immature or not sufficiently numerous to admit of satisfactory description.—Notes

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on some New South Wales fishes, by Dr. Ramsay, F.R.S.E., and J. Douglas-Ogilby. The common Jew Fish of Port Jackson is here described under the name of *Sciena neglecta*, the authors pointing out the marked differences between it and *S. antarctica*, Castelnau, and *S. aquila*, Lacep., the species to which it has been hitherto referred. Evidence is also given that *Callionymus reevesii*, Rich., is not, as has been stated, the female of *C. curvicornis*, C. and V.

PARIS

Academy of Sciences, November 15.—M. Jurien de la Gravière, President, in the chair.—Letters having been read from M. de Freycinet announcing the death of M. Paul Bert, Resident-General in Annam and Tonquin, and Member of the Academy, the President and M. Vulpian followed with some remarks on the great services rendered to science by this distinguished physiologist. Reference was made more especially to his researches on the action of light on living organisms; on the physiology of respiration; and on the influence exercised on man, animals, plants, and ferments, by increased or diminished pressure of atmospheric air, of carbonic acid, and of oxygen.—Observations of the small planets made with the large meridian instrument of the Paris Observatory during the second quarter of the year 1886, communicated by M. Mouchez. Numerous observations made by M. P. Puiseux on Pallas, Juno, Olympia, Electra, Urania, Europa, and several other minor planets, are here brought into relation with the ephemerides either of the *Nautical Almanac*, the *Bulletin Astronomique*, or the Berlin *Jahrbuch*.—Researches on the phosphates, by M. Berthelot. Fresh researches are here reported on the double decompositions which reveal in the insoluble tribasic phosphates the existence of two distinct states: one colloidal, amorphous, unstable, answering to the manifold constitution of the soluble phosphates; the other crystallised and stable, in which the three basic equivalents seem on the contrary to play the same part. The phosphates of soda, magnesia, baryta, lime, manganese, and the tribasic phosphates of strontian are specially considered.—Observations of Winnecke's comet, by M. L. Cruls. As observed during last September at the Observatory of Rio de Janeiro, this comet presented the appearance of a nebulosity about 2′ in diameter, without clearly-defined nucleus, of somewhat circular form and slight luminous intensity.—Note on Abel's theorem, by M. G. Humbert.—On the flow of a gas penetrating into a receptacle of limited capacity, by M. Hugoniot. The question here dealt with is to determine the time required to fill a receptacle containing air at an initial pressure p_0, and placed in communication with a reservoir maintained by compressing-engines at a constant pressure $p_1 > p_0$. The reading of the paper was followed by some remarks by M. Haton de la Goupillière on this fresh confirmation of his own theories on the flow of gases.—On the variation of the magnetic field produced by an electromagnet, by M. Leduc. Reference is made to M. Marcel Deprez's communication of October 26, which partly confirmed the conclusions already arrived at by the author, and announced to the Société de Physique on February 19, 1886. But the results obtained present considerable numerical differences, which may be due to the different conditions under which the experiments were made.—On the specific inductive power and conductivity of dielectrics: relation between conductivity and absorbing power, by M. J. Curie.—On the velocity of dissociation, by M. H. Lescœur. It is shown that the results drawn from the velocity of dissociation may supply valuable data regarding the presence of the hydrates and analogous compounds; but they can give no absolute or relative indications respecting the tensions of dissociation.—On some laws of chemical combination, by MM. de Landero and Raoul Prieto. In these studies, of which a few preliminary essays are here communicated, chemical combination is regarded as resulting from the shock of a collision between the particles of the elements forming any given compound. The velocity of the particles in motion being considered as a characteristic constant of each body, the loss of energy or of vital force due to the shock between non-elastic particles is regarded as the equivalent of the quantity of heat liberated by the fusion.—On some histological peculiarities of the acephalous mollusks, by M. Louis Roule.—On the typical nervous system of the ctenobranch mollusks, by M. E. L. Bouvier.—On platyrhinism in a group of African apes, by M. A. T. de Rochebrune. It is shown that the family of the Colobi forms a marked exception to the general rule that the apes of the Old World are all catarhinous. As already anticipated by Dahlbom and Gray, they prove to be distinctly platyrhinous, like all the American Simiæ.—Experimental researches on the synthesis of the lichens in a medium destitute of germs, by M. Gaston Bonnier. The researches carried out by the author since 1882 have resulted in the complete reproduction by synthesis of a certain number of species of lichens under conditions fully confirming the views generally held regarding the complex nature of these vegetable organisms. The results clearly show that a lichen is formed by the association of an Alga and a fungus.—The avifauna of the Mentone caves, by M. Émile Rivière. Of the forty-two species found in these caves, all still survive except *Pyrrhocorax primigenius*, but their present distribution mostly differs from that of Quaternary times, many having disappeared from the Mentone district, owing to climatic changes, the destruction of forests, and the chase.—On the Jurassic Echinidæ of Lorraine, by M. G. Cotteau. The researches made by the author in this branch of palæontology show that in Lorraine the Echinidæ followed the same line of development as in other Jurassic regions.—A physiological study of the respiratory function in singers, by M. Anatole Piltan. Observations made in various institutes show that the quality of the voice is inherent to the expiratory type adopted by the subject, whether unconsciously or acquired by special training.—Bacteriological studies on the Arthropods, by M. Balbiani.

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