travel abroad with a view to his improvement in that study. A Fellow forfeits his Fellowship by spending more than eighteen months within the United Kingdom.

SCIENTIFIC SERIALS

Journal of the Franklin Institute, February.—An account of certain tests of the transverse strength and stiffness of large spruce beams, by G. Lanza.—The abstraction of heat by mechanical energy, by J. Rowbotham.—On the application of the principle of virtual velocities to the determination of the deflection and stresses of frames, by G. F. Swain.—Cone pulleys, by H. W. Spangler.—Dust explosions in breweries, by C. J. Hexamer.—A summary of progress in science and industry, 1882.

THE January number of the *Revue d'Anthropologie* (Premier Fasc., 1883), contains the first part of a valuable memoir—unfortunately left incomplete by Paul Broca at the time of his death—on the cerebral convolutions of the human brain, as shown by casts. Broca, having found from long experience that it is almost impossible to obtain specimens of a normal cerebrum in which both hemispheres are symmetrical, devoted his attention to the preparation, for the special use of students, of exact models of the convolutions divested of the secondary folds, whose extreme variability makes it difficult to determine their true character. The memoir now first printed supplies an exhaustive description of the brain at every stage from fœtal to senile life, with explanations of the significance of the different colours used in the preparation of the models, which have been completed under the superintendence of M. S. Pozzi.—"Buffon Anthropologiste" is the title of a paper by M. P. Topinard, in which he has reprinted the main part of a lecture previously addressed to his class in the École d'Anthropologie. The object of the address is to show that Buffon was the precursor of Darwin and Lamark, both as to the theory of development from one, or at most a few original types, and in his belief in the survival of the fittest. His undoubted contradictions M. Topinard ascribes to the necessity of the times, which compelled him to respect the opinions of the clergy so far as to address to the Faculty of Theology a written retractation of fourteen propositions contained in his "Histoire Naturelle," which that body had condemned. This curious document is here given *in extenso*.—M. C. Sabatier, a former *juge de paix* in Kabylia, in an article on "La femme kabyle," explains the nature of the enactments by which the French Government is endeavouring to ameliorate the condition of women among the Kabyles, who till the present time have virtually been slaves, being treated alike by their fathers and husbands as the least valued of chattels. As the result of long discussions with the heads of the tribes, two new "kanouns," or laws, have been agreed to and put into force, which M. Sabatier believes to be decisive steps towards the social regeneration of the men as much as of the women, one of these enactments restricting the rights of the father to give his daughter in marriage before she has reached a fixed age, and the other freeing a wife from the control of her husband under certain conditions of desertion and neglect.—MM. Corre and Roussel's report of their observations of 200 crania of criminals preserved in the Anatomical Museum of Brest is supplied with various tables exemplifying their precise cranial characteristics, the nature of the crimes committed, the birth-place of the criminals, &c. The general conclusions are in complete accord with those of Bordier, Broca, &c.

Archives des Sciences Physiques et Naturelles, January 15.—On a refractometer for measuring the indices of refraction and the dispersion of solid bodies, by M. Soret.—Theoretical and experimental study of a rapid vessel, by M. Pictet.—On the apparent forces arising from the terrestrial motion, by M. Cellérier.

Bulletin de l'Académie Royale des Sciences de Belgique, No. 12, 1882.—Considerations on the stratigraphic relations of the psammites of Condroz and the schists of the Famenne properly so-called; also on the classification of these Devonian deposits, by M. Mourlon.—Second note on the dynamo-electric machine with solenoid inductor, by M. Plücker.—Determination of the general law ruling the dilatability of any liquid chemically defined, by M. de Heen.—On the aurora borealis of November 17, 1882, by M. Terby.—Reports on prize competitions, &c.—The great discoveries made in physics since the end of last century (lecture at public *séance*), by M. Montigny.—Dwarfs and giants (lecture), by M. Delbœuf.

The Proceedings of the Linnean Society of New South Wales, vol. vii. Part 2 (April–June, 1882); Part 3 (July–September, 1882). The chief contents are, *Botanical:* Botanical notes on Queensland. No. 2, the tropics; No. 3, the Mulgrave River; No. 4, Myrtaceæ.—On a coal-plant from Queensland, by Rev. J. E. Tenison-Woods.—Half-century of plants new to South Queensland, by the Rev. B. Scortechini.—Forage-plants indigenous to New South Wales, by Dr. Woolls.—On *Myoporum platycarpum*, a resin-producing tree of the interior of New South Wales, by K. H. Bennett.—Botanical notes in the neighbourhood of Sydney, by E. Haviland.—*Zoological:* On a new Gobiesox from Tasmania; on two new birds from the Solomons; on a new Coris from Lord Howe's Island, by E. P. Ramsay.—Australian Micro-lepidoptera, No. 7, by E. Meyrick.—On a reported poisonous fly from New Caledonia; new species of fish from New Guinea and Port Jackson; on an insect injurious to the vine, by Wm. Macleay.—On a new species of Allopora, by Rev. J. E. Tenison-Woods.—On Australian fresh-water sponges; on the brain of *Galeocerdo rayneri;* monograph of Australian Aphroditea (Plates 6 to 11); notes on anatomy of pigeons, by W. A. Haswell.—Some new Queensland fishes; on a new species of squill from Moreton Bay, by W. de Vis, B.A.—Habitat of *Cypræa citrina*, of Gray, by J. Brazier.—New variety of *Ovulum depressum*, found at Lifou, by R. C. Rossiter.—On a breeding place of *Platalea flavipes* and *Ardea pacifica*, by K. H. Bennett.—*Geological:* Physical structure and geology of Australia, by Rev. J. E. Tenison-Woods.

Journal of the Asiatic Society of Bengal, vol. li. Part 2, Nos. 2 and 3, 1882 (December 30, 1882) contains:—Some new or rare species of Rhopalocerous Lepidoptera from the Indian region, by Major G. F. L. Marshall, R.E. (Pl. 4).—On an abnormality in the horns of the Hog-deer (*Axis porcinus*), with an amplification of the theory of the evolution of the antlers in ruminants, by John Cockburn.—On the habits of a little-known lizard (*Brachysaura ornata*), by John Cockburn.—Second list of butterflies taken in Sikkim in October, 1882, by L. de Nicéville.

Morphologisches Jahrbuch, eine Zeitschrift für Anatomie und Entwickelungsgeschichte, Bd. 8, Heft 3, contains:—The nasal cavities and lachrymo-nasal canals in amniotic vertebrata, by Dr. E. Legal.—The structure of the hydroid polyps, by Dr. Carl F. Jickeli (Plates 16-18).—The tarsus in the birds and Dinosaurs, by G. Baur (Plates 19 and 20).—Contribution to a knowledge of the development of the vertebral column in Teleostians, by Dr. B. Grassi.—On an hypothesis concerning the phylogenitic derivativion of the blood system of a portion of the Metazoa, by Dr. O. Bütschli.

Reale Istituto Lombardo di Scienze e Lettere Rendiconti, vol. xv. fasc. xx.—Reports on prize-awards; announcements of prize-subjects, &c.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, February 15.—"Description of an Apparatus employed at the Kew Observatory, Richmond, for the Examination of the Dark Glasses and Mirrors of Sextants." By G. M. Whipple, B.Sc., Superintendent.

In the *Proc. Roy. Soc.* for 1867, Prof. Balfour Stewart described an apparatus designed and constructed by Mr. T. Cooke for the determination of the errors of graduation of sextants. This instrument has from that date been constantly in use at the Kew Observatory, and since the introduction of certain unimportant improvements has been found to work very well.

No provision was made, however, for its employment in the determination of the errors of the dark shades used to screen the observer's eyes when the sextant is directed to the sun or moon, and it has been found that errors may exist in the shape of want of parallelism in these glasses, sufficiently large to seriously affect an observation accurate in other respects.

It has also been found that sextant makers are desirous of having the shades examined before proceeding to fit them into their metal mountings, and also to have the surfaces of the mirrors tested for distortion before making the instruments up. With a view to the accomplishment of these ends, for some time past the Kew Committee have undertaken to examine both dark glasses and mirrors, and to mark them with a hall-mark when

they are found to answer the requirements necessary for exactitude.

For these purposes the following apparatus has been devised by the author, and brought into use at the Observatory.

A telescope of 3¼ inches aperture and 48 inches focal length, a pair of collimators of 1¼ inch aperture and 10 inches focal length, and a heliostat, are firmly fixed to a stout plank, so that their axes may be in the same horizontal plane. The eyepiece of the telescope carries a parallel wire micrometer.

In order to adjust the instrument, the telescope is directed to the sun, a shade being fitted to the eyepiece and then placed in its Y's focused for parallel rays. The collimators are then fixed on their table with their object-glasses opposed to that of the telescope, the eyepieces and wires having first been removed, and a metal plate with a sharply-cut hole in its centre fitted to their diaphragms.

Light is next reflected down the collimator by the heliostat, and the aperture in the diaphragm being viewed through the telescope, is carefully focused by moving the object-glass of the collimator to and fro by means of its rack and pinion.

The diaphragm aperture is next collimated by rotating the collimator in its bearings.

Both collimators being thus adjusted, they are placed side by side, so that their illuminated sights can be viewed simultaneously in the telescope, appearing as superimposed bright disks 12′ in diameter. They are next separated so that the disks remain merely in contact at the extremity of their horizontal diameters.

The instrument is now ready for use, and the examination of the shades is performed in the following manner :—

The glass to be tested is fixed in a rotating frame in front of the object-glass of one collimator, a corresponding shade being placed between the heliostat and diaphragm of the other collimator. The sun is now directed on to the diaphragms. The coloured disks are viewed through the telescope, when, if the sides of the shade, placed between the collimator and the object-glass of the telescope, are perfectly parallel, the relative position of the disks is unchanged ; if, however, the shade is not ground true, the disks will appear either separated or to overlap. In the first case the amount of separation is measured by the micrometer, and serves to indicate the quality of the glass. In the case of overlapping images the shade is rotated through 180°, and separation produced which can be measured. A second examination is then made, the shade having been turned through 90°.

If in no position a separation of images is found to exist to the extent of 20″, the glass is etched K.O. 1 ; if more than 20″ but less than 40″, the mark is K.O. 2 ; with greater distortion than this, the shade is rejected and not marked.

To examine the quality of the mirrors, a small table, on levelling screws, is put in front of the object-glass of the telescope. The mirror to be tested is placed on its edge on this table, and turned until a distant well-defined object is reflected down the tube of the telescope. The object-glass of the telescope having previously been stopped down to an aperture corresponding to the size of the mirror, the reflected image is contrasted with that seen directly, and if the definition is unchanged the mirror is marked K.O. with a writing diamond, and returned to the maker ; if the object appears distorted, its unfitness for use is similarly notified. A small fee is charged for the examination.

Geological Society, February 7.—J. W. Hulke, F.R.S., president, in the chair.—G. D'Arcy Adams, Prof. Ferdinand Moritz Krausé, and the Rev. Alfred William Rowe were elected Fellows, and Dr. Karl A. Zittel, of Munich, a Foreign Correspondent of the Society.—The following communications were read :—On the metamorphic and overlying rocks in parts of Ross and Inverness shires, by Henry Hicks, F.G.S., with petrological notes by Prof. T. G. Bonney, F.R.S. In this paper the author described numerous sections which have been examined by him in three separate visits made to the north-west Highlands. In some previous papers, sections in the neighbourhood of Loch Maree had been chiefly referred to. Those now described are to the south and south-east of that area, and occur in the neighbourhoods of Achmashellach, Strathcarron, Loch Carron, Loch Kishorn, Attadale, Strome Ferry, Loch Alsh, and in the more central areas about Loch Shiel and Loch Eil to the Caledonian Canal. In these examinations the author paid special attention to the stratigraphical evidence, to see whether there were any indications which could in any way be relied upon to prove the theory propounded by Sir R. Murchison that in these areas fossiliferous Lower Silurian rocks dip under thousands of feet of the highly crystalline schists which form the mountains in the more central areas. On careful examination he found that in consequence of frequent dislocations in the strata the newer rocks were frequently made to appear to dip under the highly crystalline series to the east, though in reality the appearance in each case was easily seen to be due to accidental causes. Evidences of dislocation along this line were most marked ; and the same rocks in consequence were seldom found brought together. He recognised in these eastern areas at least two great groups of crystalline schists metamorphosed throughout in all the districts examined, even when regularly bedded and not disturbed or contorted ; and they have representatives in the western areas, among the Hebridean series, which cannot in any way be differentiated from them. These he called locally by the names, in descending order, of Ben-Fyn, and Loch-Shiel series. The former consist, in their upper part, of silvery mica-schists and gneisses, with white felspar and quartz ; in their lower part, of hornblendic rocks, with bands of pink felspar and quartz, and of chloritic and epidotic rocks and schists. The Loch-Shiel series consists chiefly of massive granitoid gneisses and hornblendic and black mica-schists. Thirty-three microscopical sections of the crystalline schists and the overlying rocks are described by Prof. Bonney, and he recognises amongst them three well-marked types. In No. 1 he includes the Torridon Sandstone, the quartzites and the supposed overlying flaggy beds on the east side of Glen Laggan. These are partially metamorphosed, only distinct fragments are always easily recognisable in them in abundance. In No. 2, the Ben-Fyn type, the rocks are crystalline throughout, being typical gneisses and mica-schists. In No. 3, the Loch-Shiel series, he recognises highly typical granitic gneisses of the Lower Hebridean type. Dr. Hicks failed to find in these areas at any point the actual passage from group 1 to group 2 ; neither did the same rocks belonging to group 1 meet usually the same rocks belonging to group 2. The evidence everywhere showed clearly that the contacts between these two groups were either produced by faults or by overlapping. Group 3, placed by Murchison as the highest beds in a synclinal trough, supported by the fossiliferous rocks, the author regarded as composed of the oldest rocks in a broken anticlinal. They are the most highly crystalline rocks in these areas ; and the beds of group 2 are thrown off on either side in broken folds. These, again, support the rocks belonging to group 1. The author therefore feels perfectly satisfied that the crystalline schists belonging to groups 2 and 3, which compose the mountains in the central areas, do not repose conformably upon the Lower Silurian rocks of the north-west areas with fossils, and that these highly-crystalline rocks cannot therefore be the metamorphosed equivalents of the comparatively unaltered, yet highly disturbed and crumpled, richly fossiliferous Silurian strata of the southern Highlands, but are, like other truly crystalline schists examined by him in the British Isles, evidently of pre-Cambrian age. In an Appendix by Prof. T. G. Bonney, F.R.S., on the lithological characters of a series of Scotch rocks collected by Dr. Hicks, the author stated that he observed in the above series, as he had done in other Scotch rocks lately examined by him, three rather well-marked types—one, where, though there is a certain amount of metamorphism among the finer constituents forming the matrix, all the larger grains, quartz, felspar, and perhaps mica, are of clastic origin ; a second, while preserving a bedded structure and never likely to be mistaken for an igneous rock, being indubitably of clastic origin, retains no certain trace of original fragments ; while the third, the typical "old gneiss" of the Hebridean region, seldom exhibits well-marked foliation. It is sometimes difficult to distinguish between the first and second of these ; but this the author believed to be generally due to the extraordinary amount of pressure which some of these Scotch rocks have undergone, which makes it very hard to determine precisely what structures are original. Even the coarse gneiss is sometimes locally crushed into a schistose rock of comparatively modern aspect. The least altered of the above series the author considered to be the true "newer-gneiss" series of the Highlands, but both of the others to be much older than the Torridon Sandstone.—On the Lower Carboniferous rocks in the Forest of Dean, as represented in typical sections at Drybrook, by E. Wethered, F.G.S., with an appendix by Dr. Thomas Wright.

Chemical Society, March 1.—Dr. Gilbert, president, in the chair.—The following gentlemen were elected Fellows :—A. C. Abraham, G. Board, C. N. Betts, E. Bevan, F. J. Cox, A. Collenette, S. Dyson, W. T. Elliott, H. B. Fulton, C. G. Grenfell, B. F. Halford, W. D. Hogg, D. Hooper, J. J. Knight, H. F. Lowe, T. H. Leeming, J. E. Marsh, W. Newton, C. Rumble, F. Scudder, J. O'Sullivan, S. A. Vasey, T. D. Watson, R. M. Walmsley, C. S. S. Webster, F. Watts. —The following papers were read :—On some derivatives of the isomeric $C_{10}H_{14}O$ phenols, by H. E. Armstrong and E. H. Rennie. Lallemand stated that a trinitro-thymol was produced by the action of a mixture of nitric and sulphuric acids on dinitrothymol. The authors find that a trinitro body is formed, but that it has the constitution and properties of trinitrometacresol. The authors could not obtain a trinitro body from carvacrol. When thymolsulphonic acid is treated with nitric acid, paranitrothymol is formed, the sulpho group being displaced. When bromothymolsulphonic acid is treated with chromic acid, an amorphous quinone is formed, but when permanganate is used, no quinone is produced. The authors have also studied the action of nitric acid on bromisobutylsulphonic acid.—Chemico-microscopical researches on the cell-contents of certain plants, by A. B. Griffiths. The author has grown cabbage plants on soils containing ferrous salts : the plants are larger, and their ash contains a considerable quantity of oxide of iron. In sections under the microscope crystals are visible which belong to the monoclinic system and give a blue colour with potassium ferricyanide and an opacity with barium chloride. The author concludes that they consist of ferrous sulphate.—The phenates of amido bases, by R. S. Dale and C. Schorlemmer. The authors have satisfied themselves that, when aurin is heated with ammonia, pararosanilin is at once formed. When aurin is heated with common rosanilin and alcohol, a solution is produced which on concentration yields a crystalline powder of rosanilin aurate ; similarly by heating anilin and phenol in molecular proportions, anilin phenate is obtained in glistening plates melting at 29°·5, boiling 184°·5.

Anthropological Institute, February 27.—Prof. W. H. Flower, F.R.S., president, in the chair.—The election of Mr. C. Fountaine Walker was announced.—Dr. Garson exhibited and described a series of photographs of cases of hypertrichosis. —Mr. A. Tylor read a paper on the homological nature of the human skeleton. He finds that in the skull of all vertebrate animals, including man, a general resemblance to the trunk and limbs is carried out—for instance, variations in the limbs are accompanied by variations in the jaws, and the occiput varies with the pelvis, the sternum with the palate, and so on throughout the skull and body. This is due to mechanical causes. Bones, like the parts of plants, consist of stalks and leaves ; the stalk-element is shown in the vertebræ and the long bones, and the leaf-element in the apophyses, the plate-bones of the skull, such as the parietals, &c. The elemental shaft-bones always bulge at the extremities where pressure is exerted, hence the peculiar form of all such bones. This form is a mechanical necessity, and, in accordance with the known laws of correlation and repetition of parts, helps us to understand the singular relations subsisting between the skull and the rest of the skeleton.

Institution of Civil Engineers, March 6.—Mr. Brunlees, president, in the chair.—The first paper read was on the productive power and efficiency of machine tools, and of other labour-saving appliances, worked by hydraulic pressure, by Mr. Ralph Hart Tweddell, M.Inst.C.E.—The second paper read was on stamping and welding under the steam-hammer, by Mr. Alexander McDonnell, M.Inst.C.E.

SYDNEY

Linnean Society of New South Wales, December 27, 1882.—Dr. James C. Cox, F.L.S., president, in the chair.—The following papers were read :—Occasional notes on plants indigenous in the neighbourhood of Sydney, No. 2, by Edwin Haviland. This paper treats chiefly of the construction and habits of *Utricularia dichotoma*.—Description of a new *Belideus* from Northern Queensland, by Charles W. De Vis, B.A.—A paper by the same author describing two new Queensland fishes (*Callionymus achates* and *Mugil nasutus*).—By the Rev. Dr. Woolls, on the species of Eucalyptus first known in Europe. Of the twelve species described by Willdenow, eleven are from the immediate neighbourhood of Sydney, and one only from Tasmania. This tree, the Tasmanian Stringy Bark (*E. obliqua*), was the first Eucalypt known in Europe, the specimen having been collected during Furneaux's voyage. On it L'Héritier founded the genus, 1788. The early descriptions are, as it may be supposed, very vague and imperfect, and their identification has been a matter of much difficulty and hesitation, now happily removed.—On some new species of tubicolous annelides, by William A. Haswell, M.A., B.Sc.—On new species of *Agaricus* discovered in Western Australia, by the Rev. C. Kalchbrenner. —On some points in the anatomy of the urogenital organs in females of certain species of kangaroos, Part 1, by J. J. Fletcher, M.A., B.Sc.—The Rev. J. E. Tenison-Woods read a paper on a species of *Brachyphyllum*, which was found in the Tivoli coal mine. In many respects this species resembled the well-known *B. mamillare* of the British and Continental Oolite, but lest any confusion should arise from a doubtful identification, and as the stems and leaves of this specimen were much thicker, and the leaves more fleshy than in *B. mamillare*, the author distinguished it as *B. crassum*. He considered that the discovery of this specimen served to place the Jurassic age of the Ipswich (Queensland) coal beds beyond much doubt.—A note was read by Dr. H. B. Guppy, of H.M.S. *Lark*, on the cocoa-nut eating habit of the *Birgus* of the Solomon Islands. Dr. Guppy had no doubt from what he had observed that the Robber-Crab is in the habit of breaking open the shells of the cocoa-nuts with its powerful chelæ.—Mr. Haswell stated that he had much pleasure in announcing to the Society that, thanks to the intelligent inquiries made by Mr. Morton of the Museum, while recently in Queensland, he had hopes that they were on the way towards learning something of the embryology of the *Ceratodus*. Mr. Morton had ascertained that the *Ceratodus* spawns in the Burnett River during the months of June, July, or August, the spawn being deposited in a slight excavation formed in the bed of the river at a depth of eight or ten feet, the male and female remaining in close attendance on it until hatched. Arrangements had been made by which it was hoped that a supply of the spawn might be obtained for observation next season.

PARIS

Academy of Sciences, February 26.—M. Blanchard in the chair.—The death of Baron Cloquet, Member in Medicine and Surgery, was announced.—The following papers were read :—Note on various points of celestial physics, by M. Janssen. At Meudon Observatory they are studying movements of photospheric matter with the aid of series of images obtained with the "photographic revolver" ; they are also working at photographic photometry, the principle being that the intensities of two light-sources are in the inverse ratio of the time they take for the same photographic work (*e.g.* producing the same tint on two quite similar plates). The method will be applied to data of the comet of 1881, the full moon, &c. M. Janssen further hopes to present soon a complete study of the spectrum of aqueous vapour.—Results of a new series of experiments on the apparatus for transport of mechanical work installed on the Chemin de fer du Nord, by M. Deprez : note by M. Tresca (see p. 422).—On the heat of formation of chromic acid, by M. Berthelot.—Rain in the Isthmus of Panama, by M. de Lesseps. A table of observations of rainfall by Mr. John Stiven, for 1879–1882, shows that 1879 was an extraordinarily rainy year (2·152 m.), a large excess occurring in November. The rain-season lasts nearly six months, from May to November, excepting an interruption of a few weeks in June and July. This is explained by the behaviour of the ascending body of air which accompanies the curve of maxima in its annual oscillation on either side of the thermal equator, which movement is connected with the annual movement of the sun. The trade-winds north and south also affect the phenomena.—On the bronze tools used by miners in Peru, by M. Boussingault. A bronze chisel found in an old quarry of trachyte near Quito, evidently served in working the trachyte (softened by water) ; it contains copper 95, tin 4·5, with minute quantities of lead, iron, and silver.—Nebulæ discovered and observed at Marseilles Observatory, by M. Stephan.—Exhalation of nitrogen in a gaseous state during respiration of animals, by M. Reiset. MM. Petenkoffer and Voit negated such exhalation (affirmed by the author). Recent experiments by MM. Seegen and Nowak confirm M. Reiset's view.—Direct and rapid attenuation of virulent growths by the action of heat, by M. Chauveau. The method may be applied to liquids of artificial cultivation with much better success than to the natural humours of the system, and it may be graduated at will according to the degree of attenuation desired.—Contribution to the

study of refrigeration of the human body in hyperthermic diseases, especially typhoid fever, by M. du Montpellier. He indicates the useful effects of his cooling apparatus.—Researches on the division of acids and bases in solution by the method of congelation of the solvents, by M. Raoult.—On the relations between covariants, &c. (continued), by M. Perrin.—On the theory of uniform functions, by M. Goursat.—Note on a point of the theory of continuous periodic fractions, by M. de Jonquières.—Remarks on a communication of M. de Chardonnet on the vision of ultra-violet radiations, by M. Mascart. He thinks the conclusions too absolute; he showed some years ago that ordinary sight habitually perceives the whole ultra-violet solar spectrum as lavender grey, and some eyes see even further.—On the increase of intensity of scintillation of stars during auroras, by M. Montigny. (Already noted elsewhere.)—On the production of apatites and of bromised Wagnerites with lime base, by M. Ditte.—Researches on the action of zinc-ethyl on amines and phosphines; new method of characterising the nature of these bodies, by M. Gal.—On the products of decomposition by water of fluoborised acetone α, by M. Landolf.—On neutralisation of glycolic acid by bases, by M. de Forcrand.—On a new base of the quinoleic series, phenol-quinoleine, by M. Grimaux.—Derivatives of strychnine, by M. Hanriot. He describes a new dinitro-strychnine, also diamido-strychnine.—On sulphocyanacetone, by MM. Tcherniac and Hellon.—Chloronitrated camphor, by M. Cazeneuve.—On the ice plant, by M. Heckel. His observations some years ago agree with those of M. Mangon.—Researches on the chromatophores of the *Sepiola Rondeletii*, by M. Girod. He regards the protoplasm of the pigmentary cell as the agent of extension; the basilar cell producing contraction.—On the disease of saffrons known as *Tacon*, by M. Prillieux.—On an inversion of temperature observed at a point of the Alps on December 27, 1882, by M. Henry. M. Broch noted a similar case near Christiania, where a rich banker has a châlet at a height of 408 m. In winter the temperature there is often about zero, while at Christiania it is 10 or 15 degrees below zero.—M. Daubrée indicated the contents of a new publication from Lima, *Anales de Construcciones civiles y de Minas del Perú*.

March 5.—M. Blanchard in the chair.—The following papers were read:—Observations of the satellites of Neptune, of Uranus, and of Saturn, with the equatorial of the eastern tower of Paris Observatory, by MM. Henry; Note by M. Mouchez. A new objective having been put in the instrument (acquired in 1849, under Arago) renders it the best instrument the Observatory has ever had.—Nebulæ discovered, &c. (continued), by M. Stephan.—The prolific power of virulent agents that are attenuated by heat, and the transmission by generation of the attenuating influence of a first heating, by M. Chauveau. The attenuation does not involve any alteration of the vitality or prolific power of the agents deprived, by heat, of their infectious properties. It is also shown that the influence is not merely individual, but may appear in the properties of new agents arising through proliferation of the protoplasm which has been directly subject to it.—M. de Lesseps stated that he was about to go to the region of the North African Chotts for a month, to consider the investigations of M. Roudaire.—A letter from M. Nordenskjöld referred to his intended departure for Greenland in August. He believes that vast regions covered with perpetual ice are a physical impossibility on our globe south of the 80th degree of N. lat., and goes to the interior of Greenland to test this view.—On the importance of the *rôle* of inhibition in therapeutics, by M. Brown-Séquard. A morbid activity will disappear suddenly, or nearly so, on irritation at some point (to be sought) more or less distant from that at which the activity prevails.—Practical use of sulpho-carbonate of potassium against Phylloxera in the south of France, by M. Culeron.—On the perturbations of Saturn due to the action of Jupiter, by M. Gaillot.—Observations of the great comet of September, 1882 (II. 1882), made at the Observatory of the Transit of Venus Mission at Martinique, by M. Bigourdan.—Observations of the new comet (Brooks and Swift) made at Paris Observatory (equatorial of the western tower), by the same.—Observations of the same comet at Lyons Observatory with the 6-inch Brunner equatorial, by M. Gonessiat. The comet appeared as a bright, nearly round nebulosity, with nucleus well condensed. In a clear sky, a straight tail of about 13′ long was observed. (M. Bigourdan estimates the brightness as about that of a star of 6th or 7th magnitude.)—On the approximation of sums of numerical functions, by M. Halphen.—On the series of polynomes, by M. Poincaré.—On the trajectories of different points of a connecting-rod in motion, by M. Léauté.—On the theory of electromagnetic machines, by M. Joubert. He calls attention to the loss of work in continuous-current machines through change of direction of the current in the coils of the ring.—On a new collimator, by M. Thollon. The slit is made to take any direction, while its image remains fixed. This is effected by means of a total-reflection prism placed behind the slit, with its hypothenuse face parallel both to the axis of the collimator and to the slit.—Dissociation of the bromhydrate of phosphuretted hydrogen, by M. Isambert.—On sulphuric chlorhydrate, by M. Ogier.—On chloride of pyrosulphuryl, by the same.—Heat of formation of solid glycolates, by M. de Forcrand.—On the hydrocarbons of peats, by M. Durin. From an examination of fresh mosses, he thinks it probable (with M. Dumas) that the hydrocarbons of peat are not formed during vegetal decomposition, but that they existed already in the mosses which formed the peat.—Experiments proving that sanguineous concretions, formed at the surface of an injured part of vessels, begin with a deposit of hematoblasts, by M. Hayen.—On the chromatophores of Cephalopoda, by M. Blanchard. He holds that they do not differ at all in general structure from those of fishes, batrachians, and especially saurians (chameleon). The chromatophore is a sort of amœba charged with pigment, living for itself and independent of the skin which imprisons it; it is, however, under the influence of the nervous system. The radiating fibres are mere fibres of connective tissue, and M. Blanchard has never (like M. Girod) found them to vary in form with the chromatophore.—On a flagellate Infusoria, ectoparasite of fishes, by M. Henneguy. This was observed on trout. The name *Bodo necator* is given provisionally.—On the *Gnetaceæ* of the coal formation of Rive-de-Gier, by M. Renault.—Selenetropism of plants, by M. Musset. Plants of phototropic sensibility were grown from seeds in pots in a very dark place; then, on three nights, exposed at a window to direct moonlight; the stems bent over towards the moon, and followed it in its course.

BERLIN

Physical Society, February 16.—Prof. Kirchhoff in the chair.—Prof. Krech described at length a spectrophotometer which he had made in 1872, and with which, in the years 1873, 1874, 1875, and 1876, he had made a large number of observations for verification of the theory of the apparatus and determination of its errors. The theory of the instrument and the improvements proposed were fully gone into; the experiments had been made before Herr Glau had described his spectrophotometer.

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