Colleges incorporated in a teaching university have this opportunity. Originality of thought has fuller encouragement, and new educational methods have freer play than can possibly be the case in a college of which the students have no other avenue to a university degree than examination by a wholly external examining body like the University of London, however excellent be the conduct of its examinations. An atmosphere of intellectual independence is of the essence of true academic life. The true scholar must breathe it as his native air. And this is not the language of mere theory. It has its immediate practical application on the scientific side. The trained student of science, for instance, entering on manufacturing pursuits should do so with free inquiring eye, ready to believe that it may have been reserved for him to make a discovery of immense value to the industry to which he is devoting himself. I believe that this freedom of spirit is far more likely to be developed and fostered in a teaching university than in a college bound to teach on certain rigid lines laid down by an authority in which it has no part." The first object of the founders of the University of Wales is to ensure that all students of the University shall receive good teaching and thorough training before proceeding to graduation. By this means the University will be made a real force for the advancement of learning in the Principality.

SCIENTIFIC SERIALS.

Bulletin of the American Mathematical Society, vol. ii. No. 8, May 1896.—"The Arithmetising of Mathematics" is an excellent translation, by Miss Maddison, of Bryn Mawr College, of an address delivered by Prof. Felix Klein, before the public meeting of the Royal Academy of Sciences of Göttingen, on November 2 of last year. In it Prof. Klein explains his position in regard to an important mathematical tendency which he remarks has for its chief exponent Weierstrass, whose eightieth birthday has been lately celebrated. This tendency he calls the *arithmetising* of mathematics. Like all the author's addresses, this one, now rendered easily accessible to English mathematicians, will repay study.—Next follow three carefully drawn-up reviews, viz. by R. A. Roberts, on a second edition of Darboux's classic treatise, "Sur une classe remarquable de Courbes et de surfaces Algébriques et sur la théorie des Imaginaires." It is matter of regret, Mr. Roberts says, that the author has not devoted some more time to a subject which offered him once such a fruitful field for original investigation.—Then Prof. Bôcher examines in detail the "Treatise on Bessel Functions, and their Applications to Physics," by Messrs. Gray and Mathews. He well shows that the writers have by their work filled a real gap in mathematical literature.—In his notice of Miss Scott's "Introductory Account of certain Modern Ideas and Methods in Plane Analytical Geometry," Prof. F. N. Cole states it to be a minor excellence of the book that it is written in the English of English speaking and writing people, *i.e.* there are no abbreviations, and such like, which necessitate constant reference to a "list of signs," &c. He looks upon Miss Scott's performance as a compact, scholarly work on the more accessible principles and methods of modern analytical geometry. "It exhibits to a marked degree that genial breadth of treatment and conciseness which are associated only with mature scholarship and extensive and accurate information." His summing-up of warm approval is that he knows of no introductory work which is better adapted, in the particulars he indicates, for the use of those who desire not merely to learn, but also to master geometry.—Prof. H. B. Newson, in a note on "A Remarkable Covariant of a System of Quantics," calls attention to a covariant of a system of n quantics in n homogeneous variables. He states two important geometric properties of this covariant which, *pro tem.*, he calls the Cremonian. (1) The Cremonian of U, V, and W is the locus of the point (x', y', z') whose first polars with respect to U, V, and W have a common point; the locus of these common points is, of course, the Jacobian. (2) The Cremonian of U, V, and W is also the locus of (x, y, z) the point of intersection of the polar lines of (x', y', z'), with respect to U, V, and W, *i.e.* it is the locus of the point of intersection of the polar lines of the points on the Jacobian. The author gives other results of interest, and hints at an extension of the conception of the Cremonian to spaces of higher dimensions.—Much interesting matter is given in the Notes, and a list of recent publications fills up a big number of 44 pages, in place of the usual 32 pages.

Symons's Monthly Meteorological Magazine, June.—The worst gale of the nineteenth century in the English Midlands (continued). A map is given showing the path of the storm from South Wales to Lincolnshire between 11 a.m. and 4 p.m. on Sunday, March 24, 1895. The average velocity of translation was about sixty miles an hour, and the disturbance appears to have been caused by a subsidiary depression formed over the south of Ireland, during a well-marked cyclone which lay over the northern parts of our islands on the same day. Great disaster was caused along its track, and fourteen deaths were reported. There were also more than a dozen cases of windows and gables being blown *out*, owing to the expansion of air inside the buildings during the passage of diminished atmospheric pressure.—Fog, mist and haze, by a Fellow of the Royal Meteorological Society. This is a continuation of the discussion raised in the preceding number of the *Magazine* (NATURE, June 4, p. 118). The writer agrees generally with the definitions proposed, as a practical scheme, based on a correct view of the phenomena, but he thinks that the difference between fog and mist should not rest upon what can be seen with the naked eye—a test in which two persons would be very apt to disagree.

THE enlarged issue of the *Journal of Botany* still continues to be occupied almost entirely with papers on descriptive botany, and chiefly relating to the flora of the British Isles. In the numbers for May and June, Prof. R. Chodat describes some new species of *Polygala* from South Africa; and Mr. W. H Pearson a new liverwort, *Plagiochila Stableri*, from Rydal.

THE papers in the *Nuovo Giornale Botanico Italiano* for April, and in the *Bulletino della Società Botanica Italiana*, Nos. 2-4, relate almost entirely to the flora of Italy. In the former, Signor S. Sommier describes and figures an interesting hybrid between *Ophrys bombyliflora* and *O. tenthredinifolia*. In the latter is an abstract of an article by Signor B. Longo, on the mucilage of the Cactaceæ.

Bulletin de la Société des Naturalistes de Moscou, 1895, No. 3.—On considerable perturbations of atmospheric pressure in the year 1887, by B. Sresnewskij. A research into the relations between the said perturbations, the movements of cyclones, and the local weather predictions based on the study of the same; as also their relations, both to the groups of areas of minimal pressure and to the distribution of temperature (in German).—Materials for the Amphibia and Reptile fauna of the Orenburg region, by N. Zarudnyi. List of eleven species of the former, and fifteen species of the latter (Russian).—*Aquila Glitchii*, Severtsoff, a biological sketch, by P. Suschkin, in German, with two plates.—Note on *Posidonomya buchi* of the Balaclava schists in Crimea, by M. D. Stremoouchow, with a plate.—On Russian Zoocecidiæ and their makers, by. Ew. H. Rübsaamen, based on a collection made by Madame Olga Fedchenko and her son Boris Fedchenko. No less than 120 galls and their occupants from various parts of Russia and Caucasia are described.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 11.—"On the Relations between the Viscosity (Internal Friction) of Liquids and their Chemical Nature. Part II." By Dr. T. E. Thorpe, F.R.S., and J. W. Rodger.

In the Bakerian Lecture for 1894 the authors gave an account of their work on the viscosity of some seventy liquids, and they discussed the interdependence of viscosity and chemical composition. In order to render their investigation more complete, they have now made measurements of the viscosity of (1) a number of esters or ethereal salts, and (2) of ethers, simple and compound—groups of liquids, which with the exception of a single member, ethyl ether, have not hitherto been studied by them. The physicochemical relationships previously established made such determinations of special interest, for it was shown that one of the most striking of the various connections traced between chemical constitution and viscosity was the influence exerted by oxygen according to the different modes in which it was assumed to be associated with other atoms in the molecule. The influence which could be ascribed to hydroxyl-oxygen differs to a most marked extent from that of carbonyl-oxygen, and it appeared that ether-oxygen, or oxygen linked to two carbon atoms, had also a value which differed considerably from oxygen in other conditions.

The details of the observations are given in precisely the same manner as in the first paper, and formulæ of the Slotte type showing the relation between viscosity in absolute measure and temperature are calculated for each liquid. The general results of the observations are then discussed in the same manner as in the previous memoir.

The conclusions relating to the graphical representation of the results may be thus summarised. Both ethers and esters give no evidence of molecular aggregation, and conform to the rules that :—

(1) In homologous series, the viscosity is greater the greater the molecular weight.

(2) An iso-compound has a smaller viscosity than a normal isomer.

(3) The more symmetrical the molecule of an isomeric compound the lower is the viscosity.

As regards the esters themselves, it is noteworthy, where the comparison is possible, that :—

(4) Of isomeric esters, the formate has the larger viscosity.

As regards the algebraical representation of the results, it is shown that in the expression $\eta = C/(1 + \beta t + \gamma t^2)$, derived from Slotte's formula :—

(1) In any homologous series, β and γ increase as the molecular weight increases.

(2) Of isomeric compounds, the iso-compound has the smallest coefficient.

(3) Ethyl ether, the symmetrical isomer, has smaller coefficients than methyl propyl ether.

(4) As regards normal isomeric esters, the formate has the largest, and the propionate the smallest coefficients, and the values of the acetate are larger than of the butyrate.

The authors then deal with the relationships existing between the various viscosity magnitudes—the viscosity coefficient, the molecular viscosity, and the molecular viscosity work—(1) at the boiling point, and (2) at temperatures of equal slope, the slope adopted being that employed in their previous paper, namely, 0·04323, and values for the oxygen in three different conditions are given for each system of comparison in the same manner as in their first communication.

Physical Society, June 26.—Captain Abney, President, in the chair.—Mr. F. Bedell read a paper on admittance and impedence. The author discusses the application of the method of "vector diagrams" to the solution of questions connected with alternating currents. He shows how, by a consideration of the loci of the different lines on such a diagram, many problems which require for an analytical solution a lengthy investigation, may be simply and expeditiously solved. Mr. Blakesley asked the author what was his test of resonance? Was it that the primary current and E.M.F. were exactly in the same or in opposite phase? The term resonance was an acoustical one, and he did not see why it should be applied to one particular case in the electrical problem. Mr. Inwards asked what degree of accuracy the author had obtained. The author in reply said that if the applied E.M.F. and the current were brought into phase by means of a condenser in the secondary, then he called that a case of resonance. The agreement between the experimental and theoretical results was generally within from 1 to 3 per cent.—Prof. S. P. Thompson read a paper on the properties of a body having a negative resistance. The author, after showing the consequences which would follow according to the laws of Joule and Ohm if we postulate the existence of a body having a negative resistance, goes on to show how the observations described by Messrs. Frith and Rodgers, in a paper read at a recent meeting of the Society, only prove that that part of the resistance of an arc, which is not constant, is a positive resistance that varies inversely as the current. Since it varies inversely as the current the term dR/dC will be negative, and so will the quantity $C(dC)/dR$, which is what they have tabulated as a negative resistance. That the resistance of the arc itself should vary inversely as the current is natural, for it may be regarded as a column of vapour, the cross-section of which is proportional to the current, and therefore increasing in its conductance in direct proportion to the current. There is no need even to suppose any (distributive) adjuvant E.M.F., which would be the other alternative to the suggestion they have made Mr. Swinburne asked if the numbers on which Messrs. Frith and Rodgers based their arguments were obtained by taking successive readings of a voltmeter. Prof. Ayrton said that what they maintained was, that if the arc acts as if it had a back E.M.F. and a resistance, then the resistance is a negative quantity. In ordinary cases we do not know what really constitutes a resistance, but simply say that a circuit, in which electrical energy is being dissipated at a rate proportional to the square of the current, has resistance. If the loss is proportional to the first power of the current, then we say there exists a back E.M.F. Is it impossible to imagine a circuit in which a loss of electrical energy occurs proportional to the current, and a return of energy to the circuit proportional to C^2? If in a curve showing the relation between V and C you draw a tangent at any point, it is not the tangent of the inclination of this tangent which Messrs. Frith and Rodgers have called the resistance; it is another quantity, which they call the electrical dV/dC. In conclusion the author seems to have based his paper on three misconceptions: (1) That it had been claimed that a negative resistance could exist alone. (2) That the curves given by Messrs. Frith and Rodgers showed that the ordinates were inversely proportional to the current. (3) That what was measured was the geometrical dV/dC. Mr. Frith said that in a paper by Mr. Rodgers and himself, they had defined the resistance of the arc as the ratio dV/dA, where by dV/dA they meant, not what was ordinarily understood by this expression, but the value of the ratio obtained by superposing an alternating current for a direct current arc. In order to show that, in cases analogous with that of the arc, but in which the true resistance can be verified, the electrical dV/dC obtained by superimposing an alternating current gives correct results for the resistance, some experiments have been carried out. In one case a glow-lamp was placed in series with some fifty ampere secondary cells, and a current sent through against the E.M.F. of the cells. The value obtained for the electrical dV/dC agrees very well with the value of the resistance obtained by dividing the P.D. between the terminals of the lamp by the current. At very low frequencies for the superimposed alternating current it is evident that the electrical oscillations would travel along the steady value curve, and this is clearly the meaning of the critical frequency observed with cored carbons, namely, that under the critical frequency the superimposed alternating current travels on the steady value curve, and over that frequency along the line joining the point on the curve and the instantaneous origin.—Mr. Frith exhibited a mechanical model of the arc which he has devised. This model consists of two rods of carbon dipping in two mercury cups which are traversed by the current. The current also passes through a solenoid which attracts an iron core attached to the carbon rods and draws them down into the mercury, thus reducing the resistance of the instrument. Hence it can be arranged so that the P.D. between the terminals decreases as the current increases. With this model it is found that, for superimposed oscillatory currents of such a frequency that the moving parts are not able to follow the changes in the current, the oscillations of the current and of P.D. are in phase, and the electrical dV/dC gives the resistance of the apparatus for various currents. Mr. Carter asked the author how on his vapour column theory he explained the difference in the behaviour of solid and cored carbons. Mr. Enright asked why it was absurd to suppose that a negative resistance could exist. Prof. Ayrton and Mr. Frith had made in their definitions certain restrictions; it ought, however, not to be necessary to make any such restrictions. Mr. Blakesley asked if, since the title of the paper by Messrs. Frith and Rodgers was entitled the "*true* resistance of the arc," it was to be inferred, as the results given were negative, that a negative ohmic resistance existed in the arc. Prof. Thompson's paper appeared to him (Mr. Blakesley) to be rather a mathematical than a physical paper. Prof. Rücker said that the discussion showed that considerable confusion existed, and that the introduction of the term negative resistance only tended to fog matters. It was entirely wrong to argue that because you have a quantity with a positive value, therefore a negative value must also be possible. As an example, take the case of mass. If you defined as a positive mass that which is attracted to the earth, and then found that cork when immersed in water was repelled from the earth, would you therefore say that cork had a negative mass? Is not "negative resistance" a term for which some equivalent could be found which would not lead to confusion? Mr. Hovendon made some remarks on his experiments. The author in his reply said that he did not dispute the accuracy of the results obtained by Messrs. Frith and Rodgers, but it was the interpretation which they had given of their results to which he objected. Mr. Frith now makes a new reservation, namely, that the results depend on the particular

way in which the increment of C and the decrement of V are made. He supposes that if the experiment is made in a particular way a new slope is obtained which is proportional to what we call the true resistance, and hence gets a new definition of the quantity dV/dC. He (the speaker) endorsed all Prof. Ayrton had said as to the interest of the model exhibited. The question is, Is there anything in the arc which acts as a source of energy to the circuit, either as a negative resistance or as an adjuvant E.M.F.? Mr. Frith's experiments do not give us any hint as to the point where the negative resistance occurs, and the absence of any such energy-giving portion of the arc is rendered probable by the fact that the arc itself is hotter than the crater. In reply to Mr. Carter, the anomalies which occur with cored carbons are so great as to prevent any argument being based on their behaviour. The Chairman (Captain Abney) said that the mere fact that the quantity dV/dC had been defined in two distinct ways, showed that the definitions would have to be modified in some way.

Zoological Society, June 16.—Sir William H. Flower, K.C.B., F.R.S., President, in the chair.—Mr. E. E. Austen gave an account of a journey undertaken by Mr. F. O. Pickard-Cambridge and the author up the Lower Amazons, on board Messrs. Siemens Bros. cable s.s. *Faraday*, for the purpose of making zoological collections on behalf of the British Museum. No terrestrial mammals were met with, but observations were made on the two species of freshwater dolphins (*Inia geoffroyensis* and *Sotalia tucuxi*, or *S. fluviatilis*), which are extremely abundant in the Lower Amazons. Among the birds, the only species of special interest collected were a little goatsucker from Manaos, referred provisionally to *Nyctiprogne leucopygia*, and a woodpecker (*Celeus ochraceus*), of which the British Museum previously possessed but two specimens. The reptiles and amphibians met with all belonged to well-known and widely distributed forms, and the chief interest of the collections centred in the invertebrates. Among these Mr. Pickard-Cambridge made a large collection of spiders, including an extensive series of the large hairy Therephosidæ, eleven species of which were pronounced to be new. An interesting collection of the nests of some of these forms was also obtained. Mr. Cambridge likewise secured several specimens of *Peripatus*. Mr. Austen, who devoted himself chiefly to insects, obtained some 2500 specimens of different orders, of which it was expected that a fair proportion would prove to be new. Attention was drawn to some interesting examples of mimicry.—Mr. P. Chalmers Mitchell read a "Contribution to the Anatomy of the Hoatzin (*Opisthocomus cristatus*)." He stated that from the characters of the alimentary canal, the hoatzin might be placed either between the sand-grouse and the pigeons, or between the Gallinæ and the Cuculidæ. He described some interesting individual variations in the condition of the ambiens muscle, and referred to other points in the muscular anatomy.—Mr. G. A. Boulenger, F.R.S., gave an account of the occurrence of *Tomistoma schlegeli* in the Malay Peninsula, and added some remarks on the atlas and axis of the Crocodilians.—A communication was read from Mr. W. Schaus containing notes on Walker's American types of Lepidoptera in the University Museum, Oxford.—Mr. Hamilton H. Druce read a paper entitled "Further Contributions to our knowledge of the Bornean Lycænidæ," in which he referred to about forty species of this family not hitherto recorded from Borneo. A number of these were new, and were now described by Mr. G. T. Bethune Baker and the author.—Mr. F. G. Parsons read a paper on the anatomy of *Petrogale xanthopus* as compared with that of other kangaroos.—Dr. J. Anderson, F.R.S., communicated on behalf of Miss M. E. Durham some notes on the mode of swallowing eggs adopted by a South African snake, *Dasypeltis scabra*, as observed in the specimens now living in the Society's Gardens, and illustrated by a series of drawings.—Mr. F. O. Pickard-Cambridge read a paper on the spiders of the family Aviculariidæ taken during the expedition up the Amazons previously described by Mr. Austen.—Mr. G. A. Boulenger, F.R.S., read the description of a gecko which he proposed to refer to a new genus and species as *Mimetozoon floweri*, in honour of Mr. Stanley Flower, who had obtained the specimen at Penang.

Royal Meteorological Society, June 17.—Mr. E. Mawley, President, in the chair.—Mr. H. Harries read a paper on Arctic hail- and thunder-storms, in which he showed that the commonly accepted opinion that hail- and thunder-storms are almost, if not quite, unknown in the Arctic regions is incorrect. He had examined 100 logs of vessels which had visited the Arctic regions, and found that out of that number no fewer than 73 showed that hail was experienced at some time or other. Thunder-storms were not so frequent as hail, but they have been observed in seven months out of the twelve, the month of greatest frequency being August. Mr. Harries is of opinion that the breeding-place of thunder-storms in these high latitudes is in the neighbourhood of Barent's Sea.—A paper, by Mr. J. E. Cullum, on the climatology of Valencia Island, was also read. The observatory at Valencia, which is under the control of the Meteorological Office, is situated on the extreme south-west coast of Ireland, and is almost the most westerly point of Europe. Continuous records from self-recording instruments were carried on from 1869 until 1891, when the observatory was removed to Caherciveen, and the author gives the results of the observations for these twenty-three years.

Royal Microscopical Society, May 20.—Mr. A. D. Michael, President, in the chair.—Mr. E. M. Nelson exhibited and described a small portable microscope, which had been designed by Dr. Ross for the investigation of cases of malarial fever. The President said that the instrument seemed to be very compact, and in this respect would no doubt be found of great value. Mr. J. E. Ingpen wished something could be done in designing microscopes of this kind to get them to fold up a little flatter.—Mr. J. Rheinberg's paper, on an addition to the methods of microscopical research by a new way of optically producing colour contrast between an object and its background, or between definite parts of the object itself, was read by Mr. Nelson.

June 17.—The Rev. Canon Carr, Vice-President, in the chair.—Surgeon V. Gunson Thorpe, R.N., exhibited and described some Rotifera, preserved after Rousselet's method, which he had collected whilst on the China station.—Lieut.-Colonel Siddons, R.A., exhibited and described a portable microscope which he considered met the suggestion offered by Mr. Ingpen at the previous meeting.—Mr. Conrad Beck read the report of the sub-Committee of the Council on screw-tools.

PARIS.

Academy of Sciences, June 22.—M. A. Cornu in the chair. An expression for the skin friction in the irregular flow of a fluid, by M. J. Boussinesq.—Some properties of the primitive roots of prime numbers, by M. de Jonquières.—On the caustic of an arc of a curve reflecting rays emitted by a luminous point, by M. A. Cornu.—On the formation of gaseous and liquid hydrocarbons by the action of water upon metallic carbides. Classification of the carbides, by M. H. Moissan. A *résumé* of the work done by M. Moissan and his pupils upon metallic carbides, together with some remarks on the geological bearing of the results.—Remarks on a work entitled "Microbial and animal toxins," by M. A. Gautier.—Observations on Swift's comet (April 13, 1896) made with the large equatorial at the Observatory of Bordeaux, by MM. G. Rayet, L. Picart and F. Courty.—Dr. Gill was elected a Corresponding Member in the Section of Astronomy in the place of the late Prof. Cayley.—On the zero of Riemann's function $\zeta(s)$, by M. Hadamard.—On the X-rays, by M. C. Maltézos. Some theoretical considerations as to the possible nature of the rays.—An electrolytic method of desilverising argentiferous lead, by M. D. Tommasi.—Magnetic anomaly observed in Russia, from a letter by M. Moureaux to M. Mascart. In the village of Kotchetovka (lat. 51°, long. 6° 8′ east of Poulkowa) determinations of the magnetic elements at fifteen points within an area of one square kilometre gave values for declination varying between $+58°$ and $-43°$; for inclination, from 79° to 48°, and for the horizontal component, 0·166 to 0·589. The latter figure, which is the highest value of the horizontal component hitherto observed, was carefully controlled by six measurements at neighbouring points, from the results of which figures between 0·48 to 0·58 were obtained.—On the dark blue nitrosodisulphonic acid, by M. Paul Sabatier. By the action of cuprous oxide upon strong sulphuric acid containing a little nitrite, a deep blue colour is produced, the absorption spectrum of which is closely analogous to that produced by Fremy's potassium oxysulphazotinate (nitrosodisulphonate). The same coloration can be produced by passing a current of nitric oxide mixed with air into sulphuric acid saturated at 60° with sulphurous anhydride.—On the preparation of aluminium alloys by a chemical reaction, by M. C. Combes. A mixture of aluminium with a sulphide or chloride is heated till the reaction

commences. The heat evolved during the chemical action is sufficient to melt the alloy formed provided that there is a sufficient difference between the heat of formation of the metallic sulphide employed and that of aluminium sulphide. Alloys of aluminium with nickel, manganese, and chromium were prepared by this method.—On the action of phosphorus on some metallic chlorides, by M. A. Granger.—Measurement of heat of etherification by the action of the acid chloride upon the sodium alkylate, by M. J. Cavalier. A thermochemical study of the reaction between phosphoryl chloride and sodium ethylate.—On the heat of combustion of acetal and monochloracetal, by M. Paul Rivals.—On the thermochemistry of the chloracetic ethers, by M. Paul Rivals.—Action of hydrazine upon the glyoxylic acids of the aromatic series, by M. L. Bouveault. The hydrazones obtained lose CO_2 at 180°-200°, giving nearly quantitative yields of the hydrazones derived from the corresponding aldehydes.

$$R(CO_2H).C=N-N=CR(CO_2H)=2CO_2+R.CH:N-N:CH.R$$

The yield of aldehyde, however, obtained by the hydrolysis of these hydrazones is not good.—On the constitution of inactive campholenic acid, by MM. Guerbet and A. Béhal.—On the nutritive value of flour and on the economic consequences of excessive sifting, by M. Balland.—On the chemical mechanism of the reduction of nitrates in plants, by M. A. Bach.—On the rational denaturation of alcohol, by M. G. Jacquemin. The addition of crude mercaptan to rectified spirit is suggested as a means of rendering alcohol unfit to drink, without interfering with its industrial applications.—On the deep borings at Charmoy (Creusot) and Macholles (Limagne), by M. A. M. Lévy. The first of these borings showed a rise of 1° C. for every 26 metres, the second (Charmoy) giving a rise of 1° C. for every 14·16 metres.—On the region of Diego Suarez (Madagascar), by M. R. Bourgeois.—On the relations which exist between the first segmentation groove and the embryonic axis in Amphibia and Teleostia, by M. E. Bataillon.—Tuberculosis experimentally shown to be attenuated by the Röntgen radiation, by MM. L. Lortet and Genoud.

PHILADELPHIA.

Academy of Natural Sciences, May 19.—The collections made by Dr. A. Donaldson Smith in Western Somaliland and the Galla country, North-eastern Africa, in 1894, were presented to the Academy. Dr. Smith spoke of the physical features of the regions from which the specimens had been collected, and gave briefly some facts regarding the habits of the animals observed by him. The several sections of the collection were commented on by the specialists of the Academy. The mammals are of unusual interest because these alone have not been studied by authorities elsewhere. They embrace fifty genera and about seventy species represented by over two hundred specimens. Seven genera and twelve species are new to American museums. The collection, except the bats, which are being studied by Dr. Harrison Allen, is in the hands of Mr. Samuel N. Rhoads, who will furnish a detailed report on the material submitted to him. The birds have been studied by Mr. Bowdler Sharpe. One hundred and fifty specimens of about one hundred species have been given to the Acadamy. The insects embrace 871 specimens. The Hymenoptera are being studied by Mr. Wm. J. Fox, who has determined eight species heretofore undescribed.—Mr. Henry A. Pilsbry made a communication on the fish-house deposits of New Jersey.—A paper entitled "The Plantstonokrit, a centrifugal apparatus for the volumetric estimation of the food supply of oysters and other aquatic animals," by Dr Chas. S. Dolby, was presented for publication.

May 26.—A paper entitled "Catalogue of the species of Cerion, with descriptions of new forms," by Henry A. Pilsbry and E. G. Vanatta, was presented for publication.—Mr. Edw. Goldsmith reported that a specimen of supposed Guperite from Hawaii had proved on examination to be an amorphous, soluble sulphate of lime. It is deposited in association with sulphur on the margin of the Kilauea crater, and is either ejected from the volcano or formed by the action of the oxygenated sulphur water on associated minerals. — Prof. Edw. D. Cope described a new genus and species of whalebone whale from the Miocene of the Yorktown epoch, under the name *Cephalotropis coronatus*. It was characterised by an elongation of the parietal and frontal bones, and establishes the relation of the group to the Zenglodonts.—Dr. M. F. Ball described a human exancephalic monster born about the seventh month, in which the brain, although extruded, was well developed

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Fourteenth Annual Report of the Fishery Board for Scotland, 1895, Part 1 (Edinburgh, Neill).—19th Annual Report of the Connecticut Agricultural Experiment Station, 1895 (New Haven).—Rheumatism, its Nature, its Pathology, and its successful Treatment: Dr. T. J. Maclagan (Black).—La Vie d'un Homme. Carl Vogt; W. Vogt (Paris, Schleicher).—Nitro-Explosives: P. G. Sanford (Lockwood).—Wayside and Woodland Blossoms: E. Step, 2nd series (Warne).—Geographical Journal, Vol. 7 (Stanford).—Plants of Manitoba (M. Ward).—Coloured Vade-Mecum to the Alpine Flora for the use of Tourists in Switzerland: L. and C. Schröter, 5th edition (Zürich, Raustein).—Sport in the Alps: W. A. Baillie-Grohman (Black).—Micro-Organisms and Disease: Dr. E. Klein, new edition (Macmillan).—Macmillan's Geography Readers, Book v. (Macmillan).—A Concise Handbook of British Birds: H. K. Swann (Wheldon). Der Lichtsinn augenloser Tiere: Dr. W. A. Nagel (Jena, Fischer).—La Spectrométrie: Prof. J. Lefèvre (Paris, Gauthier-Villars).—Le Nickel: H. Moissan and L. Ouvrard (Paris, Gauthier-Villars).—University Tutorial Series. Matriculation Directory (32, Red Lion Square).—Ros Rosarum, 2nd edition (E. Stock).—The Scenery of Switzerland: Sir J. Lubbock (Macmillan).

PAMPHLETS.—U.S. Department of Agriculture:—Some Mexican and Japanese Injurious Insects liable to be introduced into the United States (Washington).—On the Interpretation of Greek Music: C. Torr (Frowde).

SERIALS.—English Illustrated Magazine, July (Strand).—Revue Générale Internationale, No. 1 (Paris, Ollendorff).—Longman's Magazine, July (Longmans).—Good Words, July (Isbister).—Sunday Magazine, July (Isbister).—Lloyd's Natural History. Butterflies: W. F. Kirby, Part 1 (Lloyd).—Chambers's Journal, July (Chambers).—Natural Science, July (Page).—Journal of the Chemical Society, June (Gurney).—J. C. Poggendorff's Biographisch-Literarisches Handwörterbuch, 3 Band, Liefg. 1 (Leipzig, Barth).—Ergebnisse der Meteorologischen Beobachtungen in Jahre 1895, Jahrg. vi. (Bremen).—Memoirs of the Geological Survey of India, vol. xxvii. Part 1 (Calcutta).—Ditto, Palæontologia Indica, Ser. xiii. Vol. 2: Ser. xv. Vol. 2, Part 2 (Calcutta).—Bulletins de la Société d'Anthropologie de Paris, tome septième, (iv^{e}. série), 1896, fasc. 1er (Paris).—Mémoires de la Société d'Anthropologie de Paris, tome 2, (3^{e} sér.) 1er fasc. (Paris).—National Review July (Arnold).—Century Magazine, July (Macmillan).—Notes from the Leyden Museum, October 1895 (Leyden, Brill).—Contemporary Review, July (Isbister).—Morphologisches Jahrbuch, 24 Band, 1 Heft (Leipzig, Engelmann).—Reliquary and Illustrated Archæologist, July (Bemrose).

CONTENTS.

	PAGE
The Cell-Theory	193
A Romantic Naturalist	194
Our Book Shelf:—	
Weber: "The Spas and Mineral Waters of Europe"	195
Murché: "Domestic Science Readers"	196
Munro: "The Story of Electricity"	196
Letters to the Editor:—	
Zoological Publications.—Edgar R. Waite; Prof. G. B. Howes	196
The Salaries of Science Demonstrators.—Charles Frederic Baker	196
Halley's Chart of Magnetic Declinations.—Thos. Ward	196
The Total Eclipse of the Sun. By J. Norman Lockyer, C.B., F.R.S.	197
The Kelvin Jubilee	199
The British Association Meeting in Liverpool.—Local Arrangements. By Prof. W. A. Herdman, F.R.S.	199
The Davy-Faraday Research Laboratory	200
Boring a Coral Reef at Funafuti. By W. W. Watts	201
Sir Joseph Prestwich, D.C.L., F.R.S. By H. B. W.	202
Notes	203
Our Astronomical Column:—	
Declinations of Fifty-six Stars	206
Graphical Prediction of Occultations	206
Mass of the Asteroids	206
Variable Stars	206
Award and Presentation of the Rumford Premium	207
Causes of Death in Colliery Explosions	207
Individuality in the Mineral Kingdom. By Prof. Henry A. Miers, F.R.S.	208
University and Educational Intelligence	212
Scientific Serials	213
Societies and Academies	213
Books, Pamphlets, and Serials Received	216