REPLYING to a question as to the terms of reference to the Royal Commission on University Education in Ireland, in the House of Commons on Thursday last, Mr. Balfour said they were as follows:—"To inquire into the present condition of the higher general and technical education available in Ireland outside Trinity College, Dublin, and to report as to what reforms, if any, are desirable in order to render that education adequate to the needs of the Irish people." The chairman is Lord Robertson, and among the other members are Profs. Ewing, Rücker and J. Lorrain Smith.

IN opening an exhibition of practical work done in connection with the City and Guilds of London Institute, at the Imperial Institute, Lord Avebury referred to the dependence of technological instruction upon the sound teaching of science, and some defects of school work in general, when considered from an educational point of view. He pointed out that our great public schools were bound under the regulations of the Public School Commission to give one-tenth of the marks in all examinations to science and one-tenth to modern languages. But this obligation was systematically ignored. At the greatest of our schools there were twenty-eight classical masters, thirteen mathematical, and only four science masters for more than 900 boys. The University of London, which he had the great honour of representing in Parliament for more than twenty years, had always taken a leading part in endeavouring to secure for science its proper place in our educational system. It was the first to give science degrees. It made a knowledge of science an obligatory part of the matriculation examination, that no University degree should be given to any one who, taking the line that literature, science and mathematics were necessary elements in any well-though-out education, was not well grounded in all three. It was difficult to over-estimate the important and beneficial effect which this had had on our secondary schools, and he deeply regretted that it had been proposed to drop science out of the list of obligatory subjects in the matriculation examination. It was greatly to be hoped that the Senate would not adopt a recommendation which was so retrograde and so opposed to the whole traditions of the University, and which he did not hesitate to say would be a national misfortune. The Chambers of Commerce did not wish, nor, he was sure, did scientific men wish, to exclude classics. What they pleaded for was that science, the knowledge of the beautiful world in which we lived, should not be excluded.

## SCIENTIFIC SERIALS.

*Bulletin of the American Mathematical Society*, June.—The number opens with an account of the proceedings at the two April meetings of the Society. The Chicago section held its meeting at the University of Chicago on April 6. Ten papers were read, and abstracts of the papers are edited by Prof. T. F. Holgate. The other meeting was held in New York City on April 27. To relieve the increasing burden of administration, Dr. Edward Kasner was appointed assistant secretary, to serve until February 1902. This gentleman reports the proceedings and gives abstracts of several of the seventeen papers which were communicated.—The value of

$$\int_0^{\frac{\pi}{2}} (\log 2\cos\phi)^m \phi^n d\phi$$

is a notelet which was read before the April (1899) meeting of the Society by Prof. F. Morley.—Dr. Kasner's paper on the algebraic potential curves (read February 23, 1901) has for its object the derivation of the characteristic geometric properties of a class of curves which are of interest in connection with the theory of equations and of the potential function. Analytically, these curves are obtained by equating to zero the rational integral solutions $\phi(x, y)$ of Laplace's equation

$$\Delta\phi \equiv \frac{\partial^2\phi}{\partial x^2} + \frac{\partial^2\phi}{\partial y^2} = 0,$$

or, what is equivalent, the real (or imaginary) parts of the rational integral functions of $x+iy$.—Various geometric properties are given in Briot and Bouquet's "Théorie des Fonctions Elliptiques" (book iv. chap. ii.), but none are completely characteristic. The several sections treat of (1) apolarity with respect to a point pair, (2) polar properties of potential curves, (3) focal properties, (4) the asymptotes, and (5) the connection with the theory of equations. Several useful references are given in footnotes.—The reviews are of Steinmetz's "Alternating Current Phenomena," by J. B. Whitehead, jun., and of de Tannenberg's "Leçons Nouvelles sur les Applications Géométriques du Calcul Differential," by L. P. Eisenhart.—The usual information follows in the notes and new publications.

*American Journal of Science*, June.—The new spectrum, by S. P. Langley. A short account of the methods adopted for mapping the spectrum in the ultra-red. The paper is accompanied with a map of this spectrum for wave-lengths between 0·76 $\mu$ and 5·3 $\mu$.—On the rival theories of cosmogony, by O. Fisher. A discussion of the meteoric and nebular hypotheses. A study of some American fossil Cycads. Part iv. On the microsporangiate fructification of Cycadeoides, by G. R. Wieland. It was suggested in a previous paper that the sorus-bearing axis is a series of twelve fused leaves or fronds with their sorus-bearing pinnacles turned inwards. More extended study of additional material in a far superior state of preservation has confirmed the above hypothesis as a correct one.—Studies of Eocene mammalia in the Marsh collection in the Peabody Museum, by J. L. Wortman. A continuation of a previous paper.—On the cæsium-antimonious fluorides and some other double halides of antimony, by H. L. Wells and F. J. Metzger. A description of the mode of preparation and properties of five double salts of the composition $CsF.3SbF_3$, $CsF.2SbF_3$, $4CsF.7SbF_3$, $CsF.SbF_3$ and $2CsF.SbF_3$, mohawkite, by J. W. Richards.—The life-work of Prof. H. A. Rowland, by H. F. Reid.

## SOCIETIES AND ACADEMIES.

### LONDON.

**Royal Society**, February 28.—"On the Results of Chilling Copper-Tin Alloys." By C. T. Heycock and F. H. Neville.

Sir W. Roberts-Austen and Dr. Stansfield have shown that the cooling curves of many copper-tin alloys exhibit well-marked "arrest points," or halts in the cooling due to the evolution of heat. From the temperatures at which these halts occur it is certain that many important changes take place long after the alloy has apparently become solid. Thus the authors find that an alloy of the composition $Cu_{81}Sn_{19}$ shows well-marked halts in cooling at the temperatures 754° C., 743° C., 558° C. and 490° C., the temperature at which solidification appears complete being but little below the second of the numbers. The exact nature of the changes causing the lower halts has until recently been obscure, but Prof. Roozeboom, by his paper on "Binary Systems Producing Mixed Crystals," has thrown much light on these phenomena.

The present paper is an attempt to apply Roozeboom's theory to the copper-tin alloys.

The authors, by slowly cooling small ingots of alloy to definite temperatures near the "arrest points" of the cooling curve, and then suddenly chilling them by immersion in water, have been able to prevent the subsequent changes due to slow cooling from taking place. The structures formed during the slow cooling down to the moment of chilling were thus fixed and could be examined.

It follows from Roozeboom's theory that in the solidification of a liquid mixture that can form mixed crystals the crystals first formed will generally differ in composition from the liquid, but that these crystals will change in composition as the solidification proceeds, and that in many cases at temperatures slightly below that of complete solidification the solid will consist of a uniform mass of mixed crystals. He further discusses the possibility of the solid solution thus formed breaking up into separate phases by crystallisation in the solid at lower temperature.

This paper contains photographs of three chills of the same alloy, $Cu_{81}Sn_{19}$, which illustrate these changes. In the first case the alloy was chilled at 740° C. (Fig. 1), while it was still partly fluid, and the photograph shows large primary combs much richer in copper than the mother substance.

Another portion of the same alloy was chilled at 630° C. (Fig. 2), a temperature at least 100 degrees below that of solidification. Even when etched or attacked in a variety of ways this sample shows no detail indicating any difference of composition; it appears to be homogeneous, or very nearly so. It has reached the stage of uniform mixed crystals.

Another fragment was chilled at 500° C. (Fig. 3), close to the lowest "arrest point." The photograph shows that crystallisation has taken place in the solid solution and that a substance rich in tin has crystallised in rosettes and bands, leaving a mother substance rich in copper.

These alloys, after polishing, were prepared for photography by slightly oxidising the surface by gently heating them in air, the temperatures needed to bring out the pattern in this way being far below those at which changes in the structure of the alloy occur. When treated thus, the parts rich in copper oxidise, and therefore darken, more rapidly than those rich in tin, hence the dark parts in the photographs correspond to matter rich in copper, and *vice versa*.

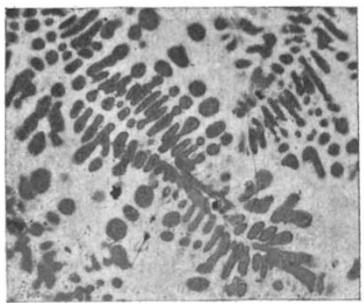


FIG. 1.—Chilled at 740°.

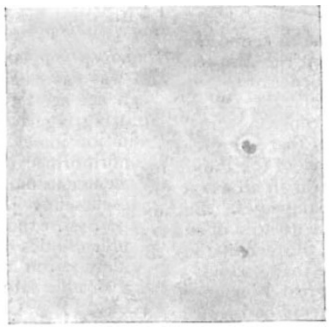


FIG. 2.—Chilled at 630°.

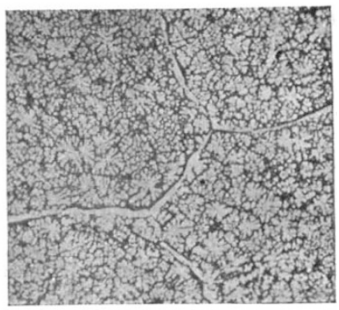
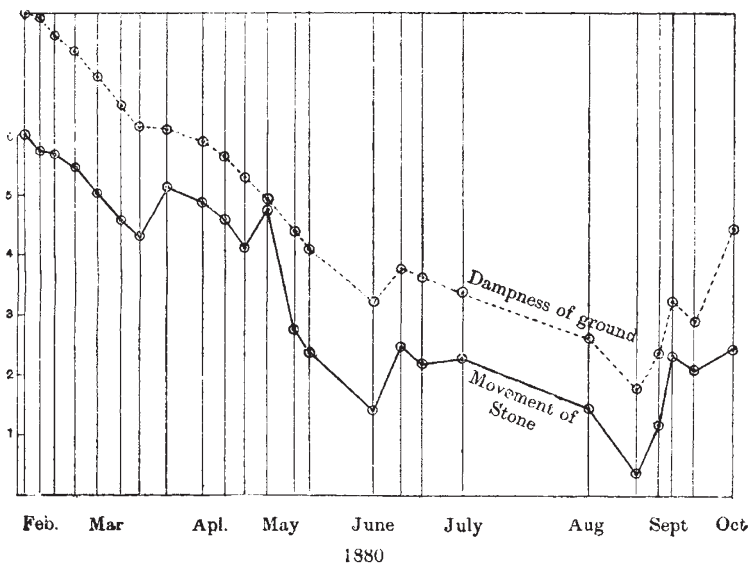


FIG. 3.—Chilled at 500°.

The authors have found similar, though sometimes more complex, phenomena throughout a considerable range of composition. The results lead to the conclusion that it is unwise to interpret a freezing curve by the examination of slowly-cooled alloys only.

May 2.—"On the Small Vertical Movements of a Stone laid on the Surface of the Ground." By Horace Darwin. Communicated by Clement Reid, F.R.S.

The experiments described in this paper were undertaken originally to measure accurately the downward movement of a stone caused by earthworms. The upward and downward movements due to varying moisture of the soil and to frost were found to be much larger than was expected. These movements, owing to an unforeseen cause of error the measurements were not trustworthy to the last place of decimals. However, when care was taken to avoid this error, consecutive readings agreed to less than this amount, showing that the method was capable of greater accuracy than was required. Errors caused by the growth of the roots of a tree near the stone, swelling of the soil due to dampness, and the expansion of the rod from change of temperature are discussed.




The movements of the stone are represented graphically; the figure reproduces one of the diagrams.

The curve marked "Movement of Stone" represents the up and down movements of the stone from February 19 to October 9, 1880, due to the varying dampness of the ground.

The points corresponding to each observation are surrounded by a small circle; their vertical distance apart is proportional to the movement of the stone, each division of the scale representing 1 mm.; the horizontal distance apart is proportional time.

The curve shown by the dotted line roughly represents the dampness of the soil. Moisture is assumed to leave the soil at a uniform rate; the ordinates are proportional to the rainfall less this assumed amount evaporated or drained away; both quantities are calculated from February 19. The curves follow each other, showing that the stone fell as the soil became dryer and rose again with rain. In May there is a marked exception; the most probable explanation is an error in reading the micrometer. The total downward movement from February 19 to September 7 is 5·6 mm. On another occasion artificially wetting the ground raised the stone 0·6 mm.

Measurements taken in the winters of 1878 and 1886 show that the stone sank about 2·2 mm. per year. Measurements were also taken in the summer of most years from 1878 to 1896. The downward movement was not regular, and it is shown that this also is partially due to the varying dampness of the soil. From 1878 to 1887 the stone sank on the average about 2·3 mm. per year, and from 1887 to 1896 about ·36 mm. per year.

The effect of frost is to raise the stone; it fell rapidly during a thaw—on one occasion 2·3 mm. in 4 hours 40 minutes.

June 6.—"The Measurement of Ionic Velocities in Aqueous Solution, and the Existence of Complex Ions." By B. D. Steele, B.Sc., 1851 Exhibition Scholar (Melbourne). Communicated by Prof. Ramsay, F.R.S.

The method of measuring ionic velocities described by Masson has been extended in such a manner that, by the present method, the use of gelatin solution and of coloured indicators is not necessary.

An aqueous solution of the salt to be measured is enclosed between two partitions of gelatin which contain the indicator ions in solution, the apparatus being always so arranged that the heavier solution lies underneath the lighter. On the passage of the current the ions of the measured solution move away from the jelly, followed at either end by the indicator ions; the boundary is quite visible in consequence of the difference in re-

interesting in themselves, increase the difficulty of accurately determining the movement due to the action of earthworms.

To obtain a fixed point from which to measure the displacement of the stone a rod was driven into the ground to a depth of 2·63 metres. The top of this rod was the point from which all measurements were taken.

A circular stone about 460 mm. in diameter and about 57 mm. thick, weighing about 23 kilos., was placed on the ground with the rod projecting through a hole in its centre.

A screw micrometer graduated to 01 mm. was used. The screw was turned until its end just touched the end of the rod;

fractive index of the two solutions. The velocity of movement of the margins is measured by means of a cathetometer, and the ratio of the margin velocities gives at once the ratio of the ionic velocities.

The velocities of a large number of ions at different concentrations of different salts have been calculated, and the velocities of the hydrogen and hydroxyl ions have been also measured, with the following results:—

| | Found. | Calculated. |
|---|---|---|
| OH in KOH, 0·5 N ... ... | 0·001435 | 0·00145 |
| ,, NaOH, 0·2 N ... ... | 0·00158 | 0·00152 |
| H in $HNO_3$, 0·2 N ... ... | 0·00282 / 0·00272 | 0·00280 |

The ratio of the current, as measured by the galvanometer, to that calculated from the velocity of the margins in the manner indicated by Masson, is found to be equal to unity only for a few salts of the type of potassium chloride; for other salts this ratio has a value in some cases greater, in others less, than 1. The same irregularity has been previously pointed out by Masson for the gelatin solutions of the sulphates of magnesium and lithium.

The attempt is made to explain this deviation from the requirements of theory, and also the difficulty that Kohlrausch is unable to assign to dyad elements any value for the specific ionic velocity, which is the same when calculated from the measurements of different salts of the same metal, by the assumption, first advanced by Hittorf, that, in concentrated solutions of these salts ionisation takes place in such a manner that there are formed complex ions in addition to simple ones; and the conclusion is drawn that, in all cases where any considerable change in transport number occurs with changes in concentration, complex ions are present to a greater or less extent.

**Zoological Society**, June 4.—Dr. W. T. Blanford, F.R.S., vice-president, in the chair.—A communication by Dr. R. Broom, on the structure and affinities of the Anomodont genus Udenodon, was read. It contained an account of a number of specimens from the Lower Karoo beds of Pearston, South Africa, which the author referred to the Dicynodont genus Udenodon [Oudenodon]. One of these, a small skull, was shortly described as the type of a new species (*U. gracilis*).—A communication was read from Mr. Oldfield Thomas, F.R.S., in which he gave the history of the specimen of *Rhinoceros lasiotis*, Sclater (which had lived for thirty-two years in the Society's Gardens), and stated that he was of opinion that it was not deserving of specific rank, but should be considered rather as a subspecies of *R. sumatrensis*. The generic nomenclature of the rhinoceros was also examined, and it was proposed that the existing species of this family should be divided into three generic divisions—Rhinoceros (to include *R. unicornis* and *R. sondaicus*), Dicerorhinus (to include *R. sumatrensis* and *R. sumatrensis lasiotis*), and Diceros (to include *R. simus* and *R. bicornis*). It was shown that, if it were found necessary to divide the species *R. simus* and *R. bicornis*, the former, with its fossil allies, should bear the name Coelodonta.—Mr. G. A. Boulenger, F.R.S., read a paper on a small collection of fishes from the Victoria Nyanza which had been made by the order of Sir H. H. Johnston, K.C.B. Six species were enumerated and remarked upon, two of which (*Labeo victorianus* and *Discognathus johnstoni*) were described as new.—Mr. F. E. Beddard, F.R.S., described six new species of earthworms of the genus Benhamia from Tropical Africa.—A communication was read from Mr. J. G. Millais containing some notes on the capture of a specimen of Bechstein's Bat (*Vespertilio bechsteini*) in the neighbourhood of Henley-on-Thames. So far as was known, this was only the second occurrence of this species recorded in Great Britain.—Mr. H. R. Hogg read a paper on the Australian and New-Zealandian spiders of the suborder Mygalomorphæ. The author adopted the nomenclature of M. Simon, and stated that of the seven subfamilies of this suborder into which M. Simon had divided it, six were represented in Australia and New Zealand, the only absentee being the Paratropidinæ of South America.

**Entomological Society**, June 5.—The Rev. Canon W. W. Fowler, president, in the chair.—Mr. G. C. Champion exhibited a male specimen of *Odontaeus mobilicornis*, one of the rarest of British beetles, captured at Woking on May 28.—Mr. R. McLachlan exhibited four specimens of a curious bug of the genus Henicocephalus received from Mr. G. V. Hudson of Wellington, New Zealand, not previously noticed in that country. Mr. Champion said that Henicocephalus was generally recognised as a type in itself of a family, and Mr. Kirkaldy that it was much commoner than generally supposed. It was probably only an aberrant form of the Reduviidæ, having no stridulating apparatus on the prosternum.—Mr. C. P. Pickett exhibited varieties of *Smerinthus tiliae* bred during May 1900-1.—Mr. C. G. Barrett exhibited imagines, cocoons, pupa skins, and also water-colour sketches of larvæ, reared and drawn by Miss Frances Barrett, at Buntingville, Pondoland, S. Africa.—Dr. A. Jefferis Turner exhibited specimens of Australian wood-boring Lepidoptera belonging to four different families. They included examples of Pyralidæ, Gelechidæ, Cossidæ and Hepialidæ.—Mr. H. Goss exhibited for Mr. Ernest Ardron, of Colombo, Ceylon, two specimens of a species of Phyllium (Phasmidæ). They bore an extraordinary resemblance to leaves. He also showed three varieties of the male of *Melitaea Cinxia*, which he had taken on May 27 and 28 at Niton, Isle of Wight.—Mr. C. O. Waterhouse exhibited two new genera and species of Coleoptera recently described by him in the *Ann. and Mag. Nat. Hist.* from Rio Janeiro. One belonged to the aberrant Prisnidæ (*Pathocerus Wagneri*); the other (*Tetraphalerus Wagneri*) belonged to the Cupesidæ, and was remarkable for the form of its head. He also exhibited ♂ and ♀ of the curious Scarabæid, *Glyphoderes sterquilinus*, Westw., from North Argentina.—Mr. H. St. J. Donisthorpe exhibited a glove burnt by discharges of formic acid in the nests of *Formica rufa*. Prof. Poulton said that the discharges collected in tubes fluctuated greatly in strength, the strongest yielding a proportion of sixty to seventy per cent. of anhydrous acid. The discharge of *Dicranura vinula* showed a strength of about forty-five per cent.—Mr. W. Schaus communicated "A Revision of the American Notodontidæ," and Mr. H. St. J. Donisthorpe read a paper on cases of protective resemblance, mimicry, &c, in British Coleoptera.

**Linnean Society**, June 6. Mr. W. Curruthers, F.R.S., vice-president, in the chair.—The adjourned debate was resumed on Mr. H. M. Bernard's paper on the necessity for a provisional nomenclature for those forms of life which cannot be at once arranged in a natural system.—The following resolutions were proposed by Mr. Bernard: (1) That the Linnean method of naming is well adapted for indicating affinity, and should be used for that purpose; (2) that allied forms whose affinities are not clear should be designated by some provisional method of naming; (3) that the method proposed by the author appears to promise enough to justify its temporary application to the Anthozoa. Mr. H. Groves moved as an amendment to the first resolution to omit all after the word "naming," and to substitute "is adequate for the present needs of zoology and botany." This was seconded by Dr. P. L. Sclater. The discussion was continued in order to elicit the views of those present on the resolutions proposed by Mr. Bernard, but no vote was taken.

**Anthropological Institute**, June 11.—Dr. A. C. Haddon, F.R.S., president, in the chair. Mr. Morton Middleton exhibited, on behalf of the South American Missionary Society, a large series of implements and other objects, including swan gullet necklaces, whalebone snares, featherwork, &c., from the Yahgans of Tierra del Fuego, and introduced Mrs. Burleigh, who spent some fifteen years among the Yahgans, and gave a number of additional data in regard to them.—Mr. G. Coffey read a paper on Irish copper celts.

**Mathematical Society**, June 13.—Dr. Hobson, F.R.S., president, in the chair.—The theory of Cauchy's principal values (ii.), by Mr. G. H. Hardy.—On the general form of three rational cubes whose sum is a cube, by Prof. Steggall.—Invariants of curves on the same surface, in the neighbourhood of a common tangent line, by Mr. T. Stuart.—Short impromptu communications were made by Dr. Macaulay (2) and Lieut.-Colonel Cunningham, R.E.

## DUBLIN.

**Royal Irish Academy**, June 10.—The president in the chair.—On the creeping of liquids and tension of mixtures, by Dr. Fred T. Trouton, F.R.S. A number of experiments were described which showed that in order for a liquid to be capable of creeping over solid surfaces it must be a mixture. Ordinary paraffin, for example, does so, but a pure paraffin will not creep. It can be made to do so, however, by the addition of a suitable liquid. The added liquid must be more volatile, and must reduce the surface tension. This can be the case not only with

liquids of lower surface tension, but also with liquids of higher surface tension when added in small quantities. For experiments on mixtures of liquids in general showed that the surface tension of a mixture is always less than the percentage calculated value. Thus an actual depression of the surface tension is in most cases produced by adding a liquid of higher surface tension. For this reason there are few liquids by the addition of which the creeping of, say, ordinary paraffin may be prevented, the requisite being a more volatile liquid with a very high surface tension.

EDINBURGH.

**Mathematical Society**, June 14.—Mr. J. W. Butters, president, in the chair. The following papers were read: (1) Note on an extension of Abel's theorem on the continuity of a power series, by Prof. Gibson; (2) The diffraction of plane waves incident obliquely on a semi-infinite plane, by Dr. Carslaw.

PARIS.

**Academy of Sciences**, June 17.—M. Fouqué in the chair. —Researches on chemical equilibria. The formation of insoluble phosphates by double decomposition; disodium hydrogen phosphate and silver nitrate, by M. Berthelot. In the reaction between silver nitrate and ordinary sodium phosphate, the total precipitation of the silver as phosphate takes place only when the two salts react in equimolecular proportions. Precipitates formed in the presence of an excess of sodium phosphate contain a certain amount of sodium, probably in the form of a sodium silver phosphate, which cannot be removed by prolonged washing.—On some new syntheses effected by means of molecules containing the methylene group associated with one or two negative radicles. The action of epichlorhydrin and epibromhydrin upon the sodium derivatives of benzoylacetic esters, by M. Haller. The chlorine or bromine atom is not eliminated in these reactions, but an addition product is formed. Thus epichlorhydrin with benzoylacetic ester gives a new ketolactone, the properties and reactions of which are given.—M. Maupais was nominated a correspondent for the section of anatomy and zoology in the place of the late M. Marion.—Some new nebulæ discovered at the Observatory of Paris, by M. G. Bigourdan. Positions and descriptions of twenty-one new nebulæ.—On the employment of the stereoscope in astronomy, by M. Maurice Hamy. Remarks on some possible applications of the stereoscope in astronomy, with applications to the study of the motions of stars by the Doppler-Fizeau principle, to eclipses of the sun with special reference to the internal movements of the chromosphere, and to the internal movements of nebulæ.—The equations and fundamental properties of reciprocal autopolar figures in the plane and in space, by M. Rabut.—On Fourier's series, by M. A. Hurwitz.—On the application of the theory of elasticity to the calculation of bent rectangular beams, by M. Mesnager.—On electromotive forces of contact and the theory of ions, by M. E. Rothé. An experimental study with a Lippmann capillary electrometer in which the solution could be readily changed, the solutions used being sulphuric and hydrochloric acids of varying strengths. The variations of electromotive force thus observed were compared with those calculated from the ionic hypothesis, the agreement in the case of the weak solutions being satisfactory.—The capillary constants of organic liquids, by MM. Ph. A. Guye and A. Baud. Measurements by the method of Ramsay and Shields of the capillary constants of phenetol, anisol, ethyl acetate, nitrobenzene, benzonitrile and metacresol. In all these substances, with the exception of metacresol, the value of the constant K exceeds the number 2·121 admitted by Ramsay and Shields as the value for a non-polymerised liquid, but the author adduces reasons for supposing that this does not necessarily mean that these substances are in a polymerised state.—On a new element, europium, by M. Eug. Demarçay. By a prolonged fractionation of samarium it has been possible to isolate the oxide of an element, apparently distinct from samarium, and which is capable of giving rise to the so-called anomalous ray, discovered by Crookes in the fluorescent spectrum of samarium. It is also identical with the element provisionally named Zε by de Boisbaudran. The name europium is proposed for this substance, with the symbol Eu = 151 about.—On the chlorobromides of thallium, by M. V. Thomas. The methods of preparation and the properties of two chlorobromides of thallium are described, having the compositions $Tl_3Cl_2Br_4$, and TlClBr.—The reactions of acetylene with cuprous chloride dissolved in a neutral solution of potassium chloride, by M. R. Chavastelon. The action of acetylene upon a neutral saturated solution of cuprous chloride gives the same results as when the solution is acid or alkaline. —The separation of nickel and cobalt by the electrolytic method, by M. Dmitri Balachowski. From a solution containing both nickel and cobalt salts to which ammonium thiocyanate, urea, acetic acid, and a little ammonia have been added, it has been found possible by careful attention to the voltage, and especially to the amperage, to completely separate the nickel, which comes down apparently as a sulphide. By then altering the voltage and the strength of the current the cobalt can be thrown out.—Study of contact action on the secondary and tertiary alcohols, by M. A. Trillat.—On the floral organogenesis of the disciflora, by M. L. Beille.—Diffusion in gelatin, by M. S. Leduc.—On the presence of carbon monoxide in the blood of the newly-born, by M. Maurice Nicloux. In ten estimations of the amount of carbon monoxide in the blood of a newly-born animal the amount found varied between ·08 c.c. to ·14 c.c. of CO from 100 c.c. of blood, with a mean of 0·11 c.c. The amounts were estimated by the amount of iodine set free from iodic acid, and from this reaction and the fact that the gas is totally absorbed by hæmoglobin it is quite certain that the gas is really CO.—On a biochemical differentiation of the two principal ferments of vinegar, by MM. Gab. Bertrand and R. Sazerac. The two species, *Mycoderma aceti* and *Bacterium xylinum*, can be distinguished by their different oxidising power towards glycerin.—On the extrapolar electrotonic currents in nerves without myeline, by M. Mendelssohn.—On the reaction time in different races and social conditions, by M. Louis Lapicque. The average reaction time of Europeans was found to be 0·15 second, of Hindoos 0·22 second and of Andaman Islanders 0·19 second.—The influence of the lethecines of the egg upon the nutritive changes, by MM. A. Desgrez and A. Zaky. —On the use of yeast as a means of finding out communications between sheets of water, by M. P. Miquel.

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