

exemplify the idea and to let schoolboys know how the daily arithmetic of the laboratory and of the workshop is carried out. Masters should also find them useful for curve tracing on squared paper, as the coordinates of any parabola or rectangular hyperbola, or of any curve representing the law of inverse squares, can be read off from the rule with a single setting of the slide.

With such inexpensive slide-rules it is to be hoped that the makers will in time provide two spare slides at a slight additional cost. For instance, one should be divided so as to give sines and tangents; the second should have a scale of equal parts to give logarithms and a log log or P line for exponential calculations. They might also with advantage print on the back of the rule constants that are frequently required, but at no extra cost.

With such extra slides the master would be able to illustrate further curve tracing, and the line of sines would be specially useful in the optical class for reading off angles of incidence and of refraction with any refractive index, or for showing the necessity of total internal reflection when the scale of sines stops short of the number representing the refractive index. He would also find it useful in solving triangles.

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Dr. G. H. F. Nuttall, F.R.S., Quick professor of biology and fellow of Christ's College, Cambridge, has been elected to a professorial fellowship at Magdalene College.

MANCHESTER.—By the will of Mr. G. Harrison, who died on January 21, 1900, is bequeathed to Owens College for scholarships or fellowships, or such similar purposes as the council of the college may direct, subject to the words "George Harrison" being always associated with the objects provided for by this bequest.

SIR FREDERICK WILLS has contributed another 500*l.* to the fund for establishing a university at Bristol. This brings his contribution up to 10,000*l.* At the beginning of this year Mr. H. O. Wills promised 100,000*l.* toward the endowment of the university provided a charter be granted within two years.

THE University of London Union Society appears to have made good progress since its formation in July, 1906. The annual report for 1906-7 shows that at the end of the session there were 377 members, 180 of whom were graduates. Monthly meetings for discussion were held during the Lent and Easter terms of 1907, and, in addition, friendly relations have been established with the Students' Representative Council, the University Athletic Union, and the University Musical Society. The new union is modelled on the lines of those existing at Oxford and Cambridge, and deserves the support especially of the students of London colleges affiliated to the University. Interested members should apply to the secretary, Mr. D. W. H. Bell, 20 Maxey Road, Plumstead.

A BILL to establish compulsory continuation schools in England and Wales, and to amend the Education Acts of 1870 and 1902 in respect of the age of compulsory school attendance, was introduced in the House of Commons on Tuesday by Mr. Chiozza-Money, and read a first time. In introducing the Bill, Mr. Chiozza-Money said that according to the last census there were in England and Wales 5,000,000 youths of both sexes between the ages of fifteen and twenty-one, and of these not more than 400,000 were receiving any measure of systematic training. This does not include the children of the upper and middle classes, but if 400,000 be added the extraordinary conclusion is arrived at that out of 5,000,000 young people between fifteen and twenty-one years of age only 800,000 continue training after leaving the elementary schools. The practical result is that untrained boys and girls drift into the ranks of the incompetent, the unskilled, and the unemployed. The Bill abolishes all partial or total exemptions of boys and girls under fourteen years of age. It abolishes half-timers, making fourteen years the lowest age at which a boy or girl might leave an elementary school. A continuation scholar is defined as a boy between

the ages of fourteen and seventeen, and a girl between the ages of fourteen and sixteen. The Bill makes it the duty of the education authority to establish continuation schools, with technical classes, and the attendance of continuation scholars is made compulsory on the parent and the employer. The hours of attendance would be six per week, spread over one, two, or three days. The cost of carrying out the provisions of the Bill would be defrayed out of money voted by Parliament.

ABOUT a year ago the Board of Education requested its Consultative Committee to consider and advise the Board what methods are desirable and possible, under existing legislation, for securing greater local interest in the administration of elementary education in administrative counties by some form of devolution or delegation of certain powers and duties of the local authority to district or other strictly local committees. The committee has reported to the Board, and the report has been published (Cd. 3952). A prefatory memorandum states that the findings of the committee are under the consideration of the Board, and that the report has been published to provide information in view of the discussion arising out of the Bill recently introduced in the House of Commons to secure compulsory devolution. The Consultative Committee has arrived at certain general conclusions which should prove of value in assisting intelligent action. Every education committee, it is suggested, should, so far as existing powers go, secure as managers of schools the services of persons familiar with the educational needs of the locality and likely to be regarded with confidence and sympathy by parents, teachers, and the education authority. At the same time, there are certain duties requiring a wide outlook and broad educational experience which, the committee thinks, should be reserved by the authority itself. A certain number of counties exist which might with advantage create some form of local subcommittees and delegate to them duties appropriate to their needs and circumstances. It is very important to notice that the Consultative Committee states that it would be difficult, if not impossible, to devise any uniform system which would give general satisfaction throughout the country. It would be fatal to efficiency if a parochial spirit became predominant in the administration of education. It is desirable by all means to encourage an interest in educational matters in all districts by every legitimate means, but every step must be taken to ensure that the supply of efficient education in every locality is a national matter which must not be left at the mercies of local prejudices.

#### SOCIETIES AND ACADEMIES.

LONDON.

**Royal Society**, December 5, 1907.—"Localisation of Function in the Lemur's Brain." By Dr. F. W. Mott, F.R.S., and Prof. W. D. Halliburton, F.R.S.

The brain of the lemur, the lowest of the ape-like animals, does not appear to have been subjected previously to a thorough examination. Page May and Elliott Smith brought a brief communication on the subject before the Cambridge meeting of the British Association in 1904. Their experiments were apparently limited to stimulation of the cerebral cortex, and they have never published a full account of their work. Brodmann has worked out some of the histological details of the structure of the cortex cerebri, and Max Volsch has performed a stimulation experiment upon one lemur. The work of these investigators will be referred to again in the course of this paper.

(1) The brain of the lemur has a simple convolutional pattern, and the fissures are few and for the most part shallow.

(2) The motor areas are limited to the central region of the cortex.

(3) Extirpation of the excitable areas is followed by transitory paralysis of the corresponding regions on the opposite side of the body, and by degeneration of the tracts which pass to the bulbar or spinal grey matter which controls these movements. Degeneration also occurs in commissural (callosal) and association tracts in the cerebrum.

(4) The motor areas are characterised histologically by the presence of Betz cells. Localisation by histological study is therefore possible, and there is a close correspondence of the results so obtained with those obtained experimentally.

(5) There are, however, two types of motor cortex in the lemur's brain. The large type of Betz cell is found in the greater part of the motor cortex, particularly where limb and body movements are represented. The smaller type of Betz cell is found in the area governing face, tongue, ear, and eye movements, and in this excitable region there is a layer of granules; it is therefore probably sensorimotor.

(6) Although the investigation relates in the main to motor representation, histological examination of the occipital (and especially calcarine) region shows it to possess the structural characters of the visual cortex in other animals. That no eye movements could be elicited by faradic stimulation of this region is probably due to the difficulty of the experiment, as explained in the text.

February 13.—“On the Determination of Viscosity at High Temperatures.” By Dr. C. E. Fawsitt. Communicated by Prof. Andrew Gray, F.R.S.

Measurements of viscosity at temperatures higher than 300° C. to 400° C. present considerable difficulties, and until the present year this subject has not been touched by experimenters.

The present communication contains a description of the method used. The method is suitable for the measurement of the viscosity of liquids which are not very viscous—not more than, say, fifty times as viscous as water—and is especially designed for the determination of the viscosity of molten metals and salts. The determination of the viscosity of salts up to 1200° C., or even higher, can be quite satisfactorily carried out by this method. Determinations of the viscosity of metals are much more difficult, owing to the impossibility of preventing a certain amount of surface oxidation. The smallest trace of surface oxidation will completely spoil a series of observations, and the prevention of oxidation is really the chief difficulty in such determinations.

The method used is based on the method originally given by Coulomb, the modifications introduced being due to the special nature of the determinations. In Coulomb's method a horizontal disc is allowed to execute horizontal vibrations about a vertical suspending wire attached to its centre. The viscosity of the liquid can be calculated from the rate of decay of amplitude.

In making a series of observations with this apparatus, the disc is allowed to sink about half an inch below the surface of the liquid. The amplitude of the oscillations is indicated by a pointer (wire) at right angles to the top of the iron rod which carries the disc, and the pointer moves above a circular scale divided into degrees.

With this apparatus, the determination of the viscosity of a liquid is accurate to within 5 per cent. of the absolute value, unless there are special circumstances, as in the case of molten metals, when the results are apt to come out considerably too high.

The results obtained show the availability of this method for the determination of viscosity up to the highest temperature at which a platinum capillary has been used.

**Chemical Society**, March 5.—Sir William Ramsay, K.C.B., F.R.S., president, in the chair.—The solubility of iodine in water: H. Hartley and N. P. Campbell. The solubility of iodine in water has been determined at 18°, 25°, 35°, 45°, and 55°, and the heat of solution has been calculated from the temperature coefficient of the solubility.—Nitro-derivatives of *o*-xylene (preliminary note): A. W. Crossley and Miss N. Renouf. *o*-Xylene yields two trinitro-derivatives, the one melting at 71° and the other at 115° (compare Noelting and Thesmar, *Ber.*, 1902, xxxv., 634). A new dinitro-*o*-xylene melting at 82° has also been isolated, and a substance melting at 115° which is a dinitro-derivative of some condensed benzene ring derivative.—Substituted dihydrobenzenes, part ii., 1:1-dimethyl- $\Delta^{2:4}$ -dihydrobenzene and 1:1-dimethyl- $\Delta^{2:5}$ -dihydrobenzene: A. W. Crossley and Miss N. Renouf. Dimethyldihydrobenzene prepared by the elimination of 2HBr from 3:5-dibromo-1:1-dimethylhexahydrobenzene has been proved to consist of a mixture in approximately equal

parts of these two hydrocarbons, thus refuting the adverse criticisms of Harries and Antoni (*Annalen*, 1903, cccxxviii., 66) on the work published by Crossley and Le Suéur (*Trans.*, 1902, lxxxi., 821).—The viscosity of aqueous pyridine solutions: A. E. Dunstan and F. B. T. Thole. The authors have repeated their experiments on the viscosity of aqueous pyridine solutions, and find that the same discontinuities occur in the curve as were previously observed (compare Hartley and others, *Proc.*, 1908, xxiv., 22).—The action of thionyl chloride on the methylene ethers of catechol derivatives, ii., piperonyloin, piperil, and hydropiperin: G. Barger and A. J. Ewins.—Traces of a new tin-group element in thorianite: Miss C. de Brereton Evans. The dark brown sulphide of the new element separates with arsenious sulphide, from which it differs in being soluble in water, to form a deep brown solution. It yields a hygroscopic brown oxide, which on reduction in hydrogen furnishes a grey metal. Incidentally, proof was obtained of the presence in thorianite of arsenic, mercury, bismuth, molybdenum, and selenium.—The sulphination of phenolic ethers and the influence of substituents: S. Smiles and R. Le Rossignol. The authors have confirmed the conclusion that the sulphonium base derived from phenetole is produced in three stages, at which the sulphinic acid, sulphoxide, and base are consecutively formed, by isolating the sulphinic acid.—The relation between unsaturation and optical activity, part ii., alkaloid salts of corresponding saturated or unsaturated acids: T. P. Hilditch.—The wandering of bromine in the transformation of nitro-aminobromobenzenes: K. J. P. Orton and Miss C. Pearson.—A new isomeride of vanillin occurring in the root of a species of Chlorocodon, preliminary note: E. Goulding and R. G. Pelly. The results obtained show that the odorous constituent of Chlorocodon root is a monomethyl ether of a dihydroxybenzaldehyde having an odour intermediate between that of vanillin and piperonal, but which is not identical with vanillin or any of its known isomerides.—The volatile oil of the leaves of *Ocimum viride*, preliminary note: E. Goulding and R. G. Pelly. The composition of the oil is approximately as follows:—thymol, 32 per cent.; alcohols (calculated as C<sub>10</sub>H<sub>18</sub>O), 40 per cent.; esters (calculated as C<sub>11</sub>H<sub>18</sub>OAc), 2 per cent.; the remainder consists chiefly of a terpene (or possibly a mixture of terpenes), which is a liquid of pleasant lemon-like odour, boiling at 160°–166°.—Experiments on the synthesis of the terpenes, part xii., synthesis of terpins, terpineols, and terpenes derived from the methylisopropylcyclopentanes, Me.C<sub>2</sub>H<sub>5</sub>.CHMe<sub>2</sub>: W. N. Haworth and W. H. Perkin, jun.—The initial change of the radium emanation: N. V. Sidgwick and H. T. Tizard.

**Geological Society**, March 4.—Prof. W. J. Sollas, F.R.S., president, in the chair.—*Metriorhynchus brachyrhynchus*, Deslong., from the Oxford Clay near Peterborough: E. T. Leeds. Two skulls have recently been obtained from the Saurian zone of the Lower Oxford Clay, in the neighbourhood of Dogsthorpe, Peterborough. The mandibles were missing. The two specimens have been referred to *Metriorhynchus brachyrhynchus*. This is believed to be the first recorded occurrence of the species in England.—The high-level platforms of Bodmin Moor, and their relation to the deposits of stream-tin and wolfram: G. Barrow. In this area there are three platforms:—one, which is marine and of Pliocene age, terminating in a steep slope at 430 feet; a second, at a height of 750 feet, seen about Camelford and at the foot of Delabole Hill; and a third, a little under 1000 feet, first recognised on Davidstow Moor. The superficial deposits which bear tin above the 750-foot platform differ markedly at times from those below it. These deposits are not so concentrated as the stream-sorted material below, but they have been frequently worked in past times. The veins from which the wolfram is derived have been found close to the points where the “wash” is enriched by their denudation. The success of working depends to some extent on the slope of the granite-floor on which the detritus rests. On Bodmin Moor the larger marshes have a floor of kaolinised granite, but there is a difficulty in working it at many points in consequence of the water-logging by peaty water.

**Royal Anthropological Institute**, March 10.—Prof. W. Ridgeway, president, in the chair.—The origin of the crescent as a Mohammedan badge: Prof. Ridgeway. It

was demonstrated that the crescent badge had its origin, not in the new moon, as generally supposed, but in the well-known amulet formed of a claw or tusk. These in course of time were placed base to base, with the result that the crescent form arose. The two tushes are joined together by string or by a silver plate, but in later examples the amulet is carved out of one piece of material and all traces of the joint are lost, except that in some cases a panel of ornament survives to mark where the join was originally. Examples were exhibited from Turkey, Greece, Africa, and New Guinea, and Prof. Ridgeway traced the amulet back so far as the date of the sanctuary of Artemis Orthia at Sparta, where an example was discovered in the recent excavations. The crescent seen on modern English horse-trappings was also shown to have originated in this amulet.—Some Megalithic remains in central France: A. L. Lewis. The paper dealt principally with monuments in the neighbourhood of Autun, including the dolmen at La Rochefort and the standing stones at St. Pantaléon. With these last the author compared other lines of stones at Carnac, Gezer, Dartmoor, and in the Khasi Hills. He also dealt with the two types of circle in Scotland, and showed that they had each a definite locality, those with recumbent stones being found only around Aberdeen, while those with great chambered cairns in the middle are found round Inverness. He was of the opinion that the two types of circle were contemporary, and that the differences were solely due to local influences.

**Physical Society, March 13.**—Dr Charles Chree, F.R.S., president, in the chair.—The distribution in electric fields of the active deposits of radium, thorium, and actinium: S. Russ. The first experiments were made with the active deposit produced from radium emanation. The amount of active deposit directed to a cathode decreases as the pressure in the vessel is reduced, but after a certain pressure is reached the amount going to an anode shows a corresponding increase under the same conditions. The main feature brought out is that at the lowest pressure reached almost as much activity is obtained on the anode as on the cathode, while at atmospheric pressure the activity of the latter is about twenty times that of the former. Similar experiments conducted in hydrogen, air, and sulphur dioxide indicate that the collisions between the active deposit particles and the gaseous molecules play an important part in the distribution of the active deposit in electric fields. Experiments on similar lines with thorium and actinium show that while at atmospheric pressure nearly the whole of the active deposit particles of thorium are directed to the cathode, this is not necessarily the case with actinium. Other observations indicate that the sign of the electrical charge exhibited by the active deposit particles of actinium is a function of the distance that these particles have travelled through the containing gas before reaching the electrodes.—Note on certain dynamical analogues of temperature equilibrium: Prof. G. H. Bryan. Attention is directed to the following results of a method described in 1900 (*Archives Néerlandaises*) under the title of "Energy Accelerations":—(1) In a system of uniformly distributed particles, a stationary state of statistical equilibrium cannot exist under the Newtonian law of force, whether the forces between the particles be attractive or repulsive, except when the particles are at rest in a state of unstable equilibrium. (2) For energy-equilibrium to exist the force between the particles, if repulsive, must vary according to a higher power of the inverse distance than the square; if attractive, it must vary according to a lower inverse power than the square of the distance. (3) In a system in which the kinetic energy cannot be expressed as a quadratic function of the velocities with constant coefficients, the equations of energy-equilibrium no longer take the form of linear relations between the various components of kinetic energy, so that the commonly assumed analogue between temperature and kinetic energy becomes inapplicable.

## CAMBRIDGE.

**Philosophical Society, March 9.**—Dr. Hobson, president, in the chair.—(1) The formation of lactic acid and carbonic acid during muscular contraction and rigor mortis; (2) the complete hydrolytic decomposition of egg-

albumin at 180° C., and on the constitution and synthesis of dead and living albumin: Dr. Latham.—(1) The formation of  $\gamma$ -pyrone compounds from acetylenic acids; (2) the action of mustard oils on the ethyl esters of malonic and cyanoacetic acids: S. Ruhemann.—The absorption spectra of some compounds obtained from pyridine and collidine: J. E. Purvis.—The limitations of the copper-zinc couple method in estimating nitrates: J. E. Purvis and R. M. Courtauld.—A double sulphate of guanidine and aluminium: F. Ferraboschi.—The property of a double-six of lines, and its meaning in hypergeometry: H. W. Richmond.—Energy accelerations and partition of energy: C. W. Follett.

## PARIS.

**Academy of Sciences, March 16.**—M. H. Becquerel in the chair.—The extension of the theorem of Clausius: E. H. Amagat.—The characters of tuberculous infection in their relations with the diagnosis of tuberculosis: S. Arloing and L. Thévenot. In a *post mortem* examination the absence of macroscopic lesions is no proof of the absence of tuberculous infection, and this is the explanation of the occasional want of agreement between the experimental diagnosis (sero-agglutination or application of tuberculin to the skin or conjunctiva) and the *post mortem* examination.—Report by the committee on the application of the metric system to French coinage. The views of various commissions dealing with this question from the date of the foundation of the metric system are reviewed, and the question of the advisability of introducing a 25-centime piece considered, and reported on unfavourably. To preserve the unity of the metric system the committee conclude that the only coins should be 1, 2, and 5 centimes, 1, 2, and 5 decimes, 1, 2 and 5, 10, 20, 50, and 100 francs, and this view is confirmed by the academy.—The dispersion of light in celestial space. The history of the question and the first results: G. A. Tikhoff.—The presence of water vapour in the atmosphere of the planet Mars: P. Lowell. Photographic observations made at the Flagstaff Observatory, Arizona, U.S., during January of this year, establish the presence of water vapour in the atmosphere of Mars. The plates used were rendered sensitive to the extreme red rays, and with an exposure of two to three hours were capable of photographing the spectrum in the neighbourhood of the band *a*, the most intense band due to water vapour. Photographs of the spectrum of Mars clearly show this band *a*, whilst the spectrum of the moon taken on the same plate shows no trace of this band, thus eliminating the effects of the earth's atmosphere (see NATURE, March 12, and p. 497 of the present number).—The series of Taylorian polynomials: A. Buhl.—The general solution of the problem of equilibrium in the theory of elasticity, in the case where the forces are applied at the surface: A. Korn.—The electrolysis of solutions of hydrochloric acid: Th. Guilloz. In a recent note on this subject M. Doumer, on the basis of his experiments, raises objections to Hittori's theory of electrolysis. In the present note the author directs attention to recent work by Noyes and Sammet on the mobility of H and Cl ions in dilute solutions of hydrochloric acid, and points out that these researches afford an experimental proof that the disturbances due to the evolution of oxygen during electrolysis are without effect on the transport numbers.—The velocity of evaporation and a method of determining the hygrometric state: P. Vaillant. The liquid the evaporation of which is being studied is placed on a balance, and the rate of evaporation deduced from ten oscillations of the beam. The formula  $Q=B(F-f)$ , where  $Q$  is the quantity evaporated in a given time,  $F$  the pressure of the saturated vapour, and  $f$  the pressure of the water vapour in the atmosphere surrounding the balance, was shown to be valid experimentally. By using pure water and pure sulphuric acid successively the method can be applied to give  $f$ , the determination being reduced to two weighings.—The hydrates of arsenic acid: M. Auger.—The pseudomorphoses of the microclines in microgranites from the valley of the Meuse (Ardennes): Jacques de Lapparent.—The magmatic parameters of the volcanic series of Anglona and Logudoro (Sardinia): M. Deprat.—Asymmetry of the figure and its origin: Richard Liebreich. From the examination of several thousand

human skulls, dating from prehistoric times to the present day, the author considers that asymmetry is the normal form of the human figure, and is not, as supposed by Lombroso, a sign of degeneration. A simple physiological reason is put forward as the cause of this asymmetry, which is regarded as the necessary result of the erect position of the human species.—The quantity of X-rays absorbed and transmitted by the successive layers of tissues: H. **Guilleminot**.—An attempt at grafting articular tissues: **Henri Judet**.

CALCUTTA.

**Asiatic Society of Bengal**, March 4.—Certain unpublished drawings of antiquities in Orissa and northern Circars: **Manmohan Chakravarti**. This paper invites attention to the eleven folios of drawings received by the society in December, 1822, and forming a part of the remarkable collection of Lieut.-Colonel Colin Mackenzie. It takes up two of the folios dealing with the antiquities of Orissa and northern Circars; the one of the smaller size (B) has eighty-five originals, while the other of the larger size has two originals and thirty-two duplicates, and gives a brief description of each in the Appendices A and B. They contain interesting drawings of Hindu sculptures, pillars, and other architectural designs, drawn in 1815.—The exact determination of the fastness of the more common indigenous dyes of Bengal, and comparison with typical synthetic dye-stuffs, part ii., dyeing on silk: E. R. **Watson**.—Oil of *Lawsonia alba*: D. **Hooper**.—A general theory of osculating conics: Prof. **Syamadas Mukhopadhyaya**.

DIARY OF SOCIETIES.

THURSDAY, MARCH 26.

ROYAL SOCIETY, at 4.30.—Bakerian Lecture: The Thermal and Electrical Conductivities of Metals and Alloys at Low Temperatures: Prof. C. H. Lees, F.R.S.—Note on the Values of the Board of Trade Standards of Current and Electromotive Force: T. Mather, F.R.S., and F. E. Smith.—Note on the Rise of Meteorological Balloons and the Temperature of the Upper Air: A. Mallock, F.R.S.  
ROYAL SOCIETY OF ARTS, at 8.—The Navigation of the Air: Dr. H. S. Hele-Shaw, F.R.S.  
ROYAL INSTITUTION, at 3.—Standardisation in Various Aspects: (2) Electrical Engineering: Dr. R. T. Glazebrook, F.R.S.  
CHEMICAL SOCIETY, at 5.—Annual General Meeting.—Presidential Address: The Electron as an Element: Sir William Ramsay, K.C.B., F.R.S.

FRIDAY, MARCH 27.

ROYAL INSTITUTION, at 9.—Radio-active Change in the Earth: the Hon. R. J. Strutt, F.R.S.  
PHYSICAL SOCIETY, at 5.—(1) Notes on the Plug Permeameter; (2) On the Use of Shunts and Transformers with Alternate Current Measuring Instruments; (3) On Wattmeters; (4) Experimental Demonstration of Alternate Current Wave Propagation in a Helix: Dr. C. V. Drysdale.  
INSTITUTION OF MECHANICAL ENGINEERS, at 8.—Combustion Processes in English Locomotive Fire-Boxes: Dr. F. J. Brislee.—Combustion Processes in American Locomotive Fire-Boxes: L. H. Fry.  
ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—A Canoe Journey to the Plains of the Caribou: E. Thompson Seton.

SATURDAY, MARCH 28.

ROYAL INSTITUTION, at 3.—Electric Discharges through Gases: Prof. J. J. Thomson, F.R.S.

MONDAY, MARCH 30.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Geographical Conditions affecting the British Empire; (2) British Islands: H. J. Mackinder.  
ROYAL SOCIETY OF ARTS, at 8.—Fuel and its Future: Prof. V. B. Lewes.  
INSTITUTE OF ACTUARIES, at 5.—On Reversionary Bonuses as affected by Expenses and Variations in Rates of Mortality: H. H. Austin.

TUESDAY, MARCH 31.

ROYAL INSTITUTION, at 2.—The Egyptian Sudan: its History, Monuments, and Peoples, Past and Present: Dr. E. A. Wallis Budge.  
INSTITUTION OF CIVIL ENGINEERS, at 8.—Some Methods of Heating adopted in Hospitals and Asylums recently built: E. R. Dolby.

WEDNESDAY, APRIL 1.

ROYAL SOCIETY OF ARTS, at 8.—Dr. Schlick's Gyroscopic Apparatus for Preventing Ships from Rolling: M. Wurl.  
GEOLOGICAL SOCIETY, at 8.—The Geological Structure of the St. David's Area (Pembrokeshire): J. F. N. Green.  
SOCIETY OF PUBLIC ANALYSTS, at 8.—Lead in Tartaric Acid, Cream of Tartar and Baking Powders: The President.—(1) The Nitrogen Factor for Casein; (2) The Recovery of Amyl Alcohol from Waste Gerber Liquors: H. D. Richmond.—Carapa Oil: Dr. J. Lewkowitsch.—A Rapid Method for the Estimation of Mercuric Salts in Aqueous Solution: S. G. Liversidge.  
ENTOMOLOGICAL SOCIETY, at 8.

THURSDAY, APRIL 2.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: Complete Survey of the Cell Lamination of the Cerebral Cortex of the Lemur: Dr. F. W. Mott, F.R.S., and Miss A. M. Kelley.—The Alcoholic Ferment of Yeast Juice. Part III. The Function of Phosphates in the Fermentation of Glucose

by Yeast Juice: A. Harden and W. J. Young.—The Antagonistic Action of Calcium upon the Inhibitory Effect of Magnesium: S. J. Metzler and J. Auer.—Studies on Enzyme Action, XI. The Hydrolysis of Raffinose: Prof. H. E. Armstrong, F.R.S., and W. H. Glover.—Studies on Enzyme Action, XII. Emulsin: Prof. H. E. Armstrong, F.R.S., Dr. E. F. Armstrong, and E. Horton.—On Some Features in the Hereditary Transmission of the Albino Character and the Black Piebald Coat in Rats, Paper II.: G. P. Mudge.

ROYAL INSTITUTION, at 3.—The Animals of Africa: R. Lydekker, F.R.S.  
ROYAL SOCIETY OF ARTS, at 8.—The Navigation of the Air: Prof. H. S. Hele Shaw, F.R.S.

LINNEAN SOCIETY, at 8.—Altitude and Distribution of Plants in Southern Mexico: Dr. Hans Gadov, F.R.S.—The Anatomy of some Sapoteaceous Seedlings: Miss Winifred Smith.—Notes on some Sponges recently collected in Scotland: Dr. N. Annandale.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY, at 8.—Efficiency of Boiler Heating Surface: C. Humphrey Wingfield.

CHEMICAL SOCIETY, at 8.30.—The Condensation of Epichlorohydrin with Phenols: D. R. Boyd and E. R. Marle.—Rate of Hydrolysis of Chloroacetates and Bromoacetates, and of  $\alpha$ -Chlorohydrin by Water and by Alkali, and the Influence of Neutral Salts on the Reaction Velocities. Preliminary Note: G. Senter.—A New General Method of Preparing Diazonium Bromides: F. D. Chattaway.—On the Probable Nature of the Impurity found in the Triphenylmethane Spectrum: W. N. Hartley.—The Absorption Spectrum of Triphenylmethane: A. G. G. Leonard.—The Constituents of Cyprus Origanum Oil. Isolation of a New Terpene (Origanene): S. S. Pickles.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—High Speed Electrical Machinery: G. Stoney and A. H. Law.

FRIDAY, APRIL 3.

ROYAL INSTITUTION, at 9.—The Modern Motor Car: Lord Montagu of Beaulieu.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Notes on the Foundations of an Indian Bridge: G. W. N. Rose.

SATURDAY, APRIL 4.

ROYAL INSTITUTION, at 3.—Electric Discharges through Gases: Prof. J. J. Thomson, F.R.S.

CONTENTS.

	PAGE
Misleading Seismology . . . . .	481
German School Botany . . . . .	481
Elementary Physics . . . . .	482
Our Book Shelf:—	
Bell: "The Mechanism of Speech."—Prof. John G. McKendrick, F.R.S. . . . .	483
South: "The Moths of the British Isles."—W. F. K. Kienitz-Gerloff: "Physiologie und Anatomie des Menschen mit ausblicken auf den ganzen Kreis der Wirbeltiere."—W. W. . . . .	484
Stephenson: "The Elements of Geography" . . . . .	484
Hemmelmayr and Brunner: "Lehrbuch der Chemie und Mineralogie für die vierte Klasse der Real-schulen" . . . . .	484
Letters to the Editor:—	
The Cotton Plant.—W. Lawrence Balls; Lieut.-Colonel D. Prain, C.I.E., F.R.S. . . . .	484
The Isothermal Layer of the Atmosphere.—C. E. Stromeyer; W. H. Dines, F.R.S. . . . .	485
The Penetrating Radiation.—Prof. A. S. Eve . . . . .	486
Mosaic Origin of the Atomic Theory.—Dr. John Knott . . . . .	486
Tabulated Values of Certain Integrals.—Harry M. Elder . . . . .	486
Notes on Ancient British Monuments. VII.—The Aberdeen Circles ( <i>Continued</i> ). ( <i>Illustrated</i> .) By Sir Norman Lockyer, K.C.B., F.R.S. . . . .	487
Proposed Alteration in the Calendar. By W. T. L. . . . .	489
Peculiarities in the Structure of some Heavenly Bodies . . . . .	490
Sir John Eliot, K.C.I.E., F.R.S. By A. P. . . . .	490
Notes . . . . .	492
Our Astronomical Column:—	
Water Vapour in the Martian Atmosphere . . . . .	497
The Dispersion of Light in Interstellar Space . . . . .	497
The Moving Object near Jupiter . . . . .	497
Distribution of Standard Time in Egypt . . . . .	497
Observations of Algol Variables . . . . .	497
Nebulae and Nebulosity observed by Prof. Barnard . . . . .	497
Russian Scientific Publications . . . . .	498
The Corals of Hawaii. By Prof. S. J. Hickson, F.R.S. . . . .	499
Commemorative Dinner to Sir William Ramsay, K.C.B., F.R.S. . . . .	500
New Slide-rules . . . . .	500
University and Educational Intelligence . . . . .	501
Societies and Academies . . . . .	501
Diary of Societies . . . . .	504