

on "Algal Flagellates," by Dr. F. E. Fritsch, commenced at University College on October 26. Admission to these lectures is free to the public.

OXFORD.—Prof. C. F. Jenkin, professor of engineering in the University, delivered his inaugural address on October 16. No teaching, he said, is sufficient to fit a man for an engineer's various duties. The scientific theory of engineering can be taught, but the no less necessary experience must be gained outside the university. Prof. Jenkin described the teaching of engineering, showing that while the subjects are familiar, the engineering method of teaching differs somewhat from the traditional method. He advocated the use of examples chosen from apparatus which the student can handle rather than from the imaginary astronomical bodies often used to illustrate dynamical principles. In the Oxford laboratory the art of measurement will be taught. It will not be a model shop, but a shop may be used in conjunction with the laboratory for repairing and adjusting apparatus. It is also intended to have surveying classes during the vacation. Prof. Jenkin also explained the details of the scheme which has been prepared for carrying out engineering teaching in Oxford. It is intended that engineering students shall take the science preliminary examination and then proceed to a final honour school in engineering. The necessity for having a final honour school for the student to work for was urged, and there is every reason to believe that the scheme now being prepared will be received favourably, and thus open academic honours to engineers.

The Right Hon. A. J. Balfour, F.R.S., M.P., has been nominated by the Vice-Chancellor to deliver the Romanes lecture next year.

Dr. A. J. Evans, F.R.S., will resign the keepership of the Ashmolean Museum at the end of this year.

We have received from Prof. W. S. Franklin, of Lehigh University, a copy of the address he delivered at the annual meeting of the New York State Science Teachers' Association last year on the study of science by young people. In it he stigmatises as one of the greatest evils of present-day teaching of science the large proportion of time devoted to problems more or less completely detached from actual physical experience. He believes that the only quantitative physical laboratory work which should be done in a secondary school should relate to things of which the boy has knowledge in his everyday life outside the laboratory, and should be of practical value in that life. Thus, e.g., he would let a boy determine the speed of a runner by observing the time he takes to cover a measured distance, or the power he develops by the time he takes to climb a measured flight of stairs. He would set him to determine the discharge of water along a canal by timing a float from one station to another, and encourage him to measure the rainfall, record temperature, wind and cloud, and get together a great variety of similar data of practical everyday value.

THE Association of Teachers in Technical Institutions has forwarded to the Board of Education a memorandum directing attention to the conditions under which Whitworth scholarships and exhibitions are awarded. The council of the association has, after extensive inquiries, been led to the conclusion that the competitions at present are not in full accord with modern requirements of engineering study and training, and it has, in consequence, drawn up proposals for the modification of the methods of award. The objects of the proposals are to prevent cram and to provide systematic training, to give preference to engineering subjects, to encourage regular workshop practice in engineering over a period of thirty-six months, and to ensure greater prominence for study and practice in electrical engineering. Among other changes suggested are the introduction of a qualifying test, the holding of a special freehand drawing examination, the division of subjects into two groups and a new scale of marks, and the deletion of building construction and drawing and naval architecture from the list of subjects candidates may offer, as not strictly belonging to mechanical engineering. The annual general meeting of the association will be held at the St. Bride's Institute, Bride Lane, Fleet Street, E.C., on Saturday, November 7, commencing at 3 p.m.

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THE *Physikalische Zeitschrift* for October 15 contains a list of the lectures in mathematics, physics, and chemistry which are to be delivered during the coming winter session at the various universities and technical high schools of Germany and Austria. At the University of Berlin each of the above subjects is divided into ten or a dozen parts, and each part is placed under the charge of a separate professor or lecturer, who gives four or five lectures per week. Physics, for example, is divided into (a) experimental physics: (1) mechanics, sound, and heat; (2) magnetism and electricity; (b) theoretical physics: (3) introduction; (4) heat; (5) magnetism and electricity; (6) advanced portions; (7) vector analysis applied to physics; (8) potential theory; (c) (9) geophysics; (10) climatology. Under such a system it is possible for each lecturer to present his subject to his students in a much more complete and up-to-date manner than is possible in, let us say, the University of London, the professors of physics of which lecture probably twice as often per week and cover the whole subject in their lectures. Who in these circumstances can blame the post-graduate student who elects to go to Germany to complete his knowledge of his subject? and who can refrain from asking, when will the universities of this country be in a position to attract post-graduate students from Germany in return?

### SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, October 19.—M. Bouchard in the chair.—Precipitated silica: Henry **Le Chatelier**. The existence of hydrated forms of silica appears to be generally admitted, but this view does not appear to have any experimental basis. Various experiments with gelatinous silica are described, all tending to prove that silica exists always in the anhydrous state. The passage through filters is not due to the solubility of anhydrous silica or the presence of a soluble hydrate, but is due to its extremely fine state of division. In confirmation of this, it was found that silica jelly could be used for polishing metal sections.—The influence of the heating of urine on urinary toxicity: Ch. **Bouchard**, M. **Balthazard**, and Jean **Camus**. After heating urine to temperatures of 57° C. or above, the toxic power is diminished by one-third, as measured by experiments on rabbits. The freezing point of the urine is not affected by this heating.—The action of Saturn's ring: P. **Stroobant**.—The spectrum of Morehouse's comet, 1908c: A de la Baume **Piuvinel** and F. **Baldet**. A comparison of the spectra of the Daniel and Morehouse comets. The latter gives no trace of a continuous spectrum; the photograph shows seven monochromatic images of the comet, the wave-lengths of which are given.—Some properties of curved surfaces: A. **Demoulin**.—Directed waves in wireless telegraphy: A. **Blondel**. Referring to recent papers on this subject by MM. Tosi and Bellini, and by M. Turpain, the author points out that he dealt with this subject in a similar manner in 1903.—The electrolytic soda industry: André **Brochet**. A theoretical discussion of the electrolytic cell through which the electrolyte is flowing in a stream with a velocity equal to or greater than the velocity of the OH ions.—A new method of attacking iron alloys, and, in particular, the ferrosilicons: Paul **Nicolardot**. Chloride of sulphur is the reagent suggested for the solution of ferrosilicons or ferrotitaniums. Details are given of the method proposed, which is specially arranged to avoid loss of silicon.—The phenyl transposition. The migration of the naphthyl group in the iodo-hydrins of the naphthalene series: MM. **Tiffeneau** and **Daudel**. The migration of groups caused by the addition of hypiodous acid and subsequent removal of hydriodic acid has been found to occur in the naphthalene series in a manner quite analogous to that previously described for the benzene series. Descriptions are given of the preparation and properties of  $\alpha$ -allylnaphthalene, its isomer, propenyl-naphthalene,  $\alpha$ -naphthyl- $\alpha$ -propanal, methyl- $\alpha$ -naphthylacetic acid,  $\alpha$ -pseudooallylnaphthalene,  $\alpha$ -vinyl-naphthalene, and  $\alpha$ -naphthylethanal.—A modification of the preparation of methylamine by means of bromacetamide: Maurice **François**. It has been found advantageous to modify the original Hoffman method in several details.

The yield is increased from 35 per cent. to 72 per cent. of the theoretical, and the methylamine hydrochloride is obtained pure and free from ammonium chloride.—The study of colouring matters in solution: L. **Pelet-Jolivet** and A. **Wild**. Colouring matters exist in a state of electrolytic dissociation; some of them are partly in the colloidal state, as was shown by their behaviour in the ultramicroscope. The properties of colouring matters are intermediate between ordinary saline solutions and colloidal solutions.—Saprophytic cultures of *Cuscuta monogyna*: Marin **Molliard**.—The Secamone of the north-west of Africa: Henri **Jumelle** and H. Perrier **de la Rathie**.—Pigmentary assimilation in Actinia: Georges **Gohn**.—The hereditary chromatic substratum and the nuclear combinations in the crossing of Amphibia: E. **Bataillon**.—The gradation and improvement of the instinct in the solitary wasps of Africa of the genus *Synagris*: E. **Roubaudi**.—The affection known under the name of botryomycosis and its parasite: Gustave **Bureau** and Alphonse **Labbé**. This disease is not a mycosis, but is due to an amoeba; the botryomycoses observed in previous cases is only a plastogamic stage of this organism.—The protonephridia of the adult polychaetal annelids: A. **Malaquin**.—The existing genera of the family of the brachyopodids: A. **Menegaux**.—New researches on the radio-activity of springs producing goitre: M. **Répin**. All the goitre-producing waters of the Alps gave on examination a measurable radio-activity, due probably to radiothorium.—The accelerative influence of magnesia in the transformation of saccharose: J. **Tribot**. Sucrase was prepared from yeast and purified by fractional precipitation with alcohol. It was found that the purer the product from mineral matter the smaller was the activity, as measured by the amount of sugar fermented in a given time. The mineral substance to which the activity would appear to be due is magnesia.—The ferment from the decapod Crustacea: C. **Gerber**. This ferment is distinguished from other animal ferments by its resistance to heat and by the special action of acids. Its properties approach those of the vegetable ferments.—The numerical determination of the urinary excretion of nitrogen in various forms in a normal man: L. C. **Maillard**.—The action of the products of the reaction on the saponification of fats by the pancreatic juice: Mlle. L. **Kalaboukoff** and Émile **Terroine**.—The tonality of the sound of percussion: Gabriel **Arthaud**.—The existence of a new deposit of pre-Pyrenean strata in the middle of the north Pyrenees sheets, in the neighbourhood of Arbas: Léon **Bertrand**.—The seismic disturbance of October 13, 1908: Alfred **Angot**. A discussion of the seismograph record at the Parc Saint-Maur Observatory.—The erosion of the Fontainebleau grits: E. A. **Martel**.—The presence of the genera *Salvinia*, *Nymphæa*, and *Pontederia* in the sparnacian clays of the Montois: P. H. **Fritel**.

DIARY OF SOCIETIES.

**FRIDAY, OCTOBER 30.**  
 INSTITUTION OF MECHANICAL ENGINEERS, at 8.—Repairs, Renewals, Deterioration and Depreciation of Workshop Plant and Machinery (*Resumed discussion*): J. E. Darbishire.  
**MONDAY, NOVEMBER 2.**  
 ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Unexplored Western Asia: D. G. Hogarth.  
 SOCIETY OF CHEMICAL INDUSTRY, at 8.—Chemical Industry in Relation to Agriculture: Prof. Adolf Frank.  
**TUESDAY, NOVEMBER 3.**  
 ZOOLOGICAL SOCIETY, at 8.30.—The Development of the Lesser Black-backed Gull, *Larus fuscus*, L.: Prof. Alexander Meek.—On Mammals from Inkerman, North Queensland, presented to the National Museum by Sir W. Ingram and the Hon. John Forrest: Oldfield Thomas, F.R.S., and Guy Dollman.—(1) The Sze-chuen and Bhutan Takins; (2) On an Indian Dolphin and Porpoise: R. Lydekker, F.R.S.  
 INSTITUTION OF CIVIL ENGINEERS, at 8.—Address by the President, Mr. J. C. Inglis.  
**WEDNESDAY, NOVEMBER 4.**  
 ENTOMOLOGICAL SOCIETY, at 8  
 GEOLOGICAL SOCIETY, at 8.—The Relations of the Nubian Sandstone and the Crystalline Rocks of Egypt: H. J. L. Beadnell.—On the Fossil Plants of the Waldershare and Fredville Series of the Kent Coalfield: E. A. Newell Arber.  
 SOCIETY OF PUBLIC ANALYSTS, at 8.—The Solvent Action of Carbonic Acid on the Carbonates of the Heavy Metals: C. Seyler.—The Analysis of Camphorated Oil for Camphor Substitutes: F. W. Richardson and W. K. Walton.—The Separation and Estimation of Certain Volatile Fatty Acids by Extraction with Benzene or Toluene: T. R. Hodgson.—The Estimation of Coconut Oil in Butter: R. Ross.

THURSDAY, NOVEMBER 5.

ROYAL SOCIETY, at 4.30.—*Probable Papers*. (1) Note on Tidal Bores; (2) Voices in Oscillating Liquid: Lord Rayleigh, O.M., Pres. R.S.—Note on Two recently-compiled Calendars of Papers of the period 1666–1806 in the Archives of the Royal Society: Prof. A. H. Church, F.R.S.—On the Osmotic Pressures of Aqueous Solutions of Calcium Ferrocyanide. Part I., Concentrated Solutions: Earl of Berkeley, F.R.S., E. G. J. Hartley, and C. V. Burton.—On the Generation of a Luminous Glow in an Exhausted Receiver moving near an Electrostatic Field, and the Action of a Magnetic Field on the Glow so produced, the Residual Gases being Oxygen, Hydrogen, Neon and Air: Rev. F. J. Jervis-Smith, F.R.S.—The Rate of Production of Helium from Radium: Sir James Dewar, F.R.S.—The Spectrum of Radium Emanation: A. T. Cameron and Sir William Ramsay, K.C.B., F.R.S.—On a Method of Comparing Mutual Inductance and Resistance by the Help of Two-phase Alternating Currents: A. Campbell.—The Effect of Pressure upon Arc Spectra. No. 2, Copper: W. G. Duffield.  
 CHEMICAL SOCIETY, at 8.30.—The Direct Union of Carbon and Hydrogen: W. A. Bone and H. F. Coward.—The Relation between Absorption Spectra and Chemical Constitution. Part XI., Some Aromatic Hydrocarbons: E. C. C. Baly and W. B. Tuck.—Organic Derivatives of Silicon. Part VII., Synthesis of *di*-*l*-Sulphobenzylethylsilylic Oxide: B. D. W. Luff and F. S. Kipping.—(1) Chlorine Derivatives of Pyridine. Part IX., Preparation and Orientation of the Dichloro pyridine, m. p. 66–70°; (2) Chlorine Derivatives of Pyridine. Part X., Orientation of the Trichloropyridine, m. p. 49–50°; (3) Chlorination of Methyl Derivatives of Pyridine. 2-Methyl pyridine. Part II.: W. J. Sell.—(1) The Triazo-group. Part V., Resolution of *α*-Triazopropionic acid; (2) The Triazo-group. Part VI., Triazoethyl Alcohol and Triazoacetaldehyde: M. O. Forster and H. E. Fierz.  
 LINNEAN SOCIETY, at 8.—Notes on some Parasitic Copepoda, with a Description of a New Species of *Chondracanthus*: May E. Bainbridge.—On some Nemertean from the Eastern Indian Ocean: R. C. Punnett and C. Forster Cooper.—Report on the Echinoderms other than Holothurians collected by Mr. Stanley Gardiner in the Western Parts of the Indian Ocean: Prof. F. Jeffrey Bell.  
 RÖNTGEN SOCIETY, at 8.15.—Presidential Address, The Amsterdam Congress.  
**FRIDAY, NOVEMBER 6.**  
 GEOLOGISTS' ASSOCIATION, at 8.—On some Norwegian Lakes and Rock-Basins: H. W. Monckton.

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