

CAPT. F. DOWNIE, of the South Wales School of Mines, has been appointed head of the new electrical engineering department of Rutherford Technical College, Newcastle-upon-Tyne.

DR. J. K. WOOD, principal assistant in the chemistry department of University College, Dundee, has been appointed lecturer in physical chemistry at the Manchester Municipal College of Technology.

A DEPARTMENT of Italian studies has been established in the University of Manchester, and Dr. E. G. Gardner, of the University of London, has been appointed to the newly instituted chair of Italian.

AN Agricultural History Society has been established in Washington, having for its object the stimulation of interest, the promotion of study, and the facilitation of publication of researches in agricultural history. The president is Dr. R. H. True, and the secretary-treasurer Mr. L. Carrier, both of the Bureau of Plant Industry, Washington.

THE new prospectus of the Merchant Venturers' Technical College, which provides and maintains the faculty of engineering of the University of Bristol, has been received. We note that the courses include schemes of study for persons intending to engage in civil, mechanical, electrical, or automobile engineering. These schemes comprise not only the usual engineering subjects, but also instruction in French and German for scientific purposes, as well as in book-keeping, accountancy, works administration and organisation, commercial law, and estimating and writing specifications.

AN interesting and useful piece of work has been inaugurated by the Staffordshire Education Committee, viz. the placing of an exhibit in flower-shows throughout the county embodying the life-histories of some of the most troublesome insect pests which infest gardens and orchards; a prepared collection of potato diseases which are prevalent in the county, with instructions how to control them; varieties of potatoes grown on the county demonstration plots, all of which varieties are resistant to black scab or wart disease; early varieties of culinary and dessert apples; samples of bottled fruit and vegetables, fowl and rabbit; bees, with model hives and full complement of apparatus; and diagrams and charts demonstrating the best methods of planting, pruning, and training fruit-trees. Pamphlets on the subjects are also distributed. An expert pruner and propagator of fruit-trees is to be appointed for the purpose of furthering fruit-growing in the county.

THE London County Council has issued its "Handbook of Classes and Lectures for Teachers" for the session 1919-20. The lectures are available to all teachers actually employed in teaching within the administrative County of London, irrespective of the particular institution at which they may be engaged. Teachers employed in teaching elsewhere than within the administrative county may be admitted where accommodation permits. Among the courses of lectures in science the following may be mentioned:—Five lectures on practical astronomy for schools, by Prof. T. Percy Nunn, at the London Day Training College, on Wednesdays at 6 p.m., beginning on September 24; ten lectures on the history of the development of fundamental principles of physics, by Prof. Bragg and Mr. Orson Wood, at University College, on Tuesdays at 5.30 p.m., beginning on March 16, 1920; ten lectures on modern views of electricity and matter, by Prof. O. W. Richardson, at King's College, on Saturdays at 10.30 a.m., beginning on October 4. There will also be courses of lectures on experimental psychology, the experimental study of

children, psycho-analysis, and psychological problems in special schools. Copies of the handbook can be obtained on application to the Education Officer, L.C.C. Education Offices, Victoria Embankment, W.C.2.

AN interesting address delivered at Manchester to the newly formed Association for the Scientific Development of Industry by Mr. E. C. Reed, of London, on "Education for Genius," has been published in pamphlet form (The Abbey Press, Westminster, 31 pp., price 6d.). Mr. Reed propounds the theory that it is possible, given the necessary facilities, to educate for genius, and thereby increase largely the world's supply of geniuses in every department of productive life. It is argued that by developing natural aptitude, by training and deepening the intuitive and allied faculties of the superconscious mind, the supply of genius can be much enlarged. Talent is defined by the author as labour *plus* aptitude, and genius as labour *plus* natural aptitude *plus* intuition, and the latter, it is contended, can equally be made the subject of training. But this is surely to beg the whole question. Speaking of the genius which produces great art, Ruskin truly and forcibly says in "Modern Painters" that every system of teaching is false which holds forth "great art" as in any wise to be taught to students. Great art is precisely that which never was, and never will be, taught; it is pre-eminently and finally the expression of the spirits of great men. And in his "Joy for Ever" he further remarks:—"You have always to find your artist (your man of genius), not to make him; you can't manufacture him, any more than you can manufacture gold. You can find him and refine him; you dig him out as he lies nugget-fashion in the mountain stream; you bring him home, and you make him into current coin or household plate, but not one grain of him can you originally produce." That "genius must frequently waste its years and dissipate its efforts in trying to make headway against an indifferent or hostile atmosphere" may be freely admitted, and it must therefore be the business of the nation to create for its nurture a sympathetic and appreciative environment, "in which all phases," as the author of the address observes, "of intellectual and cultural activity, mechanical, literary, æsthetic, are each highly developed and equally honoured." The address is well worthy of thoughtful study.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, August 4.—M. Léon Guignard in the chair.—G. Humbert: The formation of a fundamental domain of an automorph group.—P. Marchal: The evolutive cycle of the woolly Aphis of the apple-tree (*Eriosoma lanigera*). It has been proved that in America the American elm harbours the sexual generation of American blight, whilst the apple and some other trees of the same group act as intermediate hosts. In Europe the cycle would appear to be different; the sexual generation does not occur, and the species is continued during the winter by hibernation on the apple-tree, the reproduction being parthenogenetic.—E. Ariès: The density of the saturated vapour of propyl acetate and the density of the liquid emitting this vapour.—A. Denjoy: Riemannian integration.—N. E. Nörlund: The polynomials of Euler.—R. Garnier: The irregular singularities of linear differential equations.—E. Kogbetliantz: The integral of Angelesco.—C. Trémont: New methods for the mechanical testing of metals. Description and diagrams of two simple pieces of

apparatus for measuring the tensile strength and resistance to shock of metal test-pieces of very small dimensions.—E. Esclançon: The mechanical transformation of sidereal time into mean time. Calculations of simple gears show that with four wheels having 119, 330, 317, and 314 teeth the conversion can be made with the loss of only one second in eight years; with wheels having 188, 465, 563, and 227 teeth the error can be reduced to one second in 249 years.—P. Roubertie and A. Nemirovsky: Some new fluorescent screens for use in radioscopes. As a substitute for platinocyanides in radioscopic screens, cadmium tungstate has given good results. This material forms screens which are stable in air, and unaffected by prolonged exposure to X-rays.—R. Levailant and L. J. Simon: The action of chlorosulphonic acid on methyl sulphate. The preparation of methyl chlorosulphonate.—G. Mignonac: The synthesis of ketimines by the catalytic method. A mixture of ammonia and the vapour of a ketone passed over thoria at 300°–400° gives a ketimine of the type R.C(NH).R'. The method fails with fatty ketones, condensation products of the ketimines being produced. The preparation and properties of methylphenyl-, ethylphenyl-, cyclohexyl-, and diphenylketimines are described.—L. Daniel and M. Thoulet: Shell deposits in the neighbourhood of Erquy (Côtes-du-Nord).—H. Coupin: The absorption of mineral salts by the root-tip. The root-tip can absorb mineral salts in solution, and these are freely utilised by the growing plant.—P. Vayssière: Some methods for the destruction of crickets and their application. Trials were made of flame projectors, poison gas, and arsenical pastes, and all of these can be used with success under certain conditions. Sprays of chloropicrin (50 per cent.) can be used where a flame is inadvisable, and arsenical pastes in places where there are no animals at pasture. Special organisations under direct State control will be necessary if these measures are to be carried out effectively.—H. Violle: The peroxydases in milk. The peroxydase reaction cannot be used to judge the quality of a milk; normal milk from a healthy cow may contain very little peroxydase, whilst milk from a diseased udder may contain peroxydase in quantity.—W. Kocaczewski and A. Vahram: The suppression of anaphylactic shock. The injection of solutions of sodium oleate, sodium taurocholate, sodium glycocholate, or of saponin five minutes before the second injection of serum completely suppresses the anaphylactic shock in guinea-pigs.—J. Amar: The elastic force of diseased lungs.—V. Galippe: New researches on the presence of living organisms in the cells of the male genital glands (microbiosis, normal or accidental parasitism).

August 11.—M. Léon Guignard in the chair.—A. Lacroix: A scapolite from the Madagascar pegmatites, constituting a precious stone.—G. Bigourdan: The observatory of the Mazarin College.—M. Portevin: Certain defective fractures of test pieces taken across the steel bar.—A. Cornu-Thénard: Tests of flexure by shock on notched bars.—A. Schaumasse: Observations of the periodic Kopff comet made with the bent equatorial at Nice Observatory. Positions for August 4, 6, and 7 are given, together with positions of the comparison stars. On August 4 the comet was of the 10th magnitude, the nebulosity being about 3', showing a diffuse central condensation.—J. Guillaume: Observation of the periodic Kopff comet (1910a) made with the bent equatorial at Lyons Observatory. Position given for August 7.—D. Faucher: Contribution to the study of the lacustral levels and fluvial levels of the lower valley of the Vardar.—F. R. du Caillaud: The Baixo da Judia.—M. Marti: A measurement of the

velocity of sound-waves in sea-water. Direct-measurements in Cherbourg harbour gave the velocity of sound in sea-water at 14.5° C. (density 1.024) as 1503.5 metres per second, a figure notably higher than those obtained by other experimenters.—H. Abraham and E. Bloch: The application of amplifiers to the mechanical recording of wireless telegraphy signals.—G. Chavanne and L. J. Simon: The composition of some Asiatic petrols. The method of critical solution temperatures in aniline described in earlier communications has been applied to various fractions of petrol arising from Persian, Sumatran, and Borneo petroleum.—P. Bonnet: The relations between the Otoceras layers of Armenia and those of the Himalayas. The Armenian Otoceras-bearing strata have been usually considered as being older than the Himalayan deposits. Fresh observations are given controverting this view, and tending to prove that the strata are of the same age.—L. Gentil: The origin and morphological characters of the *rideaux* in chalk districts.—J. Rouch: The diurnal variation of the wind velocity in the atmosphere. Tabulation of the results of a series of experiments with balloons.—G. Guilbert: The scientific prediction of the weather.—L. Blaringhem: The heredity of the facies of *Capsella viguieri*.—A. Guillermond: The chondriome and the ergastoplasmic formations of the embryonic sac of the Liliaceæ.—F. Viès: Remarks on the absorption spectra of the hæmoglobins from Annelids. The spectra of the hæmoglobins of certain invertebrates and those of mammals present small, but distinct, differences.—L. Vialleton: The epiphyses and cartilage of conjugation of the Sauropsidæ.

SYDNEY.

Linnean Society of New South Wales, May 28.—Mr. J. J. Fletcher, president, in the chair.—Dr. R. J. Tillyard: A fossil insect wing belonging to the new order Paramecoptera, ancestral to the Trichoptera and Lepidoptera, from the Upper Coal Measures of Newcastle, New South Wales. This wing, which is perfect except for a small piece missing at the apex and a very small area of the base covered over by rock, was discovered in February, 1919, by Mr. John Mitchell at Belmont, N.S.W., and is named *Belmontia mitchelli*, n.g. et sp. It is clearly related to both the Mecoptera and Protomecoptera, but is definitely of the type found in the most archaic Lepidoptera and Trichoptera, though with a greater number of branches to both the radial sector (seven) and the media (five). The posterior arculus is remarkably well developed, and is shown to be a true branch of M, which should be denoted by M₅. The wing can be easily restored, the only points in doubt being the shape of the jugal lobe and the position of vein 3A. In discussing its affinities the author compares it very fully with the forewing of the genus *Rhyacophila*, and shows that the latter is derivable from it in every single detail by reduction. The same is true of the Micropterygidae within the order Lepidoptera. Reasons are also given why the Megaloptera and Planipennia may also, very probably, be derived from this type of wing; but its relationships with the Diptera are doubtful, and with the Mecoptera they are definitely collateral, not ancestral. The wing shows that at least two Holometabolous orders were present in Upper Permian times, the Mecoptera having been already discovered in the same locality.—Prof. T. H. Johnston and O. W. Tiegs: *Pseudobonellia*, a new Echiuroid genus from the Great Barrier Reef. The outstanding features of the animal are:—(1) The Bonellia-like form of the body of the female; (2) the presence of two uteri; (3) numerous simple anal glands opening directly into

the rectum instead of into anal vesicles; (4) the ovary is restricted to the extreme posterior end, and is transversely situated; (5) presence of a well-defined siphon associated with the anterior part of the intestine, with which it communicates by means of a greatly folded region; (6) the presence of a distinct invagination of the body-wall between uterine openings (in this invagination, which the authors call the male tube or andrœcium, a tiny degenerate male is lodged); (7) though the female possesses from two to four ventral hooks, the male is devoid of them; (8) the presence of two vesiculæ seminales; and (9) the partial fusion of the male with the female, its posterior end being more or less enveloped by the tissues of the andrœcium, so that there is a very pronounced parasitism. The differences between the species under review and those belonging to other genera of Echiuroidea have led the authors to propose a new genus, *Pseudobonellia* (*P. biuterina*, n.sp.), for this remarkable worm. Various stages in parasitism in sex relationship are referred to in the paper.—Dr. R. J. Tillyard: Mesozoic insects of Queensland. Part v. Mecoptera, the new order Paratrachoptera, and additions to the Planipennia. This part deals with six specimens, of which four are named. A new family, genus, and species of Mecoptera are described from the Upper Trias of Ipswich, having a six-branched media, but with the first cubitus cut off short in a peculiar manner. Two very fine wings from the same horizon belong to Trichopterous-like insects, but have certain important differences in the venation, viz. the anal veins primitive and separate and the first cubitus without any apical fork. Together with the two allied genera already described, these are removed to a new order Paratrachoptera. In the Planipennia the same horizon yields a portion of a fine wing closely resembling that of the recent *Megapsychoptis illidgei*; this is placed in a new genus within the family Prohemerobiidæ. The recent Psychopsidæ are shown to be the direct descendants of these. Some interesting evidence is forthcoming as to the nature of the vein called by Comstock the "posterior arculus," which is shown almost certainly to be a true posterior dichotomic branch of M, and should, therefore, merit the notation M₅.

Royal Society of New South Wales, July 2.—Prof. C. E. Fawsitt, president, in the chair.—Miss Marguerite Henry: Some Australian fresh-water Copepoda and Ostracoda. The present paper arose out of an investigation of the transmission of worm-nodules in cattle. In this investigation it was necessary to examine all the Crustacea that might have acted as intermediate hosts. Besides material collected at Kendall, where the work was principally carried on, some was collected at Lett River, Blue Mountains, Waterfall, Botany, Dorrigo, Byron Bay, Casino, Bangalow, Orange, Cumbalum, and Corowa. Amongst the sixteen species collected, four were found to be new.—Rev. W. W. Watts: Some notes on *Neurosoria pteroides*. Results of an investigation into the structure and systematic position of a very rare fern from tropical Queensland. It was first published by Robert Brown as an *Acrostichum*, but Mettenius had created for it the new genus *Neurosoria*. The paper reviewed the work of previous students, and submitted careful notes of an independent examination of the material available in Australia.—J. H. Maiden: Notes on *Eucalyptus*; No. vii., with descriptions of new species. Four species are proposed as new, viz. the "Morrel" of the eastern goldfields of Western Australia, which has hitherto been looked upon as a large-growing form of the red mallee (*Eucalyptus oleosa*); a narrow-leaved mallee from

Comet Vale, in the same State; a tree from Bathurst Island, Northern Territory; and a mallee-like species from the summit of the Barren Mountain, Bellinger-Clarence district. Discovery of *E. bakeri* in Queensland, together with additional notes of a technical character in regard to other eucalypts occurring in some of the other States.

BOOKS RECEIVED.

The Occlusion of Gases by Metals: A General Discussion held by the Faraday Society, November, 1918. (Reprinted from the Transactions of the Faraday Society, vol. xiv., parts 2 and 3, 1919.) Pp. 93. (London: The Faraday Society, n.d.) 8s. 6d.

Fevers in the Tropics. By Sir Leonard Rogers. Third edition. (Oxford Medical Publications.) Pp. xii+404. (London: Henry Frowde and Hodder and Stoughton, 1919.) 30s. net.

Members of the Maimed: The Anatomical and Physiological Principles Underlying the Treatment of Injuries to Muscles, Nerves, Bones, and Joints. By Prof. A. Keith. (Oxford Medical Publications.) Pp. xii+335. (London: Henry Frowde and Hodder and Stoughton, 1919.) 16s. net.

Fossil Plants: A Text-book for Students of Botany and Geology. By Prof. A. C. Seward. Vol. iv.: Ginkgoales, Coniferales, Gnetales. Pp. xvi+543. (Cambridge: At the University Press, 1919.) 1l. 1s. net.

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