

the whole of the fifth year are also spent in a works. Some twenty-one important engineering firms in different parts of the country have already agreed to take part in the experiment, and a satisfactory trial of the plan is assured. Full details are given in the calendar as to the courses of study demanded of students desiring to graduate in engineering in the University of Bristol.

THE annual report for 1916 of the chief medical officer of the Board of Education is now available (Cd. 8746, price 1s. net). The report furnishes a record of the school medical service of the local education authorities in England and Wales carried out under the general direction of the Board of Education. Sir George Newman contributes an introduction to the report, in which he says the fact must be faced that in 1916, as in former years, the records show a large amount of ill-health, of bodily impairment, and of physical and mental defect. Of the six millions of children in attendance at school, medical inspection shows that many, though not specifically "feeble-minded," are so dull and backward mentally as to be unable to derive full benefit from schooling, that upwards of 10 per cent. of the whole are at a like disability on account of uncleanness, and that 10 per cent. also are mal-nourished. A year ago a moderate computation yielded not fewer than a million children of school age (not children in school attendance) as being so physically or mentally defective or diseased as to be unable to derive reasonable benefit from the education which the State provides. Local education authorities do not yet understand the nature of the problem which presents itself in their areas. Each authority should have continually a clear view of the steps necessary from a medical point of view to secure the full value of the school medical service to every child of school age in its area. The irreducible minimum, Sir George states, which will yield the results the nation requires is as follows:—(1) That every child shall periodically come under direct medical and dental supervision, and if found defective shall be "followed up." (2) That every child found mal-nourished shall, somehow or other, be nourished; and every child found verminous shall, somehow or other, be cleansed. (3) That for every sick, diseased, or defective child skilled medical treatment shall be made available, either by the local education authority or otherwise. (4) That every child shall be educated in a well-ventilated school-room or classroom, or in some form of open-air school-room or classroom. (5) That every child shall have daily organised physical exercise of an appropriate character. (6) That no child of school age shall be employed for profit except under approved conditions. (7) That the school environment and the means of education shall be such as can in no case exert unfavourable or injurious influence on the health, growth, and development of the child.

## SOCIETIES AND ACADEMIES.

### PARIS.

**Academy of Sciences**, October 1.—M. Camille Jordan in the chair.—M. **Angelesco**: A method of summation of trigonometrical series.—W. **Sierpinski** and N. **Lusin**: A decomposition of an interval.—Q. **Majorana**: Experimental demonstration of the constancy of the velocity of light reflected by a mirror in motion.—C. **Benediks**: The thermo-electric effect by contraction in the case of mercury. The thermo-electric effect described by the author in an earlier paper may be regarded as the reversal of the Thomson effect. It is, however, open to the possible objection that the effect observed

may be due to the non-homogeneity of the metal wire employed; a similar effect is now demonstrated with pure mercury, in which case this objection cannot apply.—M. **Siegbahn** and W. **Stenström**: The X-ray spectra of the isotopic elements. A comparison of the X-ray spectra of RaG and ordinary lead has proved their absolute identity.—P. **Dejean**: Martensite, troostite, sorbite. A discussion of the definition of these micrographic constituents of steels.—L. C. **Soula**: A new method of graphically recording in physiology. The method is based on the principle that if a battery, microphone, and solenoid are placed in circuit, and a magnet is put in the axis of the solenoid, any variation of resistance produced in the microphone by external pressures produces corresponding modifications of the magnetic field, and a piece of soft iron carrying a writing point placed before the magnet gives a record of the pressures.—V. **Galippe**: Parasitism in toxic seeds or seeds rich in essential oils. The presence of micro-organisms was found to be general in both classes of seeds.—Edm. **Sergent** and Et. **Sergent**: A new method for the destruction of mosquitoes by alternation of their breeding-grounds. The life of the larva of the mosquito in the Mediterranean climate is from sixteen to twenty-five days before the metamorphosis into the winged insect. In the case of a spring, around which a breeding-bed of mosquitoes is liable to form, it is sufficient to dig out two channels and every eight days to change the water from one to the other. During the week the soil dries and the larvæ die for want of water. This method has given excellent results in Algeria, requires slight supervision, and costs little.—G. **Bertrand**: The digestibility of bread and the best utilisation of wheat. A comparison of existing data for white bread (72 per cent. extraction), wholemeal bread (100 per cent. extraction), and the intermediate (85 per cent.), taking into consideration the calorific value of the digested portion and the feeding of farm animals on the wheat offal, leads to no definite conclusion from a theoretical point of view.—H. **Vincent**: Results of antityphoid vaccination in the armies during the war.—C. **Levaditi** and L. **Delrez**: The cutaneous origin of the streptococci found in war wounds.

### NEW SOUTH WALES.

**Royal Society**, August 1.—H. G. **Smith**: The resin of the outer bark of *Melaleuca uncinata*. The author describes the resin which is the chief constituent in the outer bark of this *Melaleuca*. A piece of this outer bark, if ignited at one end, will continue to burn like a candle until entirely consumed, giving at the same time a considerable amount of black smoke. The inflammable material consists almost entirely of a resin, as only a very small amount of a vegetable wax, melting at 67°–68° C., was detected. It is a rare occurrence for a true resin to be obtained in quantity from any member of the natural order Myrtaceæ, and in only one previous instance does it appear that a Myrtaceous resin has been recorded. The resin, which is present in the outer bark of *M. uncinata* to the extent of 23 per cent., is of an orange-brown colour, semi-transparent, and very brittle. It is almost entirely soluble in alcohol, quite soluble in ether-alcohol, and very soluble in acetone. It is only slightly soluble in chloroform and benzene, and turpentine has little action upon it even on boiling. The acetone solution makes a splendid lacquer for brass, and is perhaps one of the best uses to which the resin could be economically put. The chief constituent of the resin is a resin acid, the formula of which is  $C_{17}H_{28}O_4$ . It melts at about 148°–150° C., and in alcoholic solution gives a deep-green colour and green precipitate with ferric chloride. The neutral bodies of the resin melt

at about 125°–130° C., are brittle, of a resinous nature, and do not give the green coloration with ferric chloride.

## VICTORIA.

**Royal Society, July 12.**—Prof. W. A. Osborne, president, in the chair.—J. H. Gatliff and C. J. Gabriel: Additions to, and alterations in, the catalogue of the marine shells of Victoria. *Ischnochiton proteus*, Reeve, *I. atkinsoni*, Iredale and May, and *I. (Stenochiton) pallens*, Ashby, were recorded as Victorian species. Figures of *Dosinea grata*, Desh., from specimens compared with the British Museum type are given.—F. Chapman: New or little-known Victorian fossils in the National Museum. Part xxi.: Some Tertiary Cetacean remains. A fine example of the cranial rostrum of the ziphoid, *Mesoplodon compressus*, Huxley, sp., is described, together with another less perfect, both tending to prove the specific identity of the two examples described by Huxley and Owen respectively. A new species of Scaldicetus (*S. lodgei*) is described, which, as a Balcombian or Oligocene form, is the oldest recorded example of the genus. A well-preserved tooth referred to *Stenochiton (S. cudmorei)* is apparently the first discovery of this genus in the fossil state, from the Kalimnan, or Lower Pliocene, of Port Phillip.—H. J. Grayson: Description of a new engine for ruling diffraction gratings. The ruling engine differs from other machines in respect to the following:—The screw and ways of the ruling carriage lie in one axial plane. The screw thrust occupies a central position upon the machine bed, and the screw is free from any stress other than that due to a direct axial pull upon the nut which is connected with the ruling carriage by means of two steel rods lying parallel with the screw axis. All the bearing surfaces or ways of the machine are ground circular bars of steel or glass, the latter forming the ways of the diamond carriage. They are semi-polished and require no lubrication; the frictional resistance is therefore uniform and constant. The teeth of the ratchet wheels are ground and finished with diamond-charged cutters, by which means a high degree of accuracy is obtained and compensating devices are dispensed with. Gratings submitted to the Mount Wilson Observatory have been pronounced practically free from periodicity and diffused light. (This research was awarded the 1917 Syme prize for the most important work published in Australia during the preceding biennium.)

## BOOKS RECEIVED.

Municipal Engineering Practice. By A. P. Folwell. Pp. xi+422. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 16s. 6d. net.

The Industrial and Artistic Technology of Paint and Varnish. By A. H. Sabin. Second edition. Pp. x+473. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 16s. 6d. net.

Elementary Mathematical Analysis. By Prof. J. W. Young and F. M. Morgan. Pp. xii+548. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd.) 11s. net.

Mathematical Papers for Admission into the Royal Military Academy and the Royal Military College, February–July, 1917. Edited by R. M. Milne. Pp. 30. (London: Macmillan and Co., Ltd.) 1s. 3d. net.

Memoirs of the Geological Survey, Scotland. The Economic Geology of the Central Coalfield of Scotland. Description of Area II. By L. W. Hinxman and others. Pp. iv+92. (Edinburgh: H.M.S.O.; London: E. Stanford, Ltd., and others.) 4s. 6d. net.

NO. 2503, VOL. 100]

The Quest for Truth (Swarthmore Lecture). By S. P. Thompson. Pp. 128. (London: Headley Bros., Ltd.) 1s.

Heat Drop Tables: H.P. Gauge Pressures. L.P. Absolute Pressures. Calculated by H. Moss from the Formulæ and Steam Tables of Prof. H. L. Callendar. Pp. 63. (London: E. Arnold.) 5s. net.

Education: Scientific and Humane. Edited by F. G. Kenyon. Pp. 32. (London: J. Murray.) 6d. net.

Amusements in Mathematics. By H. E. Dudeney. Pp. viii+258. (London: T. Nelson and Sons, Ltd.) 3s. 6d. net.

Letters concerning the War between an American and a Relative in Germany. March–June, 1915. Pp. 82. (New York: Privately printed.)

Greenhouses: Their Construction and Equipment. By W. J. Wright. Pp. xvi+269. (New York: Orange Judd Co.) 1.60 dollars.

## DIARY OF SOCIETIES.

FRIDAY, OCTOBER 19.

INSTITUTION OF MECHANICAL ENGINEERS, at 6.—A Comparison of the Working Costs of the Principal Prime Movers: O. Wans.

TUESDAY, OCTOBER 23.

ZOOLOGICAL SOCIETY, at 5.30.—Present Knowledge of the Life-history of the Common Eel: C. Tate Regan.—A Hermaphrodite Dogfish: Miss Ruth C. Bamber.—Ant-like Spiders from Malaya: H. D. Baddock.

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