emergency, and are now showing a production of gauges, gun parts, etc., which many engineers unacquainted with the capabilities of college workshops and staffs have found difficult to credit. Colleges not making munitions are training workers for the new munition factories, and many have undertaken researches of various kinds. Some information regarding the work in progress will be found in a paper by Dr. Walmsley and Mr. Larard, read at the Institution of Mechanical Engineers on December 17. It is to be hoped that the closer connection which exists at the present time between colleges and engineering works will not be broken when the war is over. Each side has much to learn from the other, and it promises well for the future that old prejudices on both sides are fast disappearing.

IT is announced in the issue of *Science* for December 10 that Mrs. Russell Sage has given Syracuse University a fund to build a college of agriculture as a memorial to her father. The building is to cost several hundred thousand dollars, the exact sum to be decided later. Our contemporary also states that a new building will be constructed for the University of Illinois Medical School in Chicago for the clinical courses. The initial cost is to be about 20,000*l.*, which will pay for one wing. This will be added to later as the demand for room increases. From the same source we learn that the trustees of Delaware College have made plans for the expenditure of a gift of 100,000*l.* to the college by an unnamed donor. A report submitted by the chairman of the Plans and Development Committee, which has been approved by the board, shows that 50,000*l.* will be used for a science hall to house the agricultural and chemical departments, 15,000*l.* to remodel the old dormitory building and turn it into a commons for the students, and 40,000*l.* will be set aside for maintenance.

AMONG the resolutions passed by the Headmasters Conference last week was one moved by Mr. A. L. Francis, headmaster of Blundell's School, Tiverton, "That in the opinion of this conference very grave loss to the country is caused by the employment of young students of exceptional mathematical and scientific ability as subalterns in Line battalions." Several important questions are raised by this resolution, but the chief point put forward by Mr. Francis was that the country should not permit itself to be deprived of its most ingenious and inventive brains in the grim struggles of the battlefield. "The place for the young man who has a special gift for science, mathematics, or mechanics is in the laboratory." Everyone will agree with this in principle, but the practical difficulty in deciding what students are sufficiently endowed with a "special gift" to be husbanded for national work in science and invention is another matter. The young students to whom Mr. Francis seemed to refer were those of Public School age, but it may be doubted whether at such an early stage it is possible to distinguish the few original minds which are destined to create new knowledge. Success in examinations certainly does not provide a true standard by which this genius for productiveness in science and invention may be measured. What we all deplore, and think should be avoided, is the sacrifice of men like Capt. J. W. Jenkinson and Lieut. Moseley, who had shown exceptional ability as original investigators. Apparently the Headmasters Conference does not object to the young students embraced by the resolution becoming subalterns in corps of engineers and artillery, where there are opportunities of applying a knowledge of science and mathematics, or even in the guards or the cavalry, where there may be no such need. Hundreds of able students of mathematics and science from university colleges and technical schools are at present serving as privates and non-commissioned officers in the Army, and the rank offered by the War Office to exceptional men in such subjects as chemistry and mining is not usually that of a subaltern but of a corporal.

THE annual report of the Royal Technical College, Glasgow, for the session 1914–15, has reached us. The "Roll of Members, Students, and Past Students on the King's Service" forms an appendix of a hundred pages. The roll comprises eight members of the governing body and of committees, 37 members of the staff, 1152 students of 1914 and 1915, and 622 students of previous sessions. These are serving in the following capacities:—Officers, 490; non-commissioned officers, 351; men, 966; nurse, 1; and on special service, 11. The appointment of 114 naval officers from the School of Navigation is specially noteworthy. The report records the deaths of ninety-one whose names appear on the roll. The reduction in the normal work of the college is indicated by the following comparative table of the number of students who enrolled:—

	Day students	Evening students	Total individuals
1914–15	445	2583	3028
1913–14	669	4342	5011

These enrolments necessarily include the large number of students who offered themselves during the session for active service, or who received appointments under firms manufacturing munitions. Many former members of the staff and students of the department of chemistry are now engaged in this work, and this department has made a contribution of about 150 men to the corps of chemists attached to the Royal Engineers. There are usually about 150 day students at work in the chemical laboratory during the session, but in the last week this number had dwindled to four, while of ten assistants on the staff only two were left. The plans for the increase of the new endowment fund initiated to extend the facilities available for higher studies and for research work have necessarily been postponed, but a grant of 520*l.* from the Bellahouston Trustees towards this object is acknowledged in the report.

SOCIETIES AND ACADEMIES.

LONDON.

Geological Society, December 1.—Dr. A. Smith Woodward, president, in the chair.—Dr. J. W. **Evans**: Petrological methods. The different methods of obtaining the directions-image ("interference figures") of a small mineral in a rock-slice, unaffected by the light from neighbouring minerals, were discussed. The author prefers the use of a diaphragm in the focus of the eyepiece, in conjunction with a Becke lens; he also described the inferences that might be drawn from the form, position, and movement on the rotation of the stage of the isogyres (dark bars or bushes) in the directions-images, both of chance sections and of those cut parallel to planes of optical symmetry or at right-angles to optical axes. He showed how the character or sign of the crystal and its approximate optic axial angle might be determined.

Linnean Society, December 16.—Prof. E. B. Poulton, president, in the chair.—E. S. **Goodrich**: The reproduction of Protodrilus. The author criticised the account given by Prof. U. Pierantoni, according to whom there are in most species of the genus male and hermaphrodite individuals. Dr. Orton having recently discovered *Protodrilus flavocapitatus* at Plymouth, the author has been able to study large numbers at the Marine Biological Laboratory. The appar-

ent males and females are about equal in size and number; but in ripe females spermatozoa can often be seen, and many of the ova are fertilised. Mr. Goodrich brought forward evidence that these spermatozoa are derived from the males, are not developed in the females, and that their presence is due to normal internal cross fertilisation between the sexes.—Miss Marietta **Pallis**: The structure and history of "Plav," the floating fen of the delta of the Danube. Plav is a Russian word: it signifies the floating thing or floating stuff, and is the name given by the fishermen of the delta of the Danube to a floating raft of vegetation built up almost entirely of living reed, *Phragmites communis*, Trin., *β. flavescens*, Gren. and Godr., and earth. The variation in length of the aerial portion of the reed-shoots is so striking (they vary from about 4 ft. to about 17 ft.), that it suggests the presence of different varieties of reed. Evidence is given that this variation is not specific or due to the factors of the environment, but is inherent in the reed. The different sizes of reed-shoots are held to be different branches of a definite and complicated reed-system, the first and final branches of which do not co-exist.—T. A. **Dymes**: The seed-mass and dispersal of *Helleborus foetidus*, Linn. The seeds of *H. foetidus*, L., are remarkable in being shed from the follicle in a single mass, bound more or less tightly together by a thick, white ventral strip of oleaginous tissue. Owing to the contrast of the shining elaiosome with the almost black seeds, the mass as a whole bears, at a short distance, a deceptive resemblance to the larva of a beetle. Observations were made, over two consecutive nights, on the work of the snails, which disintegrate the mass by devouring the elaiosome, thus reducing it eventually to single seeds. Experiments were also made with a view of establishing the possibility of molluscan dispersal of single seeds over a short distance. Observations in nature, and on captive *Helix aspersa*, point to the conclusion that the elaiosome offers an attraction as a molluscan dainty in the way of food. Experiments in the open do not support the idea of the larval resemblance being an adaptation to ornithochory, or that there is any regular dispersal by the birds of the neighbourhood. Observations and experiments with the ants, *Donisthorpea nigra* and *Myrmica laevinodis*, prove that they carry off whole masses, fragments, and single seeds, and take them into the nest. On the other hand, their behaviour does not favour the suggestion that the larval "mimicry" is operative, so far as they are concerned. The claim to myrmecochory is not a valid one. So far as the ants are concerned, neither the larval resemblance nor the massing brings to the species any advantage which it would not possess if the seeds were shed singly, as is usually, if not universally, the case with those that are adapted to these insects. The larval resemblance, which cannot be denied, suggests an adaptation to some still unrecognised agent or agents, and observations at the distributional headquarters of the species are much to be desired, in order to clear up the mystery of the mass.

MANCHESTER.

Literary and Philosophical Society, November 30.—Prof. S. J. Hickson, president, in the chair.—Prof. G. Elliot **Smith**: Further notes on pre-Columbian representations of the elephant in America. An amplification of the letter published in NATURE of November 25 (p. 340). Further examples of representations of the elephant were shown; and attention was directed to the fact that the Hindu god Indra, who was associated with the elephant, killed Vritra, who kept the rain in the clouds, just as the Central American elephant-headed god stood upon the head of the serpent, who prevented the rain from reaching the earth.—T. A. **Coward**: A change in the habits of the black-headed gull. Owing to the remarkable increase in its numbers since the Wild Birds' Protection Act of 1880, this gull has extended its range inland, and it is now an inland as well as a shore bird. This increase, in north Cheshire, has resulted in a noticeable change of habit, secondary to the change mentioned above, for within the last few years the bird has been roosting nightly on the waters of Rostherne Mere during autumn, winter, and early spring. Normally, the roosting and feeding hours of a bird which feeds upon the coast are regulated by the tides, but these Cheshire birds retire to roost like any other diurnal bird, about sundown. The area which these regular diurnal feeding and nocturnal sleeping black-heads frequent is contiguous to an area where others of the same species feed and sleep according to the constantly changing hours of the tide in the neighbouring Mersey estuary.

DUBLIN.

Royal Irish Academy, December 13.—Sir John Ross of Bladensburg, vice-president, in the chair.—H. **Ryan** and J. **Algar**: Studies in the diflavone group. III.—Derivatives of dicoumaranone and of diflavanone. Dianisylidenediacetoresorcinol, which was prepared by condensing anisaldehyde with diacetoresorcinol, was converted into its diacetatetetrabromide. Alcoholic potash converted the latter compound into dianisylidenedicoumaranone, instead of forming, as might be expected, di-*p*-methoxydiflavone. In the presence of alcoholic hydrochloric acid dianisylidenediacetoresorcinol interacted with anisaldehyde to form anisylidene-2-*p*-methoxycinnamoyl-3-hydroxy-4′-methoxyflavanone, and also dianisylidene-4:4′-dimethoxydiflavanone.—H. **Ryan** and M. J. **Walsh**: Studies in the diflavone group. IV.—Diveratrylidenedicoumaranone. By condensing veratric aldehyde with diacetoresorcinol a crystalline solid (diveratrylidenediacetoresorcinol), the constitution of which resembles somewhat that usually attributed to curcumindimethyl ether, was obtained. Unlike curcumin, however, the substance can scarcely be regarded as a mordant dye. It formed a crystalline diacetate, which readily added on bromine, and the product, on warming with potash, gave diveratrylidenedicoumaranone.—H. **Ryan** and Miss G. **Plunkett**: Unsaturated *β*-diketones. III. By the condensation of veratrylideneacetone with dimethyl oxalate a diketone, 3:4-dimethoxycinnamoylpyruvic methyl ester, was obtained. It formed an *iso*oxazole and a benzeneazo-derivative. Gentle hydrolysis converted it into the corresponding acid. The substances are mordant dyes, and, with mordanted wool, give colours very similar to those got with curcumin, the dimethyl ether of which they probably resemble in constitution.—H. **Ryan** and Miss A. **Devine**: The condensation of aldehydes with ketones. III.—Aldehydes with methyl-ethyl-ketone. *α*-Benzylidenemethyl-ethyl-ketone reacts with benzaldehyde in the presence of aqueous alkali to form a crystalline compound, $C_{18}H_{18}O_2$, which melts at 83–86°. It, as well as *α*-benzylidenemethyl-ethyl-ketone, interacts with benzaldehyde in the presence of alcoholic hydrochloric acid to form a colourless crystalline solid, $C_{25}H_{20}O$, which melts at 156° C. The latter compound may also be got by the action of excess of benzaldehyde on methyl ethyl ketone in the presence of alcoholic hydrochloric acid. *α*-Benzylidenemethyl-ethyl-ketone reacts with anisaldehyde and with piperonal to give the crystalline compounds $C_{27}H_{24}O_3$ and $C_{27}H_{20}O_5$ respectively, and also one molecule of methyl-ethyl-ketone condenses with piperonal to form a crystalline solid which has the formula $C_{28}H_{20}O_7$. The compound $C_{18}H_{18}O_2$ forms an oxime, but the compound $C_{25}H_{20}O$ forms neither an oxime nor a phenylhydrazone. With excess of bromine it gives a dibromide, $C_{25}H_{20}OBr_2$.

PARIS.

Academy of Sciences, December 13.—M. Ed. Perrier in the chair.—G. **Bigourdan**: The forgotten astronomer, Jean de Lignières, and the renaissance of astronomy in Europe. Riccioli ("Astronomia Reformata," 1665), giving the latitudes and longitudes of various stars, reproduced a small catalogue, the author of which was unknown to him, and since called by the name of *Astronomus incognitus*. Reasons are now given showing that this unknown astronomer was Jean de Lignières, a master of the University of Paris. The positions given in this catalogue are for the year 1364. —G. **Humbert**: The approximation of real irrationals. —H. **Douvillé**: The Orbitoids of the Danian and of the Tertiary.—J. **Guillaume**: Observations of the sun made at the Observatory of Lyons during the second quarter of 1915. The observations made on seventy-two days are tabulated, showing the number of spots, their distribution in latitude, and the distribution of the faculæ in latitude.—M. **Mesnager**: The elastic equilibrium of an indefinite plate of uniform thickness, compressed by two equal and opposite forces uniformly distributed along two parallel right lines situated in a plane normal to the bases.—Pierre **Breteau**: The preparation of phosphorescent calcium sulphide. Modifications of Verneuil's method are suggested. The sulphide is first prepared from a mixture of calcium carbonate and sulphur by ignition at a red heat, and this is then impregnated with 1/10,000 of its weight of bismuth. This is again raised to a red heat and allowed to cool slowly.—Mlle. Yvonne **Dehorne**: An Actinostromid of the Cenomanian.—J. **Repelin**: The discovery of deposits of large Pythonomorphs in the Upper Cretacean in the neighbourhood of Jerusalem.—Ph. **Flajolet**: Perturbation of the magnetic meridian at Lyons (Saint-Genis-Laval) during the second quarter of 1915.—A. F. **Legendre**: General considerations on the structural forms of south-western China and the Tibetian borders.—C. **Sauvageau**: The commencements of the development of *Saccorhiza bulbosa*. —Arthur **Compton**: The influence of some meteorological factors on the appearance of cases of cerebro-spinal meningitis. The degree of humidity of the atmosphere would appear to be a meteorological factor of great importance in determining the appearance of this disease when the organism is already present in the country.—M. **Weinberg** and P. F. **Seguin**: Researches on gas gangrene. This communication gives the results of the study of a hundred cases of this infection, together with suggestions for a serum treatment.—E. **Vasticar**: The terminations of the acoustic nerve.

BOOKS RECEIVED.

Illustrations of the New Zealand Flora. Edited by T. F. Cheeseman, with the assistance of W. B. Hemsley; the plates drawn by Miss M. Smith. Vol. i. Pp. 8+121 plates and descriptions. Vol. ii. Plates 122–250 and descriptions+pp. xxxiv. (Wellington, N.Z.: J. Mackay.)

Transactions of the English Ceramic Society. Vol. xiv. Session 1914–15. (Stoke-on-Trent: The Society.)

Department of Marine and Fisheries. Report of the Meteorological Service of Canada, Central Office, Toronto, for the Year ended December 31, 1912. Vol. i., Introduction and Parts i.–iii. Pp. xvi+367. Vol. ii., parts iv.–vi. Pp. 368–568. (Ottawa: J. de L. Taché.)

An Introduction to the Principles of Physical Chemistry from the Standpoint of Modern Atomistics and Thermodynamics. By Prof. E. W. Washburn. Pp. xxv+445. (New York: McGraw-Hill Book Company, Inc.; London: Hill Publishing Co., Ltd.) 15*s.* net.

Hancock's Applied Mechanics for Beginners. Revised and rewritten. By Prof. H. C. Riggs. Pp. xiii+441. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd.) 10*s.* 6*d.* net.

The Wheat Industry. By N. A. Bengtson and D. Griffith. Pp. xiii+341. New York: The Macmillan Company; London: Macmillan and Co., Ltd.) 3*s.* net.

Catalysis and its Industrial Applications. By E. Jobling. Pp. viii+120. (London: J. and A. Churchill.) 2*s.* 6*d.* net.

DIARY OF SOCIETIES.

MONDAY, JANUARY 3.

ARISTOTELIAN SOCIETY, at 8.—Time, Space, and Relativity: Prof. A. N. Whitehead

SOCIETY OF CHEMICAL INDUSTRY, at 8.

TUESDAY, JANUARY 4.

RÖNTGEN SOCIETY, at 8.15.—Some Observations upon the Occurrence of Uranium: J. H. Gardiner.

WEDNESDAY, JANUARY 5.

GEOLOGICAL SOCIETY, at 5.30.—The Islay Anticline (Inner Hebrides): E. B. Bailey.

THURSDAY, JANUARY 6.

OPTICAL SOCIETY, at 8.—The Use of a Graticule in Binoculars and Telescopes: S. D. Chalmers.

FRIDAY, JANUARY 7.

GEOLOGISTS' ASSOCIATION, at 7.30.—The Discovery and Excavation of a Large Specimen of *Elephas antiquus* near Chatham: Dr. C. W. Andrews.

CONTENTS.

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