

70 per cent. occurs over the first *third* length of the tube, 22 per cent over the *second* third, and only 8 per cent. over the last third. Fourthly, inasmuch as each tube of the boiler is, so to speak, an independent combustion unit, capable of being shut off or lit up without affecting the others, and as it only takes five minutes after lighting up a cold tube to attain its maximum steam output, it is obvious that not only is such a boiler highly responsive to rapid variations in the load, but also it works with equal efficiency at both small and big loads; indeed, within very wide limits, its efficiency is practically independent of the load.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

ABERDEEN.—Lord Elgin has been elected Chancellor of the University in succession to Lord Strathcona.

LONDON.—The following courses of advanced lectures, addressed to students of the University and to others interested in the respective subjects, to which admission is free without ticket, are announced in the issue of the *London University Gazette* of April 8:—Five lectures on the earlier Palæozoic land plants at University College, by Dr. D. H. Scott, on Wednesdays, May 6 to June 3; two lectures on plant pigments at University College, by Prof. R. Willstätter, professor of chemistry in the University of Berlin, on Monday, May 4, and Tuesday, May 5; two lectures, in French, entitled "La Catalyse, et mes divers travaux sur la Catalyse," at King's College, by Prof. Paul Sabatier, of the University of Toulouse, on Thursday, May 14, and Friday, May 15; eight lectures on the rate of the blood-flow in man in health and disease, in the Physiological Laboratory of the University, South Kensington, by Prof. G. N. Stewart, professor of experimental medicine, Western Reserve University, Cleveland, U.S.A., on Tuesdays, May 5-23; eight lectures on oxidation in the tissues, at University College, by Dr. C. Lovatt Evans, on Fridays, May 8 to June 26; four lectures on the regulation of the composition and volume of the blood, in the Physiological Laboratory of Guy's Hospital, by Dr. J. S. Haldane, on Thursdays, May 7-28; four lectures on the gaseous exchanges of the body, in the Physiological Laboratory of King's College, by Prof. T. G. Brodie, professor of physiology in the University of Toronto, on Monday, June 8, Wednesday, June 10, Monday, June 15, and Wednesday, June 17; three lectures on the morphology of the cranial muscles in vertebrates, in the Zoological Department, University College, by Prof. F. H. Edgeworth, professor of medicine in the University of Bristol, on Monday, May 4, Tuesday, May 5, and Wednesday, May 6; five lectures on the measurement of social phenomena, at the London School of Economics and Political Science, by Dr. A. L. Bowley, University reader in statistics, on Mondays, April 27 to May 25.

Among the public lectures, to which admission is free without ticket, announced to be delivered at University College during the third term of the present academic year, the following may be mentioned:—Four lectures on the ethnology and pathology of the ancient Egyptians, by Dr. D. E. Derry, beginning on May 5, at 5 p.m.; a lecture on Ptolemy's map of Germany and the Cimbric Chersonese, by Prof. Gudmudd Schütte, on May 11, at 5 p.m.; an introductory lecture on recent discoveries in Egypt, by Prof. Flinders Petrie, on May 21, at 2.30 p.m.

GLASGOW.—The following doctorates were among the degrees conferred on April 20:—Doctor of Philosophy (D.Phil.): L. J. Russell; thesis, "The Develop-

ment of the Philosophy of Leibniz, 1666-86." Doctors of Science (D.Sc.): Margaret B. Moir; thesis, "The Influence of Temperature on the Magnetic Properties of Carbon Steels; Sensitive Magnetic State induced by Thermal Treatment and by Strain; Magnetic Properties of Chrome Steels at Ordinary and Low Temperatures: Permanent Magnetism of Chrome Steels; with other papers." F. Mort; thesis, "North Arran: a Physiographic Study; with others papers." Maggie M. J. Sutherland; thesis, "Camphenanic Acid, its Isomers and Derivatives; with other papers."

Science states that a contribution of 10,000*l.* from Mrs. E. H. Harriman to the endowment fund of Barnard College, Columbia University, is announced toward the million dollar fund now being raised for the twenty-fifth anniversary of the institution. The amount now promised is 110,000*l.*

MR. H. NORMAN EDGE has been appointed honorary lecturer on meteorology to the Lancashire (Navy League) and National Sea Training Homes. As increased attention is now being given to the subject of marine meteorology, and a number of vessels keep a four-hourly log, the instruction in the keeping of the meteorological log to boys being prepared for a seafaring life is of real practical value.

It is announced in the *Times* that the late Mr. H. B. Noble, of Douglas, Isle of Man, left practically all his large estate for educational and charitable purposes in the island. The trustees of his will have decided to devote 20,000*l.* for the fostering of agriculture in the island. In connection with this gift a Bill has been introduced into the Manx Legislature constituting a Board of Agriculture for the island. The Board will administer the income arising from the gift, and will, in addition, have a fund placed at its disposal by the Government of the island.

A COMPREHENSIVE resolution dealing with the age of exemption from attendance at school, continuation classes, and child labour, was passed by the National Union of Teachers at the Lowestoft conference on April 15. The resolution, which was moved by Mr. G. Sharples, was as follows:—That all regulations recognising the half-time system, labour examinations, and other forms of early exemption from attendance at school should be abolished; that no child should be exempt from attending under the age of fourteen; that local authorities should be empowered to make by-laws requiring the attendance of children up to the age of fifteen; that all wage-earning work, and particularly all street trading, should be prohibited for all children under fourteen, both in urban and rural districts; and that a system of compulsory attendance at continuation classes should be established for children between the ages of fourteen and eighteen who are not otherwise receiving a suitable education, such a system to be accompanied by a statutory limitation of the hours of child labour.

A WEAK point in most of the Continental educational systems is that there is no easy bridge by which the public elementary and trade continuation class pupil can pass into the higher ranks of his vocation and complete his studies in the polytechnic or university. The avenue to these higher institutions is almost solely through the gymnasial secondary schools. In the facilities offered by scholarships for the transference of gifted pupils from primary schools to secondary schools and through these to universities and like places of advanced learning, we have nothing to learn from Continental methods. The scholarship systems of the education authorities of English counties and county boroughs provide the means by which any elementary-school pupil of little more than average

ability can obtain a free-place in a secondary school; and the brilliant pupil can proceed from this stage to a higher by means of senior scholarships. We are reminded of the efficiency of this educational ladder by a return just made to the Somerset County Council by the County Education Committee. It appears from this report that twenty-five out of the thirty senior county scholars referred to in it were enabled by the Education Committee's system of scholarships to pass from a public elementary school to a university or a university college. Many of the senior scholars have had remarkably successful careers since their university courses, and some have reached exceptional distinction. The return as a whole is very gratifying, and the result is due in part at least to the committee's policy of awarding scholarships of any grade only when candidates of really satisfactory merit present themselves.

MR. J. A. PEASE, Minister of Education, last week received at the offices of the Board in Whitehall, an influential deputation representing the civic, commercial, and educational life of Nottingham, and headed by the Duke of Portland, on the subject of granting the status of a university to University College, Nottingham. His Grace gave a *résumé* of the history of the college, emphasising the fact that its work would bear favourable comparison with that of the majority of the modern universities in the country. The time had now come when steps should be taken to broaden the constitution of the college, to place it in the same position as other similar institutions, and to establish it definitely as the university centre of the east midlands, spreading the responsibility for its government and maintenance over the area which it serves. Principal Heaton dwelt upon the educational work in the college itself, especially its honours, post-graduate, and research work, upon the home the college afforded to local branches of various national associations (such as Classical, Historical, English, Workers' Educational, Chemical Industry), and on the increased facilities it now offered for social intercourse among the students. The patriotic side of its work was well represented by its efficient Officers Training Corps, and the fact that it was the first college in England to form for women students a voluntary-aid detachment of the Red Cross Association. In his reply, Mr. Pease said:—"I appreciate, and the Board of Education appreciates, the desires of the people of Nottingham, their ambition, their aspiration, in connection with the formation of what one might call a full-blown university. There are schools of thought which think provincial universities have already been established in enough centres up and down our land. I am not one of those who take this view; I believe that there is work for additional universities, and I for one would be very glad to see a provincial university which would meet all requirements in connection with the wants of the people in the east midland area."

SOCIETIES AND ACADEMIES.

EDINBURGH.

Royal Society, March 16.—Prof. James Geikie, president, in the chair.—Rev. T. R. Stebbing: Stalk-eyed Crustacea Malacostraca of the Scottish National Antarctic Expedition. Most of the fifty specimens described were collected by the *Scotia* at various stations during its voyage out and home, so that not more than ten could claim to be Antarctic or sub-Antarctic in their place of capture. Six new species were described, viz., *Coryrhynchus algicola*, *Eupagurus modicellus*, *Gennadas kempi*, *Nauticaricus brucei*, *Phye scotiae*, *P. rathbunae*.—D. W. Steuart and Ingvar Jørgensen: Note on the atmospheric electrical

potential gradient in industrial districts. The experiments were carried out in the neighbourhood of Leeds. The chief feature was the magnitude of the potential gradient under certain conditions.—J. B. Robertson: A chemical examination of the organic matter in oil-shales. Thirteen samples had been analysed. The carbon hydrogen ratio varied from 6 to 8, the lower ratio belonging to the shale yielding the larger amount of oil produced from a definite percentage of organic matter. The ratios were lower than that of ordinary bituminous coal. The organic matter, the main bulk of which was insoluble in organic solvents, was the product of the decomposition of vegetable substance (algæ, spores, etc.), similar in nature to what was found in peat and cannel coal.

PARIS.

Academy of Sciences, April 14.—M. P. Appell in the chair.—L. E. Bertin: Calculation of the increase of load or of velocity obtainable by increasing the dimensions of ships. A development of some consequences of a formula given in an earlier communication.—G. Gouy: The absorbing power of the electric arc for its own radiations. Confirming results previously obtained with flame spectra, a complete opacity of the vapour for the line it produces is never observed. The absorptive power is between 0.5 and 0.7 for the very strong lines, and less for the weaker lines.—A. Laveran: New facts tending to demonstrate that Mediterranean kala-azar is identical with the Indian kala-azar. Comparative inoculation experiments were carried out on monkeys, dogs, and mice. *Macacusan cynomolgus* rendered immune to the Mediterranean kala-azar is refractory to the Indian virus, whilst another animal of the same species, inoculated under the same conditions as the first, and serving as a control, rapidly contracted a fatal infection. From this it is concluded that the diseases are identical.—A. Bilimovitch: The canonical transformations of the equations of motion of a non-holonomical system.—L. Dunoyer and R. W. Wood: Photometry of the superficial resonance of sodium vapour under the stimulation of the D lines. Fineness of the resonance lines. The magnitude of the resonance lines was of the order of 0.03 Ångström.—Félix Ebrenhaft: Minimum quantities of electricity and the existence of quantities (quanta) smaller than the charge of an electron. The electrical charges of particles of mercury and gold in the colloidal state were determined, the spherical shape of the particles under examination being previously proved by the microscope. The minimum charge is not the charge of the electron.—Albert Perrier and H. Kamerlingh Onnes: The interpretation of the magnetic properties of mixtures of oxygen and nitrogen. The molecular field varies inversely as the third power of the mean distance of the oxygen molecules.—R. Fosse: The gravimetric quantitative analysis of urea. The urea is precipitated from an acetic acid solution with xanthidrol, and the compound weighed. Its composition is definite, and can be controlled by analysis.—J. Bergonié: The rational distribution of meals in man in the nycthemeral cycle. The best times are shown to be 7.30 a.m. for principal meal, 4.30 p.m., and 8 p.m.

BOOKS RECEIVED.

Echinoderma of the Indian Museum. Part viii. Echinoidea (1). By Prof. R. Koehler. Pp. 258+xx plates. (Calcutta: Indian Museum.) 20 rupees. Gibt es denkende Tiere? By Dr. S. v. Máday. Pp. xiv+461. (Leipzig and Berlin: W. Engelmann). 9.60 marks. Die wichtigsten Lagerstätten der "Nicht-Erze." By Dr. O. Stutzer. Zweiter Teil. Kohle (Allgemeine