

Current Topics and Events.

PROF. LYDE'S leading article in last week's *NATURE* points to the need for a scientific basis for any programme aiming at the development of Empire resources which may result from the deliberations of the Imperial Economic Conference. A satisfactory organisation for effecting this purpose should embrace three main lines of work, namely, the exhibition of Empire raw materials, the technical examination of "new" or little-known products, and the systematic collection and dissemination of information relating to raw materials, their marketing and industrial use. An organisation originally designed for the purpose exists in the Imperial Institute. The Public Exhibition Galleries provide what is unobtainable elsewhere, namely, a permanent exhibition, under one roof, of the resources of all the countries of the Empire, so organised that a visitor desiring special information is, on inquiry, referred to the appropriate department of the Institute. These collections should be of great value to the business man, and their educational importance to the university student, no less than to the scholars who visit the Galleries in large numbers, conducted by the official guide, is obvious. Special lectures for the general public are also given by recognised authorities. The complement of the collections is the Scientific and Technical Department, the investigations of which—specially planned to meet the needs of the case—in conjunction with the assistance of the technical and commercial committees of the Institute, have served the economic development of the Empire to a degree unsuspected by the general public. The essential link in the scheme, namely, the collection and dissemination of technical and other information, and an organisation for dealing with the constantly growing stream of inquiries, exists in the Technical Information Bureau, which forms the intelligence department of the Institute and has proved of great practical service.

OUR famous medical contemporary, the *Lancet*, began its hundred and first year of publication on October 6, when a supplement was issued of nearly eighty pages, profusely illustrated by the portraits of many distinguished friends and some of the equally distinguished enemies of the paper. The text, modestly and humorously written, is a truly remarkable record of facts in medical highways and byways during the past century. It is not too much to say that the present state of medical education and practice in England, its established efficiency and security and freedom from all grave abuses, is as much due to Thomas Wakley's *Lancet* as to anything else. Its scurrilities, venomous nick-names—"little eminent"—the rollicking old libels, semi-caricatures, "intercepted letters," and grandiloquent but downright abuse in plain English are now things past regret. Wakley's handling of them was perfectly in accord with his time; while his sense of right, his courage, and his devotion to a great cause would receive high admiration in our own. In the first ten years of his paper's existence there were six actions for libel, the aggregate sum of 8000*l.* being claimed for damages;

the aggregate of 155*l.* os. 0½*d.* was awarded, the editor's costs being largely defrayed by public subscription. The design of the paper was to supply medical information which was available at that time to but few people, and to show that hospitals were not served, and that students were not trained, by persons selected for their merits. The libel actions arose out of the publication of supporting evidence, and ceased as reforms followed. Wakley's accusations of nepotism in hospital management and malpraxis in hospital practice gained public hearing in the Bransby Cooper case. His campaign against the Royal College of Surgeons of England, at first mismanaged, resulted in the appointment, in 1834, of Warburton's Parliamentary Committee of Inquiry into the state of the medical profession, and, later, in the Act constituting the General Council. Since then, lunacy, food adulteration and water-supply, workhouse administration, the advancement of Lister's views and of anæsthetic technique, and, indeed, every notable contribution by science to medicine, have in turn provided the *Lancet*, under Wakley guidance, with fields for great constructive work. The Centenary Supplement is a document of absorbing interest, personal and professional, a becoming memorial to great Englishmen.

MR. W. J. U. WOOLCOCK, the General Manager of the Association of British Chemical Manufacturers, described to representatives of various technical journals on Monday last the progress which has been made with the preparation of the Chemical Section of the British Empire Exhibition to be held at Wembley next year. The Chemical Section, which is being organised by the Association, and occupies nearly 40,000 square feet in the Palace of Industry, will be built in such a way as to form a Hall within the Palace. About 100,000*l.* will be spent in presenting to the public a picture of the present state of British chemical industry. No important firm in the industry will be unrepresented, and the whole of the individual exhibits, numbering about one hundred, will, by reason of their position and character, combine to form a magnificent illustration of the industry. Considerable attention has been paid to the lay-out and to the decoration of the Chemical Hall. There will, for example, be about two hundred yards of a specially painted frieze illustrating various operations in chemical manufacture; and as the majority of the stands are being designed by the same architect, the treatment of each stand is likely, while maintaining the individuality of the occupier, to present a very pleasing picture of the Hall as a whole. In the centre of the Chemical Hall there is to be illustrated the progress which has been made in pure chemistry during the past twenty or thirty years, with the view of showing that the stream of scientific invention in this country is still flowing steadily onwards. The Scientific Section is being organised by a Committee consisting of representatives of the following bodies: The Chemical Society, the Institute of Chemistry, the Societies of Chemical

Industry and of Dyers and Colourists, the Pharmaceutical Society, and the Institutions of Petroleum Technologists and Chemical Engineers. The Committee is working in close co-operation with the Royal Society. Sir Herbert Jackson acts as the representative of the Royal Society on the Committee and Mr. Woolcock in a similar capacity on the Royal Society Committee. In order that both the general public and scientific persons may have a record of the exhibit, it is proposed to publish a number of pamphlets specially written for the purpose dealing in popular language with the various classes of exhibits in the Scientific Section. In addition to this it is proposed to publish in more technical language a work, which will not only explain the scientific exhibits, but will put on record in a very complete form the state of our knowledge in chemical matters at the date of the Exhibition. It is anticipated that there will be a very large demand for this valuable record, each chapter of which will be contributed by an authority in the subjects dealt with, and that it is likely to find a place on the bookshelf of every scientific worker.

IN the hope of checking the rabbit pest in Australia, it is proposed by the Commonwealth to make large advances, not exceeding 250,000*l.*, to cover the cost of supplying settlers with wire netting on easy terms. Every State would get a fair proportion of the netting. The second reading of the bill has been carried in the House of Representatives. The money is to come out of the Consolidated Revenue Fund, and its amount indicates the continued seriousness of the situation. In the course of the discussion in the House it was mentioned that thousands of acres, in South Australia in particular, had depreciated to half their value owing to the rabbit pest, and it was stated that whereas in 1893 there were 60,000,000 sheep in New South Wales, the number was now down to 32,000,000 because of the rabbits. The calamitous interference with the balance of Nature involves a vicious circle, for the hope of permanent relief is increase in the agricultural population so that concerted and widespread elimination may be organised, but this increase is checked because the rabbits tend to make the settlers' work economically hopeless. Trapping and poisoning, netting and inoculation, have been tried with persistence, but the prolific multiplication of the rabbit continues to defeat man's efforts. Attention is being re-directed to the Rodier method, which has proved effective in areas of considerable size. Mr. W. Rodier suggested that doe-rabbits should be killed in as large numbers as possible, but no bucks. In the areas experimented with, the result was that the bucks killed the helpless young and also that the does were persecuted to death by the demands of the bucks. In other words, the polyandry became so intense that the females perished in large numbers. The method has experimental facts in its favour, and it is applicable to other pests such as rats and sparrows. A practical difficulty is in distinguishing the sexes before the act of killing.

WE regret to learn that on the afternoon of September 20, a violent explosion followed by fire occurred

in the Dynamometer Laboratory of the Bureau of Standards, Washington, D.C. One man was killed instantly, three others injured so seriously that they died during the night, and four others seriously burned or cut. The heroism of the survivors of the staff in rescuing the injured from the furiously burning wreckage and in shutting off the electric circuits and the ammonia valves, minimised the loss of life and property. The explosion occurred in the altitude chamber which is used in testing the performance of aircraft engines under the conditions of low pressure and temperature obtaining at high altitudes. At the time of the accident the room was being used in investigating the performance of an automobile engine, at temperatures corresponding to winter operation, using various grades of gasoline. The work was intended to determine the possible increase in gasoline production per barrel of crude oil, with the accompanying conservation of oil resources, by the use of gasoline of lower volatility. The explosion was due to the ignition of an explosive mixture in the chamber. The men who were killed are: Logan L. Lauer, Urban J. Cook, Stephen N. Lee, and Joseph Kendig; while those injured are: Henry K. Cummings, Frank E. Richardson, Roger Birdsell, George W. Elliott, C. N. Smith, and R. F. Kohr. Most of these men were college graduates with experience and skill in research work, and a grave blow to science and engineering must be added to the human loss to their families and colleagues. Thus grows the long list of those who have given their lives for the increase of human knowledge and welfare.

THE first number of an important and interesting publication, *The British Journal of Experimental Biology* (Edinburgh: Oliver and Boyd. Quarterly, 12s. 6*d.* net; annual subscription, 40s. net) has recently been issued from the Animal Breeding Research Department of the University of Edinburgh, with Dr. F. A. E. Crew as editor in chief. The experimental method has become so indispensable in biological research that it is perhaps remarkable that no special journal has hitherto been devoted in Great Britain to its results, though America and Germany have long possessed such media of publication. The British journal, however, covers a wider field than any existing publication, as is sufficiently evident from the fact that the contributions to the first number are drawn from such diverse institutions as the Animal Breeding Research Department, Edinburgh, the Zoological Departments of the Universities of Edinburgh and Oxford, the Physiological Department of the University of Oxford, and the Natural History Department of the British Museum. Of late years there has been a strong tendency towards over-specialisation among working biologists and the new journal should do good service in promoting the unification of biological science. We are glad to note that it is the intention of the editors to publish regular reviews of recent progress in different fields of research; the critical summary on that very modern branch of biological science known as tissue culture, by H. M. Carleton, which appears in the present number, shows

how valuable a feature such reviews are likely to be. The journal is very attractive in appearance; both letter-press and illustrations are excellent and the price is moderate. We wish it all success, and especially a large body of subscribers.

"THE Natural History of Wicken Fen," Part I. (Cambridge: Bowes and Bowes), which is to continue appearing until the volume is completed, under the general editorship of Prof. J. Stanley Gardiner and Mr. A. G. Tansley, is a very desirable record of public-spirited action by entomologists and botanists, supported by the National Trust for Places of Historic Interest or National Beauty. The Trust now holds for the benefit of the nation 521 acres, which include the greater part of the old undisturbed fenland in Wicken Sedge Fen, St. Edmund's Fen, and Burwell Fen, and has obtained leases of other areas. Mr. A. H. Evans, the secretary of the local committee formed in Cambridge in 1914 to further the purchase and preservation of the fenland, states that the Trust is able to look forward with confidence to the early purchase of a further 60 or 70 acres if funds are available. Mr. Evans reports that "very little more remains to be done in this direction," an eminently satisfactory state of affairs for which we have to thank many generous donors, but notably the late Mr. G. H. Verrall, of Newmarket, an ardent entomologist who realised the value of the undisturbed fenland to the student of insect life. The volume now commenced is to place on record the history and the biology of the fenland, and the present part contains Mr. Evans's history of the fens, with especial reference to Wicken Fen, and of their drainage and its effect upon the fauna and flora, together with an account of the butterflies and moths of Cambridgeshire by W. Farren, which is substantially the same as that appearing in the British Association Handbook for 1904. The local committee has wisely decided not to leave the fen "to Nature," which, as the secretary points out, would mean eventually the formation of a tangled impenetrable thicket of the tall coarse sedge (*Cladium Mariscus*) shaded by alien trees, but to see that excessive growth is thinned out and the waterways kept so that the winter floods may profit the ground. The characteristic fen country has never been an untouched wilderness, but so far back as its history is known the sedge crop has regularly been cut, being once of considerable value.

SIR E. SHARPEY SCHAFFER is to deliver the first Victor Horsley Memorial Lecture at the Royal Society of Medicine on Thursday, October 25, at 5 o'clock, taking as his subject "The Relations between Surgery and Physiology."

THE sixth annual Streatfeild Memorial Lecture will be delivered in the Chemical Lecture Theatre of the Finsbury Technical College, Leonard Street, E.C.2, at 4 o'clock on Thursday, October 25, by Mr. E. M. Hawkins. The subject will be "Analytical Chemistry," and admission will be free.

THE eighth annual meeting of the Optical Society of America will be held at Cleveland, Ohio, in the Case School of Applied Science, on October 25-27. The

address of the retiring president, Dr. L. T. Troland, will be on "The Optics of the Nervous System." Prof. A. A. Michelson will read, by invitation, a paper on "The Limit of Accuracy in Optical Measurement," and Mr. F. A. Whiting, director of the Cleveland Museum of Art, will address the Society on "The Optical Problems of an Art Museum." A number of papers on general optics, vision, colorimetry, photometry, spectroscopy and instruments will also be presented.

THE programmes for the meetings of the Royal Microscopical Society during the coming winter session have been issued, and the Society is to be congratulated on the excellent series of papers and communications which will be submitted for discussion. The section dealing with the industrial applications of the microscope has a specially attractive list, and in addition to the large number of exhibits, the practical demonstrations shown will be a leading feature at each meeting. Arrangements have been made for communications and discussions dealing with coal, petrology, metallurgy, textiles (cotton and linen), paper, bee-keeping, and poultry-keeping. A further attraction of the meetings of the Industrial Applications Section will be a series of lecture demonstrations, which will embody a practical course of instruction in the manipulation of the microscope. These will be given by Mr. J. E. Barnard, and a detailed syllabus of the same will be forwarded on application to the secretary to the Society, 20 Hanover Square, W.1.

THE latest news of Mr. K. Rasmussen's expedition to Arctic Canada has been brought to Europe by Mr. Birket-Smith, who has returned to Copenhagen. According to the *Times*, Mr. Rasmussen had reached Pelly Bay, near the Magnetic Pole, at the end of April on his way to Alaska and Siberia in his endeavour to trace the route of Eskimo migrations. Mr. P. Freuchen is following the Eskimo track via Baffin Land, Lancaster Sound and Ellesmere Land to Thule in north-western Greenland. Mr. Birket-Smith completed his task of visiting the inland Eskimo tribes in Melville Peninsula and Rae Isthmus.

THE *Times* publishes an account of the travels in Spitsbergen last August of the Merton College expedition. The original project of exploring North-East Land had, as was fully expected, to be abandoned. It is far beyond the scope of a summer visit. The vessel carrying the party was able to penetrate Hinlopen Strait from the north, land a sledging party on the western shore and reach Ulve Bay on the south coast of North-East Land. On the pack closing in, a retreat was made northward along the strait and a brief visit was paid to the north coast of North-East Land. Pack ice prevented progress beyond Cape Brunn and the vessel was forced to return. After a visit to Klaas Billen Bay, where the sledging party was picked up at Camp Bruce, the expedition returned to Norway. On the west side of North Cape was found a canvas tent bag which has been identified as a relic of the German Expedition of 1912 and doubtless belonged to Lieut. Schroeder Stranz, who lost his life in an attempt to sledge over insecure sea-ice.

BIBLIOGRAPHY of meteorological literature, No. 4, has recently been issued by the Royal Meteorological Society, having been prepared with the collaboration of the Meteorological Office. It deals with all meteorological publications and articles on meteorology recently received, giving the titles and references where the literature is to be found. The division of the subject-matter under specified heads enables a would-be student to determine the helpful line of reading which he is desirous of prosecuting, without loss of time. Divisions are given for the several meteorological elements, such as atmospheric pressure, temperature, solar radiation, aqueous vapour and cloud, rain, wind, storms, and weather forecasting, with other allied subjects.

WE have received a copy of the Report of the Proceedings of the Natural History Society of Bishop Stortford College for 1922. It is the first report published by the Society, and contains a list of the plants found in the district during the years 1920-1922, an account of the more interesting Lepidoptera occurring during 1922, and a note on the birds of the year. A list of the more important additions to the school museum during the year and a general account of the activities of the Society, especially in the maintenance of vivaria and aquaria, are added. The successful attempt to induce the viper to breed in captivity is a notable achievement. The Society can be congratulated on having got together a nucleus of enthusiastic and active workers, and we hope the

publication of this report will stimulate its members to increased and more sustained work on the fauna and flora of the district.

WE have received from Messrs. Watson and Sons, Bulletin 29 S. on diathermy apparatus. The introductory remarks are reprinted from an article by Dr. E. P. Cumberbatch, who has made important contributions to this subject. This foreword explains clearly the methods which are necessary for the production of sustained oscillations of the right frequency for the purposes in view, and also gives some account of the surgical and medical uses to which the diathermy currents can be put. The early designs of the instrument have been much improved so as to allow a large output of these currents, and the spark gap, which has often proved the weakest feature of the instruments, is now run in an atmosphere of coal gas; if this is not available, petrol or acetone may be used. The bulletin is illustrated by various parts of these machines and by a great variety of electrodes for the various cavities of the body.

THE Cambridge University Press announces the forthcoming publication of "The Archæology of the Cambridge Region," by C. Fox, which will form a topographical study of the bronze, early iron, Roman, and Anglo-Saxon ages, with an introductory note on the neolithic age. The object of the work is to provide a basis for future detailed study, period by period, of the archæological remains of the district and of the many problems connected with them.

Our Astronomical Column.

PHOTOGRAPHIC MAGNITUDES OF SATELLITES OF JUPITER.—Mr. Seth B. Nicholson has made a careful study by photography of the magnitudes of the eighth and ninth satellites of Jupiter. Reduced to mean opposition they are 17.6 mag. and 18.6 mag. respectively. Assuming albedoes similar to that of Jupiter III (Ganymede), the diameters are about 30 miles and 20 miles.

PERTURBATIONS BY THE METHOD OF QUADRATURES.—In 1908, Dr. P. H. Cowell introduced the method of following the perturbed motion of a planet or comet by calculating the forces acting in three directions mutually at right angles, and so obtaining the second differences of the x , y , z co-ordinates of the body; being given the initial values, the successive ones are then formed by addition of the differences.

Mr. B. V. Noumeroff has lately improved the method in a paper in vol. ii. of Publications de l'Observatoire Astrophysique de Russie. Mr. Comendantoff contributes a paper to *Astr. Nach.*, No. 5249, explaining the method and applying it to form positions of Ceres from 1913 to the present time. The Nautical Almanac has discontinued its ephemeris of the four bright asteroids, and since then regular ephemerides have not been available.

The point of the method is the use of new co-ordinates formed from x , y , z by multiplying them by a factor so chosen that the differences between the second and the sixth disappear, which greatly simplifies the calculation. The first approximation, using Jupiter perturbations only, at 40-day intervals, represents the place of Ceres for ten years with no error exceeding 15 seconds of time, which is sufficient

for a finding ephemeris; it is further shown how the calculated co-ordinates may be improved when later observations are available. The method appears to be worthy of careful study.

STUDIES IN STELLAR MASSES.—Many recent studies in this field have been mentioned in this column. Dr. E. Hertzsprung contributes another to Bulletin No. 43, *Astron. Instit. of Netherlands*. He classifies 14 pairs of known orbit elements and parallax; they include the interferometer results for Capella and the eclipsing variable β Aurigæ; the mass of each component is deduced and the logarithm of the mass plotted against the quantity $m+5 \log p$, where m and p are the apparent magnitude and parallax respectively. The graph connecting the two is nearly linear, showing a close correlation between mass and absolute magnitude, a result reached by other investigators. An expression using first and second powers of log mass is preferred, as it gives a better fit; it is noted that the formula fits well for the sun.

A table is given enabling the parallax to be deduced when the magnitudes and orbit elements are known. The star ζ Orionis is discussed. This star has a motion in position angle of 1° in 9 years, but the arc described is too short for finding an orbit. Jackson found the hypothetical parallax $0.016''$ assuming a mass double that of the sun. The parallax found from the new formula is $0.0038''$, which is regarded as more trustworthy. It agrees well with other estimates of the distance of the Orion group.

Dr. Hertzsprung appeals to parallax observers to pay special attention to stars the orbit elements of which are either known or are likely to be determinable before long.