

Current Topics and Events.

It is a biological commonplace that every species of animal (man included) tends to increase in numbers if left free to propagate without restraint. This restraint is, however, always forthcoming when the population reaches a certain degree of saturation, and in the case of the human race it has in the past taken three forms, namely, war, famine, and pestilence. During the fourteenth century there were seven famines in England, in which the people died like flies, and towards the close of the century the Black Death wiped out three-quarters of the population. We are familiar with the ravages of the Great Plague in London in 1666, during which 100,000 people died, but few realise that in the preceding century there were two similar visitations, and in the earlier one, which occurred in Elizabeth's reign, 65,000 people died. The Queen and Court fled to Windsor, and the Queen had a gallows erected in the market-place, and gave orders that every Londoner who appeared in the town should be hanged!

WITH the development of our social sense, which is the real measure of our advance in civilisation, the suffering and sorrow involved in these calamities have become abhorrent to us; and a certain proportion of our population, chiefly the better educated members of it, have learned so to limit their families that they are able to give to each child its proper share of care, food, and affection. But the greater part of the population, including most of the manual workers, are without this knowledge; and amongst them the lowest, poorest paid, and least skilled are the most prolific. The Walworth Women's Welfare Centre (153A East Street, Walworth, S.E.), the annual report of which has recently been received, was established with the object of teaching the poorer women harmless means of preventing conception, so that the births may be properly spaced and the children given a chance of healthy development. A distinguished Dutch medical man, Dr. Jansen, in a book entitled "Feebleness of Growth," has given reason to believe that in successive children produced by rapidly succeeding pregnancies, there is a progressive physical degeneration manifesting itself in stunted growth and deformities of various kinds. It would seem that birth-control should ultimately replace natural selection as a limiting factor in human affairs: but if it is confined as at present to the best elements of the population, it must cause the deterioration of the quality of the race. The aim of the Walworth centre and of the newly established centre in North Kensington is to spread the knowledge amongst those who need it most.

THOUGH to-day some 2,000,000 tons of shipping are propelled by internal combustion engines of the Diesel type, a new chapter in the history of the motor ship may be said to have been opened with the recent trials of the M.S. *Oorangi* built by the Fairfield Shipbuilding and Engineering Company of Govan for the Union Steamship Company of New Zealand. The *Oorangi* (the name is the Maori for Mount Cook) is the first large and fast passenger vessel to be fitted

with Diesel engines. The ship is 23,000 tons displacement, 600 feet long by 72 feet beam, and will carry about 1300 passengers and crew and a considerable amount of cargo. It is designed for the long run from Vancouver to New Zealand and Australia, on which it is expected that an average speed of $17\frac{1}{2}$ knots will be maintained. The main interest lies in the vessel's machinery. There are many types of Diesel engines being produced to-day, but the engines of the *Oorangi* are of the Sulzer type, two-stroke, single-acting, as developed by the famous Swiss firm of Sulzer Brothers of Winterthur. There are four sets of main engines driving four shafts, each set having six cylinders $27\frac{1}{2}$ inches diameter, 39 inches stroke, the whole 24 cylinders developing some 15,000 B.H.P., equivalent to 19,750 I.H.P. The air compressors for supplying the air, at 1000 lb. pressure, for injecting the fuel are worked off the main engines, while the low-pressure air supply for scavenging is obtained from three turbo-blowers driven by electro motors. There are also two electro motor-driven high-pressure air compressors for supplying the starting air when manœuvring in and out of port, while the electric power installation for the ship consists of four 350 kw. generators driven by Sulzer-Diesel engines of 420 B.H.P. Some of the auxiliaries in the ship, such as the refrigerators and winches, are driven by steam supplied from two ordinary marine boilers burning oil. The ship carries about 3000 tons of oil fuel, which is sufficient for the round voyage between Vancouver and Sydney. As pointed out by Engineer-Admiral Sir George Goodwin in his Hawksley Lecture to the Institution of Mechanical Engineers on November 7, there are many considerations to be taken into account when deciding upon the type of machinery for any particular ship, and the performances of the *Oorangi* at sea will be followed with great interest.

THE value of an international language for promoting amity among nations, and its obvious advantages for use in international trade, have been much emphasised by those who are convinced of the practicability of such a project; but its presumptive value to men of science has, perhaps, not yet received due attention. The work of a large number of scientific and technical societies is severely handicapped by the greatly increased costs of printing and publication, and the adoption of a single language for communicating abstracts from scientific literature, as well as for papers and treatises of exceptional importance, would undoubtedly effect economies in money and effort. In a recent issue of the Proceedings of the American Philosophical Society (vol. lxi., No. 1), Prof. R. G. Kent, of the University of Pennsylvania, makes a thoughtful contribution to this subject. After referring to the use of Latin by scientific investigators from about A.D. 1500 until 1775, and to the recrudescence of national feeling and national languages since the War, the author declares that the language burden has now become too great

even for the professional philologist and *littérateur*. He discusses the merits of the chief languages that have been suggested for international use, and comes to the conclusion that Latin is best for scientific purposes. Latin has a vocabulary that is essentially international, and a technical terminology which is already very wide and capable of easy and indefinite extension. Although ease of acquirement and brevity are valuable characteristics of an international language, a recognised and unquestioned standard of meaning is even more important. Latin has an objective standard of word-meaning, and by reason of its terminations, word-order, and moderate use of auxiliaries, it allows of complete precision in indicating the relations of words to one another; it is reasonably phonetic; it is still used for constructing new words required in science; of all non-native languages, it is most studied in European and American schools; and its use would not inflame international jealousy. Prof. Kent advocates the use of a simple Latin, *i.e.* one with short sentences and few clauses, together with a slightly increased number of prepositions. Thus modified, he thinks that Latin would stand supreme as a means of conveying scientific thought to an international public.

At the last meeting of the Newcomen Society held on December 17, another valuable contribution was made to the early history of mechanical engineering by Mr. Forward in a paper on "The Early History of the Cylinder Boring Machine." The lathe, the planing machine, and the boring machine have all been developed into very powerful and accurate machines, but some of their principal features can be traced back to the pioneering machines. It was the steam engines of Newcomen, Smeaton and Watt which created the demand for cylinder-boring machines, and one of the first is that described by Smeaton as seen at the Carron Ironworks, but it was as imperfect as Watt's "Beelzebub" itself. It was the well-known ironmaster John Wilkinson who first used a long stiff cylindrical bar fitted in bearings and provided with a cutter head of large size which could be traversed along the bar by means of a rack and pinions. It is possible the old boring bar at the Science Museum, South Kensington, was one of Wilkinson's earliest and was used at Bersham. Another improvement was the use of a screw instead of the rack, but it is not certain who made this important addition. Among the engineers of that day was Matthew Murray of Leeds, and it may have been due to him. In speaking of the making of the screws, Mr. Forward quotes an interesting passage from T. Gill's "Technological and Microscopical Repository" of 1830, showing how the lines for the screw were first produced on the bar, how a shallow screw thread was cut by hand, and how this shallow screw was used for completing the cutting.

A REPORT by Mr. Leslie Armstrong on recent results obtained by the joint committee of the British Association and the Royal Anthropological Institute for the exploration of caves in Derbyshire appeared in the *Times* of December 22. An undisturbed occupation site at Creswell Crags, opposite a cave, known as

Mother Grundy's Parlour, at the eastern end of the ravine, has yielded rude implements of quartzite, more than 1500 flint flakes and implements, a number of bone tools, and numerous bones of pleistocene animals. More important, however, are examples of palæolithic art in the form of engraved bones, one a spirited drawing of a reindeer, another a part of a bison with the head, and a third fragment too small for identification. The only other undoubted example of palæolithic cave engraving from Britain is that of a horse's head from the Robin Hood Cave, also at Creswell, found by Sir W. Boyd Dawkins in 1876. The earliest implements—flakes and hand-axes made from quartzite pebbles of late Acheulean form—were associated with remains of cave lion, cave bear, and hyæna. They represent not only the earliest occupation of Creswell, but also the extreme northward extension of early palæolithic man in Britain. A considerable interval elapsed between this and the next occupation, which belongs to the Reindeer Period. In this stratum were flint tools of Upper Aurignacian type, the engraved fragments of bone, and tools manufactured from reindeer antler and bone. A hearth or fire-hole was scooped out in the basement bed and ringed with flat stones. Not only does the evidence from the cave earth here indicate continuous occupation from late Aurignacian to Azilio-Tardenoisian times, but it also supports the view which challenges the existence of true Magdalenian culture in Britain, and maintains that there was an independent development of culture here which was free from intrusive Magdalenian influence.

THE December issue of *La Science Moderne* contains an article by M. Reverchon on "L'Évolution de l'Horlogerie." M. Reverchon points out that the mechanical clock was the gift of the middle ages, and its development belongs to the last six hundred years. One of the first clocks made was that constructed for the Cathedral of Beauvais, but the oldest clock still going is that in the Science Museum at Kensington. The fourteenth century saw many cathedrals supplied with clocks. All of these were fitted with the verge escapement—the first of all escapements—the inventor of which is unknown. "Nous sommes ainsi réduits à le saluer comme le soldat inconnu de la chronométrie." The verge escapement was the only one used for three and a half centuries, and even the pendulum clock presented by Huygens to the States General of Holland had it. A little later came the anchor escapement of Hooke or Clements, and then others by Graham, Le Roy, Lepaute, Mudge, and others. In his sketch, the author divides the history of the clock into three periods, the second of which opens with the work of Huygens, while the third, "the scientific period," began with the work of Edouard Phillips, who in 1861 published his essay "Mémoire sur le spiral réglant."

MARINE meteorology is dealt with in the *Marine Observer* for December published by the Meteorological Office, Air Ministry; this completes Vol. I., which commenced with 1924. The publication emanates from the Marine Division; communications are contributed by the marine staff, and interesting

items are given by the voluntary marine observers, for whose benefit the work is primarily undertaken. "Wireless and Weather, an Aid to Navigation," has been made a special feature throughout the year, and the December number is of special interest to seamen, dealing with phenomena common to the Atlantic and Pacific Oceans. A quotation is given from "Physical Geography of the Sea and its Meteorology," written by Maury about sixty years ago, given apparently to show that over the open ocean there are no interfering causes as commonly exist over land. With our present knowledge of the weather, the North Atlantic with its cold Arctic current flowing southwards and the Gulf Stream flowing northwards, together with other interfering causes, it is not easy to admit that over the ocean "the agents which are at work are of a more uniform character." Synchronous weather charts are given, drawn at sea from wireless reports received, and these will prove very helpful to other observers wishing to obtain similar information. It is only recently that it has been possible to draw weather charts at sea, of similar use and with somewhat equal accuracy to the synchronous charts drawn on shore at special weather bureaux. A retrospect of the results given in the first volume and the interest in the work taken by seamen is said to justify the continuance of the publication. Without doubt marine observers are regaining their pre-War interest in meteorology.

At the twelfth annual meeting of the Indian Science Congress to be held at Benares under the auspices of the Benares Hindu University on January 12-17, His Highness the Maharajah of Benares will be the patron and Dr. M. O. Forster, Director of the Indian Institute of Science, Bangalore, will be the president. The Sections and their presidents are as follows:—*Agriculture*, R. S. Finlow, Director of Agriculture, Bengal, Dacca; *Physics and Mathematics*, Prof. E. P. Metcalfe, Principal, Central College, Bangalore; *Chemistry*, Dr. J. C. Ghosh, University professor of chemistry, Dacca; *Zoology*, Dr. Baini Prasad, Officiating Director, Zoological Survey of India, Calcutta; *Botany*, Prof. R. S. Inamdar, University professor of botany, Benares Hindu University; *Geology*, Dr. G. E. Pilgrim, Superintendent, Geological Survey of India, Calcutta; *Anthropology*, Prof. P. C. Mahalanobis, Presidency College, Calcutta; *Medical Research*, Lieut.-Col. F. P. Mackie, Director of the Bombay Bacteriological Laboratory; *Psychology*, Dr. N. N. Sen Gupta, professor of psychology, Calcutta University. Besides the usual sectional programme, general discussions have been arranged on the following topics: The physical and chemical aspects of valency; the true path of industrial development in India; the relation of insects to disease in man, animals and plants; the fauna and flora of Krusadai Island near Rameshwaram. Popular evening lectures will be delivered by Prof. A. J. Turner, on "Science and the Cotton Industry"; by Dr. S. N. Gore, on "Bacterial Flora of Drinking Water in India"; and by Prof. P. Sampat Iyengar, on "The Growth of India." Lieut.-Col. F. P. Mackie will give a cinema demonstration on malaria and kindred

subjects. A number of excursions and social functions are also being arranged in connexion with the Congress.

SIR OLIVER LODGE has accepted the presidency of the Radio Society of Great Britain in succession to Dr. W. H. Eccles, who has held the office for the past two years.

WE much regret to record the death on December 26 of Dr. G. D. Liveing, F.R.S., president of St. John's College, and formerly professor of chemistry in the University of Cambridge. Dr. Liveing, who reached the advanced age of ninety-seven years on December 21 last, was the victim of an accident some two months ago and he never recovered. His early work was chiefly in the domain of spectroscopy, and he was awarded the Davy Medal of the Royal Society for his contributions to that subject so long ago as 1901.

PROF. E. GOURSAT, of the faculty of science of the University of Paris, and Prof. L. Bianchi, professor of analytical geometry in the University of Pisa, have been elected associates of the section of mathematical and physical science of the Académie royale de Belgique (Classe des Sciences); and the Lamarck Prize (Zoology) has been awarded to Prof. E. Chatton, professor of general biology in the University of Strasbourg.

THE University of Sydney commemorated on October 23 last the centenary of the publication of Sadi Carnot's "Réflexions sur la puissance motrice du feu." Representatives of almost all the scientific and educational institutions of Australia were present at the commemoration. Lectures on the bearing of Carnot's work on modern science and industry were delivered by Sir Henry Barraclough and Prof. O. U. Vonwiller, and exhibitions and demonstrations of modern oil, gas, and steam engines and refrigerating machinery were given in the Engineering Laboratory of the University.

IN conjunction with the Meteorological Office, Mr. S. Morris Bower, Langley Terrace, Huddersfield, purposes to continue, during this season (January 1-March 31), the annual record of winter thunderstorms in Great Britain hitherto made by Mr. C. J. P. Cave, of Petersfield (see NATURE, December 30, 1922, p. 877). Reports from all parts of the country are desired, especially from Scotland, Ireland and the North of England.

THE last meeting of the Illuminating Engineering Society was held at the E.L.M.A. Lighting Service Bureau—an interesting departure with the view of bringing practice and theory into line. Visitors, including representatives of gas lighting interests, had an opportunity of witnessing demonstrations of the latest types of lighting units and examining critically methods of impressing the benefits of good lighting on the public. Some of the appliances shown illustrated aptly the application of scientific principles in the lighting industry, and there was one device, a new form of camera shown by Dr. Rosenthal, that excited considerable interest. This compact form of

camera is expressly designed for taking photographs by artificial light and is provided with an exceptionally large aperture. It was stated that an exposure of two seconds was sufficient with illuminations not less than 5 foot-candles—a speed that would easily enable photographs of artificial lighting installations to be taken with figures in the foreground. In the case of factories, this is likely to be a considerable advantage.

KING EDWARD'S HOSPITAL FUND for London has arranged a series of evening popular science lectures, by distinguished scientific workers, during January, February, and March. The lectures are to be given at the Imperial College of Science and Technology, King's College, Birkbeck College, and various polytechnics spread over London, and the proceeds go to the Hospital Fund. Sufficient guarantee of the interest of the lectures is given by the list of lecturers: Sir Sidney Harmer, Sir Richard Paget, Bart., Sir Robert Robertson, Profs. Winifred Cullis, A. O. Rankine, S. Chapman, E. W. MacBride, C. S. Myers, G. Elliot Smith, E. N. da C. Andrade, J. S. S. Brame, F. J. Cheshire, and Leonard Hill, Mr. W. E. Garner, Mr. C. R. Darling, Capt. P. P. Eckersley, and Major R. W. Mayo. Tickets can be obtained from the secretary of the institution at which a lecture is to be held, or from the secretary of King Edward's Hospital Fund for London, 7 Walbrook, E.C.4 (price 1s.); serial tickets, available for any number of the lectures (price 4s.), can also be obtained at the latter address. Admission is by ticket or payment at the entrance.

"THE Abridged Scientific Publications from the Research Laboratory of the Eastman Kodak Company" is in future to be issued annually because of the increasing number of the publications that have to be dealt with. The seventh volume that has

just been received gives, in a slightly abridged form, the 22 papers that were printed during 1923 in various English, American, and French scientific journals. The full reference is given to the original source in each case, so that any one specially interested in any particular paper may refer to the full communication. The abridgments are classified under the headings of physical optics, photographic optics, inorganic, organic, physical and colloid, and analytical chemistry, photographic theory, and practical photography. They carry forward the work for which this Laboratory has become so well known.

THE Cambridge University Press announces for early publication "Scientific Papers," by the late S. B. McLaren, dealing mainly with electrodynamics and natural radiation. The work has been prepared for publication by Profs. H. H. Hassé, T. H. Havelock, J. W. Nicholson, and Sir Joseph Larmor. The same firm also announces "Plant Life on East Anglian Heaths," by Dr. E. P. Farrow. The volume will contain an account of some observations, problems and experimental work relating to the ecology of the vegetation of the East Anglian heath district known as the "Breck Country."

"THE Scientists' Reference Book and Diary," published by Messrs. Jas. Woolley, Sons and Co., Ltd., 76 Deansgate, Manchester, is as attractive and handy a book as any scientific worker could desire. It includes useful information, constants, and conversion tables, relating to many branches of science, lists of universities and scientific institutions, mathematical tables, and much other matter, in addition to a diary for 1925 and several detachable pages of squared paper. The price of the publication is 3s. 6d., and we can confidently recommend this twenty-seventh issue to all science teachers and students.

Our Astronomical Column.

A NEW COMET?—A telegram from the Copenhagen Astronomical Bureau announces the discovery of a nebulous object by Prof. Wolf at Königstuhl Observatory on Dec. 23^d 8^h 15^m 7^{sec} G.M.T. Its R.A. was 4^h 8^m 19^{sec} 47^{sec}; N. Decl. 24° 31' 36" (referred to equinox of 1924.0); daily motion -28^{sec}, south 14'; magnitude 16.0.

Two plates were exposed by Mr. G. Merton with the 30-inch reflector at Greenwich on Dec. 26, but up to the present, the object has not been located upon them. It is clearly beyond the reach of ordinary instruments.

VARIATION OF LATITUDE.—The *Japanese Journal of Astronomy and Geophysics*, Vol. 2, No. 3, contains a discussion by H. Kimura of the results obtained at the international latitude stations, Mizusawa, Carloforte, and Ukiah, in the last two years. The star-places and proper motions have been rediscussed; the amplitude of the combined wave during the period discussed is about 0.2", that of the z or Kimura term about 0.05".

The author concludes that there is a 19-year term in the variation, and that the following sub-multiples of this period have sensible coefficients: $\frac{1}{3}$, $\frac{1}{5}$, $\frac{1}{7}$, $\frac{1}{9}$, $\frac{1}{11}$, $\frac{1}{13}$. The second and fifth have the largest coefficients. These are the well-known annual and 14-month terms. He further believes that terms

found in earthquake analysis appear also in the polar motion, indicating a close connexion between the phenomena.

CONVECTION CURRENTS IN THE ATMOSPHERES OF THE SUN AND STARS.—The Proceedings of the National Academy of Science, Washington, for September 1924 contains a paper by C. E. St. John and H. D. Babcock on this subject. They confirm previous conclusions that the pressure is a small fraction of an atmosphere, being 10^{-1} atm. at the photospheric level, 10^{-4} at 5000 km., and 10^{-13} at 14,000 km. The daily rotations at these heights are 13.84°, 14.44°, 15.4°, and the linear velocities 1.97, 2.06, 2.18 km./sec. The convection currents are downward 0.5 km./sec. at 14,000 km., downward 0.3 km./sec. at 1500 km., and upward 0.3 km./sec. near the photosphere. The authors have made a similar examination of the spectra of Sirius, Procyon, and Arcturus; they conclude that the difference of convection speed for high level minus low level increases with temperature, being 1.20 km./sec. for Sirius, type A, 0.67 for Procyon, type F, and 0.34 for Arcturus, type K. It may well amount to 4 km./sec. for type B, which would explain the well-known "K" term for these stars. The pressures in the atmospheres of Sirius, Procyon, and Arcturus are concluded to be of the same order as that in the sun; the largest value found is 0.4 atm.