

Institute his fundamental principle that the aim of analysis of social institutions and religions should be to arrive at the mental attitude of primitive man towards his institutions and beliefs. In his view the study of marriage, for example, had been too exclusively sociological, and his book represented an attempt to bring marriage institutions and ceremonies as well as other primitive customs into the domain of psychology by defining the psychological needs which were satisfied by the magical or religious observances by which they were accompanied. Crawley's work was accurate and scholarly and was based upon wide reading and a critical appreciation of his authorities. Some at least of his work is of enduring value.

DR. E. O. HOVEY.

EDMUND OTIS HOVEY, curator of the Department of Geology and Invertebrate Palæontology in the American Museum of Natural History, had just entered his sixty-third year when he was struck with paralysis in his office and died on September 27. In his younger days Dr. Hovey filled some teaching posts; he was brought by his installation of the mineralogical exhibit of Missouri at the Chicago Exposition to the notice of the American Museum, and entered its service in 1894.

Dr. Hovey was perhaps best known to geologists for his work in connexion with the eruption of Mont Pelé, Martinique, which took place on May 8, 1902. He was immediately sent as representative of the American Museum of Natural History, arrived at Martinique on May 21, and after distributing supplies to the impoverished inhabitants, spent about three weeks in studying the Soufrière on St. Vincent and

four weeks on Mont Pele. His results were published in a preliminary report issued by the Museum in its Bulletin on Oct. 11 of the same year. In February 1903 Hovey was again sent to note what changes had taken place and to extend his studies to the other recent volcanoes of the Caribbean chain; and again in 1908 to bring the observations up-to-date. Other expeditions made by Hovey on behalf of the Museum were to South Dakota and Mexico.

As museum curator Hovey took a keen interest in his professional work, being responsible for several attractive models in the public gallery. Though in charge of the fossil invertebrata, he can scarcely be considered a palæontologist. He did, however, collaborate with R. P. Whitfield, and with him produced the very helpful catalogue of the types and figured specimens among those fossils in the American Museum (1898-1901). We have lost in E. O. Hovey a useful worker, a cheery companion, and a constant friend.

F. A. B.

WE regret to announce the following deaths:

Prof. W. A. Locy, professor and director of the Department of Zoology, Northwestern University, since 1896, who was known for his work on the embryology of the nervous system, aged sixty-seven.

Dr. Clara S. Ludlow, of George Washington University and the United States Army Medical School, Washington, who carried out work in the Philippines on the transmission of disease by mosquitoes, on September 28, aged seventy-one.

Prof. G. Pruvot, honorary professor in the Faculty of Science of the University of Paris, and formerly Director of the Laboratory of Marine Zoology at Banyuls-sur-Mer (Pyrénées-Orientales).

Prof. W. A. Macfadyen, professor of philosophy in the Transvaal University College, Pretoria.

### Current Topics and Events

GREAT BRITAIN is beginning to appreciate the importance of broadening the education of the mathematician and the scientific worker. In all subjects new knowledge has been and is piling up at a great rate. The universities demand more and more for a degree, and the student is constantly becoming more overloaded. At the same time, the lines of demarcation between the subjects are breaking down, and the importance for every scientific worker of a knowledge of allied sciences is growing greater every day. Sir William Pope expounded this idea in a lecture delivered in July last before the Royal Society of Arts. He pointed out the importance for chemists of a knowledge of physics and the need of a reform by which natural philosophy (that is, physics and chemistry) would become a single whole instead of being made up of half-a-dozen disconnected subjects. He would unite them into one by emphasising the fact that they are all based upon the electronic constitution of matter and energy. The importance of a knowledge of physics to the mathematician was emphasised at the conference held recently at the University College of Southampton, and the October issue of the *Mathematical Gazette* contains a valuable article by Prof. Piaggio on the subject. The main

value of this article lies in the author's discussion of the means by which it can be made possible for the mathematician to attain a knowledge of physics in addition to mathematics within a reasonable time. He goes through the various branches of applied mathematics as at present taught at universities and picks out a considerable number of items that could well be dropped in order to make room for more important matter.

A CORRESPONDENT sends us copies of the journal, *La Province de Namur*, of June 1 and October 15, containing descriptions of a large pearl, reported by M. E. de Ceuster, of Moustier-sur-Sambre, to have been found in a coconut. Where pearls come from has always been a mystery in India, and so long ago as 1240 A.D., a Kashmir physician records them as coming from bamboos, coconuts, heads of elephants, fish, etc. Pearls are definite animal concretions of carbonate of lime around a core which may be a foreign body, the egg or some part of the body of the organism, or the egg or part of the body of a contained parasite. True pearls only occur in molluscs, and they are microscopically and chemically identical with the nacre—the inner lining of the shell—

in all molluscs. Actually the structure consists of a vast number of very thin and corrugated laminae of an organic substance known as conchiolin, holding spicules of carbonate of lime. The transparency, the overlapping of the laminae, the corrugation, and the angles of the lime spicules give the lustre so well known in the precious pearls. Somewhat similar rounded off concretions may be found in any animal's body—as Bunyan says, "A pearl may in a toad's head dwell"—but they are not found in plants, smooth and rounded off in this way. Concretions do occur in the latter, both of calcium carbonate and of calcium oxalate, but they are generally rough, and are not formed in layers with a similar basis of conchiolin; a simple test for them would be the presence or absence of plant cellulose. In the East generally the pearls formed by the giant clams of the reefs are termed "coconut pearls," as their appearance bears a resemblance to the cut surface of the kernel of the coconut; they often attain the size of a pigeon's or small hen's egg, the clams themselves varying up to two feet across. Needless to say, as they have no lustre, they are of no beauty and of no value. Any plant concretion that may fairly be termed a pearl would certainly be "new to science."

THE presidential address given on October 23 to the Institution of Electrical Engineers by Mr. W. B. Woodhouse lays stress on the rapid growth of the electrical industry during the last twenty years and looks forward hopefully to the future. Mr. Woodhouse makes the timely statement that electricity is not a panacea for industrial and social ills, and so it behoves engineers to speak out just as definitely when unjustifiable claims are made for it as when it is unfairly attacked. In connexion with education, he made the interesting suggestion that a system of interchange of employees and staff between manufacturers and supply undertakings would be of value to both sections of the industry. In his opinion, there is a direct obligation in the industry to bear the cost of post-graduate training by providing salaries which would be sufficient to encourage young men showing the necessary ability and energy to continue the widening of their experience beyond the normal period of their training. If this were adopted, the industry would benefit largely.

MR. WOODHOUSE then turned to another topic. Electricity is at the present time the cheapest form of illuminant. Its use, therefore, for lighting purposes is increasing at a rate never before equalled in the history of the industry. An important problem that has only been partially solved hitherto is the reduction in the costs of distribution to the average consumer. In general the cost of distribution adds 300 per cent. to the costs of production. It is interesting to note that the somewhat analogous case of distributing milk from house to house adds only 100 per cent. to the wholesale price. It is not generally realised that if the cost of fuel were halved, the reduction in the price of electricity would be trifling. Unfair comparisons are often made between Great Britain and

other countries where the methods of transport are not so developed. For example, the carriage of coal from South Wales to London in order to generate electricity is more economical than transmitting the electricity by overhead wires from the coalfield. Mr. Woodhouse pointed out that the electrical industry, like all other human organisations, is changing, but that this is necessary if progress is to be made. He asked the younger engineers to continue that spirit of adventurous research which characterised the early pioneers.

THE American Institute of Sacred Literature—"an organisation for the promotion of popular study of the Bible and religion"—is inviting the co-operation of scientific workers and others in its efforts, and has produced a number of pamphlets written by leading men of science on the religious aspect of their work. We have before us an interesting little pamphlet by Prof. Edwin B. Frost, director of the Yerkes Observatory, entitled "The Heavens are Telling." Prof. Frost begins by stating and illustrating the enormous span of the material universe, the immense number of luminous objects which it contains, and the vast reaches of time required for their development, which must give to all who consider them a new and larger idea of the Cause behind them. After dealing with the exceedingly minute atoms and electrons which obey laws as definite and unvarying as the immense systems of the stars, Prof. Frost directs attention to the unity of the universe, as illustrated by the similarity of matter in the heavens and on the earth. This line of thought suggests that the combination of spirit and material body such as we possess may not be of great variety, and that we may not be vastly dissimilar from beings which may inhabit other planets circling around their appointed suns. Prof. Frost deplors the slow social development on the earth, particularly with respect to the evils of war, and considers that, from the planetary point of view, the most thorough application of the principles of Christianity seems to be the only way to bring our planet up to the moral standard to be expected of it. He contends that the scientific study of the material world tends to make spiritual conceptions less material, and divorces spirit from the material notions of mass, space, and time.

THE Christmas Lectures at the Royal Institution this year are to be delivered by Mr. Frank Balfour Browne, lecturer in zoology (entomology) in the University of Cambridge, the subject being "Concerning the Habits of Insects."

THE arrival of the German-built Zeppelin at Lakehurst, N.J., coinciding with the successful voyage to the Pacific coast and back of the airship *Shenandoah*, described in NATURE of March 1, p. 313, seems to have given a fresh impetus to American enthusiasm for the rigid airship. According to the *Engineer*, plans are now under discussion for the building of a series of these vessels, but of dimensions considerably in excess of any design so far evolved. Immediately on passing into American possession, the German Zeppelin, officially designated ZR3, was emptied of

the hydrogen with which she had been charged for the Transatlantic voyage, and had her gas cells refilled with helium. This is in accordance with the official American policy of forbidding the use of hydrogen in lighter-than-air craft under Government control. From a statement by Dr. R. B. Moore, former Chief Chemist of the United States Bureau of Mines, there is now in the United States a reserve of helium sufficient to keep filled and ready for service 200 airships of the capacity of the *Shenandoah*.

THE Fuel Research Board of the Department of Scientific and Industrial Research has for some time past been engaged in a general survey of the coal seams in all the coalfields of Great Britain with the object of classifying these according to their chemical and physical characteristics, and thus affording to the consumers valuable information as to the purposes for which each coal seam or each portion of a coal seam would be best suited. The first step in this direction was taken in the Lancashire and Cheshire Coalfield in co-operation with the local Coal Research Association, and the first result of this work has just been published in the form of a detailed report (London: H.M. Stationery Office, 2s. 6d. net) upon the Arley Seam of the Lancashire Coalfield. A good deal of useful information has been collected, the greater part of which was no doubt already in existence and available for those who knew where to find it, but it is a decided convenience to have the whole of this summarised and available in a compact and readily accessible form. There are a large number of illustrations, all of which, except the very useful map which forms the frontispiece, are photographs of coke produced under different conditions. It would be too much to say that these are useless and devoid of interest, but it is certain that the information which they convey is by no means commensurate with the expense of their production. It would have been better to have omitted these ten plates and to have published the pamphlet at a correspondingly lower price.

MR. J. ELLIS BARKER, in the course of a further letter, writes as follows: "In your issue of the 1st November I protested that your reviewer, in dealing with my book, 'Cancer: How it is caused, How it can be prevented,' condemned my book on the basis of a number of serious mis-statements of his and of misrepresentations of my views which I enumerated. In a note appended to my letter your reviewer, instead of dealing with my arguments, describes my justified protest as a 'hymn of hate.' As he did not deal with my charge of mis-statement and mis-quotation, I imagine that your readers will draw their own conclusions." We agree with Mr. Barker that readers of NATURE, having read the review of Mr. Barker's book in our issue of October 4, p. 496, and also the correspondence on the subject which followed, may draw their own conclusions, and we are content to leave the matter thus.

DR. CHARLES SINGER, lecturer on the history of medicine at University College, London, is to deliver the Fitzpatrick Lectures of the Royal College of Physicians, London, on November 11 and 12. Dr. Singer will take as his subject "The History of Anatomy."

AN Economic Botanist with an academic knowledge of botany, and practical experience of plant breeding including paddy breeding, is required by the Government of Madras. Particulars may be had from the Secretary to the High Commissioner for India, 42 Grosvenor Gardens, S.W.1. The latest date for the receipt of applications for the appointment is November 15.

A PRIZE of 300*l.* is offered by the Committee of the Christie Hospital, Manchester, for research on cancer. The object is to support research work already in progress, and the competition is open to workers of any nationality qualified in medicine or in science cognate to medicine, but all papers submitted must be in the English language. Applications must be received by the chairman of the Medical Board of the hospital on or before December 31.

A NUMBER of scientific works from the library of the late Sir William Crookes will be offered for sale by auction by Messrs. Hodgson and Co., 115 Chancery Lane, W.C.2, on Friday next, November 14, at 1 o'clock. The items include sets of the Chemical Society's Journal, *The Analyst*, the Journal of the Franklin Institute, the Journal of the Society of Chemical Industry, Phil. Trans. of the Royal Society, 1863-1918, Catalogue of Scientific Papers (Royal Society), *Comptes rendus* of the Paris Academy of Sciences, 1864-1924, *Revue Générale des Sciences*, 1890-1924, etc. Catalogues are obtainable from the auctioneers.

At the statutory meeting of the Royal Society of Edinburgh held on October 27, the following Officers and Council were elected: *President*, Sir James Alfred Ewing; *Vice-Presidents*, Principal J. C. Irvine, The Rt. Hon. Lord Salvesen, Prof. J. H. Ashworth, Prof. T. H. Beare, Dr. W. B. Blaikie, Sir Robert Blyth Greig; *General Secretary*, Prof. R. A. Sampson; *Secretaries to Ordinary Meetings*, Dr. Alexander Lauder, Prof. W. Wright Smith; *Treasurer*, Dr. James Currie; *Curator of Library and Museum*, Dr. A. Crichton Mitchell; *Councillors*, Prof. T. H. Bryce, Prof. J. Y. Simpson, Prof. D'Arcy W. Thompson, Sir James Walker, Prof. E. T. Whittaker, Prof. Henry Briggs, Mr. W. L. Calderwood, Prof. T. J. Jehu, Prof. C. G. Barkla, Prof. J. Graham Kerr, Lt.-Col. A. G. M'Kendrick, Mr. James Watt.

At a General Meeting of the University of Durham Philosophical Society held on October 30 the following officers were elected:—*President*, the Chancellor of the University; *Vice-Presidents*, Sir Charles A. Parsons, Sir Theodore Morison, Prof. T. H. Havelock, Mr. Wilfred Hall, Prof. A. S. Ferguson, Dr. B. Millard Griffiths; *Secretaries*, Mr. J. W. Bullerwell and Dr. Grace C. Leitch; *Editor*, Dr. G. W. Todd; *Librarian*, Dr. F. Bradshaw; *Chairmen of Sections*, Mr. R. G. Lunnon (Chemical and Physical), Dr. Hickling (Geological and Biological), Mr. J. L. Burchnall (Mathematical), Dr. J. Wight Duff (Archæological), Mr. F. H. Alexander (Applied Science), Dr. A. Robinson (Philosophy); *Committee*, Dr. H. V. A. Briscoe, Commander Hawkes, Mr. S. H. Collins, Dr. G. R. Goldsbrough, Dr. J. A. Smythe, Mr. E. R. Thomas.

THE Gilbert White Fellowship has recently received as a gift from the Earl of Dartmouth, four volumes of a Journal for the years 1788, 1789, 1793, and 1794, with MS. entries by the second Lord Dartmouth (1731-1801) and some contemporary newspaper cuttings inserted. The entries are in diary form and mainly meteorological and horticultural, with some records of plants, birds, and insect life. The localities from which the observations date are Albury, Weymouth, Castlehill, Whatcomb, Encombe, Carne, Henbury, Portland Place (London), Hayes (Kent), Maidenhead Bridge, Tunbridge Wells, Walton-on-Thames, Bright-helmstone (Brighton), Aylesford, and Grosvenor Square (London). About three-fourths of the entries are from Hayes, Kent. The association with Gilbert White and his "Natural History of Selborne" is that this "Naturalist's Journal" was drawn up and has a preface by White's correspondent, the Hon. Daines Barrington.

In the present year there occurs the tercentenary of the "Arithmetica Logarithmica," the first great work of Henry Briggs, the friend and coadjutor of Napier, and the computer of the first table of common logarithms. In many senses the day of logarithmic

tables to 4, 5, 6, or 7 figures is past. Where much computing has to be done, logarithms to a few figures are rarely used; what are used, and are often badly needed, are logarithms to 10, 15, or 20 figures. Recently the French have proposed to issue a 14 figure table and the Germans a 15 figure table. To celebrate worthily the tercentenary of Briggs's achievement, the Biometric Laboratory of University College, London, has arranged to issue "Logarithmetica Britannica," a standard table of logarithms of the 90000 integers of five digits, to 20 places of decimals. The necessary calculations are being undertaken by an able and enthusiastic computer, Mr. A. J. Thompson, of the General Register Office, Somerset House. It is to be published in nine parts by the Cambridge University Press, at the rate of about two parts a year, the first section (Part ix.) giving logarithms of integers from 90000 to 99999, together with their second and fourth differences, being now in the press. The success of the undertaking, which is not an enterprise of profit, can only be assured if a large section of the mathematical world shows readiness to commemorate with the producers of this work the tercentenary of the "Arithmetica Logarithmica."

### Our Astronomical Column.

THE NOVEMBER METEORS.—Mr. W. F. Denning writes that this display may be expected to recur on the morning of November 15, but that it is not likely to be an abundant one. Meteors are evidently distributed along all parts of the elliptical stream, for some of them are visible every year at mid-November. Occasionally there is quite a noteworthy shower, though the parent comet (1866 I. Tempel) may be near aphelion. The radiant point of the shower being situated in the "sickle" of Leo, which does not rise until about 10.15 P.M., the meteors are invisible in the early hours of the evening. This year moonlight will somewhat interfere with observation and overpower the fainter meteors. On clear evenings between November 17 and 21, some of the Andromedids of Biela's comet may probably be seen.

A REMARKABLE PLANETARY NEBULA IN CASSIOPEIA.—Mr. J. H. Reynolds contributes an article to the *Observatory* for October on the nebula N.G.C. 7635, which was noted by Sir W. Herschel as containing an 8th magnitude star eccentrically placed. The article is illustrated by a photograph taken at Mt. Wilson by Prof. E. Hubble. It shows a slightly flattened ring 2'40" by 2'15", the interior of which is dark except for the southern third of its area, where it is strongly luminous. There is also some faint nebulous light outside the ring.

The star in the centre of the ring is very faint, about mag. 17; the star of mag. 8 mentioned above is about three-sevenths of the distance from centre to circumference. Its spectrum has been photographed at Mt. Wilson, being of type intermediate between O5 and the Wolf-Rayet stars. This spectrum makes the actual association of the star with the nebula more probable. Mr. Reynolds suggests that the illumination of the nebula may be due to its radiation, though its eccentric position is against its being the parent star of the nebula. He notes that if we assume the distance of the nebula as 20 parsecs (almost certainly a minimum estimate) its diameter is some 3000 astronomical units. (By an error, 9000 is given in the article.) He looks on these gas shells as marking the place

of former novæ, and thinks that their duration is probably short.

MINOR PLANETS.—It seems most likely that the interesting object discovered by Dr. Baade on October 23 is a planet; its aspect is quite stellar, and its motion could be represented by an orbit not unlike that of Eros. Photographs were obtained at Greenwich on October 28 and 30, the magnitude being about 9.0. The arc of observation is still too short to deduce a trustworthy ellipse, but it appears that perihelion was passed about a month before discovery, and that the perihelion distance is somewhat less than that of Eros, which is 1.14. Prof. Kobold has computed the following parabolic orbit, presumably not with the idea that it is the real form of orbit, but in order to represent the motion for the next few weeks. On October 30 his computed place was right in declination, but 10 sec. too small in R.A.

T = 1924 Oct. 2.592 G.M.T.

$$\left. \begin{array}{l} \omega = 134^{\circ} 17' \\ \Omega = 210 55 \\ i = 32 7 \end{array} \right\} 1924.0$$

$\log q = 0.12463.$

#### EPHEMERIS FOR MIDNIGHT.

		R.A.	N. Decl.
Nov. 7	22 <sup>h</sup> 17 <sup>m</sup> 24 <sup>s</sup>	5° 59'	
11	22 35 0	3 53	
15	22 52 0	2 3	
19	23 8 28	0 32	

The last two places have been deduced by extrapolation.

The motion is through Pegasus and Pisces. The meridian passage remains nearly stationary at about 7<sup>h</sup> 15<sup>m</sup>, so that the object will be observable for some time.

Mr. B. M. Peek, while observing Nova Persei on October 27, detected a faint object very near it, which proved to be a minor planet. He communicated with Dr. W. H. Steavenson, who was able to observe it on the following night. If it had been new, it would have been the first visual discovery for many years, but Mr. G. Merton has established its identity with No. 709.