Much might be said about the life of this period as deduced not only from the megaliths but also from humbler remains, such as notably the graves, with the associated cairn and midden of the islet of La Motte, Jersey—to which, by the way, the little island of Thinic, to the west of the peninsula of Quiberon, seems to offer a close parallel (see *Archæologia*, 63, 210).

It must be enough, however, in conclusion to direct attention to two megalithic monuments of special interest. One of these intrigued the dilettanti of the eighteenth century; and Horace Walpole's friend, Marshal Conway, actually removed it in 1787, two years after its discovery in Jersey, to Park Place, Henley, where no British archæologist should fail to pay it a visit. It is in several respects unique among island monuments. For one thing, the covered passage leads into an *enceinte* which is perfectly circular, unlike the normal passage-grave, which is shaped more like a tennis racquet than a jew's-harp. Mr. Reginald Smith (*Proc. Soc. Antiq.*, 1919, 143) compares the shape of a neolithic house with covered passage found at Pléneuf, Côtes-du-Nord. A similar house has recently been discovered at La Sergenté, Jersey. Again, the *enceinte* with its six trilithons, somewhat suggestive of a miniature Stonehenge, may well have been hypæthral as at first designed, though later by design or accident a mound of earth (or blown sand) was superimposed. As for the magnificent passage-grave of La Hougue Bie excavated in 1925, though doubtless its contents were disturbed at some time, it remains in the intact majesty of its structure a very masterpiece of art, unsurpassed whether in size or in the symmetry of its design by any monument of the kind in north-western Europe.[2]

[2] On the whole subject see three papers by the lecturer in *Archæologia*, vols. 62, 63, 67, and for full details the *Bulletins de la Société Jersiaise* and *Proceedings of the Guernsey Soc. of Nat. Hist.*, later La Société Guernesiaise.

News and Views.

WITH this issue we begin the publication of a weekly "Calendar of Discovery and Invention," in which, so far as possible, each day will be used to recall some event of importance in the history of science and its application. The notes are being compiled by Engineer Capt. Edgar C. Smith, of the Science Museum, South Kensington, who some years ago contributed to our columns the Calendars of Scientific and Industrial Pioneers. It is not to be expected that every event of importance in the history of science will be referred to; such would be clearly impossible within the limits of a weekly column in a year's issue of NATURE. It is also obvious, from the nature of the records available, that the physical sciences and engineering are likely to figure in the column more than the biological sciences, medicine, and similar subjects, in which it is often difficult to assign the announcement of a discovery to a particular day. Suggestions regarding events suitable for inclusion in the column will be welcomed.

BY invitation of the French Government, a meeting of the executive council of the International Institute of African Languages and Culture was held in Paris on Monday, December 13, instead of in London, as had been previously arranged. It was thus the first to be held outside England, and with it the work of the Institute, which was founded a little over a year ago, may be considered to be fairly launched. The initial difficulty of raising funds, it may be hoped, is well on the way to solution, especially as it was announced at this meeting that the Government of the Gold Coast has promised a donation of £500 a year for the next two years. It is to be hoped that this subsidy will be renewed at the end of that period, and that the example of the Gold Coast will be followed by other African dependencies, as well as by organisations and individuals interested in Africa and African studies. The programme already mapped out by the Institute covers most important fields of research, and its work of co-ordination in the study of African linguistics and ethnology will be especially valuable in promoting the development and education of the African native.

THE meeting was attended by representatives of Great Britain, France, Germany, Austria, and other countries. Among those present were Dr. Westermann, the distinguished German authority on African languages; Sir Frederick Lugard; Major H. Vischer of the British Colonial Office, to whose efforts the foundation of the Institute are largely due; and the Rev. E. W. Smith. Prof. Seligman, who represents the Royal Anthropological Institute in the Institute of African Languages and Culture, was unfortunately unable to attend. M. Labouret of the French Colonial Office was appointed joint Director of the Institute in succession to M. Delafosse, the announcement of whose death was received with much regret. A deputation of the delegates was received by M. Perrier, French Minister for the Colonies, who expressed great interest in the work of the Institute.

AT a meeting of the Newcomen Society on December 15, papers were read on two famous Swedish engineers. The first paper, by Mr. J. G. A. Rhodin, was on Kristofer Polhämmer, better known as Polhem, the name he took on being ennobled. Polhem was born in 1661 and died in 1751. Starting as a clerk on an estate, he was enabled to study science at Upsala, and became a mining engineer at Stora Kopparberget, where he built his famous "Machina Nova," a large water-driven headgear for handling the ore. His inventions relating to mining and metal working were numerous. He also made the dock gates for the dry docks at Carlskrona, then the largest in the world, and built the lock at Stockholm uniting the Malar Lake with the Baltic. He also began a system of locks to make the Trolhättan falls passable, but the work was discontinued on account of the death of Charles XII. Mr. Rhodin described Polhem as "one of the first engineers in this world with a thorough theoretical training, yet practical to a degree in spite of his bringing up at *Alma Mater Upsaliensis*."

THE second paper read before the Newcomen Society on December 15 was the outcome of a translation of the book by Triewald on the "Fire and Air Machine at Dannemora," undertaken by Mr. Are Waerland for the Newcomen Society. Triewald lived in England about ten years, was familiar with Newcomen, erected a Newcomen engine near Newcastle, and built the first steam-engine used in Sweden. His book contains the first complete description of the atmospheric engine of Newcomen, and is therefore of special interest to the Society. It is hoped to publish the English translation. Like many men of his time, Martin Triewald wrote on a great variety of subjects. Born in 1691, he early engaged in business, but becoming bankrupt, at the age of twenty-five years he came to England. He was befriended by the Dutch Minister and attended the lectures of Desagulier, became known to Newton, and then found employment with Ridley of Newcastle as an engineer. At the age of thirty-five years he returned to Sweden and at Dannemora built his great engine. He afterwards held various Government appointments, was the first to introduce the experimental methods of science into Sweden, and was one of the six founders of the Royal Swedish Academy of Sciences. He died in 1747. At the University of Lund is a fine collection of scientific apparatus collected by Triewald and used by him for his lectures.

To the panoramas illustrating various parts of the British Empire, several of which were brought to the Imperial Institute from the Wembley Exhibition, the Director, Sir William Furse, has recently added two. One, in the Falkland Islands Court, represents a whale, off the coast of South Georgia, being harpooned by a 'chaser' fitted with a modern harpoon gun. The mother ship, where the carcase will be cut up, is not shown in the picture. The sea is cleverly modelled and looks well from a distance, but on a nearer view betrays its plaster composition too obviously. It is a question whether the visitor should not be prevented from coming too close. In this, as in the previous models, the horizontal plane is tilted up, like the stage of a theatre, so that the line of sight approaches it at a greater angle than natural conditions usually permit. The evident advantage would be attained in a less forced and less perplexing manner if the models were placed a little lower.

THE other model referred to above depicts wild animal life in Tanganyika. The twin peaks of Kilimanjaro rise in the distance, while over a richly diversified foreground are scattered various members of the fauna, from monkeys and lions down to crocodiles and snakes. The exhibit is designed and executed by D. Y. R. Furse and R. T. Roussel for McCorquodale and Co., and we are told that most of the animals have been modelled by an artist who has almost daily acquaintance with them on his farm in East Africa. Even he, however, can scarcely have seen all these creatures at once. This familiar defect of such panoramas is to some extent remedied by the large extent of country shown in a width of about six feet and the small scale of the animal models. These in themselves are characteristic enough, but the same can scarcely be said of the flora. All the trees and shrubs are made of a curious material which looks like the skeleton of some antipatharian or gorgonid coral. If this really is the case, we may at least suggest that the needed variety might have been attained by using more than one species. The Director's attempts to interest the public by these models are heartily to be commended, but one has to guard against giving false impressions.

THE Institution of Chemical Engineers held a very successful conference on December 8-10 in the Science Museum, South Kensington, the subjects discussed including the measurement of mechanical power absorbed by driven machines, the uses and limitations of statistics in industry, air elutriation, and refrigeration. Although a few of the papers could be classed as specifically chemical, most of them introduced chemical subject matter by way of illustration. The practice of holding conferences at which a number of papers are read, appears to be growing in Great Britain. Multiple programmes have the advantage of making it worth while for country members to travel long distances, so that meetings are larger and colleagues are more certain of seeing one another. Secretarial work is also more concentrated and therefore more economical. On the other hand, papers are apt to crowd one another out, and discussions are thereby curtailed.

MESSRS. R. G. Parker and D. N. Jackman described a new form of recording torsion-dynamometer of the type that does not itself convey power, but is applied to a transmitting shaft. Such a shaft is very slightly twisted, and the twist, which is proportional to the power, is measured, the readings being recorded photographically. In a symposium on statistical methods in relation to industrial efficiency, Messrs. D. Ryder and T. C. Finlayson dealt with the control of chemical-plant operation by this method, mainly from the point of view of the works manager. The points discussed included the transference of material, production, reports by shift foremen, the plant manager, the engineer, and the laboratory; also the methods used by the statistical office in summarising the data concerning production, labour, and stocks. In his paper on some uses and limitations of statistics in industry, Mr. H. C. Marris deplored the paucity of statistical material for forecasting short-term trade movements.

ON the third day of the conference, Dr. Geoffrey Martin contributed a paper on the laws of air elutriation, pointing out that Stokes's law applies only for very small particles, and advancing other generalisations for particles of larger size. He emphasised the influence of temperature on particle-size, and expressed the view that there is great scope for research on the influence of particle-shape on lifting power. The concluding paper, on refrigeration in the chemical industry, by Mr. H. M. Dunkerley, contained many details concerning the construction of refrigerating plant and useful data on costs of the process. As the result of the study of a large number

of installations of different types, he concludes that their capital cost ranges from £70 per 10,000 B.T.U. per hour for plants with a capacity of 250,000 B.T.U. per hour, to £50 for plants with a capacity of 2-3 million B.T.U. per hour.

FURTHER official information on "The Wet November of 1926" is given in the *Meteorological Magazine* for December. The total for the month was above the average everywhere over the British Isles except along the north-west, north, and north-east coasts of Scotland. The excesses were largest in the south-west of England and Wales and in Connemara. More than twice the average was recorded in these areas as well as at Wetherby in Yorkshire and at Dundee. Falls of more than 250 per cent. of the average occurred in parts of Dorset, Hampshire, and Hereford, while at Ross the fall of 7·87 in. was so much as 311 per cent. of the average. The largest monthly totals were those reported from Llyn Llydaw on Snowdon of 19·50 in., and from Delphi in Connemara of 18·50 in. More than 5 in. of rain was recorded in one day, in Snowdonia on November 4 and in Connemara on November 18. At Camden Square the number of days of rain, 25, and the duration of rainfall, 85 hours, were the largest in November since records commenced, in 1858 and 1881 respectively. It was the wettest November over the British Isles as a whole.

IN order to illustrate some of the recent advances that have been achieved in British-made microscope object-glasses, Messrs. R. and J. Beck, Ltd., of 69 Mortimer Street, London, W.1, recently gave a demonstration of the results obtainable from apochromatic object-glasses of their own manufacture. During the past five years these lenses have been completely redesigned, and a method of testing by zones to the extreme margin has been introduced, with the result that the resolving power of the lenses attains the theoretical limit for their respective apertures. The specimens exhibited included a $\frac{2}{3}$-in. apochromat, 0·35 n.a., resolving the dots in *Pleurosigma formosum* (dot interspaces about 36,000 per in.); a $\frac{1}{3}$-in. apochromat showing resolution in dots in *Navicula rhomboides* (about 66,000 lines per inch); the resolution in dots of the *Amphipleura lindheimerii, styrax* (about 90,000 per inch), by a $\frac{1}{6}$-in. apochromat, 0·95 n.a., the theoretical resolving power being about 95,000 lines per inch; and the resolution of dots in *Amphipleura pellucida* (about 130,000 per inch) by a $\frac{1}{12}$-in. oil-immersion apochromat, 1·4 n.a., with a theoretical resolving power of about 140,000 lines per inch. Demonstrations were also given of methods of testing the general quality of an object-glass. These included the use of a podura scale, which is a good test of the central zones of a high-power object-glass, and of a silver film with pinholes, which provides also a sensitive method of adjusting the tube length to suit the objective. In the series of experiments dealing with illumination, the most interesting was one showing a portion of a diatom overhanging the strip on which it was mounted. While the image of the portion supported and covered by glass was obliterated by glare caused by multiple reflections from the glass surfaces, there was good resolution and complete absence of glare where there was no cover glass or slip.

THE Wellcome Bureau of Scientific Research and Museum of Medical Science, situated at 25-28 Endsleigh Gardens, London, have recently been enlarged, and we received, on the occasion of their reopening by the Minister of Health, a profusely illustrated booklet giving an account of the work of the Bureau and its affiliated institutions, the Entomological Field Laboratory and the Physiological and Chemical Research Laboratories, together with a description of the contents of the Museum. There are also included lists of the papers published from the Bureau and the research laboratories from their foundation to the present time. The Museum of Medical Science is arranged to afford a continuous demonstration of various diseases, their causes, effects, and treatment, so as to give a graphic picture of the more important features. On the ground floor are arranged exhibits of the diseases caused by the Metazoa, venomous beasts, insects, worms, etc. The first floor is devoted to diseases caused by protozoa and spirochætes, and a special section is given to leprosy and tuberculosis. The second floor has as its exhibit the diseases caused by bacteria, including the exanthemata, whilst the third floor demonstrates dietetic, metabolic, and blood diseases, a section being also given to new growths. The Bureau does no routine teaching, but is open to individual workers who wish to follow some particular line of investigation. The Museum is open to all medical men, health officers and students, and is available to teachers of medicine for the purpose of giving demonstrations to their classes.

WE learn from the *Bell Laboratories Record* that the John Scott medal, founded in 1816 by John Scott of Edinburgh and awarded from time to time by the Board of City Trusts of Philadelphia for outstanding inventions, has been awarded to Gustaf Waldemar Elmen for his invention of permalloy. This nickel-iron alloy, which is noteworthy for its high permeability for minute magnetising force, is widely used in transformer cores, certain telephone receivers, and in 'loading' submarine telegraph cables for high-speed transmission.

SHORTLY after the s.s. *William Scoresby* sailed from Hull to join the *Discovery*, the house magazine of Messrs. Reckitt and Sons published an account of those celebrated whalers and explorers, the Scoresbys. It was illustrated from one of the original log-books and other material in the Fisheries Museum at Hull, and Mr. Sheppard has now included it in the 'Record of Additions' to the Hull Museum, No. 69.

THE late Prof. R. Klebs, of Königsberg, who was the most distinguished student of the insects included in Baltic amber, himself formed a large collection of such objects. A large number of his specimens was purchased by the Trustees of the British Museum in

1892 to enrich the extensive national collection of *inclusa*; but he left to his heirs a still larger collection containing many specimens of historic importance. We are glad to learn that this collection has not been dispersed, but that it has been found possible to purchase it for the Geological Institute of the University of Königsberg, which already possesses a famous cabinet of these objects. Properly qualified research workers will now, as in the past, be accorded the utmost facilities for the study of these great collections.

MESSRS. Harold C. Urey and Arthur E. Ruark, writing from the Johns Hopkins University, Baltimore, Maryland, state that they are preparing a book of about 700 pages on atomic and molecular structure, embracing both the theoretical and experimental aspects of the subject, and that they will be glad to receive reprints of private communications as to results not yet published.

MESSRS. C. Baker, 244 High Holborn, London, W.C.1, have prepared a new issue (No. 88) of their Classified List of Second-Hand Scientific Instruments. The catalogue is divided into sections dealing with microscope apparatus, surveying, astronomical and other instruments, spectroscopes, physical apparatus, and so on. The present list contains offers of a number of students' microscopes and accessories, while the astronomical telescope section is also large and its contents varied. Among the larger instruments is an 8-in. Cooke equatorial which was the property of the late Dr. W. H. Maw. Surveying instruments, and field glasses and small telescopes are let out on hire. Nine volumes of NATURE (1885–1890) are also offered for sale.

MR. GEORGE C. SHERRIN has designed, and Messrs. George Philip and Son, Ltd., have produced, a set of apparatus for demonstrating popular experiments in dynamics (20*s*. net). The set is supplied in a wooden box and is accompanied by an illustrated handbook. The apparatus consists of nothing more than a series of small steel rods of varying thickness, of weights, pivots, and collars, the parts being assembled in much the same way as the parts of a 'meccano' outfit. The result is to produce a toy capable of demonstrating—and that very effectively—the relative movements of earth, moon, and sun, the action of centrifugal force, various gyroscopic effects, and the principle of Foucault's pendulum. In itself, this is no mean achievement for such a simple toy, but in reality its 'star' turn is intended to show the action of the Flettner rotary cylinder. If a criticism might be levelled against such a delightful toy for grown-ups, it is that the last demonstration fails to carry complete conviction, first because an artificial wind created by blowing from the mouth cannot be relied on to strike a moving rotating cylinder accurately in a specified direction, and secondly, the deviations from accuracy in this respect may themselves produce the actual effects to be observed. If the toy is to rank as a piece of scientific apparatus, certain of the parts will require to be more delicately made.

Our Astronomical Column.

OBSERVATIONS OF PROXIMA.—Union Observatory Circular, No. 70, contains some interesting notes on this star by Mr. Innes and Dr. van den Bos. The colour is orange or orange-red, the spectrum probably *K*, the visual magnitude 11·2, the photographic 13·0. The parallax is given as 0″·90, which is larger than that deduced from the assumption that parallaxes and proper motions are proportional when compared with α-Centauri. Dr. van den Bos makes the interesting, but rather improbable, suggestion that the sun, Proxima, and α-Centauri form a straight-line solution of the three body problem. The parallax of the centre of gravity of the system would be 1″·14. It is satisfactory that Dr. Alden will investigate the parallax of Proxima with the Yale Telescope at Johannesburg.

THE SOLAR PHYSICS OBSERVATORY, CAMBRIDGE.—The thirteenth annual report of the Director of the Solar Physics Observatory, Cambridge, has recently been received, describing the stellar and solar work carried out at the observatory during the preceding year. Amongst the published work on stellar spectroscopy, mention may be made of a paper by Mr. Baxandall on absorption lines in spectra of types *G*, *K*, and *M*. The wave-lengths, intensities, and probable origins of lines in typical spectra of these classes have been determined and compared, in order to investigate the nature of the changes that occur in this region of the stellar sequence. Preliminary experimental work is being done by Mr. Carroll on the photography of the extreme red region by means of hypersensitised panchromatic plates, and also in testing the theoretical effect of stellar rotation upon absorption lines by studying the same effect in the solar spectrum. In the department of solar physics, an important piece of work (begun in 1916) has now been completed by Mr. Baxandall in revising the chemical origins of Fraunhofer lines in Rowland's tables. This work has been completed for the region λλ3900-5900, and the results sent to Mount Wilson for incorporation in a revision of Rowland's tables by the International Astronomical Union. Spectroheliograms of the sun's disc have been obtained on 118 days, and these, augmented by 326 spectroheliograms from Kodaikanal, have been studied by Mr. Butler. An investigation by the Director, assisted by Mrs. Beech, on the distribution of outbursts of sunspots, now covers four complete 11-year cycles, and a summary of the results is being prepared.

THE DISTANT COMPANION OF CASTOR.—An interesting article in the *Scientific American* (December) by Prof. H. N. Russell, describes recent researches on this star. A few years ago Messrs. Adams and Joy at Mt. Wilson found that it is a spectroscopic binary (as are the bright components of Castor) with a period of 19 hours 32 minutes. Dr. van Gest, of Leyden, finds that partial eclipses of each component by the other occur at intervals of $9^h\ 46^m$. Their distance apart is 1,600,000 miles, and each is 520,000 miles in diameter. The mass of each is 0·52 sun, and the density 2·5 sun, or 3·5 water. It is the greatest density found for a spectroscopic binary. The total light of each is $\frac{1}{60}$ of the sun's, and the surface brightness $\frac{1}{21}$ of the sun's. The concluded surface temperature is 3500° C., in good accord with the *M* type of spectrum which was found for them. It is of great interest and importance to have these accurate details of a pair of typical dwarf stars.