subjects, from Asiatic ritual dances to currency and zebras.

Those who were privileged to see Sir William's family life gained another view of this very remarkable man. His love for his wife was as apparent as it was deserved, for Lady Ridgeway devoted her life to her brilliant husband, and no one will ever know what he owed to her. She was his prop for very many years as his eyesight increasingly failed, and she dispensed gracious hospitality to his friends in their charming home at Fen Ditton. Her sudden death at the end of May was a terrible blow, and though he gallantly tried to overcome his desolation and to take up the threads of his old life, he was a broken man until death mercifully took him in his sleep during the night of August 11: a peaceful ending for a strenuous and militant life.

A. C. HADDON.

WE regret to announce the following deaths:

Mr. William Fawcett, lately Director of Public Gardens and Plantations, Jamaica, on August 14, aged seventy-five years.

Prof. Robert Gnehm, professor of technical chemistry, and afterwards director of the Technical High School, Zurich, who was known for his investigations on dyeing processes and dyestuffs, aged seventy-four years.

Dr. J. F. Hall-Edwards, president of the British Electro-Therapeutic Society, and a pioneer in the field of medical radiology, on August 15, aged sixty-seven years.

News and Views.

THE meeting of the British Association at Oxford which ended on August 11 has been memorable in many ways; and not least for the specially interesting character of the proceedings at the concluding gathering held at the Examination Schools. The message received from the Prince of Wales as president summed up in felicitous language the aims and prospects of the cause of science, the advancement of which it is the object of the Association to promote. The message also conveyed, in graceful terms, the president's appreciation of, and thanks for, the efforts made by all concerned to render the Oxford meeting of 1926 one of the most successful in the records of the Association. The reply read by Sir Oliver Lodge as chairman gave due expression to the gratitude felt by the members assembled at Oxford for the keen personal interest and sympathy shown by the Prince in the work of the Association, notably in his inaugural address.

THE speech delivered by Sir Oliver Lodge bore eloquent testimony to the world-wide charm exercised by Oxford over all who can be touched by the long history of western civilisation and culture. The well-known eulogy by Matthew Arnold, marked by graceful fancy and poetic feeling, and not without a light suggestion of penetrating humour, came with especial force and acceptance from one so capable of giving it its full effect as Sir Oliver Lodge. The significance of the presence of guests from overseas and from foreign countries had been emphasised by the Prince in his message, and was driven further home by the chairman of the meeting. The speeches of Prof. M'Murrich and Prof. Osborn, the latter of which concluded the meeting, showed that they too, as visitors and guests from overseas and abroad, fully appreciated the claim of science for international co-operation and fellowship. The final meeting at the schools was especially well attended, and formed an excellent conclusion to a very successful gathering.

AMONG several interesting papers presented to the Chemistry Section of the British Association at Oxford was a contribution by Mr. J. J. Manley on "The Union of Mercury and Helium." Judging by a lengthy report of Mr. Manley's paper in the *Times* for August 11, the author does not appear to have carried his investigations beyond the stage described in his letter to NATURE of April 24 last, except that he now believes that only one helide—HgHe—is formed, whereas in the letter he stated that he had obtained experimental evidence of the existence of two—$HgHe_{10}$ and HgHe. The evidence for union appears to be based upon the disappearance of free helium when it is submitted to the action of the electric glow discharge in contact with purified mercury, and upon a slight increase in refractive index as the action proceeds. The presumed compound is apparently decomposed by heat, so that its composition could be deduced from the difference in weight of 'uncombined' mercury before and after the experiment. As this difference is exceedingly small—of the order of 236 millionths of a gram—it is clear that Mr. Manley is encountering very great experimental difficulties; and bearing in mind the somewhat similar work of Miethe and Stammreich on the alleged transmutation of mercury into gold (NATURE, May 29, 1926), it is obvious that further investigation is required to dissipate or confirm the doubts that are held concerning the author's conclusions. Should those doubts be dissipated, Mr. Manley's work will constitute a discovery of very great importance.

IN the issue of the *Times* referred to, a leader-writer refers to Mr. Manley's contribution as a "startling announcement," as if it were novel, but actually the claim was first announced by Mr. Manley in these columns more than twenty months ago (NATURE, December 13, 1924). It is perhaps asking too much to expect a leader-writer, even in the *Times*, to be conversant with all that appears in our correspondence columns, but the incident directs attention once more to the need of adequate scientific representation on the staffs of our leading newspapers, and it also testifies to the value of the work done by the British Association in affording opportunity for lay writers to proclaim from the house-tops matters

of scientific importance that otherwise may be lost in the pages of scientific periodicals. The opinion is frequently heard that announcements of great discoveries at meetings of the British Association are less frequent than of yore, and although there is little more valid evidence for this opinion than for that concerning the diminished severity of our winters compared with those of, say, fifty years ago, the belief is probably to some extent responsible for the unbridled romance with which the popular writer is apt to invest his accounts of scientific achievements. The first duty of the newspaper man is to make a 'story,' and to this end he gives free rein to his unscientific imagination by supplying or suggesting sensation where it is not called for, or by elaborating relatively unimportant details at the expense of the main issue; he is also peculiarly susceptible to the temptation of treating the new as of necessity true, and occasionally, as in the present instance, of treating the true as necessarily new.

A STRONG earthquake was felt in the midland and western counties of England and in Wales at 3.58 A.M. (G.M.T.) on Sunday, August 15. From the accounts so far received it appears that the shock was felt over a nearly circular area 225 miles in diameter, and containing, therefore, about 40,000 square miles. The centre of this area lies a few miles to the south-east of Hereford, and it is worthy of notice that the shock was strongest in this city and Ludlow and in some of the villages between. A few chimneys fell at some of these places, but damage slight would not entitle the earthquake to a higher degree of intensity than 7 of the Rossi-Forel scale. During the last forty years British earthquakes of the same intensity have disturbed areas ranging from 25,000 to 63,000 square miles. The position of the roughly determined centre suggests that the recent earthquake may be connected with the twin-centres in a northwest-southeast line near Hereford and Ross, which gave rise to the strong earthquakes of 1863, 1868, and 1896. These disturbed areas of about 85,000, 41,000, and 98,000 square miles respectively. As regards intensity and disturbed area, the recent earthquake closely resembles that of 1868, and it is not impossible that, as in that year, the Ross focus was mainly responsible for the disturbance. The much slighter shock of January 26, 1924, was not directly connected with the others, for the axis of its disturbed area runs in a northeast-southwest direction through or near the Hereford focus.

AFTER a busy professional life of forty-three years, Prof. T. Turner is retiring on September 30 from the Feeney chair of metallurgy in the University of Birmingham. Taking the Associateship of the Royal School of Mines with the De la Beche medal in 1883, Prof. Turner was appointed demonstrator in chemistry at Mason College. A few years later he became lecturer in metallurgy, and when the chair of metallurgy was instituted in the University, he was appointed professor and has held the position for nearly a quarter of a century. Prof. Turner's own research work has dealt with silicon in cast iron, the production of wrought iron and steel, the hardness of metals; volatility, density and other properties of metals and alloys. He is a past president of the Institute of Metals, having also served as treasurer. He is a member of council and Bessemer Gold Medallist of the Iron and Steel Institute. He is an honorary member of various metallurgical societies in the Dominions, the United States, and on the continent. In his own University, a gold medal has been instituted to commemorate his services to metallurgy. His best known book is the "Metallurgy of Iron," which has passed through several editions.

THE School of Research in Metallurgy at the University of Birmingham, under the able guidance of Prof. Turner, has done much original work, and has contributed in no small degree to the amazing progress in metallurgical science which has taken place during the present century. The past and present students and friends of the metallurgical department of the University and of its retiring professor, have decided to make a presentation to him in the immediate future. The subscription list is open to all who feel inclined to associate themselves with the movement; members of the local section of the Institute of Metals and of the Birmingham Metallurgical Society are supporting the scheme. Several local firms have also intimated their desire to subscribe. Further information and subscription forms may be obtained on application to Dr. T. B. Crow, hon. sec. to the testimonial committee, at the University, Edgbaston, Birmingham. Prof. Turner is proposing to reside at Leatherhead, Surrey, in order to keep in close touch with his interests in London, and in extending to him and Mrs. Turner our best wishes for further years of health and happiness, we will be voicing the sentiments of his very large circle of friends.

ALL true lovers of plant-life will be interested to hear of the exceptionally well thought-out scheme propounded by Dr. L. Cockayne, the doyen of New Zealand botanists, for the setting apart of the Wilton's Bush Reserve, about three miles from the capital city of Wellington, N.Z., as an "open-air museum for plants native to New Zealand." The New Zealand flora is unique, not only in the beauty of its forests, its ferns and its alpine associations, but also in certain aspects of the lines of evolution which it has undergone, such as, for example, the replacement of a xerophytic type of foliage in the young plants of a number of species by a mesophytic type when well grown, this being exactly the opposite to what happens in the well-known case of the Australian phyllodineous wattles. Dr. Cockayne propounds a scheme with four main points in it, as follows:—(1) A well-grown collection of all possible species from the flora of New Zealand, the Kermadecs, Stewart Island, Chatham Islands and the subantarctic islands, so far as the limitations of the soil and climate of the proposed site will allow. (2) Representations of the leading plant-associations found in the Dominion, just as they existed in primeval New Zealand. Many of these associations are now either almost extinct or very inaccessible for study, and this scheme would

bring them within reach of students in the capital city. (3) Illustrations of the horticultural use that can be made of New Zealand plants, by the planting out of small gardens, alpine rockeries, etc. (4) Restoration of the present forest area of Wilton's Bush to its primeval condition. The area is already much modified and invaded by exotic weeds, but could speedily be brought back to its original state by scientific treatment.

DR. COCKAYNE suggests that the plan should be put into operation gradually over a number of years, and that a start could be made at once by procuring from all parts of the Dominion the plants required to build up the complete collection of the flora, and in particular by concentrating on the formation of an alpine garden along the sides of the mountain stream which flows through the bush. He also suggests the transformation of one of the fine cliffs in the gully into a representation of the typical cliff flora of Eastern Marlborough, which is one of the most striking plant associations known in New Zealand. After that the planting of a small kauri forest could be taken in hand, and so, from year to year, one new effect after another could be added until the scheme was completed. The scheme as outlined (*vide* the *Dominion*, Wellington, June 15) appears to us to be a very fine one, and will certainly meet with the cordial support and approval of botanists throughout the world. We hope that the Wellington City Council will take a wide view of the problem and not allow considerations of finance to stunt a plan which, if carried out in a broad and generous spirit, will add greatly to the fame of a capital which at present is perhaps too much renowned for its windiness and too little known for its wonderful beauty.

A PUBLIC demonstration of the potato trials carried out by the National Institute of Agricultural Botany at its Potato-Testing Station at Ormskirk took place on August 11. Research into the resistance of potatoes to wart disease (*Synchitrium endobioticum*), undertaken by the Institute on behalf of the Ministry of Agriculture, forms a large part of the work. Wart disease is fortunately not spreading, but there is an urgent demand from infected districts for improved immune varieties. New productions of breeders are grown by the Institute at Ormskirk in highly infected soil to determine their reaction to the disease. A variety is only certified as immune if it has been grown for at least two years at Ormskirk without showing any trace of disease. Dry seasons do not afford a good test, and therefore occasionally three or even four seasons are required. This year 97 stocks are being tested for the first time, 45 for the second, and 9 for the third. There are also 626 stocks of from two to ten tubers each, which are grown both to inform breeders at the earliest possible date which of their seedlings are susceptible, and to assist genetical studies on the inheritance of immunity. It is of interest to note that it is theoretically possible to find an immune variety as a parent which will produce 100 per cent. immune seedlings, no matter what the other parent is. Research is also made on the methods of transmission of virus diseases, such as leaf-roll and mosaic, which are a serious menace to English potato crops. There appears to be some correlation between the health of the crop from which the seed-tubers are taken and the incidence of these diseases in the following year. On the other hand, the diseases apparently cannot be transmitted through the soil or by mere contact of foliage. Trials are also being made both of the chief main crop varieties and of the best new immunes to determine their yielding capacity and the time taken to mature. The improvement of the methods of testing these characters is also under investigation. Finally, all stocks sent to Ormskirk as new are examined by the Institute's Potato Synonym Committee; 1533 stocks were reviewed between 1920 and 1925. In 1920 72 per cent. proved to be 'synonymous,' but by 1925 this unsatisfactory proportion had been reduced to 16 per cent. of the entries, the remaining 84 per cent. being distinct varieties.

A FOURTH edition of the handbook entitled "Particulars of Meteorological Reports issued by Wireless Telegraphy in Great Britain and the Countries of Europe and North Africa" (M.O. 252) has been issued by the Meteorological Office, Air Ministry (London: H.M. Stationery Office, price 4*s*. net). It contains full particulars of the meteorological bulletins issued by the various countries. These bulletins are normally issued at least three times a day, and include ordinary ground observations of weather, wind, temperature, humidity, and height of the barometer for a number of places. They also include information about conditions in the upper air, reports from and to ships at sea, and weather forecasts. Full particulars are given of the various codes in use for summarising this information. The area dealt with extends westwards to America, eastwards to Siberia, northwards to Spitsbergen, and southwards to northern Africa. Greenland is also now included. Changes constantly occur in the weather reports issued by radio from different countries, and in order to keep those interested informed of such changes, supplements to this handbook are issued from time to time. This revised fourth edition embodies all supplements issued since the previous edition. The area covered by the weather charts prepared from these messages is shown in a frontispiece. Most of the issues can be received in the British Isles by the use of quite modest receiving apparatus. Purchasers of this work will be informed when amending notices are issued and when a new edition is ready if they notify the Director of the Meteorological Office of their desire to receive this information.

No one can work in the vast field of economic and political science or be engaged in business or trade, without continually feeling the need of some work which will supply in a handy form statistical and other information on any of the numerous topics that go to make up the complexity of modern life.

It is well known that such works—encyclopædias, year-books, professional and trade directories, commercial returns, biographies, and so on—are published in large numbers in all parts of the world and relating to diverse subjects, but it is not always so easy to obtain definite information of their exact nature or to make the most suitable selection to meet any particular want. Dr. Paul Heile has now set out to provide a guide to this wealth of material in his "Nachschlagebuch der Nachschlagewerke für die Wirtschaftspraxis" (Hamburg: Verlag Wirtschaftsdienst G.m.b.H., 5 marks), which he has compiled, using as a basis the collection of the Welt-Wirtschafts-Archiv at Hamburg after a special attempt had been made to make this as representative as possible. The work is comprehensive and is divided into the following sections: general, geographical, commercial substances, directories (again subdivided geographically and by subject), dictionaries, and biography. German works predominate, as is natural, but the other countries are well represented, as a glance at the geographical section shows, and the value of the work is enhanced by annotations where the title is not self-explanatory and by analysis of those entries which cover more than one subject. It is a drawback to its use as a reference book that such details as place of publication and publisher's names have not been given, but it will nevertheless be a valuable guide for business firms in Great Britain and for our growing commercial libraries. The volume contains also a classified list of the 1000 or so current trade and commercial periodicals taken by the library at Hamburg, together with a history of the Institute. The receipt of the work makes us hope that the promised catalogue of the Library of the London School of Economics will not long be delayed.

THE Annual Report of the Mines Branch (Canadian Department of Mines), for 1924 contains a section on investigation of fuels and fuel testing, which throws light on the fuel problem as it occurs in Canada. Experiments are recorded on the production of coke from the coal of the Maritime Provinces. The coke is intended to make Canada independent of imported anthracite. Tests of friability of coke have been worked out. Reports are made of lubricating oils and gasoline marketed in Canada. The distillation of lignite and sub-bituminous coal and oil shale is considered, evidently an anticipation of the time when supplies of liquid fuel will have to be produced at home.

A BIBLIOGRAPHY of meteorological literature prepared by the Royal Meteorological Society with the collaboration of the Meteorological Office (No. 9, January-June 1925) has recently been issued by the Royal Meteorological Society. Since October 1920 the bibliography which previously had been given in the Society's *Quarterly Journal* has been issued as a separate publication in six-monthly parts (price to non-fellows, 2*s*. 6*d*.). A symbol is attached to the title of the work to show in which library the publication has been received. The divisions of the bibliography deal with general meteorology and with various branches of the work, such as temperature, rainfall, and terrestrial magnetism. The publication is helpful to meteorologists in different parts of the world.

THE annual report of the Physical Department of the Ministry of Public Works, Egypt, for 1923–24, has been issued. Dr. H. E. Hurst, the controller, reports continued progress in all departments. In the hydrological service observations are now obtained from 286 rainfall stations, an increase of five on the previous year, and from 82 gauging stations extending from Egypt to Uganda, Kenya and Abyssinia. The daily weather report continues to be published, based on the data from 28 stations in Egypt and the Sudan, five in Europe and two in Palestine. A daily broadcast message is sent out from Abu Zabal at 09·55 G.M.T. Upper-air investigations by pilot balloons from Helwan Observatory continue. Arrears of meteorological publications which accumulated during the War are being fast overtaken, the annual reports up to 1921 being nearly ready. The report contains a full list of the publications of the department.

VOLUME 17 of contributions from the Jefferson and the Cruft Laboratories of Harvard University consists of reprints of thirty-nine papers on physical subjects which have been published in scientific periodicals during the years 1924–5. Nine of these emanate from the X-ray laboratory of Prof. Duane, six from that of Prof. Bridgman, four deal with radio circuits and their properties, and twelve with spectroscopy. In the last group is a paper by Messrs. H. N. Russell and F. A. Saunders directing attention to certain new regularities in the spectra of calcium, strontium, and barium. Almost the whole of the lines of the first two are now identified by the help of new spectroscopic terms comparable in importance with the older terms, but some of them negative. The authors characterise the present notation of spectroscopy as chaotic, and as the result of discussion with other workers suggest that in future the *series* be denoted by Roman capitals, the *system* by an index at the upper left hand giving the multiplicity, and the *component* of a multiple term by a subscript on the right giving the inner quantum number.

READERS interested in early printing should obtain from Messrs. Bowes and Bowes, 1 Trinity Street, Cambridge, a copy of their Catalogue (No. 435) of books printed from 1477 to 1600. The list comprises some 548 titles, to which are added many helpful notes.

THE British Science Guild will publish shortly a Supplement to its Catalogue of British Scientific and Technical Books. The Supplement has been compiled by Miss Daphne Shaw from the monthly lists published in NATURE, and it will contain 2258 titles of books issued in 1925, classified alphabetically from agriculture to zoology, as well as an author index.

MESSRS. Chapman and Hall, Ltd., ask us to state that they have had in active preparation "The Theory and Practice of Radiology," by Dr. B. Leggett, but

that in consequence of a fire at their printers the whole work, almost completed, was destroyed, and it is therefore necessary to recommence production and there will be a delay of some months in the publication of the volume.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A junior inspector of mines in the Mines Inspectorate of the Government of India—The Secretary to the High Commissioner for India, 42 Grosvenor Gardens, S.W.1 (August 30). Assistant masters for, respectively, physics and mathematics and chemistry, and physiology and biology at the Lawrence College, Ghora Gall (Murrer Hills), India—The Principal, St. Luke's College, Exeter (August 31). An adviser in dairy bacteriology at Armstrong College, Newcastle-upon-Tyne—The Registrar (September 2). An assistant bacteriologist in the Department of Pathology and Bacteriology of the University of Sheffield—The Registrar (September 11). A lecturer in plant physiology in the University of Aberdeen—The Secretary (September 14). A senior metallurgist under the British Cast Iron Research Association—The Director, 75 New Street, Birmingham (September 15). A professor of philosophy in the University of Sydney—The Agent-General for New South Wales, Australia House, Strand, W.C.2 (September 15). A professor of psychiatry in the University of Sydney—The Agent-General for New South Wales, Australia House, Strand, W.C.2 (September 15). A research bio-chemist at the Walter and Eliza Hall Institute of Research, Melbourne—The Agent-General for Victoria, Victoria House, Melbourne Place, Strand, W.C.2 (September 30). An adviser in agricultural chemistry at Armstrong College, Newcastle-upon-Tyne—The Registrar (October 1). A lecturer in mathematics and physics in the Government College for Indian Women, Lahore—Miss G. Harrison, The Poplars, Buckingham.

Our Astronomical Column.

THE AUGUST PERSEIDS OF 1926.—Mr. W. F. Denning writes that "a series of very clear nights during the first eleven days of August enabled these meteors to be well traced as they gradually increased to a maximum on the morning of August 12. On August 7 the shower was strikingly evident by some fine, flashing meteors. The hourly number observed was about twenty-five from all radiants, of which the proportion from Perseus was sixteen. On August 10, after rain and clouds had prevailed in the early part of the night, the sky became very clear and 60 meteors were seen by an assistant during a watch maintained for $2\frac{1}{2}$ hours. The great majority of these were Perseids and were fairly bright with the normal features of swiftness and afterglows, the latter being strongly marked in several cases where the heads were unusually lustrous. On August 11 clouds and rain again affected the conditions, but soon after 22^h G.M.T. the sky became clear and the ensuing morning presented an ideal aspect for astronomical purposes. A look-out was maintained for $4\frac{1}{2}$ hours and 180 meteors were counted. About 145 of these were Perseids and included a fair proportion of conspicuous objects with long paths and a rapidity of movement which called for celerity on the part of the observer in accurately recording their flights. The maximum of the shower occurred between 2^h and 3^h G.M.T., August 12, when 60 meteors appeared. On the whole, however, the display may be regarded as only of moderate intensity and not nearly so rich in number as those of 1871, 1874, 1877, 1921 or some other years."

SOLAR RADIATION.—Special attention is directed by the Scientific News Service of the Smithsonian Institution to a recent issue of the *Monthly Weather Review* of the U.S. Weather Bureau, which is said to contain a further corroboration by Dr. Abbot of the reality of the variability of the sun's radiation. From a series of observations made at Mt. Wilson by himself and Mr. L. B. Aldrich during the years 1910–1920, a selection has been made of the days on which the atmospheric conditions were as nearly identical as possible, these being divided into comparable groups. Observations made throughout 1912 and 1913 were discarded on account of the Mt. Katmai eruption. When the mean values of the solar radiation readings for these selected days, grouped for a month at a time (the mean value for July of each year from 1910–1920 is given as an example), are plotted, together with the solar constant values already published by the Smithsonian Institution and the sunspot numbers for the same epochs, a close degree of parallelism is shown between the three sets of observations. It is also claimed that short interval changes within the individual months are verified. It is not stated, however, whether the data for other months or periods of the year give as close agreement as that shown for July. The full details of Dr. Abbot's communication will be awaited with interest.

THE SYSTEM OF CASTOR.—This beautiful system became still more interesting when Adams and Joy found in 1920 that the distant companion *C* (about 1′ distant from the bright pair) was itself a spectroscopic binary. The period was at first given as 4 days, corrected later to 0·815 days. *C* is of magnitude 9·03; as the two spectra are of equal intensity, each component is of mag. 9·78; taking the parallax as 0·0747″, this corresponds to absolute mag. 9·15.

Mr. H. van Gent, of Leyden Observatory, examined *C* for variability and found that it is an eclipsing binary. He has determined the light curve from photographs taken with the Leyden 33 cm. refractor. He discusses the observations in *Bull. Astr. Inst. Netherlands*, vol. 3, No. 97. The radius of each component is 406,000 km.; the mass of each is 0·518 sun and density 2·60 sun; the distance apart 2,581,000 km. and inclination 86°.

The surface brightness of each component is 3·31 mag. fainter than that of the sun. The effective temperature is deduced as 3500°, agreeing well with the spectral type *M*. These exact details concerning a red dwarf star are of great interest.

It is noted that Castor *C* has the greatest parallax and proper motion so far known among eclipsing variable stars, and that the components of 61 Cygni have similar absolute magnitude and colour.