

News and Views.

THIS week Lord Sydenham of Combe, soldier, administrator, and publicist, celebrated his eightieth birthday, and the occasion enabled many friends to proffer their congratulations. Born on July 4, 1848, Lord Sydenham (formerly Sir George Clarke) was educated at Haileybury and the Royal Military Academy, Woolwich. In 1868 he entered the Royal Engineers, afterwards seeing much active service, and earning a reputation as an authority on military matters. He had also made a special study of fortification, in regard to which he wrote (1910) a well-known treatise. From 1894 until 1901 he was superintendent of the Royal Carriage Factory, Woolwich, vacating this post on becoming Governor of Victoria. He was raised to the peerage in 1913; and further, in 1917, designated G.B.E. Taking a keen interest in public affairs, Lord Sydenham became chairman of the Royal Commission on Contagious Diseases, 1913-15; afterwards president of the National Council for Combating Venereal Diseases. He was president of the British Science Guild from 1917 until 1920. He had been elected a fellow of the Royal Society in 1896. Last year Lord Sydenham published an interesting reminiscent book, entitled "My Working Life."

RECENT events indicate that the movement for calendar reform is making progress, and that not in regard to Easter only, but in the direction of some of the more far-reaching proposals which were included in the report of the late Committee of Inquiry of the League of Nations as calling for careful consideration, though without any definite expression of opinion on the part of the Committee as to their respective merits. One event of great importance is the passing of a resolution at the meeting of the U.S. National Academy of Sciences at Washington on April 23 last, favouring "a change in the present calendar, looking to the establishment of 13 months per year, grouped so that the last 13 days of June and the first 15 days of July form the proposed new month, the odd 365th day being designated as 'Year day,' and the extra day in leap year being designated as 'Leap Day,' and permitting among other things the establishment of a fixed date for Easter Sunday." Another significant circumstance is the adoption by Standing Committee No. 3 of a resolution for submission to the annual plenary Congress of the League of Nations Societies being held at The Hague during the past week, which, though not specifying any particular proposals, directs attention to the defects and inconveniences of the existing calendar, and "invites the League of Nations Societies to urge the Governments of their respective countries to take immediate steps to expedite the convening by the League of Nations of an International Conference entrusted with proposing specific measures for the reform of the calendar."

It is evident that the work of exploration already done under the ægis of the League of Nations is being vigorously followed up by those eager for reform, but it seems likely that much resistance will

be offered, especially perhaps in European countries, to the specific proposals approved by the U.S. National Academy of Sciences. The suggestions relating to 'Year Day' and 'Leap Day' have been opposed by certain powerful religious communities, and it will probably be long before chronologists and the majority of people can be reconciled to the substitution of a 13-months for the time-honoured 12-months year. It is always open to any business organisation to arrange its affairs on whatever system it finds convenient, without the general disturbance in so many departments of social life which the suggested radical change would involve. It is, however, of great importance that the questions at issue should be thrashed out by competent bodies in all countries, in order that objections raised may be met and, if possible, removed. The activity displayed by those anxious to reform the calendar is accordingly to be welcomed, but it is necessary to guard against hasty and insufficiently considered action.

As radio receiving sets are now often connected with public or private supply mains so as to obviate the trouble and expense of the charging and maintenance of accumulators, it is advisable that there should be some supervision of the apparatus supplied by radio manufacturers for this purpose. Without this supervision there may be, in exceptional cases, risk of fire or even risk to life. Regulations for the design and installation of this class of apparatus have now been issued by the Institution of Electrical Engineers, with the approval of the Radio Manufacturers' Association. The cases containing them must be made of metal or non-ignitable material, or various kinds of specified woods. All holes for the passage of cables must be made so as to avoid abrasion of the cables. When a conducting material is used for the containing case it must be earthed. The temperature of the air inside the containing case must not exceed 120° F., and the apparatus must be adequately protected by fuses. A novel rule is that when radio apparatus is connected with direct current supply mains the aerial must have only inductive connexion with the apparatus through a transformer or condenser. With alternating current supply mains the capacity of the connecting condenser must not exceed 0.001 of a microfarad. Head telephones and loud speakers must be connected with the radio apparatus through a transformer or through a circuit which includes a condenser. Insulation resistance tests which the apparatus must pass are also specified. These regulations should render the new radio apparatus quite safe without appreciably increasing its cost. They do not apply to radio apparatus, such as a crystal set, which is not connected with the mains. Even in this case, care has to be exercised in installing the devices when the building is wired for the electric light. Shocks have been received when using head-phones or when handling apparatus connected with the earth owing to the operator accidentally touching at the same time a portable metal lamp standard, an electric heating or cooking appliance, a metal switch

or similar device, owing to it having accidentally become 'alive' due to the development of a fault in the electric wiring.

SENATORE MARCONI and G. A. Mathieu have recently developed a multiplex system of radio communication, using short waves. We learn from Marconi's that experiments made at the Marconi beam station at Bridgwater have been completely successful. Music has been sent from Montreal, using the same apparatus and aeriels as those through which two simultaneous Morse telegraph messages were being sent. The music was received at full strength and the quality was excellent, so that the Bridgwater party could dance to the strains from across the Atlantic. There was no hint of Morse interference, and it was impossible to tell that the music of the dance band was being transmitted from Canada on the same radio circuit as a high-speed 'dot and dash' service. The Bridgwater receiving station was built by the Marconi Company in 1926 for the General Post Office, which gave permission for the present experiments to be made. The new apparatus enables all the beam stations equipped with it to deal with three times the amount of work they can do at present. As some of the present simplex stations are working almost to their full capacity, this new invention is a very timely one. Instead of having only one channel of communication between each transmitter and receiver, it will be possible to use at least three. An appreciable economy in working will therefore be effected. Empire broadcasting at a comparatively low cost is also rendered possible. When equipped with multiplex apparatus the Empire beam stations can transmit broadcasting at the most suitable time for any part of the Empire without in any way interfering with the ordinary commercial services. It is claimed that with the new apparatus the effects of 'fading' are considerably diminished. At the present time the multiplex equipment at the Canadian beam station near Montreal and the receiver at Bridgwater are the only instruments in use. It is hoped, however, that in a few weeks' time multiplex working between England and Canada will have been achieved.

DURING the daytime many thoroughfares in London are choked with vehicles, and extensions or repairs of underground cables and pipes have become almost impossible. In addition, new services make it necessary to dig deeper and deeper in order to get an unobstructed passage, and the modern practice of laying wood blocks on a concrete foundation makes excavation very difficult. The loss also entailed on the public, and especially on shopkeepers, when excavations are in progress is serious. The London Traffic Act of 1924 has done good work by appointing a permanent committee as a co-ordinating authority. The only logical plan appears to be to construct subways or tunnels under the footways or roadways or both, which will accommodate in an orderly and readily accessible manner the plant at present laid in a haphazard manner over the whole of the roadway. This is the plan which E. S. Byng advocates in

World Power for April. Although subways were constructed in London nearly sixty years ago, yet their development has been very slow. The Post Office, however, has made some useful subways. In Paris, the very extensive system of tunnels and galleries built under the main boulevards has proved of the greatest value to public utility companies. In Madrid there is a useful system of underground canals which is largely utilised. Twenty years ago, sixty miles of tunnels were constructed under the main thoroughfares of Chicago at considerable expense. They are $7\frac{1}{2}$ feet high by 6 feet wide, and are lined with concrete. As a general rule, American cities have not adopted subways, but in Los Angeles and other places the engineers are being forced by the increase of traffic to consider their possibilities. It would be advisable to widen the powers of such bodies as the London Advisory Committee so as to enable them to provide for both present and future requirements.

THE centenary of the birth of Eduard Suess, the illustrious author of "Das Antlitz der Erde," is to be commemorated in Vienna, where for half a century he was professor of geology, by the erection of a public monument. British geologists will welcome an opportunity of celebrating the occasion, for throughout the world the brilliant work of Suess has been a source of inspiration to his admirers during at least two generations. Moreover, the name of Suess will always be intimately linked with England, since it was in London, at 4 Duncan Terrace, Islington, that he was born in 1831. The council of the Geological Society of London has had the happy thought of paying a fitting tribute to his great services to geology by placing a memorial tablet on the house in which he was born. The permission of the owner of the house and of the local authorities has already been obtained, and fellows who may wish to contribute to the cost, which will amount to about ten guineas, are invited to send a small subscription (not exceeding five shillings) to the Secretary of the Geological Society, Burlington House, W.1.

BEFORE and after the British Association meeting at Glasgow there are to be geological excursions, led by the president and local secretary of Section C (Geology). The numbers going on these excursions are necessarily limited, but there are still a few vacancies. One excursion (Aug. 30-Sept. 5) led by Mr. E. B. Bailey, is to Ballachulish and Fort William to see the cauldron subsidences of Glencoe and Ben Nevis, recumbent folds and slides of Ballachulish and Fort William, and the parallel roads of Glen Roy. This visit has been arranged to help the Discussion of "Highland Problems" which appears in the programme of the meeting. The other excursion is to Arran (Sept. 12-19), to see the schists, Highland border rocks, Old Red Sandstone, Carboniferous, New Red Sandstone, and the Tertiary igneous complex. It will be led by Dr. G. W. Tyrrell, whose Geological Survey Memoir on the district is expected to be published before the meeting. Applications to join these excursions should be made to

Dr. G. W. Tyrrell, Geological Department, University, Glasgow.

IN recent years the Royal Scottish Museum in Edinburgh has made great progress in the display of its valuable collections both from an educative and an artistic view-point. The Report of the Director for the year 1927, issued from the Scottish Education Department, recounts further advances, the most interesting being the opening, on the occasion of a visit paid by Her Majesty the Queen, of a British Bird Hall in a new block, mainly destined for the development of the natural history department. The early opening of three new galleries, devoted to comparative ethnology, technology, and mineralogy, is foreshadowed. Educational activities bulk largely in the report. Daily demonstrations were given on subjects pertaining to art and ethnography or to natural history; lantern lectures and gallery demonstrations arranged by the Education Authority of Edinburgh were given to 2456 school children; a series of loan cases of natural history specimens for the aid of nature study is circulating in primary and secondary schools; and on one occasion the Museum was specially opened at the request of a party of 1400 Nottingham miners on their way to a football match in Glasgow, so that they might visit the Mining Hall. Many interesting and valuable specimens were added to the various collections by gift and purchase throughout the year, and the scientific importance of the cabinet collections of natural history has been appreciated by many experts. It is regrettable that a Museum visited by 468,504 individuals in the course of the year should have to complain of the poor sale of its post cards and descriptive publications.

DR. J. B. ORR, of the Rowett Research Institute for Animal Nutrition, Aberdeen, and Sir Arnold Theiler, formerly of the Veterinary Research Institute, Onderstepoort, South Africa, have been making a careful study of pasture and stock problems in Australia. Unfortunately Dr. Orr's visit has been only a brief one, but Sir Arnold Theiler will spend six months in the Commonwealth. Problems of pasture improvement and animal nutrition generally are being taken up by the Council for Scientific and Industrial Research, and it is hoped as a result of Dr. Orr's presence to arrange for the utmost co-operation between workers there and in other parts of the British Empire, particularly at Aberdeen. The question of how best to organise tropical agricultural research work in Australia or adjoining territories has been under discussion between the Council and the Empire Marketing Board for some time, and Dr. Orr's observations will no doubt weigh considerably with the Board when a decision comes to be made. The policy of the Council towards veterinary research will be based largely upon the recommendations to be made by Sir Arnold Theiler.

SIR JOHN RUSSELL arrived in Australia towards the end of May and was met by a formidable programme, designed to enable him to see as much of agricultural development and research as was possible in a limited time. Between the lectures which he has delivered

in the capital cities at the invitation of the universities, he has visited all readily accessible places of interest, particularly in the irrigation areas of South Australia, Victoria, and New South Wales. The progress of these areas is of much importance to Australia from the point of view of her immigration policy, and the scope and need for scientific work are immense. Sir John will endeavour to arrange for close association between the Council for Scientific and Industrial Research and the Imperial Soils Bureau, the institution of which at Rothamsted was recommended last October by the Imperial Agricultural Research Conference.

AT the annual meeting of the Royal Society of New South Wales, held on May 2, Prof. J. D. Stewart delivered his presidential address on "The Application of Science to the Sheep Industry." He pointed out that it is essential for the prosperity of Australia that the pre-eminence of this industry be maintained by further development. Many of the problems of the pastoral industry are primarily due to the physiological characteristics of Australia, its topography, climate, and variability of rainfall. Increase in sheep population alone will not advance the industry very far, unless certain conditions retarding progress are better controlled and improved methods of production are more actively stimulated. Some of the more important problems and weaknesses of the industry, including the control of drought by fodder and water conservation, longer range weather forecasting, and increased facilities for transportation were then discussed. The wide field that exists for investigations in animal nutrition was mentioned; the Council for Scientific and Industrial Research is already taking action in this matter. Research in animal genetics and a more scientific study of wool are also necessary. Attention was also directed to the control of pests by biological methods, and to the suppression of animal diseases by further research, and the better organisation of veterinary effort. The proposal of the Wool-brokers and Wool-growers and the Pastures Protection Boards (N.S.W.) to raise funds for research in problems of the sheep industry, shows that the industry is willing to assist in the investigation of causes that retard its development.

THE eighth Annual Report of the Industrial Fatigue Research Board (to Dec. 31, 1927) again illustrates the value of systematic inquiry into problems of national importance. The variety of the problems investigated under the direction of the Board is as remarkable as the success which has attended them. Researches in progress, briefly described in the report, include the physiology of ventilation, accident causation, the relation of age to the acquisition of dexterity, the problems of vocational guidance, the design of machinery in relation to the operator, sickness among cotton weavers, card-room operatives, and printers, weight carrying by women and load carrying by men, atmospheric conditions in mines, telegraphist's cramp, and methods of vocational selection. The results obtained from investigations so far completed are broadly reviewed and the conclusion is stated that

"the increase in rate of output on short shifts, the beneficial influence of short rest pauses, the importance of high illumination in fine processes, the disadvantageous effects on work involving muscular effort at high temperatures, have been repeatedly indicated in so many investigations . . . that they can be accepted as established within a high degree of probability and ripe for experimental application on a large scale under practical conditions." Another interesting investigation mentioned is that in which the effects of menstruation were studied. The results showed that "this strictly physiological phenomenon has, as a rule, no appreciable effect on working capacity amongst normal healthy women." Glimpses of the methods of investigation employed, as well as a brief summary of the results obtained, are also to be found in this report.

SOME criticisms of the use of airships in the Arctic have been made by Dr. W. Bruns, secretary of the new International Society for the Exploration of the Polar Regions by airship, known as Aeroarctic, which, according to a recent *Daily News Bulletin* issued by Science Service of Washington, D.C., is organising a polar expedition for next year in LZ127, the giant airship now being completed at Friedrichshafen. The small size of General Nobile's airship not merely prevented the carriage of equipment requisite for a forced landing, but also seriously limited the cruising radius. This limitation of radius, with the low-speed of the *Italia* (about 53 miles per hour), necessitated a base in Arctic regions exposed to the vagaries of Spitsbergen weather. The German expedition proposes to have a base outside the Arctic at Leningrad, and others at Murmansk and Nome, away from the unsettled conditions of the North Atlantic, and hopes for a cruising radius of about 8000 miles for its airship.

AN exhibition of maps illustrating the cartography of the British Empire was opened at the Science Museum, South Kensington, on June 28, and will remain open until the end of October. The exhibition has been arranged in connexion with the International Geographical Congress which meets this month in London and Cambridge, and the conference of Directors of Survey in the Dominions and Colonies. Most of the maps selected are those in current use, but the Ordnance Survey is showing a series of sheets illustrating the successive editions of the one-inch map from 1801 to the present day, and the Hydrographical Department of the Admiralty is contributing a number of charts from the eighteenth century and a series of charts of the Downs from 1795 onwards. An exhibit has been arranged to illustrate from various parts of the world the stages through which map-making has passed. There are examples of the sailing chart of the Marshall Islanders, wooden relief maps of the Greenland Eskimo, a world map from about 700 B.C., and several reproductions of medieval maps. Sixteenth and seventeenth century maps are also represented. In an adjoining gallery there is an exhibition of modern surveying instruments. Catalogues of the exhibition are available.

ON Thursday, June 28, at a reception held at the Ross Institute and Hospital for Tropical Diseases,

Putney Heath, the Harben Gold Medal of the Royal Institute of Public Health for 1928 was presented by the Viscount Leverhulme, honorary treasurer of the Institute, to Sir Ronald Ross, in recognition of his eminent services to the public health.

It is announced in *Science* that Congress has adopted a resolution providing for the striking of a gold medal commemorative of the achievements of Thomas A. Edison, and the presentation of the medal to Mr. Edison by Congress.

BARON FERENCZ VON NOPCSA, of Vienna, and Prof. Frederico Sacco, the distinguished palæontologist of Turin, have been elected foreign members of the Geological Society of London. Dr. W. J. Jongmans, of Heerlen (Holland), and Señor Don César Rubio y Muñoz, of Madrid, have been elected foreign correspondents of the Society.

THE Eastman Kodak Research Laboratory at Rochester, N.Y., is recognised as one of the foremost in the world, and has been responsible for many important scientific and industrial developments in relation to photography. It is under the directorship of Dr. C. E. K. Mees. A research laboratory in London is to be developed on similar lines, as part of the Kodak factory organisation at Harrow, and will be under the direction of Dr. Walter Clark, of the Science Museum, South Kensington. Dr. Clark is a graduate of University College, London, and was for five years with the British Photographic Research Association. He is honorary secretary of the seventh International Congress of Photography being held this year.

THE Research Association of British Paint, Colour, and Varnish Manufacturers has issued the first number of a *Review of Current Literature relating to the Paint, Colour, and Varnish Industries*. The review is arranged in a convenient form and should prove to be of great service to all those connected with these industries.

A HANDBOOK to Tasmania was prepared for the members of the Australian Association for the Advancement of Science on the occasion of its meeting in Hobart in January this year. There are chapters on different aspects of natural science by various Tasmanian authors. Particular attention may be directed to those on geology, botany, and forestry. There are also useful chapters on hydro-electric development, manufactures, and education, and a candid and thoughtful economic survey of the past and present. A coloured geological map and some excellent photographic views are bound with the volume.

MESSRS. Watson and Sons, Ltd., 313 High Holborn, W.C.1, have issued a catalogue of photomicrographic and projection instruments, which includes some useful hints for the beginner on photomicrography.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A head of the engineering department of the Hull Municipal Technical College—The Director of Education,

Education Offices, Guildhall, Hull (July 11). A demonstrator in the physics laboratory of the Royal Naval Engineering College, Keyham, Plymouth—The Secretary of the Admiralty (C.E. Branch), Whitehall, S.W.1 (July 12). An assistant to the head of the Plant Disease Research Division of the Ministry of Agriculture for Northern Ireland, and an assistant to the head of the Ministry's Dairy Bacteriology Research Division—The Secretary, Civil Service Commission, 15 Donegall Square West, Belfast (July 14). Junior assistants at the National Physical Laboratory, Teddington—The Director, National Physical Laboratory, Teddington (July 14). Two geologists on the Geological Survey of Great Britain—The Director, Geological Survey and Museum, 28 Jermyn Street, S.W.1 (July 14). A mycologist at the Royal Horticultural Society's Gardens—The Director, Royal Horticultural Society's Gardens, Wisley, Ripley, Surrey (July 16). An assistant professor of physics at the Military College of Science, Woolwich—The Assistant Commandant, Military College of Science, Red Barracks, Woolwich, S.E.18 (July 21). A fellowship for research work in connexion with aeronautics—The Clerk, The Company of Armourers and Brasiers, 81 Coleman Street, E.C.2 (July 28). A mechanic to take charge of the college workshop, and laboratory stewards for the chemistry and physics

departments of the University College of Hull—The Secretary, University College, Hull (July 29). A second in command to the Chief of the Economic Botany Division of the Commonwealth Council for Scientific and Industrial Research—The Acting Secretary, Commonwealth Council for Scientific and Industrial Research, 314 Albert Street, East Melbourne, Victoria (Aug. 31). An investigator for work on the Flying Fox (*Pteropus spp.*) problem in Australia—F. L. McDougall, Australia House, Strand, W.C.2 (Aug. 1), or The Acting Secretary, Commonwealth Council for Scientific and Industrial Research, 314 Albert Street, East Melbourne, Victoria (Sept. 1). A part time professor of highway engineering at the City and Guilds Engineering College—The Academic Registrar, University of London, South Kensington, S.W. 7 (Sept. 4). Lecturers in applied chemistry and in economic entomology in the University of Queensland—The Secretary, Queensland Government Offices, 409 Strand, W.C.2. A lecturer in mining subjects at the Mansfield Technical College—The Principal, Technical College, Mansfield. A lecturer in chemical engineering at University College, London—The Secretary, University College, Gower Street, W.C.1. A woman laboratory assistant with knowledge of botany, physics, and chemistry, at Bedford High School—The Head Mistress, High School, Bedford.

Our Astronomical Column.

TELESCOPES OF THE FUTURE.—It seems very possible that certain innovations may be made in the construction of telescopes. Larger aperture seems required without much additional weight; the solid, thick disks for reflectors are difficult to cast, mount, and utilise in an efficient manner, and atmospheric disturbances affected their performance in no small degree. For general work, the really large instruments have been often discarded for smaller sizes by Herschel, Rosse, and Lassell, being found more serviceable and expeditious.

Prof. G. W. Ritchey, of Pasadena, California, who has worked for some time in Paris, had a considerable share in the making and mounting of the 100-inch reflector at Mount Wilson and has experimented with several instruments of large size. He concludes that "future optical mirrors will be made not of solid disks but built up of glass plates; light, cellular structures, cemented together and figured at high mountain sites" where they are intended to be employed. He says that he hopes to make a reflecting telescope with a practically perfect mirror 50 feet in diameter. He describes details of his project in the *Journal of the R.A.S. of Canada* for May-June 1928, and expresses himself with confidence in regard to the realisation of his plans.

Prof. Ritchey's experience gives great weight to his opinions, and it is to be hoped that his researches will ultimately place a greater and more efficient telescope in the hands of those dealing with some of the greater questions in astronomy which require the help of more instrumental power than that hitherto employed. The immediate future may therefore witness the dawn of a new astronomy, if combination disks of glass plates, light and easily manipulated, can be utilised. They may carry practical astronomers far beyond the limits reached by means of their previous equipment.

THE CURVE OF SUNSPOT ACTIVITY.—S. Oppenheim, in *Astr. Nach.*, No. 5566, discusses the sunspot

activity of the last two centuries and obtains a curve with several periodicities, the longest period being 450 years, and the principal one $11\frac{1}{4}$ years. He conjectures that the long period is identical with that suspected in terrestrial magnetic phenomena, the duration of which is given as between 450 and 500 years. He notes that some variable stars have a second periodicity much longer than the principal one (Mira 218 years, R.V. Tauri 3.6 years). He gives a curve from his formula which is compared with that from Wolf's sunspot numbers. The agreement is close except for the present maximum. His curve gives a sharp maximum at 1928.5, higher than any since 1870; the observations up to the present point to a low flat maximum considerably below that of 1917. The high maximum of 1778 and the low one of 1816 are very well represented.

THE ORBIT OF COMET PELTIER-WILK.—This comet was independently found by Mr. Peltier in the United States and by Mr. Wilk of Cracow. Its definitive orbit has been deduced by Mr. F. Kepinski, also of Cracow. The observations ranged from Nov. 21 to Dec. 30, 1925. They are divided into six groups, which are all well represented by the adopted orbit, the largest deviation being $2''$.

The following are the elements:

T	1925 Dec. 7.267395 U.T.
ω	$126^{\circ} 7' 13.46''$
Ω	140 34 35.59
i	144 36 22.22
e	1.0005047
log q	9.8828482

This adds another to the considerable list of comets the orbits of which appear to be hyperbolic; the deviation from a parabola in this case is so small that it can reasonably be ascribed to planetary perturbations.