

Current Topics and Events.

THE City of Gloucester proposes to commemorate the achievements of Sir Charles Wheatstone, the practical founder of telegraphy, by placing a bronze memorial tablet on one of its public buildings. This will be unveiled by Sir Charles Sherrington, president of the Royal Society, on October 19, which is the fiftieth anniversary of Wheatstone's death. To electricians, Wheatstone will long be remembered as the perfecter of the "Wheatstone bridge" which they use in their everyday work. In 1867 he described the self-exciting, shunt wound dynamo. They remember him also as the pioneer of the electric telegraph. So far back as 1837, in conjunction with Sir William Cooke, he made the electrical transmission of messages an assured success. In 1844 he conducted some of the earliest experiments in submarine telegraphy. To physicists Wheatstone is well known by the use he made of a rotating mirror to detect whether an electric discharge was oscillatory or not. He made valuable researches in sound, particularly in connexion with Chladni's figures and for his experiments on the prismatic decomposition of the electric light. In 1837 he made the important discovery that sparks between metals gave distinctive spectra. Wheatstone had a marvellous gift for interpreting documents printed in cipher. He deciphered with apparently little difficulty an important document sent him by the Trustees of the British Museum. He invented the Wheatstone's cryptograph, which is one of the most successful devices for rapidly coding and decoding secret messages. The ordinary English concertina was invented and patented by him in 1829. He was a professor at King's College, London, for many years and bequeathed to it all his scientific library and apparatus. This bequest was added to by his family and also by the Physical Society of London. An article on his connexion with the growth of telegraphy was published in *NATURE*, vol. 11, p. 510 *et seq.* It is interesting to remember that Oliver Heaviside, whose death we had recently to deplore, was his nephew.

DR. ALEŠ HRDLIČKA in the course of his lecture on "Early Man" before the Royal Anthropological Institute (see *NATURE*, October 10, p. 557) expressed a fear that the important work on the fossil apes of the Siwalik Hills might not be continued. In a statement published in the *Times* of October 7, Dr. Pilgrim, director of the Geological Survey of India, stated that although the Geological Survey in a country like India must be subservient to economic requirements rather than to those of pure science, there is at present an exceptional opportunity for combining the two, owing to the discovery of oil in the fossiliferous deposits of the Punjab. This statement will reassure those in Great Britain who are interested in the advancement of science, as they have regarded recent developments in India with some apprehension, lest changing conditions may lead to a neglect of those branches of research in which immediate advantage is not always apparent. The danger of the neglect of opportunity which Dr. Hrdlička feared in India

is also very real elsewhere. He referred to the material, possibly of priceless value to science, which is being lost beyond recovery in Java on the site of the discovery of *Pithecanthropus erectus*. According to information which has been received from Australia, the situation there also has some disquieting elements. It is stated that under recent regulations all skeletal remains of aborigines which may be discovered there have to be deposited in local museums. It is therefore impossible for specimens to be sent out of Australia for study by anthropologists elsewhere. This, though serious enough, might be regarded as a not entirely unreasonable requirement on the part of the Australian authorities if there were some assurance that these remains would be carefully preserved and stored, their provenance recorded, and that after careful study the data to be obtained from them were published and made accessible to other workers. Apparently, however, this is not the case. It is surely incumbent upon scientific workers in Australia to see that provision is made for this to be done. It should certainly be taken into account when an appointment is made to the recently founded chair of anthropology.

SOME interesting particulars have reached us of an exhibit which has been arranged in the new house at the Royal Botanic Gardens, Kew, for the display of plants of special interest. One portion of the exhibit shows various examples of phylloides and phylloclades illustrated by different species of Acacias, which, instead of the normal leaves, have the leaf petiole flattened and leaf-like. The leaves proper are usually only seen in seedling plants, the green leaf-like organs of the mature plants being entirely flattened petioles. This condition of affairs is also exhibited by *Oxalis bupleurifolia*, and in this case the three normal leaflets may be seen at the tips of the phylloides. In some other plants the leaf-like organs are flattened shoots, and these are illustrated by the common Butcher's Broom, *Ruscus aculeatus*, and by *Semele androgyna*. These phylloclades or flattened branches are also shown by species of Asparagus, *Carmichaelia* and *Phyllocladus*. Other plants displayed in this house show examples of "parallel development" in plants belonging to unrelated natural families. Those which have assumed an Ericoid habit with leaves of a heath-like character are shown by a heath, by *Fabiana*, one of the Solanaceæ, by *Gamolepis*, one of the Compositæ, and by *Calythrix*, a member of the Myrtaceæ. Near these are placed some specimens with a cypress-like character of foliage illustrated by a *Crassula* and a New Zealand *Veronica*. The various Cactoid types of growth are shown by species of *Pelargonium*, *Vitis*, and *Rhipsalis*, one of the true Cactaceæ, while larger specimens are illustrated by one of the South African *Euphorbias* and one of the candelabra-like Cacti from Central America. The Cactoid habit is also shown by a *Senecio*, one of the Compositæ, and by an *Asclepiad*, *Stapelia hirsuta*. The spherical type of plant structure is exhibited by a South African

Euphorbia, *Euphorbia obesa*, and by representatives of South American Cacti.

IN his address to the French Association for the Advancement of Science at Grenoble in July, the president, M. Emile Borel, dealt with the problem of the organisation of scientific research in France. Every one now recognises that the social progress of a nation depends on its use of the laws which facilitate the production of the means of living. A smaller band sees that the greatest material advances have been founded on discoveries made by research workers in fields which at the time seemed of little or no practical interest, and the problem of how to keep alive this type of research when democracy can only appreciate results which are immediate and material is a serious one. M. Borel considers it cannot be solved by allowing the academies and other institutions to determine the researches which are to be encouraged by the nation, or by providing national support for all research workers, but by placing in the hands of the academies, universities, institutions like the Association for the Advancement of Science, and of distinguished men of science, funds for the encouragement of young men who are willing to engage in research and are worthy of support. Some of these men would prove worthless, but M. Borel would apply to them the old axiom of law that "it is better to acquit ten guilty than to condemn one innocent." The address is reproduced in the issue of the *Revue Scientifique* for August 22.

IN accordance with resolutions passed at a preliminary representative meeting, held at the suggestion of the Optical Society on July 21, arrangements to hold an Optical Convention in 1926 are now being made by the executive committee appointed for that purpose. Mr. F. Twyman has been elected chairman of the committee. The Convention, which will be entirely British in character, will be held in London about the middle of April next. Its activities will be directed towards providing a coherent presentation of the very notable advances which have been made in British optics during and since the War. Lectures, discussions, demonstrations and exhibits will be arranged, and it is intended that these shall be of such a nature as to appeal to professional men, to those engaged in industries, and to the general public. A record of the proceedings of the Convention will be published, in which will be included an account of the papers read and the discussions held, together with a description of the instruments exhibited. Although no general appeal for financial support has yet been issued, promises have already been made, by several members of the optical industry and by the Optical Society, to contribute to the Guarantee Fund sums which amount, in all, to more than 1000*l.* This may be taken as an indication of the interest that is being taken in the proposal, and suggests that adequate financial support for the Convention will be forthcoming.

AN interesting feature of the September issue of the *Aeronautical Journal* is a paper by R. A. Frazer submitted for the R. 38 Memorial Prize Competition and

awarded the prize. It is entitled "The Rigid Airship in Relation to Full-Scale Experiment" and deals not merely with the experimental methods that have been evolved specifically to cope with scientific experimentation on such a large scale, but also with many interesting historical details relating to early struggles to arouse interest in this form of investigation. The driving force, it would appear, behind much of this work in its initial stages was J. R. Pannell, one of the members of the staff of the National Physical Laboratory at Teddington, who lost his life in the R. 38 disaster over the River Humber. Among the equipment saved from the wreck were three note-books comprising all the entries made by the N.P.L. representatives, and a film registering the pressures over the upper rudder practically up to the moment of the disaster. From the material which came to hand in this way it was found possible to reconstruct the principal stages and episodes of this dramatic flight. The experimental observations proved sufficiently complete to admit of reduction, and these data, which cost so many valuable lives, are now on permanent record in a paper published by R. A. Frazer and H. M. Bateman, one of the survivors of the disaster.

IT is a question how far the public in general is aware of the excellent work which is being done by the London County Council in stimulating the interest of its teachers in those scientific and artistic subjects which fall outside the scope of the ordinary curriculum, but are of incalculable value as a broadening influence on their intellectual outlook. Among the courses of lectures which have been arranged from time to time, the anthropological and biological courses given at the Horniman Museum, Forest Hill, which is maintained by the Council, have been particularly useful. This museum has been arranged especially with a view to the instructional value of its exhibits, and an excellent series of handbooks has been compiled by the curator, Dr. H. S. Harrison. These are written on thoroughly sound and scientific lines, but at the same time are not too technical to be of assistance to those whose scientific knowledge has not reached a very advanced stage. The latest issue in this series deals with the cases in the museum illustrating simple means of travel and transport by land and water (Horniman Museum, Forest Hill, S.E., No. 14, 1925, price 6*d.*). As the museum is liberally supplied with models, Dr. Harrison has been able to cover the subject adequately from the simple application of man or woman power by means of the headband or pack to the various types of wheeled transport, and from the skin canoe to the sailing ship.

CAPT. ECKERSLEY recently broadcast the main results arrived at by the International Radio Conference which has just been held at Geneva. The results of the tests made in September proved conclusively that Europe has too many broadcasting stations. This is mainly due to the narrow limits of the wave band (300 to 500 metres) that has been allotted by the European governments for broadcasting purposes. As government, maritime and commercial radio services must be considered, it is

unlikely that longer wave-lengths will ever be permitted. The majority of the experts therefore were in favour of reducing the number of broadcasting stations. To accomplish this, every nation must be prepared to sacrifice some of its stations. A few well-designed high-power stations will probably give better results than many low-power stations. If this were done the crystal set users would get a better service. It can be so arranged that these high-power stations cannot interfere with one another. An objection might be raised that certain towns would lose their broadcasting status and that the programmes they receive would have little local colour. This difficulty might be overcome by retaining the local studios in those towns and allowing them to give regular programmes by means of land lines to whatever station had charge of their district. The new scheme, which begins on November 1, will only come into operation gradually. It was absolutely necessary to attempt to mitigate the troubles caused by interference which would have caused a chaotic state of affairs during the coming winter. Details of the scheme will be announced as they are finally arranged by the permanent staff at Geneva. New stations outside the scheme will be given wave-lengths below 200. The new Dublin station, which will begin operations this year, was fortunate to be allotted a wave-length in the regular broadcasting wave-band.

A CIRCULAR issued by the Bureau of Standards, Washington (No. 276), contains a useful survey of progress in the design of motor headlights. Tests conducted by various committees have led to the conclusion that for modern driving it must be possible to see any substantial object on the road 200 feet away. This involves a powerful beam and inevitably some degree of dazzle to approaching persons. The most hopeful solution lies in the scientific control of the beam, and various optical devices for limiting it below a horizontal plane 30 to 40 inches above the roadway are described. In addition it is desirable to spread the beam laterally so as to show up the limits of the roadway. Various dimming devices, involving diminution of the light, have not proved very satisfactory. Methods of controlling the beam are more hopeful, e.g. devices for tilting the headlight or reflector so as to direct the beam downwards when approaching another car. The same result is obtained in some modern headlights by the use of either of two filaments within the same bulb, one out of focus. In the final portion of the circular, requirements for headlights are summarised, and the method of testing in the Bureau of Standards laboratory is described. These tests are based mainly on specifying candle-power in various directions with the view of ensuring a sufficient beam for driving, and at the same time limiting emission of light in undesirable directions.

A SUMMARY of the past season's work at Knossos is given by Sir Arthur Evans in the *Times* of October 9. In the course of completing the reconstitution of the west wing of the Palace, a series of discoveries of exceptional interest throw a new light on the entrance

system from the west and at the same time link up its processional scheme of decoration with the religious functions of the Palace Sanctuary. According to the earliest planning, belonging to the great building preceding and partly incorporated in the Palace we know, the entrance had run in directly from the west instead of from the south as in the later building. This West Porch was itself preceded by an earlier structure giving into a corridor, of which the side walls have been traced. In a void where the old foundations had been grubbed up were found stucco fragments which had been torn from the wall. These fragments showed a decoration of painted groups of seated female figures engaged at their toilet. It has been suggested that the decoration of the later corridor, which replaced this earlier passage after the greater part of the Middle Palace had been destroyed by earthquake, represented not only processional votaries bringing in gifts to the goddess, but also acolytes carrying out relics from the inner sanctuary for public exhibition in the presence of the "Priest-King." This has received unexpected support from a discovery in the South Propylæum which has brought to light a subterranean depository choked with debris and pottery of the last Middle Minoan period. Abundant remains of painted stucco show that its interior had been decorated in a deep Venetian red ground with ochre bands grained with ruddy brown to imitate woodwork. This Sacristy within the Propylæum may have been the sanctuary from which the sacred vessels were taken out to be borne in procession. Remains of brilliantly polished stone plaques with marble-like surface indicate the splendour of the Early Palace entrance which it was attempted to reproduce in the Later Palace in stucco.

IN 1875 the Bradford Naturalists' Society, now the Bradford Natural History and Microscopical Association, and also the Bradford Scientific Association were formed in Bradford. With varying fortunes both societies have continued active in the cause of natural history and of science, and on September 25 and 26 they joined in the celebration of their jubilee. The Lord Mayor honoured the two societies by a civic reception at the Cartwright Hall on September 25, and on September 26 a most successful exhibit and demonstration of the scientific work of the members was held at the Technical College in Bradford. Under the title of "Fifty Years of Local Science" an interesting account of the work of the two societies has been published under the joint editorship of H. J. M. Maltby and W. P. Winter, which includes brief notes of many stalwart Yorkshire workers in the cause of natural history, notably the late William West, whose influence upon natural history, radiating from his classes at the Technical College at Bradford, will long remain a living force in the development of clubs of Yorkshire field naturalists.

WE much regret to learn that Prof. H. Maxwell-Lefroy, professor of entomology, Imperial College of Science and Technology, South Kensington, was rendered unconscious by fumes while experimenting with insecticides in his laboratory on October 10 and was taken to hospital in a serious condition. In

answer to an inquiry at the moment of going to press, it was stated that he was still unconscious and his condition remained grave.

MEMBERS of the staff of Rothamsted Experimental Station, Harpenden, Herts., are available for lectures during the winter to farmers' unions, chambers of agriculture, agricultural societies and similar bodies. No charges are made, but associations are expected to defray the lecturer's expenses. The subjects for lectures are included under such general titles as manuring, soil micro-organisms, weeds, chemistry of manuring and crop production, soil physics, insecticides and fungicides, insect pests, bees, and plant diseases. Communications regarding the lectures should be addressed to the secretary of the Station.

THE annual exhibition of electrical, optical, and other physical apparatus arranged by the Physical Society of London and the Optical Society is to be held on January 5-7, at the Imperial College of Science and Technology, South Kensington. In addition to the usual display by instrument makers, the exhibition this year will include new features in the shape of illustrations of recent physical research and of improvements in laboratory practice, examples of effective lecture experiments and repetitions of historical experiments in physics. These exhibits will be kept distinct from the trade exhibits, and a section of the catalogue will be devoted to them. Offers of such exhibits should be sent to the secretary of the Physical Society at the Imperial College of Science not later than November 16. The new development will afford an opportunity for the interchange of ideas between research workers and teachers, and will also be of service in bringing the

latter into touch with recent advances in physical science. The repetition of historical experiments will be of interest not only to teachers but also to the general public, who will be admitted to the exhibition on January 7. This is another novel feature, admission to the exhibition in previous years having been confined almost entirely to scientific workers.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned: An assistant lecturer in agriculture at the Farm Institute, Spars-holt, near Winchester—The Director of Education, The Castle, Winchester (October 26). A demonstrator in inorganic chemistry in the University of Leeds—The Registrar (October 26). A lecturer in the department of chemistry of the University of Cape Town—The Secretary to the High Commissioner for the Union of South Africa, Trafalgar Square, W.C.2 (October 27). A professor of botany in the Rhodes University College, Grahamstown—The Secretary to the High Commissioner for the Union of South Africa, Trafalgar Square, W.C.2 (November 4). Assistant-Secretary to the Royal Society of Arts—The Secretary, John Street, Adelphi, W.C.2 (November 7). An editorial assistant under the British Non-Ferrous Metals Research Association, for abstracting and reviewing British and foreign scientific and technical publications and for editing and interpreting research reports—The Secretary, B.N.F.M.R.A., 71 Temple Row, Birmingham. Two male junior assistants in the research department, Woolwich, for computing work in connexion with ballistic observations—The Chief Superintendent, Research Department, Woolwich, S.E.18.

Our Astronomical Column.

ANOTHER FAINT NOVA IN AQUILA?—Prof. Max Wolf recently detected a star of magnitude 8.7 in Aquila, which was absent both from the Bonn Durchmusterung and from numerous photographs taken in recent years at Königstuhl, which show stars down to magnitude 12 or 13. It has been in the neighbourhood of mag. 8.7 for about three weeks, and was observed on Oct. 3 by Mr. B. M. Peek at Bournemouth and on Oct. 5 by Mr. G. Merton at Blackheath. Its place for 1925.0 is R.A. $19^{\text{h}} 27^{\text{m}} 24.7^{\text{s}}$, S. Decl. $6^{\circ} 35' 10''$. It is either a Nova or a remarkable variable, and in either case deserves careful observation. The object souths at about 6 P.M., so it will be possible to follow it for at least two months before it gets too near the sun for observation.

BRIGHT METEORS.—Mr. W. F. Denning writes that, on the evening of October 6, meteors were rather abundant though fog prevailed and the gibbous moon was up during the latter part of the observation. Meteors are often plentiful in the first week of October, several minor showers of moderate richness being of annual recurrence at this period. A few bright meteors were among those recorded on October 6 at Bristol, namely, one at $19^{\text{h}} 39^{\text{m}}$ G.M.T., equal to Jupiter, passing upwards just under Cassiopeia from a radiant at $14^{\circ} + 31^{\circ}$ or $12^{\circ} + 7^{\circ}$; another at $21^{\text{h}} 0^{\text{m}}$ G.M.T. falling in the S.E. sky rather slowly from $18^{\circ} + 14^{\circ}$ to $33^{\circ} - 10^{\circ}$. This was brighter than Venus and probably directed from a radiant in Cygnus, Cepheus, or Draco. A third at $21^{\text{h}} 56^{\text{m}}$, about

equal to Jupiter, shooting from near β Ursæ Minoris to between α and β Ursæ Majoris. If one or more of these objects were noticed at other places; it would be interesting to hear of any details of their apparent paths which would enable their actual courses to be computed.

ORBIT COMPUTING.—There is at present a dearth of readily accessible books in English that give full details of the rather difficult but fascinating problem of orbit computing. Students of celestial dynamics will therefore welcome the paper on this subject by Mr. G. Merton (Monthly Notices of Royal Astronomical Society, June 1925). The method described is based on that of Gauss, but full use is made of various improvements introduced since his time, including some by Mr. Merton himself. Special attention is given to rapid convergence, a point in which many of the older methods are defective, and to the avoiding of all unnecessary repetition after the first approximation to the geocentric distance is obtained. In particular, the parallax is eliminated in a less clumsy manner than that of Gauss's *locus fictus*. There are two fully worked out numerical examples, elliptical orbits being illustrated by the case of Baade's planet 1924 TD (lately named Ganymede) and parabolic ones by Orkisz's comet 1925 II. Some tables are appended to the paper, which avoid the necessity of consulting any other work, except a table of logarithms and the Nautical Almanac for the sun's co-ordinates.