

## News and Views.

THE Wild Birds Protection Bill is dead, after the second reading had given promise of a safe passage through the House of Commons. In the opinion of those best competent to judge, it was a measure designed to give better protection to British birds than even the old and scattered Acts, which it was to supersede had done. But it has been killed by slogans devised by well-intentioned but less well-informed propagandists. It was called a "Rare Birds Protection Bill," yet it protected every bird in the country; it was sneered at because it gave different degrees of protection to different birds, but so long as some birds are persecuted and some are not, it is reasonable that the degree of protection should vary; it was said that the birds would be better off without the Bill, but the statement betrays lack of knowledge of the operation of the present Acts and the particular points on which experience has proved them to be weakest; it was said that public opinion was against the Bill; on the contrary, the informed public were in favour of the Bill. The death of the Bill is to be regretted by all interested in the effective protection of birds in Great Britain, the more so as its disappearance is due to the blind faith of certain members of Parliament in the propaganda of malcontents.

WICKEN FEN, under the care of the National Trust and its local committee, promises to become one of the most instructive of the natural reserves in Great Britain. It can never possess the grandeur of scenery or of fauna of the wild mountain areas of Scotland, but it has many advantages. It is unredeemed fenland, most of its 600 acres uncultivated and untouched, it contains a typical marsh flora with several rare ingredients and a rich insect fauna nourished upon the plants, and it is near a flourishing school of biology which has detailed experts for the analysis of the various plant and animal groups, with the result that a preliminary survey has almost been completed. It has been found, however, that the cost of keeping the reserve in order has outrun the funds devoted to the purpose, last year by a sum of £268, and the National Trust has launched an appeal for a capital sum of £10,000, the interest of which will be available for the upkeep of the sanctuary. It is also the intention to add 340 acres to the present reserve and "so put the whole property on a sound financial basis."

A NOTICE of the appeal for Wicken Fen which appeared in the *Times* of July 14 contained the statement that, left to itself, the fen flora would decrease by two-thirds of the present number, and that the fauna would shrink from 6000 species to fewer than 2000. In Nature's care, Wicken Fen would quickly become an impenetrable swamp, uninhabitable by many fen plants and animals. To retain the present balance, which represents a typical fen flora and fauna, considerable expense has to be incurred. If the sanctuary is to preserve these fen conditions, a limited amount of human interference is necessary, the cost of which is not met by present

resources. A local committee of the National Trust, under Prof. J. Stanley Gardiner, is responsible for the area, and we are certain that money contributed towards the upkeep and extension of Wicken Fen sanctuary will be wisely spent for the furthering of knowledge of Nature.

THE British Medical Association has been celebrating the Lister centenary at its annual meeting during the past week—appropriately at Edinburgh this year—and, as part of the celebration, has issued a Lister memorial volume, which is one of the most complete that we have seen—"Joseph, Baron Lister" (Edinburgh and London: Oliver and Boyd, 1927. 10s. 6d. net). Apart from a biographical sketch of Lister's life, the work includes a number of reminiscences of 'The Chief' by surviving clerks, dressers, or house surgeons, amongst which is a contribution from the late Prof. Caird, the whole being edited by Dr. A. Logan Turner. An interesting section is that which gives a short account of the careers of Lister's fellow-residents at the Old Royal Infirmary, Edinburgh, in the summer of 1854, a group of men whose after history did not belie the promise of their early years. Two of Lister's addresses are reprinted, together with a number of *obiter dicta* from his published works. A chapter on the state of surgery before Lister's anti-septic work had banished the infections which too often followed surgical operations brings into full relief the great boon to mankind of his researches. His later surgical work perhaps rather overshadows his earlier physiological experiments, but the latter served as an excellent training and stood him in good stead when he came to devote himself entirely to the advancement of surgery. In virtue of the number of its contributors—upwards of a dozen—the volume gives an impression of completeness which may be lacking in one by a single hand. By perusal of these pages the reader may gain a very good idea of Lister's character and works, and of the development of the science and art of surgery at the period when he revolutionised its practice, the whole revealing a most fascinating story.

IN a short note in NATURE of July 9, p. 59, dealing with some recent work in hydrodynamics, the opinion was expressed that during recent years the centre of gravity of pure hydrodynamical research appeared to have shifted to the Continent. The writer had in mind the new orientation given to this subject by the Prandtl theory and its various developments on the theoretical side, and the extraordinarily high degree of experimental skill exhibited in the production of the kinematographic films of fluid motion shown at Prof. Prandtl's recent lecture before the Royal Aeronautical Society. More mature consideration, however, suggests that the opinion so expressed was too sweeping, in that it did less than justice to the large body of British scientific workers who have contributed to this and other branches of hydrodynamical investigation. A wrong impression cer-

tainly tends to be created by the tardiness with which completed papers reach publication. Reports and Memoranda of the Aeronautical Research Committee, for example, are not usually available until anything from six to sixteen months after completion of the research. The result is that independent research workers not in direct touch with the personnel at Government research stations may remain for a considerable period in complete ignorance of important developments occurring in their own field.

A VIOLENT earthquake occurred in Palestine and Transjordan on July 11. According to the official report, 268 persons were killed and more than eight hundred were injured. The places that have suffered most are Maan (more than 60 miles to the south of the Dead Sea), Ludd, Ramleh, Nablus (Shechem), Amman, and Es Salt. Some lives were lost and historic buildings were damaged at Jerusalem and the villages round about, the Mount of Olives, Jericho, etc. So far as can be judged from the accounts already received, the centre of the area of destruction lies in the Jordan valley depression, near the southern end of the Dead Sea, the longer axis of the area being parallel to that depression. The last great earthquake in Palestine was that of Jan. 1, 1837. On this occasion the shock was strong enough to cause considerable damage at Beyrout, Damascus, Safad (where 3500 out of a population of 4000 lost their lives), Acre, Tiberias, and Jaffa. The epicentre was probably in the Jordan valley, not far from the Sea of Galilee, and therefore about 100 miles to the north of that of the recent shock. Of the two earthquakes, that of 1837 seems to have been the more violent. A rather strong after-shock was also felt on July 17 at Amman, Es Salt, Haifa, Jaffa, Jericho, and Jerusalem, with its epicentre thus about midway between those of the previous earthquakes.

THE latest report of the Empire Cotton Growing Corporation (referred to by the administrative council submitted at the sixth annual general meeting on May 26) shows that the useful work which is being carried on by that body continues to expand and to produce good fruit, the production of cotton in the British Empire, excluding India, being 427,396 bales in 1925-26. The outstanding feature of the last twelve months was the fall in price in the latter half of 1926 from 10*d.* to a little more than 6*d.*, a fall which has been a great discouragement to many growers, causing the abandonment of some areas. Already, however, the price from various causes has risen once more to 9*d.*, and some of the defaulters are probably already regretting their hastiness. In general, though it may delay the hoped-for day when all or most of the cotton used in Lancashire shall be Empire-grown, this reaction will probably work for good by shaking out some of the weaker and more unprogressive cultivators, while at the same time allowing the specialist officers to press on with the breeding of the most valuable and useful types of cotton, and the Corporation and Governments con-

cerned to improve transport facilities before the pressure becomes too great.

THE work of the Empire Cotton Growing Corporation continues to expand, and the unexpended balance to diminish. The work in South Africa is first described, and though results have not yet been all that was hoped for, cotton appears to have come to stay as a crop that may ultimately cover large areas. In Rhodesia the beneficial results of rotation with mealies are becoming apparent—a step in the very desirable direction of regular rotation of crops with cotton, much useful work upon which subject has also been done by Mr. Sampson in Nyasaland, and is now being followed up by the School of Agriculture at Cambridge. Good work is being done in other parts of Africa in the breeding of improved varieties of cotton. The new Research Station in Trinidad is referred to, and the value of the work carried on there is expected to make itself apparent within a comparatively short period. An Imperial Agricultural Research Conference is to be held in October. Finally, the important work upon transport problems is referred to, and the subject of spinning tests is discussed. The whole report is well worth perusal.

UNDER the presidency of Prof. E. T. Whittaker an exceptionally interesting programme has been arranged in Section A (Mathematical and Physical Sciences) of the British Association for the Leeds meeting on Aug. 31-Sept. 7. The foreign guests include Profs. Millikan and Debye, and Drs. Heisenberg and Kolhörster. Prof. Millikan is speaking on the spectra of the elements of the first row of the Periodic Table, and is also giving an evening lecture to the Association on cosmic rays. Dr. Kolhörster will probably also speak on the latter subject in the sectional meeting. A paper by Dr. Heisenberg on recent progress in quantum mechanics will be followed by a discussion in which several English speakers will take part. Members will also have the opportunity of hearing Prof. Debye speak on the polar properties of molecules. Among other papers to be presented, those of Prof. Whiddington, Dr. Aston, and Prof. Barkla are of special interest at the present time. The joint discussion with Section B (Chemistry) on the structure and nature of colloidal particles will be opened by Sir William Bragg. There will also be several subsectional meetings. In mathematics a paper by Prof. Turnbull on non-commutative algebra will serve as a useful introduction to the discussion on quantum mechanics, and, in addition to papers by Profs. Milne and Brodetsky, a morning will be devoted to contributions on the theory of numbers.

IN an article published in NATURE of August 28, 1926, Mr. F. J. W. Whipple, the Superintendent of Kew Observatory, made the suggestion that the study of the passage of sound through the high atmosphere might be promoted by systematic observations of the sound of gunfire. He was able to record that he had heard at Grantham seven discharges of a gun on the Shoeburyness range and had been able to

time the passage of the sound. This success has led to the organisation of an experiment which was tried last Saturday. At the request of the Meteorological Office, and with the sanction of the War Office, the times of discharge of a gun on the Shoeburyness range were broadcast by the British Broadcasting Corporation from Daventry and London. There were three rounds fired in the morning and seventeen in the afternoon. Observers were asked to listen for the arrival of the sounds coming through the air. The reports received at Kew Observatory indicate that no observers at great distances were fortunate enough to be able to hear the gun regularly, though there were instances in which likely noises were heard after one or two of the rounds. Hot-wire microphones were in operation, however, at four places, and at one of these, the University of Birmingham, good records were obtained. The time of passage of the air waves over a horizontal distance of some 130 miles was about  $11\frac{1}{2}$  minutes. Birmingham must have been in the zone of 'abnormal audibility.' There are not enough observations to define the limit of the zone of normal audibility. The gun was heard intermittently at Romford, but not in the south of London. It is hoped that the broadcasting experiment will be repeated.

AMONG the activities of the Science Museum, South Kensington, is that of placing on exhibition collections of apparatus and specimens illustrating current scientific research. To some of these temporary exhibitions we have already directed attention. Thanks to the co-operation of the National Physical Laboratory, further collections were opened to the public on July 18 and will remain on exhibition for about four months. One of the new groups of exhibits relates to the research being carried out in connexion with the transport of apples, a matter of importance to the producer, carrier, and consumer. A great deal depends on the ventilation of the fruit stores, and here is shown the control device which automatically admits cool air into the store during the night and excludes warm air from entering during the day. Three exhibits deal with the metallurgy of dental alloys and amalgams, spectroscopic analysis, and British Standardised Steel Preparations. Amalgams are extensively used for dental fillings, but there is need for further knowledge of their properties. Unsatisfactory fitting often arises from the fact that the changes which occur during the mixing, setting, and hardening of the amalgams are only imperfectly understood. In this research microscopic study plays an important part. The exhibit by the Wireless Section of the National Physical Laboratory include short-wave transmitters with apparatus enabling wave-lengths to be measured within 1 mm.; a model short-wave receiver for use on wave-lengths of less than a hundred metres; typical examples of elaborate screening arrangements used in connexion with modern radio apparatus; a typical form of modern single frame-coil direction finder and photographs and diagrams illustrating the equipment used for the study of distortion in radio receivers.

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A NOTE by Prof. R. Verneau in the recent issue of *L'Anthropologie* (vol. 37, Nos. 1-2) directs attention to still another case of fraud in alleged archaeological discoveries. In this case it is the neolithic mines with human figurines sculptured in chalk, engravings, decorated vases, stone axes, etc., which M. Lequeux claimed to have discovered at Spiennes, near Mons. An investigation carried out by La Service des Fouilles des Musées in 1926 failed to find any of the galleries alleged to have been discovered, and the objects therefore remained without evidence of origin. M. Verneau recalls a similar unauthenticated discovery of skeletons with bronze masks by M. Lequeux in Morocco. A commentary which needs no elaboration is afforded by the announcement that M. Lequeux has just been arrested for violating graves in the cemetery of Montparnasse.

An article by Mr. J. D. Unwin on "Monogamy as a Condition of Social Energy" in the *Hibbert Journal* for July is interesting as an example of how anthropological data can be brought to bear upon the interpretation of history. It might even, perhaps, in an ideal State in which social organisation was an intellectual rather than an emotional process, serve to illustrate the practical value of studies at first sight rather remote from the conditions of modern life. Mr. Unwin has attacked the great problem of the historian—the rise and fall of great civilisations and empires. He shows that in the case of Sumeria and the early empires of Mesopotamia, Egypt and Crete so far as we have any knowledge, Greece, Rome, and the peoples of medieval and modern times, such as the Arabs and, up to a point, the British, this rise and fall in power presents a curve which agrees with the curve of progress towards the strictest form of monogamy and the departure therefrom in the relations of the sexes. Recent correspondence in the *Times* has suggested the responsibility of malaria for the decadence of Greece and Rome—a theory which was put forward by Mr. W. H. S. Jones some twenty years ago or more. This suggestion is open to the objection that it offers one cause only for a very complex set of conditions, and Mr. Unwin's view would be obviously open to the same criticism did he suggest an immediate connexion. His conclusion is, however, far more subtle and by that so much the more plausible. He suggests that the 'force of life,' which primarily seeks satisfaction in sexual activity, is directed under a strictly enforced monogamy into other manifestations which lead to the advancement of the race or nation—conquest, empire, art, and science.

IN connexion with the celebration this month of the diamond jubilee of the Confederation of Canada, the Dominion Bureau of Statistics has compiled a handbook entitled "Sixty Years of Canadian Progress, 1867-1927," which is being distributed to libraries, schools, and other institutions. In about a hundred and fifty pages a survey is taken of most aspects of Canadian life, with particular reference to the natural resources and industries. Abundant statistics are given and there are many illustrations and maps, including maps of the growth of Canada, its climate

and forests. An appendix gives the text of the British North America Act of 1867.

AN expedition to the coast of Labrador for the study of its mollusca has lately left Washington under the auspices of the Smithsonian Institution. The members of the expedition comprise Dr. Paul Bartsch, the curator of Mollusks in the National Museum, and Mr. and Mrs. Paul Bowman of the George Washington University. Its headquarters will be on the Matamek River on the south coast, where Mr. C. Amory has offered the use of his camp. The collection of anatomical material is to be the primary object, but special attention is to be paid to the environmental conditions in the places from which specimens are procured, while Mr. Bowman will study the flora and examine the peat bogs of the interior.

IN accordance with the recommendation of the recent Colonial Office Conference, a Colonial Medical Research Committee has been appointed as follows: The Right Hon. W. Ormsby-Gore (chairman), Sir George Maxwell (deputy chairman), The Secretary of the Medical Research Council (Sir Walter Fletcher), and the Chief Medical Adviser to the Secretary of State for the Colonies (Dr. A. T. Stanton), *ex officio*; Prof. J. W. W. Stephens, Sir Leonard Rogers, Dr. Andrew Balfour, Dr. Charles Todd, Dr. P. H. Manson-Bahr, and Dr. C. M. Wenyon. The terms of reference are: "To advise the Secretary of State and the Medical Research Council upon the initiation and promotion of medical research in the interests of the Colonial Empire; upon the recruitment and conditions of service of the necessary *personnel*; and upon the management and allocation of any funds available for these purposes." The Committee will also investigate proposals for the creation of a Colonial Medical Research Service, and for the payment from a pool of grants to medical institutions which are considered to deserve the support of Colonial Governments.

SPEAKING ON July 18 in the House of Lords on the problem of river pollution in Great Britain, Lord Balfour stated that the Government has decided to set up a committee representing the Ministry of Health and the Fishery Board, under the chairmanship of Sir Horace Monro, to advise on the question of new legislation and administration. At the same time, scientific research on river pollution is being undertaken by the following committee: Sir Robert Robertson, Prof. V. H. Blackman, Prof. F. G. Donnan, Sir Alexander Houston, Mr. H. C. Whitehead, and Dr. G. C. Bourne; with Mr. Maurice, Mr. Calderwood, Mr. Ronald, and Mr. Simpson—all connected with the Ministry of Health, the Scottish Board of Health, the Fishery Board for Scotland, or the Ministry of Agriculture and Fisheries—as assessors, and Dr. H. T. Calvert as director.

A NEW type of electric cord which acts as a push button at any point of its length is coming into use in Berlin in connexion with electric bells and buzzers and for starting and stopping machinery. It is the invention of Oscar Nagy, a Hungarian engineer. If the

cable is squeezed at any point throughout its length, the circuit is completed and the signalling or operating device is actuated. This is effected by having the wires woven into a loose braid separated by an elastic non-conductor, which, however, makes contact when pressure is applied. It is expected that this device can be usefully employed with complicated machinery where threatened accidents to either operator or material make sudden stopping a necessity. It can be operated also by the knee or the elbow, and so has advantages over ordinary types of switches and push buttons. Hidden beneath carpets it would make a useful burglar alarm. In mines and quarries it could be arranged so that a fall or slide of rock would automatically sound an emergency signal.

THE Hanbury Memorial Medal, which is given for excellence in the prosecution or promotion of original research in the chemistry or natural history of drugs, has been awarded to Dr. T. A. Henry, Director of the Wellcome Chemical Research Laboratories.

DR. R. KING BROWN, for many years Medical Officer of Health to the Borough of Bermondsey, where the practice of artificial light therapy has been extensively carried on under the Public Health Department, and chairman of the executive committee of the Institute of Hygiene, has been appointed medical editor of *The British Journal of Actinotherapy*.

THE following have been elected to fill the vacancies which will occur in the council of the Institution of Electrical Engineers on Sept. 30 next: *President*: Mr. A. Page; *Vice-President*: Captain J. M. Donaldson; *Hon. Treasurer*: Lieut.-Colonel F. A. Cortez Leigh; *Ordinary Members of Council*: Mr. J. R. Beard, Major B. Binyon, Mr. P. V. Hunter, Mr. H. Marryat, Mr. H. T. Young, and Mr. D. N. Dunlop.

SOME extra copies of the portrait of the late Arthur Bolles Lee, author of "The Microtome's Vade-Mecum," which was issued with the last number of the *Journal of Pathology and Bacteriology* are available and may be had by any one interested on application to the editor at 17 Loom Lane, Radlett, Herts. It will be remembered that Mr. Lee died on Mar. 3 last.

THE eightieth annual meeting of the Palaeontographical Society was held in the rooms of the Geological Society, Burlington House, on July 14, Mr. E. T. Newton, president, in the chair. The annual report referred to the completion of the monograph of the Upper Eocene flora of Hordle, and progress with the monographs of Gault Ammonites and Macrurous Crustacea. It also announced another instalment of the monograph of Palaeozoic Asterozoa. Prof. Morley Davies, Dr. F. L. Kitchin, Mr. S. L. Wood, and Mr. Henry Woods were elected new members of council. Mr. E. T. Newton was re-elected president, and Mr. Robert S. Herries and Sir A. Smith Woodward were re-elected treasurer and secretary respectively.

MESSRS. Cooke, Troughton and Simms, Ltd., have issued a small catalogue (No. 553B) of portable survey

equipment which gives a wide choice of plane table outfits. The instruments cover equipment for purely graphic plane tabling as well as tacheometric instruments, as the pattern used by the Survey of India.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—An analytical chemist at the Main Drainage Outfall Works of the Dublin Corporation—The Secretary, Local Appointments Commission, 33 St. Stephen's Green, Dublin (July 30). A junior engineer at the Forest Products Research Laboratory, Princes Risborough—The Secretary, Department of Scientific and Industrial Research, 16 Old Queen Street, S.W.1 (Aug. 4). A temporary botanist at the Royal Botanic Gardens, Kew—The Secretary, Ministry of Agriculture and Fisheries, 10 Whitehall Place, S.W.1 (Aug. 4). An assistant lecturer in the mathematics department of the Coventry Technical College—The Director of Education, Council House, Coventry (Aug. 5). A lecturer in physics, and assistant lecturers in mathematics, book-keeping, geography, and French at the Belfast Municipal College of Technology—The Principal, Municipal College of Technology, Belfast (Aug. 5). An assistant lecturer and demonstrator in botany at the University College of South Wales and Monmouthshire—The Registrar, University College, Cardiff (Aug. 6). A male assistant in the geological depart-

ment of the Liverpool Free Public Museums, Liverpool (Aug. 30). Appointments as follow, at the International Institute of Agriculture, Rome:—A chief of section specially qualified in tropical agriculture, and editors for, respectively, tropical agriculture, dairy science, plant diseases, rural economics, and trade in agricultural products—The Bureau du Personnel, Institut International d'Agriculture, Villa Borghese, Rome (Aug. 31). A woman B.Sc. (physiology or biochemistry) at the Wellcome Physiological Research Laboratories—The Director, Wellcome Physiological Research Laboratories, Beckenham. Two junior assistants under the Directorate of Ballistics Research of the Research Department, Woolwich—The Chief Superintendent, Research Department, Woolwich, S.E.18. An assistant entomologist at the Wellcome Tropical Research Laboratories, Khartoum—The Controller, Sudan Government London Office, Wellington House, Buckingham Gate, S.W.1. A principal of the Leicester College of Technology—The Director of Education, Leicester. A lecturer in fuel technology at the Imperial College of Science and Technology—The Registrar, Imperial College of Science and Technology, South Kensington, S.W.1.

ERRATUM.—In NATURE of July 2, p. 4, col. 2, the second term of the left-hand side of the equation should read " $2OH_2$ ."

### Our Astronomical Column.

COSMIC DUST CLOUDS.—The question of the absorption of light in space by clouds of cosmic dust is a very difficult one, and different observational results seem to lead to inconsistent conclusions. Prof. Shapley's study of the variables in the globular clusters indicates that the phases occur appreciably simultaneously in light of all wave-lengths; further, he finds that the clusters contain stars just as blue as any in our neighbourhood. These and similar facts tend strongly against any general absorption of appreciable amount. On the other hand, the occurrence of numerous regions with sharply defined boundaries, where there is a sudden drop in the star-density (the Coal Sacks are a notable example), gives cogent reason to believe in the existence of local dust clouds which absorb nearly all the light from stars behind them.

Prof. Edward S. King, of Harvard College Observatory, makes the suggestion in a recently issued Bulletin from Science Service, that the group of stars to which the sun belongs, extending outwards to a distance of a hundred light-years, contains a sensible amount of scattered dust. He bases this on observational evidence of increasing redness with distance up to the distance mentioned: after that he finds no further increase in redness. He notes the evidence of a large amount of scattered dust in the Pleiades as being a parallel case. It is well known that the Pleiades nebulae give spectra similar to those of the stars that they surround, indicating that they shine by reflected light. So Prof. King's result implies that the sun is a member of a local cluster somewhat similar to the Pleiades. His evidence for increasing redness with distance up to a hundred light-years will be awaited with interest.

Shapley's result, mentioned above, shows that the time of passage of light through this cloud does not differ by more than a minute for light of different

colours. This gives evidence of the extreme tenuity of the supposed cloud.

SOLAR RADIATION.—In *Smithsonian Miscellaneous Collections*, vol. 80, No. 2, under the title "A Group of Solar Cycles," Dr. Abbot continues his tests of the sun's intrinsic variability, as reflected in the measures of solar radiation made with the pyrheliometer at Montezuma. One test applied is to compare, for any given month throughout the interval considered, the averages of selected pyrheliometer measures of total solar radiation with those of the solar constant determinations. This selection aims at comparing measures which have been made under as nearly as possible identical conditions, namely, when the sun is equally high above the horizon, the atmosphere equally clear, the quantity of atmospheric water vapour identical. For the observations discussed, 1921–1926, there is a very good agreement shown for each of the twelve months separately between the pyrheliometer and solar constant curves. On comparing either of these set of curves with that showing the sunspot variation for the corresponding periods, it is seen that a general similarity exists, but it is not so close for all months as was previously found for July, 1910–1920 (see *Monthly Weather Review*, May 1926).

A useful table is given of monthly averages of solar constant values determined at Chilean stations from 1918 to 1926. Dr. Abbot directs attention to indications in these figures of a 26-monthly period in solar radiation. As additional evidence of related solar and terrestrial changes, monthly solar constant values are compared with (1) ultra-violet radiation values taken at Mt. Wilson; (2) long-range radio-signal intensities. During the interval, 1924–1926, for which comparisons are available, there is a marked accord. Dr. Abbot is sanguine that his continued investigations of solar radiation will yield useful positive results.