

Commissioner in the Solomon Islands by Sir J. B. Thurston, Governor of Fiji. In 1900 he proclaimed the Solomons a British Protectorate and hoisted the flag. In 1912 he was made a C.M.G. and in 1915 he retired. During his term of office he succeeded in impressing his strong personality on the natives. He induced them to abandon their head-hunting and cannibalistic habits, and put down the murder of white traders and missionaries. Under his influence the natives provided the labour for the extensive coconut plantations established in the comparatively settled conditions which he set up, even though sporadic outrages, such as that reported within a day or two of his death, still occurred.

Mr. Woodford's profound knowledge of the natives was mainly turned to profit in the practical affairs of administration; but such contributions as he made to anthropological literature were

marked by their powers of close observation and careful and accurate record.

We regret to announce the following deaths:

Prof. Max von Gruber, president of the Bavarian Academy of Sciences, known for his work on social hygiene, on Sept. 17, aged seventy-four years.

Lord Iveagh, K.P., G.C.V.O., F.R.S., Chancellor of the University of Dublin, who, among numerous public benefactions, gave £250,000 to the Lister Institute of Preventive Medicine for the endowment of bacteriological research, and was elected in 1906 to the Royal Society under Rule 12, which provides for the election by the Council of "persons who, in their opinion, . . . have rendered conspicuous service to the cause of science," on Oct. 7, aged seventy-nine years.

Prof. Emil Zettinow, director of the department of photomicrography at the Robert Koch Institute in Berlin, on Sept. 7, aged eighty-five years.

### News and Views.

IN an article in last week's issue of NATURE, the main characteristics of several types of metallurgical photomicrographic apparatus at present on the market were discussed, and it was suggested that British manufacturers must pay more attention to details of mechanical construction and design of this type of apparatus if they are to compete successfully with Continental manufacturers. That such competition is making itself felt is shown by the fact that twenty-two institutions and firms in Great Britain, and also sixteen in the United States, have recently installed Reichert metallurgical photomicrographic equipments of the type referred to in the article. From the point of view of British industry, it is unsatisfactory that so many British purchasers should have to place their orders with a foreign firm for an apparatus of such importance in industry and in scientific investigations. In 1920 the Faraday Society, under the presidency of Sir Robert Hadfield, in conjunction with the Royal Microscopical Society, the Optical Society, and the Photomicrographic Society, held a symposium on "The Microscope: Its Design, Construction, and Applications." A valuable discussion took place, in which microscope users stated their requirements and manufacturers presented their proposals to meet these requirements. The meetings aroused a considerable amount of enthusiasm on the part of manufacturers and resulted in the production of several types of microscopes of such a quality and in such quantity as to meet fully the requirements and the demands of the users. It would seem, however, that in regard to photomicrographic apparatus for metallurgy, the manufacturers have not kept pace with the demands of the metallurgists.

MESSRS. HADFIELD'S, LTD., desire to purchase an up-to-date metallurgical photomicrographic outfit. In order to avoid the necessity of placing the order abroad, Sir Robert Hadfield informs us that he or his firm is prepared to pay to any manufacturer who will supply a British-made equipment similar to the Reichert large photomicrographic apparatus, or one which fulfils the requirements of the metallurgist at

least as fully as does the Reichert, a premium of £50 in addition to the price at which the Reichert equipment is now obtainable. For photomicrographic work, the adjustment of the intensity of illumination requires a system of auxiliary lenses and light filters. These must be held in definite relation to the microscope itself, as must also the camera. For metallurgical purposes, the camera must be capable of being used also for macrophotographic work. This involves the production of an elaborate and delicate piece of apparatus, but it is certainly not beyond the resources of British microscope manufacturers. They have the advantage of a Scientific Instrument Research Association which is rendering valuable service to the industry. There is also a chair of instrument design at the Imperial College of Science and Technology, where the scientific principles of design are taught. The technical knowledge and skill of the British optician and mechanic are of a high standard, as is evidenced by several other types of instrument at present on the market. Since attention has now been directed to mechanical details in British photomicrographic apparatus in which improvement might be effected, it may be confidently anticipated that Sir Robert Hadfield's offer will meet with a ready response. Its acceptance and the successful completion of the order would undoubtedly result in increased sales of British-made apparatus of this type.

ON Oct. 10, Prof. W. C. McIntosh, of St. Andrews, the Nestor of marine biology in Great Britain, entered upon his ninetieth year. Prof. E. E. Prince, Dominion Commissioner of Fisheries for Canada, who is visiting England, has sent us an appreciation of Prof. McIntosh's work, from which we are glad to print the following extracts. Born in St. Andrews in 1838, Prof. McIntosh passed through his arts course in the University of St. Andrews and his medical course at the University of Edinburgh. On graduating M.D. he was awarded the University gold medal, for a thesis on some peculiar features in the shore crab. Though burdened with heavy official duties when appointed to the Perth Mental Hospital in the late

'fifties, he decided to devote himself as a scientific investigator to the marine annelids. The great "Monograph of British Annelids," the last of the long succession of superbly illustrated parts of which was issued only in 1923, is a monumental work. It will ensure lasting fame for its venerable author, and rank him as one of the very great zoologists of our time. The Nemertean, so rich in the rock-pools of St. Andrews, first claimed his attention. At Perth, in sea-water tanks far from the sea, he skilfully carried on his studies on the living forms, and with marvellous artistic skill portrayed the gorgeously tinted creatures. In 1884 was published the famous Report to the Royal Commission on Trawling, embodying work done on many cruises and including the discovery that the sole and other fish produced floating eggs. Prof. McIntosh is the pioneer in Great Britain of sea-fishery investigations, and it is a matter for congratulation that he continues active in the pursuit of zoological science and is as zealous as in his earlier years.

At the opening of the thirty-sixth session of the School of Pharmacy of the Pharmaceutical Society on Oct. 5, the Hanbury Memorial Medal for "high excellence in the prosecution or promotion of original research in the chemistry and natural history of drugs" was presented to Dr. T. A. Henry, Director of the Wellcome Chemical Research Laboratories. Dr. Henry, in an address on receiving the medal, stressed the importance of maintaining a close relationship between pharmacology and organic chemistry. Although the position of Great Britain as a producer of new synthetic drugs has improved since 1914, yet it is only too notorious that many of the additions to the physician's armamentarium come from abroad, especially in the case of drugs used in the treatment of tropical diseases. This is not a creditable state of things for a great Empire: in part it is no doubt due to the fact that, as a nation, we are more interested in the preventive than in the curative side of medicine: on the other hand, the lack of facilities for pharmacological testing has also militated against research. For this reason, Dr. Henry welcomed the opening of a pharmacological laboratory by the Society. New compounds are always being synthesised, the pharmacological properties of which ought to be tested, especially when it is remembered that it is only one out of many examined, which will finally find its place in practical therapeutics. For scientific research, therefore, adequate facilities for pharmacological testing are essential, in order to direct the chemical work as it develops and to assist it as required. Moreover, quite apart from the production of new synthetic drugs, pharmacological assay of therapeutic substances of unknown chemical constitution, such as insulin, require the assistance of trained pharmacologists. In both these directions Dr. Henry considers that the new laboratory will prove itself of great value.

THE presentation of the Hanbury gold medal of the Pharmaceutical Society of Great Britain to Dr. T. A. Henry, affords an opportunity for recalling

No. 3024, VOL. 120]

the work of the man whose name is commemorated in the name of the medal. Daniel Hanbury was the son of Daniel Bell Hanbury, a president of the Pharmaceutical Society and one of the founders of the historic business which still bears his name. The son, born in 1825, early impressed his contemporaries by the beauty of his handwriting and his skill at water-colour painting, talents which he later developed in his characteristically painstaking and detailed descriptive work. His writings included a series of papers on Chinese materia medica; numerous contributions to the *Transactions of the Linnean Society*, and the "Pharmacographia" published in conjunction with Prof. Flückiger, of Strasbourg, which was completed in 1874. Shortly after his death in 1875, a fund was raised for the purpose of giving from time to time a gold medal to perpetuate his memory. The medal is awarded for high excellence in the prosecution or promotion of original research in the chemistry and natural history of drugs, the award being made by a committee composed of the presidents for the time being of the Chemical, Linnean, and Pharmaceutical Societies, the chairman of the British Pharmaceutical Conference, and one pharmaceutical chemist. Twenty-one awards have been made since 1881, when the first medal was presented to Hanbury's co-worker, Flückiger. Englishmen naturally head the list of recipients, but Germany, France, Switzerland, Russia, and the United States are also represented. The last award was made in 1922 to Prof. Emile Perrot, of the University of Paris, and in the list of earlier recipients occur the names of Dragendorff, De Vrij, Ladenburg, Tschirch, and F. B. Power. Dr. Henry's work has been mainly upon problems connected with the chemistry rather than the natural history of drugs, but his reputation in that field of research and the wide range of subjects covered in his published papers both in Great Britain and abroad, indicates the appropriateness of the award of the medal to him this year.

CONTROVERSY still rages over Glozel, and Dr. Morlet continues to champion the genuine character and the high antiquity of the alleged implements and inscriptions on the clay tablets found there in the *Mercure de France* and numerous separately issued pamphlets. In the meantime, according to a dispatch from Paris which appeared in the *Times* of Oct. 6, the site at Glozel has been declared a national historical monument, and M. Heriot, acting in his capacity of Minister of Education, has informed Dr. Morlet in a letter that it has been placed under the control of M. Peyrony, the eminent archaeologist and member of the Historical Commission. M. Peyrony will be assisted by M. Champion, head of the technical department of the National Museum. All future discoveries will therefore be officially scheduled. M. Peyrony's profound and intimate acquaintance with the palæolithic sites of France and their antiquities should provide an acid test of the genuineness of any future find as Glozel. At the same time, it must be admitted that the camp of the pro-Glozelists is by no means negligible, including as it does Dr. S. Reinach, Dr. Van Gennep, M. de Laborde, Senor Leite de Vasconcellos, and Prof.

Mendes-Correa. They are, however, by no means united in their views. While Dr. Morlet regards the site as a link between palæolithic and neolithic, others, accepting the antiquity of the specimens, assign them to the various periods from the Magdalenian to the neolithic, but are hard put to it to explain the simultaneous occurrence of remains of all these periods on one site. Some, again, assign the site to so late a period as the Gallo-Roman. Against these views must be set the weighty authority of the Abbé Breuil and others, to which we have referred from time to time in these columns. Their great experience in handling the relics of early man renders their verdict of forgery one which it is difficult not to accept.

A SCIENCE Exhibition held at Hastings in the White Rock Pavilion on Oct. 5-8 shows what it is possible to do in popularising science among the inhabitants of a residential town. The promoters were local scientific and professional men, with the Mayor as chairman and the master of the Grammar School as honorary secretary and treasurer; in fact, it was quite a co-operative effort. The aim was to attract the ordinary man as well as the serious student by exhibits showing the advances in modern scientific knowledge, but the merely amusing was excluded. This involved much thought in planning, but the actual getting together of models and apparatus did not present serious difficulty for, as the catalogue shows, they were obtained on loan from public institutions, firms, and private individuals. The exhibits were divided into sections: engineering, electrical; radio and signalling; chemical and physical; and applications of science to the arts and to music. Since science objects, unlike art exhibits, cannot be appreciated merely through the eye, but call for exposition, care was taken to have stewards at hand to give explanations, while short talks and demonstrations followed one another from 3 P.M. until 9 P.M. each day; there was also a lantern lecture each day by a well-known man. The exhibition, which was well advertised by a specially designed poster and folder, was a great success, and may well serve to induce other local authorities to arrange exhibitions of a like character.

THE courses of lectures at the Royal Institution during November and December will commence on Tuesday, Nov. 1, at 5.15 P.M., with the annual course of three Tyndall Lectures, which will be delivered by Sir John Herbert Parsons on the subject of light and sight. These will be followed on Nov. 22 by four lectures by Sir William Bragg on a year's work in X-ray crystal analysis. On Thursday afternoons, beginning on Nov. 3, there will be two lectures by Mr. H. Clifford Smith on the furniture and equipment of the medieval house; three by Dr. R. E. Mortimer Wheeler on London before the Norman conquest; and two by Mr. James Kewley on petroleum natural gases and their derivatives. The Saturday lectures will be given at three o'clock, starting on Nov. 5, when Mr. Emile Cammaerts will give two lectures on the main features of modern English literature, to be

followed by three musically illustrated lectures by Mr. Gustav Holst on Samuel Wesley and Robert Pearsall, and two lectures by Mr. F. J. M. Stratton on recent developments in astrophysics. The 102nd course of Christmas Lectures for Juveniles will be delivered by Prof. E. N. da C. Andrade on "Engines," commencing on Thursday, Dec. 29, at three o'clock. The subjects of the lectures will be (1) The rules which all engines must obey; (2) learning about steam; (3) engines which work to and fro; (4) engines which work round and round; (5) putting the furnace in the cylinder; (6) heat engines which produce cold.

REFERRING to the letter by Messrs. Rosenheim and Webster in NATURE of Sept. 24, p. 440, Mr. C. A. Hill, of the British Drug Houses, Ltd., writes informing us that, immediately after the publication of Rosenheim and Webster's work on ergosterol in February last, his firm placed irradiated ergosterol at the disposal of medical men. Since then, the British Drug Houses, Ltd., has achieved the large-scale production of ergosterol and of the irradiated product, so that the latter is now available commercially. It is already on the market in a popular form for the public use; it is available for manufacturers of margarine to bring their product up to the standard of summer butter, which they can do at a fractional increase in cost; and chocolate manufacturers are already experimenting with it.

ON Sept. 10 the second Pan-Union Archaeological Conference was opened at Sevastopol. It lasted until Sept. 15, and was followed by an excursion, in the course of which the delegates were conducted to the principal archaeological sites in the Crimca by Prof. C. E. Grinevich. The Congress coincided with the hundredth anniversary of archaeological excavation in the Chersonese, for, as stated in a historical survey by Prof. Grinevich, it was in 1827 that Admiral A. S. Greig, who was of Scottish descent, ordered Lieutenant Crusee to begin excavations in the Tauric Chersonese. Work was carried on intermittently until 1885, when systematic excavation of this Dorian colony was begun and pursued continuously until 1915. It was renewed after the War in 1925, and at the same time the rich collections were reclassified and housed in the former monastery buildings. Representatives of the Academy of Sciences and the principal archaeological museums and institutions of the Soviet Republics were present at the Congress, and a number of communications, some twenty in all, were presented in two sections, one covering Chersonese archaeology, the other general archaeology. Among these, G. A. Bonch-Osmolovsky described excavations in Kukrck and the Siuren Caves of sites belonging to the Stone and Bronze Ages, from which had been obtained bones of mammoth, rhinoceros, cave bear, and the skeleton of a dog. Considerable discussion was aroused by Prof. Grinevich's communication on the oldest defence wall of Chersonese, delivered from the wall itself, which seriously modified pre-existing ideas of the topography of the town.

THE Imperial Department of Agriculture in India has commenced the issue of a new quarterly agri-

cultural journal, of which Part 2 (July 1927) has been received. The *Journal of the Central Bureau for Animal Husbandry and Dairying in India*, as it is named, will deal with cattle breeding, dairying, cultivation and storage of fodder crops, animal nutrition, and other aspects of animal husbandry, and the present number contains five articles on various aspects of Indian cattle and dairying, one on poultry feeding, and part 2 of a veterinary entomology for India. The journal is illustrated and the subscription price is Rs. 2-8 per annum.

THE annual Report for 1926 of the International Health Board, Rockefeller Foundation, has been issued. Public health work has been assisted in eighty-eight States and countries. Governments have assisted in surveys relating to yellow fever, hookworm, malaria, and other diseases; in campaigns for the control of yellow fever and hookworm disease; in field studies in malaria and hookworm disease and in demonstrations of malaria control; in county and district health work; and in the development of public health services, such as epidemiology and vital statistics, sanitary engineering, public-health laboratories, and nursing. Contributions have been made to schools of hygiene for education, including the London School of Hygiene and Tropical Medicine. Fellowships in public health were provided for 253 men and women of thirty-one countries. The Board also co-operated with the Health Section of the League of Nations. The expenditure for the year amounted to 3,260,524 dollars. The report gives a summary of the Board's activities and contains many maps, charts, and diagrams, and illustrations.

AN air survey of the western part of Northern Rhodesia is to be undertaken by the Government of that country. The *Times* reports that the area to be surveyed covers the valley of the Upper Zambezi for about four hundred miles above Livingstone and includes the two tributary rivers, the Lungwebungu and the Kabompo. This region is almost entirely unmapped and undeveloped, but is believed to have considerable mineral wealth. Major Cochran-Patrick will be in charge of the survey and the aeroplane will be supplied by the Aircraft Operating Company. The machine to be used is at present working on survey near N'Changa, and will be flown to Livingstone to be fitted with floats. The aeroplane will fly at a height of 10,000 feet along the course of the river, and a series of vertical overlapping photographs will be taken. Larger scale photographs will be taken of rapids. Ground control is being provided by the company's surveyors, who will fix points by observation, using radio time signals.

ONE of the whalers at work in the waters around Graham Land is reported in the *Geographical Journal* for September to have made a voyage through Bransfield Strait and to have reached Peter I. Island, which has not been visited since its discovery by Bellingshausen in 1821. The whaler, *Odd I.*, circumnavigated the island seeking in vain for a safe harbour; heavy weather prevented a landing. The island is

8 miles long and 5 miles broad. Most of it is covered by snow or ice, and only on the western side is there much bare rock. It rises to about four thousand feet, and the absence of an ice foot on the coast suggests, but does not prove, that it is clear of solid pack throughout the year. The same whaler reports in lat. 60° 30' S., long. 52° W., that is, west of the South Orkneys, an iceberg which was estimated to be about a hundred miles in length and 100 to 130 feet above the water line. Other enormous tabular bergs were sighted in the vicinity. It seems not improbable that these bergs represent the broken Stancomb Wills ice tongue of Coats Land or fragments of the Wilhelm Barrier farther south. The currents of the Weddell Sea would carry ice from that direction to the north-western corner of the sea.

THE experiments being made with short radio waves all over the world are giving most astonishing results. The October number of *Experimental Wireless*, the Radio Research Board refers to results obtained by E. Quack published in two German technical papers. Photographic records have been obtained at Gellow, near Berlin, of signals sent from Rio de Janeiro. Each signal is accompanied by an 'echo' signal, caused most probably by waves which have travelled round the earth in the opposite direction to the direct signal. This is most curious, because the beam transmitter is not only directional but also works with a reflector. Further experiments carried out recently show that several signals are received at definite equal intervals after the first signal. As the interval of time between the first direct signal and these additional signals is always a multiple of 0.137 of a second, it looks as if the waves, after causing the first signal, travelled completely round the world several times, recording signals as they passed the receiver. For waves lying between 14 and 34 metres, double signals have been observed. It has also been noticed that double signals occur most commonly when the great circle on which the receiver and transmitter lie is in twilight. On the other hand, the 'echo' signals caused by waves travelling round the world in the opposite direction to the direct signal are often noticed in the day-time. The attenuation of the signals after encircling the earth several times is not great, and it is concluded that many more encirclings occur before the waves subside. In practical work, methods have to be devised to eliminate the disturbances caused by these multiple signals, but their systematic study should be a great help in elucidating the phenomena of short wave propagation.

DR. W. G. SAVAGE, Medical Officer of Health, Somerset, will deliver the second annual Malcolm Morris Memorial Lecture under the auspices of the Chadwick Trust on Oct. 17, taking as his subject "Food Poisoning." The lecture will be given in the Hastings Hall of the British Medical Association.

THE Council of The Institution of Civil Engineers has made the following awards: The Howard Quinquennial Prize to Prof. W. E. Dalby, in recognition of his researches on the strength and structure of

iron and steel; The Indian Premium to Mr. A. W. Stonbridge. For selected engineering papers published during session 1926-27: A Telford Gold Medal to Sir E. Owen Williams (London), Telford Premiums to Dr. E. H. Salmon (London), Mr. R. S. Cole (India), Dr. H. Mawson (Liverpool), and Mr. A. H. Douglas (London); and a Crampton Prize to Mr. D. M'Lellan (Glasgow).

APPLICATIONS are invited for the following appointments, on or before the dates mentioned: Three examiners (men or women) in the Industrial and Commercial Property Registration Office of the Ministry of Industry and Commerce, Dublin, for the examination of applications for patents for mechanical engineering, electrical engineering, and chemical inventions—The Secretary, Civil Service Commission, 33 St. Stephen's Green, Dublin (Oct. 19). An assistant lecturer in agriculture, book-keeping, and farm costs at the South-Eastern Agricultural College, Wye—The Secretary, South-Eastern Agricultural College, Wye, Kent (Oct. 21). A fishing mate and a chief engineer in the fishery research vessel of the Ministry of Agriculture and Fisheries at Lowestoft—The Secretary, Ministry of Agriculture and Fisheries, 10 Whitehall Place, S.W.1 (Oct. 22). An assistant naturalist in the Laboratory of the Marine Biological Association of the

United Kingdom—The Director, Marine Biological Laboratory, Plymouth (Oct. 23). A scientific officer under the Air Ministry, primarily for duty at the Royal Aircraft Establishment for design and research work in connexion with high speed supercharged internal combustion engines and with special reference to research on blowers—The Chief Superintendent, Royal Aircraft Establishment, South Farnborough, Hants, quoting A.220 (Oct. 24). A research assistant for blast furnace reactions research at the Imperial College of Science and Technology—The National Federation of Iron and Steel Manufacturers, Caxton House (East), Tothill Street, S.W.1 (Oct. 25). A demonstrator in inorganic chemistry in the University of Leeds—The Registrar, The University, Leeds (Oct. 26). An Inspector under the Alkali, etc., Works Regulation Act, 1906—The Director of Establishments, Ministry of Health, Whitehall, S.W.1 (Oct. 29). An assistant lecturer in economics and political science in the University College of South Wales and Monmouthshire—The Registrar, University College, Cardiff (Oct. 29). A lecturer in hygiene in the department of education of the University of Bristol—The Registrar, The University, Bristol (Nov. 12). An assistant research physicist at the Gramophone Company, Ltd.—The Gramophone Company, Ltd., Hayes, Middlesex (quoting Z14).

### Our Astronomical Column.

DETECTION OF SCHAUHASSE'S COMET.—This periodic comet, which was discovered by M. Schuhasse at Nice in 1911, and seen again on its return in 1919, has now been detected by Prof. C. van Biesbroeck at the Yerkes Observatory on Oct. 4<sup>d</sup> 10<sup>h</sup> 22<sup>m</sup> 8<sup>s</sup> U.T., in R.A. 11<sup>h</sup> 06<sup>m</sup> 2<sup>s</sup>, N. Decl. 12° 57' 59", magnitude 12. The position is in excellent accord with that derived from the elements given by Dr. G. Merton in *Mon. Not. Roy. Ast. Soc.* for May last, the time of perihelion passage being Oct. 1.43 as compared with the predicted value Oct. 1.54. The comet is very badly placed, being low in the east at dawn, but it will be even worse placed at its next return in 1935, so it is fortunate that it has been found, as if missed for several returns it would have been difficult to find it again. This is the second comet this year for which Dr. Merton has predicted the perihelion passage within a tenth of a day; the other was comet Grigg-Skjellerup. In the present case, the forecast by the Nice astronomers was Nov. 19, seven weeks too late, so that the comet would not have been found if this had not been corrected.

THE TOTAL SOLAR ECLIPSE OF JUNE 29.—*Forschungen und Fortschritte* for Sept. 20 contains an article by H. Kienle, of the Observatory of the University of Göttingen, describing the expedition from that observatory to Gallivare, Swedish Lapland, to observe the eclipse. The height of the sun was 27° and the duration of totality 42 seconds, these being practically the greatest values obtainable at any land station; in consequence it was selected by ten different expeditions from Germany, Holland, Sweden, Esthonia, Russia.

The programme of the Göttingen party included flash spectra with a slit spectroscope, measures of radiation with a photo-electric cell, and photometry of the corona. The radiation measures began an

hour before first contact, and continued until an hour after last contact. The sky was clear except for two bands of clouds that were near the sun during totality. These interfered with the observation of the second flash and with the later corona photographs, but the rest of the programme was carried out successfully. Totality is described as "Eine besonders helle und schöne Erscheinung, die nur leider viel zu kurz andauerte"; but details of the results are reserved for a future paper.

OBSERVATIONS OF THE VARIABLE STAR Z HERCULIS.—*Bull. Internat. de l'Acad. Polonaise des Sciences* contains a series of observations of this star made by M. Jan Gadomski of the Observatory of Cracow at the mountain station on Mt. Lysina (3000 feet high). The period of light-variation falls short of 4 days by only ten minutes; in consequence it is difficult to follow all the phases of the star at a single station. However, by making 141 observations on 38 nights in 1923, the author succeeded in determining the whole of the variable part of the light curve. The eclipses last altogether 9.6 hours, just a tenth of the period: the curve seems to be quite symmetrical about minimum, implying that the orbit is appreciably circular. The light is stationary for 2.2 hours at minimum, which shows that the eclipse is total or annular for that period; the rise and fall are rapid for 2.4 hours before and after minimum, and slow for the rest of the eclipse. The magnitude is 7.19 at maximum, 8.01 at minimum.

The study of variable stars is one of the special lines of work undertaken by Poland; also the computation and publication of ephemerides of many of them. Observations of eclipsing variables, when combined with spectroscopic observations of radial velocities, give valuable information on the diameters and surface brightness of the stars.