

Current Topics and Events.

GEOLOGISTS and zoologists visiting the British Museum (Natural History) will soon miss the presence of Dr. Arthur Smith Woodward, who is about to retire. It was in 1901 that he succeeded Dr. Henry Woodward as keeper of the Geological Department, which he had joined as an assistant in 1882, and in which his whole career has been passed. He leaves the Department in a state of high efficiency, the collections in many branches reflecting the elegance and accuracy of his own personal work. His chief official publication is the four-volume Catalogue of Fossil Fishes, a task which occupied many years, and evinces not only careful systematic work, but also theoretical deductions of high value, but merely in relation to the fishes, but to the vertebrata generally. Dr. Woodward followed up his catalogue with the "Outlines of Vertebrate Palæontology," which soon became, and has since remained, the leading text-book on the subject. He also collaborated with Mr. Sheborn in the "Catalogue of British Fossil Vertebrata." In connexion with his museum work, Dr. Woodward visited many foreign countries, paying especial attention to the collection of new material, as at Pikermi, in Aragon, and in South America, as well as studying the leading museums of those countries. Few authors have contributed so many papers, and on so wide a range of subjects, to the Geological and Zoological Societies, the *Geological Magazine*, and the Geologists' Association. He has been president of the Geological and Linnean Societies, the Geologists' Association, and Section C (Geology) of the British Association, and has found time for more than twenty years to act as secretary and edit the fine series of volumes issued by the Palæontographical Society, to which he himself contributed the Monograph on the Fishes of the Chalk. His name is associated with many important discoveries among the fossil fishes and reptiles of Great Britain, but two of his most noteworthy researches have been in the Weald, in association with Mr. Dawson. The first of these was the first find of mammalian remains in the Wealden beds, and the second the famous Piltdown skull, which Dr. Woodward placed in a new genus, *Eoanthropus*, making a prediction with regard to its anatomy which was afterwards verified by the remarkable discovery of the ape-like canine tooth, the existence of which he had anticipated.

AN important and recent bequest to the Natural History Museum is the collection of spiders and other Arachnida formed by the late Mr. H. R. Hogg. Mr. Hogg started the study of this group while living at Macedon in Victoria, and thus became acquainted with the spider fauna of South Australia. Coming to England some thirty years ago to carry on his business in London, he spent most of his spare hours at the Museum, identifying and describing the collection he had brought home. He soon became known as an authority upon the spiders of that quarter of the world, and afterwards he received and worked out numerous consignments that were sent to him not only from Australia, but also from New Zealand, the subantarctic islands, and Austro- and Indo-Malaysia.

Although the restrictions of his business prevented him devoting so much time as he wished to the prosecution of his hobby, his painstaking industry resulted in the publication of many papers in the Proceedings of the Zoological Society and in various Asiatic and Australian scientific periodicals. For many years before his death last December, he had been almost the only man in England working at exotic Arachnida, and his loss will be greatly felt by his zoological colleagues and by the numerous personal friends to whom his kindly nature had endeared him. He bequeathed his valuable collection of scientific books to Christ's College, Cambridge, where he was a graduate.

THE Physical Society of London is arranging to celebrate its jubilee on March 20-22, March 21 being the anniversary of the first meeting held, when a paper was read by Prof. J. A. Fleming. All the proceedings will take place at the Institution of Electrical Engineers, the premises having been generously placed at the disposal of the Physical Society for the occasion. A number of distinguished men, including many foreign men of science, have stated their intention of taking part in the celebrations. Amongst these may be mentioned (besides the principal British physicists) MM. le Duc de Broglie, Langevin, Fabry, and Dunoyer (France), M. de Hemptinne (Belgium), Profs. Wien and Zenneck (Germany), Prof. Guye (Switzerland), and Prof. Zeeman (Holland). The afternoon of March 20 will be devoted to the reception of delegates and presentation of addresses (3 P.M.), and to the delivery of the Guthrie lecture (3.45 P.M.) by M. le Duc de Broglie, who will take as his subject "The Photo-electric Effect in the case of High-frequency Radiation, and some Associated Phenomena." For the evening (6 P.M.) a lecture by Sir Richard Paget has been arranged by the Institution of Electrical Engineers on "The Nature of Speech." On March 21 there will be reminiscences by fellows of long standing, including, at the afternoon session, Sir W. Barrett, Prof. J. A. Fleming, Prof. C. V. Boys, and Sir R. Glazebrook, and at the evening session Sir A. Schuster, Sir Oliver Lodge, and Prof. H. E. Armstrong. On Saturday, March 22, a banquet will be held at the Connaught Rooms at 7 P.M. His Royal Highness the Duke of York has graciously consented to be present, and to respond to the toast of the Royal Family. The Prime Minister and Viscount Haldane will also be guests of the Society, and are expected to speak. Each day there will be an exhibition of apparatus, and demonstrations dealing particularly with important apparatus which was described before the Society at its first introduction. A feature of this part of the entertainment will be a demonstration by Prof. C. V. Boys of the making of quartz fibres, which he first showed to the Society thirty-seven years ago. The exhibition will be open from 2.30 to 8.30 P.M. on March 20 and 21, and from 2 to 4 P.M. on March 22.

At the meeting of the Informal Meetings Section of the Institution of Electrical Engineers on February

18, Mr. E. M. Malek gave some very interesting data as to recent hydro-electrical development in France. In 1902 only 200,000 h.p. was being developed from water-power, and in 1906 this had grown to 350,000 h.p. In 1906 powers were given to the Ministry of Public Works to collect data and prepare schemes for the development of natural water-powers. The progress of development was steady until 1914, when it was accelerated by the demand for energy for the manufacture of munitions, and by the shortage of fuel. In 1919, 1,500,000 h.p. was in operation, and it is estimated that by 1925 the total development will amount to 3,000,000 h.p., and by 1935 to 4,000,000 h.p., or about 45 per cent. of the total available water-power of the country. This will represent a saving of some 24,000,000 tons of coal per annum. There are eighty-two power-houses now in operation in France having a capacity of more than 10,000 h.p. Of these, ten are above 50,000 h.p. and two more than 100,000 h.p., while eight further schemes, each to give above 100,000 h.p., are now in hand. The regions of hydraulic power are the east, centre, and south. Between these areas a network of transmission lines is being constructed which will be extended to Paris, to the industrial area of the N.E., and the towns on the north and west coast. These developments are likely to have a very pronounced effect on the growth of industry in France, and especially on that of the metallurgical industry.

SIR OLIVER LODGE communicated to the Society for Psychical Research, at its meeting on March 6, an important paper by Prof. Richet entitled "Pour et contre la survie." Without questioning the alleged facts accepted by the investigators of what are called spiritistic phenomena, Prof. Richet doubts the spiritistic interpretation, because as a physiologist he cannot see how personality can survive the death of the brain. Sir Oliver Lodge dealt with this objection from the purely scientific point of view. The basis of Sir Oliver's spiritistic theory, the ground of his belief in survival, is not religious in the theological meaning, or speculative in the philosophical meaning, but positivistic in the scientific meaning. It may be described as a physical theory of mental activity, or at least as a physical hypothesis of the nature of the relation of mind and brain. He holds that the physical universe, even admitting the new interpretation of physical reality offered by the principle of relativity, gives abundant evidence of the existence of ether, a physical medium which differs in definite and clearly marked characteristics from matter. It is essentially through this medium that all human activity is in fact conducted even when living people in communicating with one another make use of material organisms. It is this fact which holds out to us the scientific possibility of the continuity of psychical existence and the survival of personality. Personality, Sir Oliver holds, is even now and here an ethereal and not a material existence, but in our present life its activity depends on its relation to matter. We are unable to know directly, and we can only vaguely conceive, the conditions of ethereal existence without relation to matter, but everything

points to the view that it is not nothing. The theory seems a perfectly reasonable one, and simply depends for its appeal on the amount of direct evidence of a scientific nature which we can collect, and also, of course, on the rationality of the interpretation. The hypothesis has nothing in common with the philosophic argument which Plato puts into the mouth of Socrates in the "Phædo," or with the metaphysical argument of Leibniz that the soul being a simple substance is indestructible.

THE estimates for the Civil Service and Revenue Departments for the year ending March 31, 1925, which have recently been issued (H.M.S.O., 3d.), show a total net estimate of 289,874,727*l.*, a reduction of 37,338,145*l.* on that for the year 1923-24. Among the items with which we are more intimately concerned, and comparing the estimates with those for 1923-24, we notice that the estimate for the Ministry of Agriculture and Fisheries has been reduced by 2,704,323*l.*, and now stands at 2,018,138*l.*, a reduction of considerably more than one-half, while that for the Forestry Commission has been increased by 15,000*l.* to 178,000*l.* In Scotland the Board of Agriculture and Fishery Board receive increases of 115,440*l.* and 14,111*l.* respectively, the two estimates being 446,692*l.* and 60,790*l.* Class IV. estimates are of particular interest. The Board of Education estimate is 41,900,000*l.*, a reduction of 34,047*l.* only on that for 1923-24; that for the British Museum is 301,793*l.*, an increase of 9877*l.* Scientific investigation has been allotted 201,450*l.*, an increase of 12,729*l.*, while the estimate for the Department of Scientific and Industrial Research has been increased by nearly one-fifth (50,938*l.*), the total being 328,281*l.* The item for universities and colleges, Great Britain, and intermediate education, Wales, has also been augmented slightly (73,770*l.*), the 1924-25 figure being 1,272,970*l.* The estimate for public education in Scotland is 5,773,495*l.*, a decrease of 149,500*l.* on the 1923-24 estimate. The Development Fund is allotted 200,000*l.*, a decrease of 50,000*l.* on the present year's figures.

THE need for linking the activities of the various organisations of technicians in industry, so as to enable them to co-operate effectively for the purpose of securing that the interests of their members are adequately protected, is now becoming generally recognised. It is felt that, in the past, owing to the fact that technical engineers, chemists, and scientific workers generally have been insufficiently organised, their collective voice has been practically ignored when, *inter alia*, questions of general policy affecting industry have been made the subject of legislative enactment. With the view of remedying this state of affairs, a joint conference of delegates representing several societies of technical engineers and chemists was held recently to consider the matter, the outcome being that a National Council of Technical Staff Associations has been formed. At present only the Electrical Power Engineers' Association, the Society of Technical Engineers, and the Engineer Surveyors' Association are represented on the National Council, but the regulations which have been drawn up are

wide enough to admit all similar organisations to its membership. The National Council aims principally at being an advisory body: its object is to co-ordinate the work and policy of the constituent societies, whilst maintaining adequate safeguards to prevent encroachments on their autonomy. The National Council proposes as a first step to undertake propaganda work with the view of impressing upon technicians generally the desirability of their being organised on a professional basis, and meetings, to be held in large industrial centres for this purpose, are now being arranged; the first of these will be held at the Milton Hall, Manchester, on March 28. Joint secretaries to the National Council have been appointed, their offices being established at 102 Belgrave Road, London, and 23 King Street West, Manchester.

At the invitation of the Council of the British Association, a conference of representatives of scientific societies will be held at the rooms of the Society of Antiquaries, Burlington House, on March 21, at 3 P.M., to discuss the need for further protection of sites of historic or scientific interest or of natural beauty against disfigurement or obstruction. Recent experience in connexion with Holmbury Hill, Lulworth Cove, and Avebury indicates that the Ancient Monuments Act is not adequate to secure beyond question monuments which may be irreplaceable, while it does not cover sites in which the scientific or æsthetic interest lies in the locality itself irrespective of any structures or building. Although local learned societies have done much to form public opinion in specific instances when a site is threatened, damage may already have been done before an expression of public disapproval has gathered sufficient force to resist powerful interests such as were concerned in the cases mentioned. It is therefore urgently necessary that the existing Act should be strengthened by a widening of its scope and by a stricter wording, so that it should apply to all such sites, and should provide that when once scheduled they could not be subject to any kind of disturbance except by removal from the schedule as the result of a deliberate decision of Parliament in the interests of the nation.

THROUGH the persevering labours of Mr. R. T. Gunther, of Magdalen College, the extremely valuable collection of early scientific instruments acquired by Mr. Lewis Evans has now found a permanent home in the Old Ashmolean Museum at Oxford. No more appropriate resting-place for this unique series of historic instruments could be found than the building erected by the University in the reign of Charles II. to receive the famous collections of Elias Ashmole, and to serve as a centre for scientific studies in Oxford. The collection is the fruit of thirty years' assiduous devotion on the part of Mr. Evans, and it is quite certain that, if it were dispersed, no such series could ever be got together again. A remarkable feature of the collection is its wealth in early astronomical and mathematical instruments, dated examples of which go back so far as the thirteenth century. For rather more than a year past the

collection has been housed as a loan in the Picture Gallery of the Bodleian Library; now, however, it passes as a gift to the University, and the expenses of its removal to its new quarters will be met by the generous gift of 1000*l.* from the Goldsmiths' Company and of 250*l.* from Sir John R. Findlay, of Balliol College. Mr. Gunther is to be heartily congratulated on the successful issue of his untiring efforts, in the face of some opposition, to ensure the addition of this most interesting series to the permanent treasures of the University.

THE new Aquarium which has been built in the Zoological Society's Gardens at Regent's Park, London, will be opened to fellows of the Society on Saturday, April 5, and to the public on Monday, April 7. The Aquarium is situated below the Mappin Terraces, and has been completed at a cost of approximately 54,000*l.*, including equipment and stocking. It is a crescentic gallery nearly 450 feet long, with tanks on each side, those on the outer side of the crescent being illuminated by daylight or electric light, those on the inner side by electric light bulbs which select the rays so as to produce a daylight effect. There is a fresh-water hall with twenty-five tanks, a sea-water hall with a similar number of tanks, two of which are more than 30 feet long, and a tropical hall with forty tanks, most of them small in size. There are well-lighted service passages behind the tanks from which the cleaning and feeding are carried out. The salt water has been obtained from the Bay of Biscay. It is stored in large reservoirs under the floor of the great hall, and is circulated constantly through the tanks. A well-equipped workroom is attached to the Aquarium for zoological and economic research. The living exhibits already include turtles, cod, soles, plaice, flounders, small sharks and dog-fish, skates, rays, crabs, lobsters, octopuses, and many different kinds of molluscs, worms and anemones, most of the British fresh-water fish, and a large number of rare and brilliantly coloured tropical fish.

MR. EDWARD F. L. WOOD, M.P., and Major A. G. Church, M.P., secretary of the National Union of Scientific Workers, have been appointed members of the Medical Research Council.

It is announced in *Science* that Dr. Frederic A. Lucas, after serving for twelve years as director of the American Museum of Natural History, has become honorary director, and will act in an advisory capacity. Mr. George H. Sherwood is promoted to the post of acting director for a term of two years.

APPLICATIONS are invited by the Department of Scientific and Industrial Research for an assistantship for experimental work in connexion with timber-drying kilns of the Forest Products Research Board. The applications should be made in writing by March 20, at latest, to the secretary, Department of Scientific and Industrial Research, 16 Old Queen Street, S.W.1.

MR. R. ANNING-BELL, Royal Academician; Mr. J. W. Simpson, past president, Royal Institute of

British Architects; and Mr. F. E. Smith, F.R.S., director of Scientific Research, Admiralty, have been elected members of the Athenæum under the provisions of the rule of the club which empowers the annual election by the Committee of a certain number of persons "of distinguished eminence in science, literature, the arts, or for public service."

THE Lord President of the Council has appointed Mr. F. S. Sinnatt to be assistant director of fuel research as from April 1 next. Mr. Sinnatt is lecturer in fuels in the University of Manchester, Faculty of Technology. He is also director of research to the Lancashire and Cheshire Coal Research Association, and has been in charge of the physical and chemical survey of coal seams which the Association is carrying out for the Fuel Research Board in the Lancashire and Cheshire coalfields.

PROF. V. H. BLACKMAN, of the Imperial College of Science and Technology, will deliver a lecture before the Royal Meteorological Society on March 19 on "Atmospheric Electric Currents, Normal and Abnormal, and their Relation to the Growth of Plants." The subject of the lecture is one that has created much interest of recent years both in Great Britain and abroad, and Prof. Blackman's discourse will bring forward the latest developments in this line of research. Those interested in the subject are invited to attend the meeting, which will be held in the Society's rooms at 49 Cromwell Road, South Kensington, at 7.30 P.M.

REAR-ADMIRAL ALBERT PARKER NIBLACK, U.S. Navy (Retired), has been elected a director of the International Hydrographic Bureau in succession to Capt. S. H. Müller, Royal Norwegian Navy (Retired), who resigned in October 1923. Admiral Niblack has had a long and varied career afloat, and for four years was under the U.S. Coast and Geodetic Survey in Alaska, during which he carried out astronomical determination of latitude and longitude, magnetic and tidal observations, and other scientific work. He has also been responsible for much hydrographic surveying in the Hawaiian Islands, off Costa Rica, and other regions.

THE annual general meeting of the Chemical Society will be held at Burlington House on Thursday, March 27, at 4 P.M., when the president, Prof. W. P. Wynne, will deliver his presidential address, and the presentation of the Longstaff medal for 1924 will be made to Prof. F. G. Donnan. An informal dinner of fellows and their guests will be held at the Hotel Cecil, Strand, the same evening, at 7 for 7.30 P.M. Tickets, price 7s. each, are obtainable from the Assistant Secretary, Mr. S. E. Carr, the Chemical Society, Burlington House, Piccadilly, W.1.

THE following Committee has been appointed by the Ministry of Agriculture to investigate foot-and-mouth disease: Sir Charles Sherrington (chairman), Dr. J. A. Arkwright, Prof. W. Bulloch, Prof. J. B. Buxton, Capt. S. R. Douglas, Mr. S. H. Caiger, Sir John McFadyean, Prof. C. J. Martin, Prof. Robert Muir, Sir Stewart Stockman, Mr. H. G. Richardson and Mr. W. G. Wragg (secretaries). By its terms of

reference, the Committee is to initiate, direct, and conduct investigations into foot-and-mouth disease, either in Great Britain or elsewhere, with the view of discovering means whereby the invasion of the disease may be rendered less harmful to agriculture.

THE Toronto meeting of the British Association, to be opened on Wednesday, August 6, with the presidential address by Sir David Bruce, will be distinguished by a number of discussions in which members of two sections will join. Among the subjects of these joint discussions are:—soil population, physiological and psychological factors of muscular efficiency in industry, optical stress determination, vitamins, crystal structure, mental differences of race, chromosomes and species, and colloid chemistry. On the evening of Friday, August 8, Sir Thomas Holland will give a discourse on the formation and destruction of mineral deposits, and an afternoon lecture will be delivered by Sir Ernest Rutherford on Tuesday, August 12, on the subject of atomic disintegration.

H.M. THE KING has been pleased to approve the award of the Royal medals of the Royal Geographical Society as follows: Founder's medal to Ahmed Hassanein Bey for his journey in 1923 to Kufra and Darfur; Patron's medal to Commander Frank Wild for his long services to Antarctic exploration. The Council has made the following awards: Victoria medal to Mr. J. F. Hayford, formerly of the United States Coast and Geodetic Survey, for his establishment of the theory of isostasy; Murchison grant to Mr. J. H. Reynolds for his work on the 1/million map and for the Permanent Committee on Geographical Names; Back grant to Mr. M. C. Lester for his geographical work in Graham Land; Cuthbert Peek grant to Mr. F. Kingdon Ward to assist him in his present journey in Tibet; and Gill memorial to Major A. L. Holt for his surveys in Arabia.

At the annual general meeting of the Institute of Chemistry of Great Britain and Ireland, held on March 3, Mr. A. Chaston Chapman, the retiring president, delivered an address, and the following officers were elected: *President*, Prof. G. G. Henderson; *Vice-Presidents*, Prof. E. C. C. Baly, Mr. A. Chaston Chapman, Mr. A. More, Dr. T. Slater Price, Prof. A. Smithells, and Dr. E. W. Voelcker; *Hon. Treasurer*, Mr. P. H. Kirkaldy; *General Members of Council*, Mr. L. Archbutt, Dr. E. F. Armstrong, Mr. E. R. Bolton, Prof. A. A. Boon, Dr. F. D. Chattaway, Mr. R. L. Collett, Dr. H. G. Colman, Mr. J. Evans, Dr. R. H. Greaves, Prof. A. J. Hale, Mr. G. N. Huntly, Prof. W. H. Lewis, Mr. W. McD. Mackey, Dr. H. McCombie, Dr. R. S. Morrell, Mr. G. H. Perry, Prof. J. C. Philip, Dr. R. H. Pickard, Mr. B. D. Porritt, Prof. F. L. Pyman, Mr. W. D. Rogers, Mr. H. Silvester, Dr. A. Slator, Prof. J. F. Thorpe, Dr. J. F. Tocher, Dr. D. F. Twiss, Prof. F. J. Wilson; *District Members of Council*, Dr. L. Dobbin (Edinburgh and East of Scotland), Mr. H. J. Evans (Liverpool and North-west Coast), Dr. W. R. Fearon (Irish Free State), Dr. W. H. Gibson (Northern Ireland), Mr. C. A. F. Hastilow (Birmingham and Midlands), Mr. E. M. Hawkins (London and South-eastern Counties), Mr. R. D. Littlefield (Bristol and South-western

Counties), Mr. S. E. Melling (Manchester and District), Dr. L. G. Paul (North-east Coast and Yorkshire), Mr. C. A. Seyler (Wales and the County of Monmouthshire), and Mr. J. H. Young (Glasgow and West of Scotland); *Censors*, Mr. A. Chaston Chapman, Sir Herbert Jackson, Prof. G. T. Morgan, and Sir Robert Robertson.

DR. PAUL RIVET publishes a bibliography of current Americanist literature in vol. xv. of the *Journal de la Société des Américanistes de Paris*. It extends to ninety pages, of which forty are occupied by entries relating to physical anthropology, archæology, ethnology, and linguistics. Dr. Rivet asks that authors should send him copies of their contributions to the subject. It is no doubt the failure to comply with this request that is responsible for the omission of work published in Britain from the bibliography. This is unfortunate, as British contributions to Americanist studies, though few in number, are as a whole of some importance.

THE London County Council has recently issued a second edition of Mr. Milligan's *Handbook to the cases illustrating adaptations for locomotion in animals*, a series that forms a characteristic and attractive feature in the Horniman Museum at Forest Hill. Apart from the cases, this booklet of 40 pages serves as a useful summary, clear and correct so far

as it goes, though it cannot hope to be complete. The omission of any reference to crabs under "Climbing" is doubtless due to the lack of a suitable specimen. Under "Creeping" allusion might be made to the use which some sea-urchins make of their jaws. In making the transition from "Parachuting" to "Flying," would it not be of interest to mention *Archæopteryx*?

AMONG a number of items of local or of general interest, the *Transactions and Proceedings of the Torquay Natural History Society for 1922-23* (vol. iv. part 1) contains a most instructive and illuminating article from the pen of Dr. R. C. L. Perkins on "The Control of Injurious Insects in the Hawaiian Islands by their Natural Enemies." The economic value of the study of entomology has in recent years received something of the recognition that is its due. But it cannot be denied that there are yet wider fields for its application. Articles such as this of Dr. Perkins perform a useful function in setting before the layman the facts and the outlines of the methods adopted in combating insect pests. They thus help to enlist the aid of public opinion in support of work on which an important part of the food supply of the world depends.

ERRATUM.—Letter on "Continental Drift and the Stressing of Africa," E. J. Wayland, December 29, 1923, p. 939, col. 1, line 27, for *features* read *fractures*.

Our Astronomical Column.

COMET OR MINOR PLANET?—An object of uncertain nature (either comet or minor planet) of magnitude 11 was discovered by Stroobant at Uccle Observatory (Brussels) on March 5 at 7^h 26.5^m G.M.T.; Right Ascension 2^h 42^m 28^s, daily motion +1^m 20^s. North Declination 16° 44', daily motion +10'. Its closeness to the ecliptic and moderate rate of motion make its planetary nature quite probable; but the discoverer's uncertainty as to its nature suggests some appearance of nebulosity.

THE PLANET SATURN.—Mr. W. F. Denning writes: "The belted aspect of the globe of Saturn, and the occasional spots and irregular markings observed, show that disturbances occur on this planet of somewhat similar character to those which frequently present themselves on Jupiter. The much smaller diameter of Saturn, however, renders certain of the phenomena beyond our recognition. At somewhat rare intervals, as in 1903, the disc of this planet becomes the seat of extensive changes, and it is then that its period of rotation may be ascertained with considerable accuracy. In 1795 William Herschel found the period 10^h 16^m, while in 1877 Asaph Hall, at Washington, determined it to be 10^h 14^m 24^s from an equatorial white spot which, however, remained visible only a short period.

In 1903 the writer computed the period as 10^h 37^m 52^s from a number of white and dark spots which remained visible during the last half of that year. This is 23½ minutes longer than the period found nearly half a century ago.

Saturn now rises at about 10 P.M., and may be well observed during the morning hours. It will soon be favourably placed for telescopic study during the evening hours, as it rises 4 minutes earlier every night. Observers should examine critically the planet's globe for signs of a repetition of the disturbances which occasioned the irregular markings detected in past years."

DISTANCES OF STARS.—E. A. Kreiken has published a memoir on "The distance of the stars in the Scutum group, and other Galactic regions," which is dedicated to the memory of Prof. Kapteyn, since it is largely based on his methods. The colours of the stars, or rather the effective wave-lengths of the light we receive from them, are found by the distances between the first order spectra that are produced by a coarse grating in front of the telescope tube. The stars go down to magnitude 14.9; the table below shows that the colour-index is a minimum about magnitude 11.5.

Mag.	Mean Colour.	No. of Stars.
Brighter than 8.9	+0.70	2
8.9 to 9.9	+0.37	3
9.9 ,, 10.9	+0.21	20
10.9 ,, 11.9	+0.16	36
11.9 ,, 12.9	+0.34	101
12.9 ,, 13.9	+0.46	480
13.9 ,, 14.9	+0.60	604

The spectral type is deduced from the colour-index by the following table, based on the work of Miss Cannon and K. Schwarzschild: B₀ -0.25, B₅ -0.16, A₀ -0.04, F₀ +0.30, G₀ +0.65, K₀ +0.90, M₀ +1.50. The distance of the cloud is separately deduced from stars of different spectral type from formulæ using the luminosity frequency curves for each type.

Stars of type B₀ to B₅ indicate 1800 parsecs for the distance (printed 3600 but altered by hand by the author); B₅ to B₉ give 1300 parsecs; A₀ to A₉ 1400 parsecs (4600 light-years), the latter being adopted as having the highest weight, but the agreement of the others is sufficiently good.

The star-density in the cloud is found to be five times the average value for the same galactic latitude.