

THE report of the Clifton College Scientific Society for the year 1912-13 has been received. It contains information of the work done during the session by the various sections among which the work of the society is divided. We notice among the contents an interesting calendar of bird observations made near Clifton, from January to July, 1913, to which a note is appended, stating that the Royal Agricultural Show enclosures on Clifton Downs greatly interfered with birds and observers during the season.

WE have received from the Carnegie Institution of Washington two volumes prepared under the auspices of the department of historical research. One, by Mr. David W. Parker, is a "Guide to the Materials for United States History in Canadian Archives"; the other, by Prof. Herbert E. Bolton, is a similar guide concerned with materials for the same purpose in the principal archives of Mexico. Both volumes belong to a series, to which we have directed attention on previous occasions, representing a systematic endeavour by the department of historical research to make more easily available for authors and students the materials contained in foreign archives necessary in studying the history of the United States. Volumes have appeared already dealing with Cuba, Spain, Great Britain, Italy, and Germany, and others concerned with the archives of Paris, Switzerland, the Netherlands, and Sweden are in course of preparation.

OUR ASTRONOMICAL COLUMN.

COMET 1913f (DELAVAN).—Prof. H. Kobold communicates, in a Kiel Circular, No. 144, dated December 21, the elements and ephemeris of Delavan's comet (1913f), the former being based on observations made on December 17, 18, and 19. The elements are as follows:—

Elements.

$$\begin{aligned} T &= .914 \text{ March } 2^{\text{h}} 32^{\text{m}} 11^{\text{s}} \text{ M.T. Berlin.} \\ \Omega_0 &= 126^{\circ} 32' \\ \omega &= 7 \quad 40' \\ i &= 13 \quad 4' \\ \log q &= 0.04526 \end{aligned}$$

Ephemeris for 12h. M.T. Berlin.

	R.A.	Dec.	Magn.
	h. m. s.	° ' "	
Dec. 31	2 54 5 ...	−5 18.4	
Jan. 1	53 44 ...	5 4.9	
2	53 28 ...	4 50.8	
3	53 12 ...	4 36.1	
4	53 1 ...	−4 20.9 ...	10.5

A note in *The Times* of December 24 states that the comet will approach the earth and sun for the next two months, and while its brightness will be considerably increased, the object is not expected to be visible to the naked eye. Its south declination will be maintained until about the middle of January. The positions of the comet are in the constellations of Eridanus and Cetus.

AN AID TO TRANSIT CIRCLE OBSERVERS.—Transit observers are only too well aware of the time occupied in reading off chronograph strips, the work involved, even when assisted by a writer, being equal to that of making the observations themselves. Any suggestion of a method of reducing the labour will be welcomed provided it can be thoroughly relied upon.

Prof. E. Grossmann, in *Astronomische Nachrichten*, No. 4701, describes a very practical arrangement which seems very efficient and simple. He adopts the reading apparatus constructed by Th. von Oppolzer, and works this in conjunction with an ordinary typewriter. All the observer has to do is to place the movable thread on the observed signal on the tape and the press of a key is sufficient to write automatically the scale reading underneath. In the paper Prof. Grossmann describes the apparatus in some detail, and accompanies the text with two illustrations. Messrs. Favargar and Co. in Neuchatel were entrusted with the arranging of the complete apparatus.

STANDARD WAVE-LENGTH DETERMINATIONS.—No. 75 of the Contributions from the Mount Wilson Solar Observatory is devoted to the second paper by Messrs. St. John and L. W. Ware, entitled "Tertiary Standards with the Plane Grating: the Testing and Selection of Standards." In this paper the authors have examined the international secondary standards from $\lambda 4282$ to $\lambda 5506$ as to their consistency among themselves, and have determined the wave-lengths in international units of a series of 198 lines in the arc spectrum of iron from $\lambda 4118$ to $\lambda 5506$. The region from $\lambda 5371$ to $\lambda 5506$ is common to the 1912 and 1913 investigations, but an entirely new series of plates was made for the common region. The Pasadena plates were taken with the 30-ft. spectrograph, while the Mount Wilson plates were secured with the 75-ft. Littrow spectrograph used in conjunction with the 150-ft. tower telescope. The communication, which is published in considerable detail, is another example of the high accuracy attained in the Mount Wilson determinations. It is interesting to note that the difference between the heights above sea-level of Pasadena (244 m.) and Mount Wilson (1794 m.) is responsible for changes in relative wave-length determinations at the two stations. Numerous important conclusions are summed up at the end of the paper.

PRIZE AWARDS OF THE PARIS ACADEMY OF SCIENCES FOR 1913.

Geometry.—The Francœur prize to A. Claude, for the whole of his astronomical work; the Bordin prize was not awarded, no memoir on the question proposed having been received.

Mechanics.—The Montyon prize to M. Sauvage; the Poncelet prize to Maurice Leblanc, for his work in mechanics.

Navigation.—The extraordinary prize for the Navy is divided between Le Prieur (1800 francs), Geynet (1800 francs), Violette (1800 francs), and R. E. Godfroy (600 francs); the Plumey prize to M. Risbec, for his work on the propulsion and stability of ships.

Astronomy.—The Pierre Guzman prize is not awarded; the Lalande prize to J. Bosler, for his researches on the sudden variations of terrestrial magnetism and their connection with disturbances in the sun; the Valz prize to Prof. Fowler, for his researches in spectroscopy; the G. de Pontecoulant prize to M. Sundmann, for his researches on the problem of three bodies.

Geography.—The Tchihatchef prize to Col. Peter Kusmitch Kozlov, for his explorations and publications on Central Asia; the Gay prize to Dr. Mocquart, for his memoirs on tropical reptiles.

Physics.—The Hébert prize to Prof. Swingedauw, for his researches on explosive potential and electro-technics; the Hughes prize to Jean Becquerel, for his work in magneto-optics; the De Parville prize to Prof. Rothé, for the whole of his researches in physics; the Gaston Planté prize to R. V. Picou, for his work in the field of electrical industry; the Kastner-Boursalt

prize to Benjamin Chauveau, for his researches in atmospheric electricity.

Chemistry.—The Jecker prize is divided between Eug. Léger (3000 francs), for his work on vegetable alkaloids, M. Mailhe (2500 francs), for his researches on catalytic reduction, Amand Naleur (2500 francs), for his work in analytical, organic, and thermochemistry, and Fernand Bodroux (2000 francs), for work in organic chemistry; the Cahours prize divided between Mme. Ramart-Lucas Paul Clausmann, and E. Chablay; the Montyon prize (unhealthy trades) to MM. Desgrez and Balthazard (2500 francs), for their work relating to life in a confined atmosphere, M. Henriet receiving a mention (1500 francs), for his memoir on the impurities of Paris air; the Berthelot prize to Ernest Fourneau, for his syntheses of stovaine, novocaine, and other substances of service in therapeutics; the Vaillant prize was not awarded, as no memoir was received dealing with the question proposed.

Mineralogy and Geology.—The Delesse prize to Robert Douvillé, for his important works relating to certain groups of ammonites in France and South America; the Joseph Labbé prize to M. Dussert, for two memoirs dealing with the metalliferous deposits of Algeria; the Victor Raulin prize to J. Blayac, for his paper dealing with the geology of the Seybouse and some neighbouring regions.

Botany.—The Desmazières prize to M. Hariot, for his work on marine flora; the Montagne prize to M. Gain, naturalist on the *Pourquoi-Pas?*, for his memoir on the Algæ of the Antarctic regions; the de Coigny prize to Marcel Dubard, for his researches on the Sapotaceæ; the Grand prize of the physical sciences to Auguste Chevalier, for his geographical study of the flora of western French Africa; the Thore prize to Etienne Foëx, for his publications on the Erysibaceæ; the de la Fons-Melicocq prize to Eugène Coquidé, for his study of the vegetation of the peaty valleys of Picardy.

Rural Economy.—The Bigot de Morogues prize to Gustave André for his work on agricultural chemistry and the chemistry of the soil.

Zoology.—The Savigny prize to Henri Neuville, for his work on the invertebrates of Abyssinia; the Cuvier prize to Charles Oberthür for his studies in entomology and comparative lepidopterology.

Medicine and Surgery.—Montyon prizes (2500 francs each), to Mme. Lina Negri Luzzani, for her studies on the corpuscles discovered in the nervous system of rabid animals, to L. Ambard, for his memoir on renal secretion, and to MM. A. RAILLET, G. MOUSSU, and A. HENRY, for their researches on the etiology, prophylaxy and treatment of distomatosis in ruminants. Mentions of 1500 francs each are accorded to M. Marquis, for his memoir on mercuric chloride in surgery, to M. Legrange, for his work on the treatment of chronic glaucoma; and to Fernand Bezançon and S. L. de Jong, for their treatise on the examination of sputa. Citations are given to Henri Paillard, for his works on pleurisy, Paul Hallopeau, for his memoir on temporary disarticulation in the treatment of tuberculosis of the foot, and A. Sartory and Marc Langlais, for their work entitled dust and micro-organisms of the air. The Barbier prize is divided between Jules and André Boeckel and MM. de Beurmann and Gougerot; prizes of 2000 francs each are awarded from the Bréant funds to C. Levaditi, for works on epidemic acute poliomyelitis, A. Netter and R. Debré, for their memoir on cerebrospinal meningitis, and V. Babès for his treatise on hydrophobia; the Godard prize to J. Tanton; the Baron Larrey prize to A. Dejouany; the Bellion prize to Albert Frouin and Pierre Gérard, for their study of the rôle of mineral salts in digestion; the Argut prize to Claudius Regaud

and Robert Crémieux, for their study of the effects of X-rays on the thymoid and the treatment of hypertrophy of this gland by Röntgentherapy; the Mège prize was not awarded.

Physiology.—A Montyon prize (experimental physiology) to Michel Cohendy, for his work on life without micro-organisms; the Philipeaux prize to Louis Lapique, for his researches on the electric stimulation of nerves, an honourable mention to Samson Levin; the Lallemand prize is not awarded, but A. Barré receives a very honourable mention; the Pourat prize to Th. Nogier and Cl. Regaud, for researches on the comparative action of filtered and unfiltered X-rays on living tissues.

Statistics.—Montyon prizes to Henri Bresson (1000 francs), Albert Quiquet (1000 francs), and M. Thollon (500 francs).

History of Science.—The Binoux prize to M. Molk, for the French edition of the "Encyclopédie des Sciences mathématiques."

General Prizes.—The Lavoisier medal to Ernest Solvay; Berthelot medals to MM. Léger, Fourneau, Desgrez, and Balthazard; the Henri Becquerel prize to Louis Dunoyer, for his researches in physics; the Gegner prize to J. H. Fabre; the Launelongue prize divided between Mme. Cusco and Mme. Ruck; the Gustave Roux prize to M. Montel, for his work on the theory of analytical functions; the Trémont prize to Charles Frémont; the interest on the Leconte prize (2500 francs) to S. Bivort, for the construction of a shorthand machine for the use of the blind; the Wilde prize (4000 francs) to M. Borrelly, for his astronomical discoveries; the Lonchampt prize is divided between Emile Demoussy (3000 francs), for his physico-chemical researches in plant physiology, and M. Agulhon (1000 francs), for his work on the function of boron in living matter; the Saintour prize is divided between Camille Tissot (2000 francs), for his work on wireless telegraphy, and M. Maire, for his studies in the history of science; the Henri de Parville prize to Jean Perrin; the Fanny Emden prize is not awarded, but encouragements are given to Guillaume de Fontenay (2000 francs), and J. Courtier (1000 francs); the d'Ormoys prize to Claude Guichard, for the whole of his mathematical works; the Petit d'Ormoys prize to Jules Lefèvre, for the whole of his scientific work; the Pierson-Perrin prize is divided between Ch. Fabry (2000 francs), H. Buisson (2000 francs), and Rodolphe Soreau (1000 francs); the Parkin prize is not awarded; the Estrade-Delcros prize to Mme. Charles André; the Danton prize to Eugène and Léon Bloch; the prize founded by Mme. la Marquise de Laplace to M. Boutteville; the prize founded by Félix Rivot between MM. Demay, Perrin, Boutteville, and Renaud.

The Bonaparte Fund.

The committee appointed by the Paris Academy of Sciences to allocate the grants from this fund for the year 1913 have made the following proposals:—Out of sixty-three applications the committee recommend twenty-one grants.

3000 francs to H. Caillois, for the publication of his catalogue of the Coleoptera of Provence.

2000 francs to A. Colson, for apparatus required for his work in physical chemistry.

2000 francs to E. Coquidé, to assist him in his study of the means of utilising peaty soil.

2000 francs to C. Schlegel, for the continuation of his researches in the laboratory of M. Delage.

6000 francs, in equal parts, between MM. Pitard and Pallary, for assistance in the continuation of their scientific work in Morocco.

2000 francs to Jules Welsch, for his geological work on the coasts of western France and Great Britain.

2000 francs to Louis Roule, for continuing and extending his researches on the morphology and biology of the salmon in France.

2000 francs to Jean Pougnet, for the continuation of his researches on the chemical and biological action of ultra-violet light.

2000 francs to C. Dauzère for his work on cellular vortices.

2000 francs to Méd. Gard, for the publication of a work and atlas on material left by the late M. Bornet.

4000 francs to Aug. Chevalier, to meet the expense necessitated by the classification of the botanical material arising from his expeditions in Africa.

2000 francs to Paul Becquerel, for the continuation of his physiological researches relating to the influence of radio-active substances upon the nutrition, reproduction, and variation of some species of plants.

4000 francs to Le Morvan, for assistance in publishing the photographic atlas of the moon.

2000 francs to Jacques Pellegrin, to assist him to pursue his researches and publish works on African fishes.

3000 francs to E. Rengade, for a systematic research on the presence and distribution of the rare alkali metals in mineral waters.

3000 francs to Charles Alluaud, for the publication of work on the Alpine fauna and flora of the high mountainous regions of eastern Africa.

2000 francs to Charles Lormand, for the purchase of a sufficient quantity of radium bromide to carry out methodical researches on the action of radio-activity on the development of plants.

2000 francs to Alphonse Labbé, for researches on the modifications undergone by animals on changing from salt to fresh water or the reverse.

3000 francs to G. de Gironcourt, for the publication of the scientific results of his expeditions in Morocco and western Africa.

3000 francs to A. F. Legendre, for the publication of maps and documents of his expeditions in China.

2000 francs to H. Abraham, for the determination of the velocity of propagation of Hertzian waves between Paris and Toulon.

PAPERS ON VERTEBRATE PALÆONTOLOGY.

TO vol. xxii. (pp. 407-420) of the Bulletin of the American Museum of Natural History Prof. H. F. Osborn contributes two articles on the skulls of ungulates from the Wind River Lower Eocene of Wyoming. A very interesting point is that in the members of the family Uintatheriidae characteristic of this stage, such as *Bathyopsis*, the skull lacks the great bony horn-cores of the later types, their place being taken by small knobs. In the *Perissodactyle Titanotheriidae* it has been found that two phyla of the genus *Eotitanops* are recognisable, one comprising relatively small, persistently primitive light-limbed species, and the other animals of a larger and more progressive type. Several new species are named.

In the Bulletin of the Department of Geology, California University (vol. vii., pp. 169-175), Dr. J. C. Merriam describes a lower molar of a tapir obtained many years ago from the auriferous gravels of California as a new race of a species described by Leidy from the Pleistocene of South Carolina. To this race (*Tapirus haysii californicus*) is provisionally referred a set of three upper molars from the late Tertiary of Oregon. The species appears to be nearly related to the existing Central American *T. bairdi*.

The skeletons of *Saurolophus osborni*, a duck-billed dinosaur of the family Trachodontidae, and of *Hypacrosaurus altispinus*, a new genus and species of the same family, both from the Upper Cretaceous of Edmonton, Alberta, Canada, form the subject of two papers by Mr. Barnum Brown in vol. xxxii. (pp. 387-407) of the Bulletin of the American Museum of Natural History. The type skeleton of the former, which measures about 32 ft. in length—the same as that of the contemporaneous *Trachodon mirabilis*—has been mounted on a slab for exhibition. *Saurolophus*, it appears, is much more numerous represented in the Edmonton beds than its cousin *Trachodon*. *Hypacrosaurus* is characterised by the great height of the spines of the dorsal vertebrae, coupled with the presence of nine vertebrae in the sacrum, against eight in the allied genus.

Under the name of *Rutiodon manhattensis*, Prof. F. von Huene describes in the volume last cited (pp. 275-283) the remains of a new species of phytosaur (belodont) from the Upper Triassic of Fort Lee, New Jersey, at the base of the "Palisades," opposite New York. In the opinion of the describer, *Rutiodon* and the European *Mystrisuchus*, on account of the taller spines of their vertebrae and the consequently more compressed form of their bodies, were probably better swimmers than the typical *Phytosaurus*. Both were long-snouted reptiles, of larger bodily size than *Phytosaurus*, the new species being the biggest yet described.

From the Trias of Heligoland Mr. H. Schroeder (*K. Preuss. Geol. Landesanstalt*) describes a beautifully preserved skull of a large stegocephalian (labyrinthodont) as a new species (*C. helgolandiae*) of the genus typified by von Meyer's *Capitosaurus nasutus* from the Trias of Burnberg.

Mere reference will suffice for supplementary notes on fossil sharks by Messrs. D. S. Jordan and C. H. Beal, published in the Bulletin of the Department of Geology, California University (vol. vii., pp. 243-256).

In the Bulletin of the American Museum of Natural History, vol. xxxii., pp. 437-439, Dr. R. Broom records additional remains of the extinct South African horse described by himself in 1909 under the name of *Equus capensis*. These are stated to indicate a heavily built, short-legged species, standing about fourteen hands, and apparently distinct from all the existing South African members of the genus, as well as from the Arab stock.

In a second communication the same author (*op. cit.*, pp. 441-437) describes a number of remains of South African dicynodont reptiles, many of which are regarded as representing new species of the typical *Dicynodon*, while others are assigned to new genera. It is interesting to note that a skull described by Huxley as that of a lizard, under the name of *Pristerodon mackayi*, really represents a dicynodont furnished with cheek-teeth.

R. L.

AGRICULTURE AT THE BRITISH ASSOCIATION.

THE meeting this year was one of the most successful held since agriculture has been recognised at the British Association, both the quality of the papers and the attendance at the section being exceedingly good. Prof. Wood, in his presidential address, dealt with a problem which has now assumed very great importance. Hitherto the agricultural expert working in the counties and among farmers, has had to demonstrate certain facts which were already known at the experiment stations. One of the most important is the effect of phosphates in improving grassland, an effect so striking that it can be demonstrated without very refined experiments, so that the