

organ itself. It must not be supposed, however, that the electricity is generated in the electric centres, and that it is conveyed by the electric nerves to the electric organ. On the contrary, it is generated in the electric organ itself, but it is only produced so as to give a "shock" when it is set in action by nervous impulses transmitted to it from the electric centres by the electric nerves.

The *Humanitarian* contains a revised form of the paper on "Cremation" read at the Edinburgh meeting of the British Institute of Public Health by Sir Spencer Wells.

Mr. Geoffrey Winterwood writes on "Mars as a World" in *Good Words*, his article being based in the main upon Camille Flammarion's recent work on Mars and its conditions of habitability. The article is brightened by nine excellent illustrations. "The Cold Meteorite" is the title of a poem by Mr. W. R. Huntingdon in the *Century Magazine*. The meteorite is thus apostrophised:—

"far better 'tis to die  
The death that flashes gladness, than alone  
In frigid dignity to live on high;  
Better in burning sacrifice be thrown  
Against the world to perish, than the sky  
To circle endlessly, a barren stone."

#### HYDROPHOBIA STATISTICS FOR 1892 AT THE INSTITUT PASTEUR.

AN account of the anti-rabic vaccinations undertaken last year in the Pasteur Institute in Paris has been recently published (*Annales de l'Institut Pasteur*, vol. vii. p. 335, 1893). From the statistics here given it appears that no less than 1790 persons underwent this treatment during the past year in Paris alone, and that out of these only four subsequently died from rabies. In 600 of these cases the bites were attributed to animals suspected of suffering from hydrophobia at the time, but in all the others the certainty was established by subsequent veterinary examination, as well as by the death from rabies of other animals bitten by the animal in question.

Since the beginning of the Pasteur treatment in 1886, the mortality from bites on the head after treatment is stated as 1.48 per cent., from wounds on the hands 0.55, and 0.24 per cent. from bites on the limbs.

Thus by far the most serious cases are those in which the head is attacked, and it is pointed out how unfortunate is the delay which frequently occurs between the wound and the arrival of the patient for treatment, the interval militating most seriously against the success of the subsequent inoculations.

The following table indicates the nationality of the patients admitted to the Institute during the past year:—

England ... ..	26	Russia ... ..	1
Belgium ... ..	11	Switzerland ...	3
Egypt ... ..	12	Holland ... ..	14
Spain ... ..	14	India ... ..	9
Greece ... ..	19	France and Al-	
United States ...	1	geria ... ..	1584
Portugal ... ..	96		

Algeria is specially mentioned as being amongst those districts from which the largest number of cases are yearly sent to the Institute.

Last year a patient came from Madeira, rabies having been imported for the first time into the island by a dog from Portugal.

A most unusual occurrence is drawn attention to, viz. the death of a patient, a young Englishman, treated in 1887, and who died last year, five years therefore later, of rabies. Such an exceptional case has not been met with

since the commencement in 1886 of the anti-rabic inoculations, which up to the present number 12,782.

Taking the average of cases received during the past six years, rabies appears to reach a maximum in the spring and a minimum in the autumn.

#### NOTES.

THE Harveian Oration will be delivered by Dr. P. H. Pye-Smith, at the Royal College of Physicians, at four o'clock on Wednesday, October 18.

THE vacancy in the Mineralogical Department of the British Museum, occasioned by the death of Mr. Thomas Davies, has been filled by the appointment by the trustees of Mr. Leonard J. Spencer, of Sidney Sussex College, Cambridge, who gained the first place at the competitive examination.

THROUGH the munificence of Mr. F. Duncane Godman, F.R.S., a botanical exploration of the island of St. Vincent was made by Mr. Herbert H. Smith and Mr. G. W. Smith in 1889 and 1890. The plants then collected, and those from St. Vincent previously in the Kew Herbarium, have now been arranged, and the resulting catalogue constitutes the *Kew Bulletin* for September (No. 81). All the 977 plants collected by the Smiths are included, whether indigenous or naturalised, and, in addition, 179 flowering plants and 24 ferns not collected by them. We read that, "with regard to the general distribution of the indigenous plants, the principal points are the wide geographical range of the majority, and the smallness of the endemic element, conditions that obtain throughout the whole chain of islands from Tobago to the Virgin group, which are in striking contrast to the proportions of the endemic element in Cuba and Jamaica. . . . The fern vegetation is very rich and varied, and, in relation to the area, far in excess as to number of species to that of New Zealand, which is generally regarded as one of the most highly concentrated

WE learn from the *Pioneer Mail* that Mr. Dallas, Assistant Meteorological Reporter to the Government of India, leaves shortly for Madras, in order to assist the authorities in starting a daily weather report in that Province.

DR. HENRY B. WARD, of Michigan University, has been appointed Associate Professor of Zoology to the University of Nebraska, Lincoln, Nebr.

DR. E. SYMES THOMPSON will lecture upon the voice, at Gresham College, Basinghall Street, on October 10, 11, 12, and 13. The lectures are free to the public, and commence each evening at six o'clock.

A VERY brilliant meteor was seen about 9.45 last night at Leicester (says the *Times* of October 2). It seemed to burst from near the zenith, and proceeded towards the western horizon, increasing very rapidly in brilliancy, until the ground and atmosphere were lit up so that objects in the landscape could be clearly seen at a long distance for several seconds. Mr. H. Cook, of the Birmingham and Midland Institute, says that the meteor was also seen at Neen Sollars, near to Cleobury Mortimer, Salop, at the above-mentioned hour.

DR. O. LOEW, of Munich, well known for his investigations of the nature of protoplasm in connection with Dr. T. Bokorny, has been appointed Professor of Agricultural Chemistry in the University of Tokio, Japan; and Dr. D. Brandis, a fellow of our Royal Society, Professor of Forestry in the University of Bonn.

IN two recent numbers of the *Botanisches Centralblatt* is a detailed account, by Dr. F. v. Herder, of the Herbaria and Botanical Museums in St. Petersburg. Of these, five in number besides private collections, the richest and most important

are those of the Imperial Academy of Sciences and of the Imperial Botanical Garden.

THE Natural History Society of Danzig has offered a prize of 1000 marks for the best essay on the best means of producing and spreading fungus-epidemics for the destruction of insects injurious to the forests in Western Prussia. The essays must be written in German or French, and are to be sent in before the end of the year 1893.

The numbers of the *(Esterreichische Botanische Zeitung)* for August and September contain interesting reports of the botanical excursion of Dr. E. von Halácsy in the Pindus range in Greece, and of that of Dr. J. Bornmüller in Persia. Dr. Bornmüller describes the flora of the neighbourhood of Bushire in March as being especially rich and beautiful.

A SUBTROPICAL botanical laboratory has been established at Eustis, Florida, under the direction of Prof. Swingle. The diseases of fruits belonging to the *Aurantiaceæ* are a special subject of investigation.

THE singular swarms of flies observed by Mr. R. E. Froude at the end of May last, and described by him in these columns (vol. 48, p. 103 and p. 176), have also been seen at Muskegon, Michigan, by Mr. C. D. McLouth. Writing from that city to *Science* of September 15, Mr. McLouth says that on the evening of June 26 the fire brigade was called to two of the highest buildings, the alarms being caused by an appearance as of smoke issuing from the pinnacles of the towers. In both cases the appearance was found to be caused by clouds of insects. Some insects afterwards captured and supposed to be identical with the swarms were found to be Neuropters.

THE fiftieth volume of the *Verhandl. des Naturhistor. Vereins der preuss. Rheinlande* contains numerous short notices on various subjects, and three important memoirs:—B. Stürtz, on star-fishes, giving a bibliography of recent and fossil forms, notes on classification and distribution, and descriptions of three new species; a continuation of the monograph, by A. Hosijs, on the Foraminifera of the Miocene; and a paper by H. Laspeyres on the nickel ores and minerals of the Rhenish rocks, giving numerous analyses and crystallographic notes.

MR. G. CHRISTIAN HOFFMANN has prepared an excellent catalogue of Section I. of the Museum of the Geological Survey of Canada. It embraces the systematic collection of minerals and the collections of economic minerals and rocks and specimens illustrative of structural geology. Reference is facilitated very considerably by four very full indexes. The first of these is an index to the cases containing the minerals; the second to the numbers borne by the specimens; the third to mining districts, areas, camps, locations and claims, mines, quarries, and pits, and the fourth to subjects. Since all the specimens are from Canadian localities, Mr. Hoffmann's catalogue may be taken as a representation of the mineral resources of the Dominion.

THE modifications in the physiological character of micro-organisms which may be produced by either natural or artificial means, and which may, moreover, become inherited and permanent, is one of the most fascinating subjects in bacteriology. But it opens up a problem of much importance in the identification of bacteria, for the characteristic appearance may become so modified that its original parentage is with difficulty recognised. In this connection the production of a race of *sporeless* anthrax, endowed with the same virulent properties, resembling also microscopically the original form, is of particular interest. Such "asporogène" anthrax was first produced by Chamberland and Roux, through the addition of small doses of potassium dichromate to broth infected with anthrax-blood. By this means a generation of anthrax bacilli was obtained in which the power of producing spores was permanently destroyed.

Since the publication of the above, "asporogène" anthrax has been obtained by other investigators, whilst Lehmann came upon such a variety quite accidentally in an old gelatine culture. Still more recently (*Le Bulletin Mèd.* p. 293, 1892), Phisalix has succeeded in producing sporeless anthrax by the continuous and successive cultivation of anthrax bacilli at 42° C. For the original infection the blood of a sheep dead of anthrax was taken, and portions of this culture were transferred to a second culture, and also kept at 42° C., this process being continued for twenty-five generations covering a period of five months. The twelfth generation already yielded a variety incapable of producing spores except on being first passed through the body of a mouse, but the fourteenth generation had established a race permanently incapable of producing spores. These asporogène cultures, however, unlike those of Chamberland and Roux, suffered an attenuation of their virulent properties, and the descendants of the twentieth generation were absolutely harmless as regards animals. The possibility, therefore, of pathogenic microbes losing their virulence, or of harmless saprophytes being trained up to acquire pathogenic properties, is one which must without doubt be taken into consideration; and when we remember that sunshine alone may produce such modifications in the physiological characters of microbes as to permanently deprive certain pigment-producing bacteria of this property, and raise up instead a colourless race (Laurent), the indulgence of this possibility becomes yet more within the bounds of legitimate conception.

THE Meteorological Reporter to the Government of India has published No. 5 of *Cyclone Memoirs*, containing an elaborate and valuable discussion, accompanied by twenty-five plates, of three cyclones in the Bay of Bengal and Arabian Sea during the month of November, 1891. The first storm, called the Port Blair cyclone, originated in the Gulf of Siam on October 29 and 30, and caused great destruction of life and property in the South Andaman Island. It is the first large storm for which there is conclusive evidence that it originated outside the area of the Bay of Bengal, and owing to its rapid recurvature several ships encountered the storm twice; it was probably owing to this that the pilot vessel *Coleroon* foundered. An examination of the storms which have occurred since 1737, shows that not more than three or four of them could possibly have advanced across the Malay Peninsula into the bay. The second storm originated on the 1st and 2nd, between the Maldives and the Travancore coast, and is said to be the most violent that has been experienced in Minicoy for the past quarter of a century. This storm is the more interesting from the fact that exact information is rarely obtained of the birth of such a disturbance in the neighbourhood of the equator. The predominant feature was the excessive amount of rainfall, which was quite as exceptional as the storm itself. The third storm originated in the south-east of the bay, on the 19th and 20th; it was remarkable only for its track, as it advanced by a curved path into Central Burma, instead of to the coast of Madras, as usual. The tracks of this and of the first storm show certain abnormal conditions to have existed during the whole of the month. All the disturbances were generated in the humid south-west monsoon current, and were apparently not due to any mechanical action between two opposite air currents. Mr. Eliot states that rainfall appears to be the dominating factor in all large cyclones in India, and that this or aqueous vapour was the chief agent in determining the origin and motion of the three storms above referred to.

A REMARKABLE case of resuscitation of an optical image is described from personal experience by Prof. T. Vignoli in a paper recently communicated to the *Reale Istituto Lombardo*. On the morning of July 3, after a railway journey in a bright

sun, and two days' walk in a suffocating heat, he happened to be in a room with several other persons, and during conversation looked at a balcony bathed in bright sunlight, but without taking any special interest in it. The balcony was decorated with trellis-work and ivy. Flowering creepers were arranged in vertical columns, each column being crossed below by the iron bars of the balcony, and above by sticks supporting the plants. A cage with birds hung up in the middle. Two days afterwards, very early in the morning, the professor was in bed, but perfectly awake, and in ordinary health, when, to his astonishment, he saw on the ceiling, by the light coming through Venetian blinds of two large windows, an exact reproduction, in all its colours and details, of the balcony referred to. The phenomenon lasted long enough to permit some detailed investigation. On closing the eyes, the image disappeared, to appear again when they were opened. It was unaffected by regarding it with each eye alternately. A finger placed between the eye and the image intercepted it in the same manner as it would any ordinary object; in short, the phenomenon obeyed all the optical laws of vision. And not only was the cage of birds reproduced, but also its swinging motion noticed before. Prof. Vignoli argues that this cannot have been a case of ordinary hallucination, since the latter is unaffected by the opening or closing of the eyes, and is practically limited to occasions of abnormal health or disturbed state of mind. It must be regarded as an outward projection of a recollected image, though the mechanism of this projection does not appear to be well understood by the professor himself. A case such as this, of what the German psychologists would call *wach-traum*, merits the attention of those interested in psycho-physics.

THE current number of the *Electrical Review* contains a description of some of the latest appliances in "electric heating" for domestic use. In the cookery experiments at the Crystal Palace last year the efficiency obtained was, as a rule, very small, and the wires used in the apparatus were soon destroyed. Mr. Binswanger, of the General Electric Company, claims to have got over both these drawbacks, as well as that of the difficulty of insulation. Instead of wrapping the wires in asbestos, mica, &c. (under which conditions they rapidly oxidise), or clothing them with enamel (which cracks at high temperatures), a cement is applied in a cold state, which is said to insulate well without cracking, even at very high temperatures. The "electric kettle" has a copper bottom resting on a double layer of silicate cement, between the two parts of which the copper wires carrying the current are arranged. The 1 pint size takes 3 amperes at 100 volts to raise the water to boiling, and as the time required to raise a pint of water from 15° C. to 100° C. by an expenditure of 1000 watts is 3·7 minutes, this kettle, which is a "300-watt kettle," will take 12 minutes to boil 1 pint. With electricity at 4d. per unit, the cost of boiling the pint of water would be approximately one farthing, which is, of course, much dearer than gas. Stew-pans, ovens, and "radiators" for heating rooms are also made, as well as frying-pans and gridirons, in the two last-named of which greater economy is practicable than in the other cases, as the heat can be produced in the exact spot in which it is wanted. Altogether it is evident that although the use of "electric heating" for domestic culinary purposes is not yet in its really practical stage, it is well on the way there.

In the course of an interesting series of articles in *Electricité* on the "Electric Lighting of Trains," we find the following figures given as a comparison between the cost of oil-lamps and electric lights. The system under discussion is that of accumulators carried in the train and charged at fixed charging stations. The total expense of an electric-lamp in a first-class carriage, including interest on capital, &c., comes out at 0·0289

francs per "lamp-hour," while an oil-lamp (of only 7-candle power) comes to 0·38 francs per hour, while in the second and third class carriages, where more lamps are run off the same battery, the comparison is still better in favour of the electric system.

A CATALOGUE of works on Phanerogams, alphabetically arranged in genera, has been issued by Messrs. Dulau and Co.

TWO pamphlets by Sir Spencer Wells have been sent to us—one, "The Prevention of Preventible Disease," is a lecture delivered in Glasgow in May last, and the other, "Cremation and Cholera," is reprinted, with additions, from the *Forum* for February, 1893. They both deserve a wide circulation and attentive reading.

MESSRS. CASSELL AND CO. have just published a new edition of "Elementary Lessons with Numerical Examples in Practical Mechanics and Machine Design," by R. G. Blaine. The book has been to a large extent rewritten, and contains a good deal of additional matter, an attempt having been made to bring the work up to date.

THERE is little of scientific value in Mr. Phil Robinson's latest volume—"Some Country Sights and Sounds" (Unwin). The author, however, writes pleasantly enough on a variety of topics more or less to do with the country.

WE have received a volume containing the meteorological observations made at the Adelaide Observatory and other places in South Australia and the northern territory, during the years 1884-5, under the direction of Sir Charles Todd, F.R.S.

A NEW edition (the eighth) of Valentin's "Course of Practical Chemistry, or Qualitative Chemical Analysis," edited and revised by Prof. W. R. Hodgkinson, has just been published by Messrs. J. and A. Churchill. A few additions have been introduced into the work, including an extra chapter, in which quantitative operations are dealt with.

THE June number of *Timehri*, the journal of the Royal Agricultural and Commercial Society of British Guiana, has just appeared, and contains articles on "The Seasons in Guiana," "Notes on a Journey to a Portion of the Cuyuni Gold Mining District," and "Amateur Insect Collecting in British Guiana," occasional notes, reports of the society's meetings, &c. It may be obtained in London from Mr. Stanford.

MESSRS. BLACKIE AND SON have just published an attractive little book entitled "Animal and Plant Life," by the Rev. Theodore Wood. The book is the sixth number of a useful series of science readers adapted for use in elementary schools.

"WEISSMANN'S Theory of Evolution" (1893) is the title of an article by Prof. Romanes in *The Open Court* of September 14. Prof. Weismann's recent modifications of his sequent theory of evolution are the chief points discussed.

A LIST of Coleoptera, prepared by Mr. James Edwards, and forming Part XII. of the "Fauna and Flora of Norfolk," has been reprinted from the Transactions of the Norfolk and Norwich Naturalists' Society (Vol. V.), and issued separately.

UNDER the title "Les Moteurs à Gaz et à Pétrole" (Gauthier Villars), M. Paul Vermand gives an excellent summary of the present state of knowledge of atmospheric motors. The volume belongs to the Aide-Mémoire series. Another work in the same series that has recently been received is "Décoration Céramique au Feu de Moufle," by M. E. Guenez.

MESSRS. METHUEN AND CO.'s Commercial Series, "intended to assist students and young men preparing for a commercial

career, by supplying useful handbooks of a clear and practical character, dealing with those subjects which are absolutely essential in a business life," has received an addition by Mr. H. De B. Gibbins, entitled "British Commerce and Colonies."

A SECOND edition of Mr. J. R. Ainsworth Davis' "Elementary Text-book of Biology" (Messrs. Charles Griffin and Co.) having been called for, the book has been thoroughly revised and much enlarged, and a number of illustrations have been added. Part II. (Animal Morphology and Physiology) has had its value enhanced by the addition of a chapter on the Distribution of Animals.

MESSRS. WHITTAKER'S library of popular science has received an addition in the form of a volume entitled "Electricity and Magnetism," by Mr. S. R. Bottone. The illustrations in the book are a little coarse, but are just what a teacher requires to elucidate the text. Mr. Bottone is evidently at home in his subject, and he knows the way to present it to the general reader.

DR. J. W. GREGORY has conferred a benefit upon students of petrography by translating the "Tables for the Determination of the Rock-Forming Minerals," prepared by Prof. F. Löwinson-Lessing. The tables of Rossenbach and Michel Lévy and Lacroix leave nothing to be desired in the matter of completeness, but they are of little use to the elementary student for purposes of identification. By means of the synoptical tables, however, the commoner rock-forming minerals can easily be determined when their characters have been microscopically observed. A very suitable introduction to the tables is a description of the petrological microscope, by Prof. Grenville A. J. Cole. Messrs. Macmillan are the publishers of the translation.

THE October number of *Natural Science* is of unusual interest. Among the articles are the following: "The Effect of the Glacial Period on the Fauna and Flora of the British Isles," by G. W. Bulman; "Some Recent Researches on the Habits of Ants, Wasps, and Bees," by George H. Carpenter; and "The Recent Plague of Wasps," by Oswald H. Latter. Dr. C. Herbert Hurst theorises upon "The Digits in a Bird's Wing," and Mr. J. T. Cunningham upon "The Problem of Variation." In addition there are numerous notes and book-notices.

AN investigation of the composition and properties of the dangerously explosive iodide of nitrogen has been carried out by Dr. Szuhay in the laboratory of the University of Budapest, and an account of his interesting experiments is contributed to the latest publication of the *Berichte*. A large number of investigators have previously attacked this somewhat fascinating subject, but the knowledge hitherto accumulated has been insufficient to enable us to express with certainty its composition. One of its properties, its unparalleled readiness to explode with or without provocation, has been so much to the fore as to almost entirely exclude investigation of its more important, although less sensational, chemical properties. One variety of the substance, which was obtained by Dr. Szuhay by adding ammonium hydrate solution to powdered iodine, was found to be so pre-eminently disposed to detonative decomposition that it frequently exploded even under water, and if it were successfully transferred while wet to a filter it exploded upon the passage of the first draught of air. An attempt to ascertain its composition by careful decomposition with sulphurous acid resulted in the complete pulverisation of the containing vessel. Iodide of nitrogen was first prepared by Curtois by mixing alcoholic solutions of iodine and ammonia. He considered it to be the tri-iodide  $\text{NI}_3$ , an opinion which was subsequently shared by Gay Lussac. Millon and Mar-

chand afterwards expressed the view, unsupported, however, by experimental evidence, that it contained hydrogen, and might be represented by the formula  $\text{NH}_2\text{I}$ . More recently Bineau, and in this country Dr. Gladstone, have adduced more trustworthy evidence, from its mode of decomposition by an aqueous solution of sulphuretted hydrogen and by sulphurous acid, that this extraordinary substance does indeed contain hydrogen, but only to the extent of one atom, its constitution being  $\text{NHI}_2$ . Bunsen, however, subsequently communicated to the *Annalen* the view that iodide of nitrogen consists of  $\text{NI}_3$ , but that according to its mode of preparation it contains more or less ammonia. Finally, Stahlschmiedt has brought forward the further hypothesis that when an alcoholic solution of iodine is mixed with aqueous ammonia the substance  $\text{NI}_3$  is produced, but that when alcoholic ammonia is employed the product possesses the composition  $\text{NHI}_2$ . The result of all this conflicting testimony has been to leave the question of the composition of iodide of nitrogen an open one.

IODIDE of nitrogen was prepared by Dr. Szuhay, after investigating most of the methods hitherto described, by adding excess of aqueous ammonia to a concentrated solution of iodine in potassium iodide. It is thus obtained in the form of a very fine powder, which was found to be capable of safe purification by washing with a dilute solution of sodium sulphate. It is requisite to protect the filter from draughts of air which are liable to induce explosion. The purified substance, of course in a moist condition, as it cannot be dried without explosion, was analysed by decomposition with a solution of sulphurous acid of known strength and estimation of the amount of iodine and ammonia in the solution. Its composition was indubitably proved to be  $\text{NHI}_2$ , thus confirming the earlier work of Dr. Gladstone and of Bineau. This conclusion is powerfully supported by the fact that Dr. Szuhay has been able to prepare a silver derivative of the compound by replacing the hydrogen atom by silver. This silver compound is readily obtained by adding powdered oxide of silver or an ammoniacal solution of silver nitrate to iodide of nitrogen suspended in water. It is a black flocculent substance which is quite as explosive as iodide of nitrogen itself. When carefully dried the least rise of temperature provokes explosion. It also detonates upon being struck or even when brought into gentle friction with any other substance. When warmed under water, or when treated with dilute acids it is quietly decomposed, silver iodide being deposited, free iodine liberated, and free nitrogen escaping with effervescence. The relative amounts of these products of decomposition conclusively prove the compound to possess the composition  $\text{Ag}_2\text{NI}_2$ . Moreover, considerable evidence is also adduced to show that potassium, sodium, and barium replacement compounds are capable of existence in solution. The existence of the compound  $\text{HNI}_2$  is thus fully demonstrated, and whether or not the compounds  $\text{NI}_3$  and  $\text{NH}_2\text{I}$  are likewise capable of formation under different experimental conditions is a question which doubtless further work will elucidate. It is not unworthy of notice that there is a considerable amount of resemblance between this extraordinarily explosive

substance and the similarly distinguished azoimide  $\text{H}-\text{N} \begin{array}{l} \nearrow \text{N} \\ \parallel \\ \searrow \text{N} \end{array}$ ; for both contain the imido group  $\text{NH}$  the hydrogen of which is capable of being replaced by silver and other metals, and both appear in consequence to be endowed with a somewhat acid nature by the two atoms of negative iodine in the one case, and the negative diazo-nitrogen group in the other.

NOTES from the Marine Biological Station, Plymouth.—Last week's captures include the Annelids *Myrianida maculata* (one of these with a chain of buds), *Spherodorum peripatus* and *Siphonostoma uncinatum*, the tubicolous Gephyrean *Phoronis*

*hippocrepia*, and the Decapod Crustacean *Athanas nilescens*. The floating fauna has presented hardly any appreciable change: numbers of young *Geryonia appendiculata*, some Margelid medusæ and swarms of *Obelia*, have formed the chief Cœlenterate element. *Noctiluca* is generally present in fair quantity. The Ascidian *Ciona intestinalis* is now breeding.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*) from India, presented by Mr. Duncan Mackintosh; two Lions (*Felis leo*, ♀ & jew.) from Somaliland, presented by The Lord Delamere; four Long-fronted Gerbilles (*Gerbillus longifrons*) from Tunis, two Long-tailed Field Mice (*Mus sylvaticus*) from France, presented by Mons. Albert de Lautreppe; a Ring-tailed Coati (*Nasua rufa*) from South America, presented by Mr. H. Rich; two White Storks (*Ciconia alba*) European, presented by Mr. Walter Winans, F.Z.S.; an Adelaide Parakeet (*Platyercus adelaidæ*) from Australia, presented by Mrs. Waterhouse; two Common Sheldrakes (*Tadorna vulpanser*) from Scotland, presented by Mr. Francis Alexander; three Dwarf Chameleons (*Chamaleon pumilus*) from South Africa, presented by Mr. Henry Beamish; an Alligator (*Alligator mississippiensis*) from Florida, presented by Mr. H. Venn; a Serval (*Felis serval*), a Cape Crowned Crane (*Balearica chrysopelargus*), a Secretary Vulture (*Serpentarius reptilivorus*), a Black-winged Kite (*Elanus ceruleus*) from South Africa, a Grey Squirrel (*Sciurus cinereus*) from North America, deposited; three Viscachas (*Lagostomus trichodactylus*), a Hairy Armadillo (*Dasyfus villosus*), two Ypecaha Rails (*Aramides ypecaha*), a Great Grebe (*Aechmophorus major*) from South America, a Prêtres Amazon (*Chrysotis pretrii*) from Brazil, purchased; four Indian Wild Swine (*Sus cristatus*) born in the Gardens.

OUR ASTRONOMICAL COLUMN.

ON THE PARALLAX OF THE PLANETARY NEBULA B.D. + 41°40'.—During the summer of 1892 Dr. J. Wilsing began a series of photographs of Webb's planetary nebular B.D. + 41°40', using the new photographic refractor of the Potsdam Observatory, with the intention of determining the parallax. In the current number of *Astronomische Nachrichten* (No. 3190) he gives an account of the measurements made. The undertaking seems to have been especially difficult on account of the numerous errors that were liable to arise, and also to the lack of sharpness of the image of the nebula on the photographic plate. From June 1892 to June 1893 he obtained thirty-four plates with two exposures on each of eight minutes duration, and they were all measured with the Repsold's measuring apparatus, a description of which instrument is given in vol. v. of the Publications of the Potsdam Astrophysical Observatory. Six stars were used for comparison, and the distance of the nebula was measured from two of these stars, the others being used for finding the value in seconds of arc of the measured distances, &c. The distances measured show a distinct decrease, as will be gathered from the following table, when N. 3 and N. 6 denotes the distances from the two companion stars respectively:—

1892-93.	N. 3.	N. 6.	Wt.
June 25 ...	7 24'53 ...	13 9'72 ...	$\frac{2}{3}$
July 13 ...	24'40 ...	9'77 ...	I
Aug. 8 ...	24'53 ...	9'56 ...	$\frac{1}{3}$
Sept. 23 ...	24'42 ...	9'71 ...	$\frac{1}{3}$
Oct. 18 ...	24'43 ...	9'61 ...	I
Nov. 10 ...	24'23 ...	9'60 ...	$\frac{1}{3}$
Jan. 2 ...	24'32 ...	9'43 ...	$\frac{1}{3}$
June 5 ...	7 24'56 ...	13 9'61 ...	$\frac{1}{3}$

Assuming the nebula distances from these stars as 7' 24'' 40 + 13' 9'' 60 for 1892.0. the position, corrections, relative yearly proper motions, and the relative parallaxes, when taken

into account, gave the following numbers for the equation, observed—calculated

O - C.			
N. 3.	N. 6.	N. 3.	N. 6.
+ 0'05 ...	+ 0'05	+ 0'06 ...	- 0'05
- 0'07 ...	+ 0'16	- 0'13 ...	+ 0'01
+ 0'08 ...	- 0'11	- 0'05 ...	- 0'08
+ 0'02 ...	+ 0'03	0'00 ...	+ 0'05

The negative relative parallax thus obtained shows, as Dr. Wilsing in his concluding remarks says, that the distance of Webb's nebula from the sun cannot be assumed in any way to be less than the distances of both the eleventh-magnitude comparison stars.

SOLAR AND LUNAR EPHEMERIS FOR TURIN.—In vol. xxviii. of the *R. Accademia delle Scienze di Torino*, Dr. Alberto Manaira contributes the ephemerides of the sun and moon which he has calculated out for the horizon of Torino for the year 1894. For each day of the month throughout the year he gives the time of rising, meridian passage, and setting of the sun and moon. Brief reference is also made to the eclipses visible in that year, giving the time (mean time Rome) of the chief contacts.

GEOGRAPHICAL NOTES.

THE *Mouvement Géographique* publishes a sketch map of Dr. Baumann's exploration to the north-east of Lake Tanganyika, in the country of Urundi. He has traced out the head waters of the Kagera, which take their rise close to Tanganyika and flow down the long slope to the Victoria Nyanza, being thus the ultimate source of the Nile, if it is possible to apply that name to any of the streams which feed Lake Victoria. The mountains between the basin of the Kagera and that of the Rusiji are called by the Warundi *Misozi a Mwedi*, or Mountain of the Moon. Some of the summits were apparently about 10,000 feet above the sea. The Rusiji River, which flows into Lake Tanganyika at its northern end, is represented provisionally as flowing from the reported Lake Oso, which receives the drainage from the southern slopes of the Mfumbiro mountains, the north slope of which drains to Lake Albert Edward. If this topography turns out to be correct, the Mfumbiro range forms the only barrier across the great meridional furrow which runs from the Mediterranean to the Zambesi, and includes Lakes Albert, Albert Edward, the possible Oso, Tanganyika, and Nyasa.

MR. H. F. B. LYNCH, with his brother and a Swiss guide, succeeded, after seven and a half hours' climbing, in making an ascent of Mount Ararat, on September 19, and promises some interesting information regarding his observations on his return to this country. He took some photographs of the mountain scenery.

PRINCE KRAPOTKIN publishes his address on the Teaching of Physiography, given at the Teachers' Guild Conference at Oxford, in the October number of the *Geographical Journal*. He deprecates the exclusive use of the *Heimatskunde* in introducing children to the study of the earth, and approves rather of teaching geography by considering the earth as a whole, insisting, however, on the importance of personal work by the scholars in their own neighbourhood to extend and give reality to theoretical teaching.

AN interesting history of the mapping of the state of Missouri, by Mr. Arthur Winslow, assisted by Mr. C. F. Marbut, has been published in the Transactions of the Academy of Sciences of Missouri. Starting with the dictum that the civilisation of a people is proportional to the accuracy with which their country is mapped, Mr. Winslow traces the gradual improvement of the maps of Missouri in a readable way. He gives rough sketches of the more interesting early maps. Franquelin's map of 1688 is the first on which the name "Missouris" appears, but the river to which the name was applied is very imperfectly drawn. In Sinex's map of 1710 the position of the Mississippi is shown nearly sixty miles too far west, and the mouth of the Missouri twenty-five miles too far north. In du Pratz' map of 1763 the error in both directions is doubled. Lieutenant Ross, of the British Army, in 1765 made a survey of the Mississippi, accurate as to latitudes, but wrong in longi-