

these have raised a host of questions at various times, which even yet are not fully answered. The question as to the form of the planet itself is also one full of interest, and observers, from Beer and Mädler down to Trouvelot, have made numerous drawings of the different appearances. Observations have shown that the surface, or whatever it is that we look at, is by no means level, but extremely uneven or irregular. Such irregularities can be best detected naturally at the terminator and limb. Fig. 1 indicates a bulging at the limb, while Fig. 3 shows a similar phenomenon at the terminator at two different times—February 5, 2h. and 5h. 43m. (Perhaps this is one of the best proofs of a "short duration" period for rotation).

Fig. 4, which we also owe to Prof. Trouvelot, shows a more decided case of irregularity, and on perhaps a much larger scale.

Much remains, however, to be done before we are on anything like a footing with this planet as we are with Mars. With this latter we can observe directly the land and water markings, time to a second the period of rotation, observe local storms, and many other details; but with the former the case is different. Here the planet is for the most part lost in the rays of the sun, or at other times not very easy for observation.

That Venus has an atmosphere is a fact which has long been known, and that this is denser than the earth's envelope is also very probable. The part this atmosphere plays in the determination of the period of rotation seems to be of great importance, and it is rather a question of whether we have been observing real rigid markings on the planet itself, or only what has been described as "a shell of clouds, the appearances interpreted to signify the existence of lofty mountains, snow-caps, vast chasms, and crater-like depressions, are really nothing but the varying features of cloud scenery."

Whichever the case may be, future observation has still to show; but it seems that with the rapid advance now taking place in large instrument-making, such a question as this could be settled, given a few fine evenings or mornings near a favourable time of observation, a clear and still air, and a large aperture. Such occasions, perhaps, may be rare, but the point at issue is important, and should be settled as soon as possible.

W. J. L.

#### NOTES.

ALL the arrangements have now been made for the eleventh International Medical Congress, shortly to be held in Rome. The inauguration of the congress will take place on March 29, in the presence of the King of Italy. On the following day will commence the work of the scientific sections, which will be continued till April 5.

A CONGRESS of chemistry and pharmacy will be held in Naples at the beginning of next September. The congress will be divided into two sections—the one scientific, the other professional.

M. EUGENE CATALAN, a member of the Sciences Mathématiques section of the Paris Academy of Sciences, died at Liège on February 14.

ON March 18, Prof. J. Bertrand, the popular perpetual Secretary of the Paris Academy of Sciences, will have spent fifty years in expounding science. In order to celebrate this jubilee in a fitting manner, a committee has been formed, consisting chiefly of his old students at the École Polytechnique, the Sorbonne, the Collège de France, and the University, and a circular has been issued asking for subscriptions towards a commemorative medal which it is proposed to have struck for the occasion.

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The committee appeal not only to the eminent professor's old pupils, but also to his colleagues and friends who desire to do him honour. Among the members of the committee are Profs. Cornu, Marcel Deprez, Jordan, Maurice Lévy, Mascart, Mercadier, Picard, Poincaré, and M. Tisserand, the Director of the Paris Observatory. Subscriptions may be sent to any of these names, or to M. le Trésorier, de l'École Polytechnique, 21 Rue Descartes, Paris.

AN offer made by Miss Marian Brockhurst, to build a museum in the public park of Macclesfield, and endow it with £100 a year, has been accepted by the park committee.

AMONG the bequests of the late Mr. Thomas Avery, of Birmingham, is the sum of £2000 to the Midland Institute, and £1000 to Mansfield College, Oxford.

THE Malte-Brun gold medal of the Paris Geographical Society is to be awarded to M. A. Delebecque, for his researches on the French lakes, of most of which he has constructed detailed bathymetrical maps.

We learn from the *Chemist and Druggist* that the centenary of the birth of Friedlieb Ferdinand Runge, whose name is connected with the discovery of aniline, carbolic acid, and the paraffines of coal-tar, was celebrated at Oranienburg, near Berlin, on February 6, by the unveiling of a memorial tablet in the wall of the present Royal Seminary, which occupies the place where Runge's laboratory formerly stood.

THE Council of the Society of Arts attended at Marlborough House on Friday, when the Prince of Wales, President of the Society, presented to Sir John Bennet Lawes the Albert medal, and a like medal to Sir J. Henry Gilbert, awarded to them in 1893 "for their joint services to scientific agriculture, and notably for the researches which, throughout a period of fifty years, have been carried on by them at the Experimental Farm, Rothamsted."

WE learn that the collection of fossil plants, got together by Mr. James M'Murtrie, of Radstock, has passed away from the county where it was chiefly collected to the Natural History Museum at South Kensington, where it has found a permanent home. The Somerset coal measures generally, and especially the Radstock seams, have long been known for the richness and variety of their fossil flora, which is found in a state of preservation probably not equalled in any other coal-field in the country, and a residence of more than thirty years amidst such surroundings, with the aid of many willing assistants, had enabled Mr. M'Murtrie to accumulate one of the finest private collections in the country. The collection, consisting of more than 300 specimens, includes every variety of plant life of the Carboniferous age, from the smallest variety of fern to the largest tree ferns.

A FINE egg of the gare-fowl or Great Auk was put up for auction by Mr. Stevens, on Thursday, and, after a keen competition, was purchased by Sir Vauncey H. Crewe for 300 guineas. The egg originally belonged to the late Mr. William Yarrell, and the facts relating to its purchase are stated by Prof. Newton in another column. In 1856 the late Mr. Frederick Bond purchased the specimen for twenty guineas. It remained in this gentleman's possession until 1875, when it was sold to Baron Louis d'Hamonville. Of the sixty-eight true specimens of the Great Auk's eggs known to be in existence, Great Britain is said to possess forty-eight; France, ten; Germany, three; Holland, two; Denmark, Portugal, and Switzerland, one each; and the United States, two.

THE origin of gold nuggets is a question about which much controversy has arisen. Dr. A. R. Selwyn long ago suggested that the nuggets grow in alluvial deposits by the deposition of

gold upon their surface. His theory has been supported by other geologists and chemists. Prof. A. Liversidge has recently made a large number of experiments bearing upon this question, and his conclusion is that although large nuggets may be artificially produced, those found in alluvial deposits have been derived from gold-bearing rocks and reefs, and have obtained their rounded and mammillated surface by attrition; also, any small addition of gold which they may have received from meteoric water has been quite immaterial. (Roy. Soc. N.S. Wales, September 6, 1893.)

WE have received the annual report of the Geological Survey of Canada for 1890-91 (vol. v. new series). The volume consists of 1566 pages, bound in two parts, and containing thirteen separate reports, with maps and illustrations descriptive of the geology, mineralogy, and natural history of the various sections of the Dominion to which they relate. The region surveyed is so large, and the matters described are so numerous, that a bare mention of the results would take up many columns of this paper. One of the points of interest that attracted our attention while glancing through the pages of the report, relates to the discovery of a considerable deposit of infusorial earth on the right bank of the Bras, just at its junction with the Montmorency River. The deposit is about fifteen feet thick, and occurs in sand containing boulders, about forty feet above the river, and is overlaid by fifty feet of the same material. In colour the earth is partly yellowish and partly lead-grey, these tints being sometimes arranged in different layers, and sometimes irregularly intermixed in spots and patches. Another deposit of the same kind has been found on the east side of the north branch of the Ste. Anne River. This deposit is said to extend over an area of half an acre in the river valley, and in places is more than four feet in thickness. Dr. A. R. C. Selwyn, the Director of the Survey, has the thanks of all students of geology for the mass of material he has brought together in the report, and for the manner in which it is arranged and indexed.

ANOTHER Arctic expedition is announced by Reuter's agency as being prepared in the United States by a journalist named Wollman. The proposed route is by Spitzbergen, whence "a dash is to be made for the pole," and America regained by November of the current year. In this connection it is interesting to note that an expedition under the Norwegian Ekroll was stated in the newspapers to have started in June, 1893, from the north of Spitzbergen, but from private information we understand that this expedition never set out. The experiment of an Arctic journey from this side would be well worth making, if the expedition were properly equipped and adequately organised.

THE recent planimetric measurement of France by the Geographical Department of the Army, gives as the total area 536,891 square kilometres, or 206,381 square miles, which is 2000 square miles more than was formerly accepted as the area of the country. The problem of the exact area of a country is one of the most difficult in geography, involving as it does a survey of high accuracy and very laborious computation from large scale maps. The datum is of extreme importance, as it enters into all questions of quantitative distribution; in the case in point, it reduces the average density of population in France at the census of 1891 from 187·8 to 185·8 per square mile.

AT the last meeting of the Royal Geographical Society, a paper by Mr. Warington Smyth, on the Upper Mekong, was read in his absence. The journey which was described was carried out for the Siamese Government, with the primary object of investigating a reported deposit of rubies and sapphires

opposite Chiang-kong. Mr. Smyth left Bangkok in December, 1892, ascended the Menam for some distance, and crossed the mountainous country inhabited by the kindly and hospitable Laos eastward to the Mekong, which was reached near Chiang-kong. Across the river a series of low hills of crystalline rock gave origin to the gem-bearing gravels carried down by the streams which flowed from them to the main river. These gravels were being actively worked by the Burmese, who tried to keep the place of occurrence of the gems secret. The survey finished, Mr. Smyth's party came down the Mekong, five days' journey amidst beautiful scenery, to Luang Prabang, a large un-walled town of teak houses and numerous picturesque, often ruinous, monasteries. A French store established there seemed to do little business, the people preferring their home-woven cottons to the product of European looms.

WE have received an excerpt paper from the *Beobachtungen der Meteorologischen Stationen im Königreich Bayern* for 1893, containing an account of two balloon ascents, made at night-time, under the auspices of the Munich Balloon Society. The ascents were made for the purpose of investigating the conditions of the atmosphere at a time when the disturbances arising from heated ground were not effective, and the observations have been discussed by Profs. L. Sohncke and Finsterwalder, who also took part in one of the ascents. The instruments recorded automatically, electric light being employed both for attending to them and for obtaining photographic traces from some of the apparatus. The first ascent was made at 1 a.m. on July 2, 1893, from Munich, there being a barometric maximum at the time, and the second ascent was made on the 8th of the same month, under similar conditions. We can only refer here to one or two of the results of the first ascent. The most important feature in this case was the observation of a maximum temperature at a height of about 1000 feet above the ground. At a height of 400 feet the temperature was 63°5, or 5°4 higher than at the place of starting. In a stratum of another 450 feet there was only an unimportant rise of temperature, after which a rapid fall occurred, so that at a height of a little over 1000 feet the maximum temperature of 65°8 was recorded, being 7°7 higher than at the place of starting. From this point the temperature steadily decreased, and at 2900 feet it had fallen to 56°3. The relative humidity first decreased regularly with height from 85 to 49 per cent., and then from 1400 feet to the highest point attained (2900 feet), it steadily rose to 72 per cent.

A VALUABLE contribution to the study of thunderstorms, by R. De C. Ward, appears in vol. xxxi, part ii. of the *Annals of the Harvard College Observatory*, which has just been published. Full details are given of all the storms observed in New England during the years 1886 and 1887. June, July, and August were the months in which thunder was most frequently heard, and July had the greatest number of distinct thunderstorms. The hours of greatest frequency were 5 to 7 p.m. On about 40 per cent. of the days when thunder was reported there were storms with progressive movement, the average rate in both years being about 35 miles per hour, while the maximum and minimum velocities were 50 and 14 miles per hour respectively. The results of 1886 tend to show that the dependence of thunderstorms on the larger atmospheric disturbances or cyclonic storms is not so striking as many observations have shown it to be for Europe. While in 1886 over 60 per cent. of the thunderstorms occurred in the southern or south-western quadrant of cyclones central north of New England, in 1887 the majority of the storms occurred in the south-eastern quadrant under anti-cyclonic conditions. A meteorological summary for New England in 1891, by J. Warren Smith, of the U.S. Weather Bureau, appears in the same volume.

THE last number of the *Memoirs and Proceeding* of the Manchester Literary and Philosophical Society (vol. viii. No. 1)

contains a paper by Dr. G. H. Bailey, on some aspects of town air as contrasted with that of the country. He proves that as a means of discriminating between polluted and unpolluted air, and as a means of forming some estimate of the extent of pollution, the determination of the sulphurous compounds and of organic matter are much to be preferred to that usually adopted, viz. an estimation of the carbonic acid. It is also urged that however minute the quantities of polluting matter may be, they are sufficient to bring about serious disorganisation in plant life and in human beings. Dr. Bailey has prepared a number of tables showing considerable variations in the quantity of sulphur compounds present in different localities in Manchester and London on clear days and on slightly or densely foggy days. A remarkable result derived from one of the tables is that during the dense fogs of December, 1892, in Manchester and London, there was a much larger proportion of sulphur compounds present in the London than in the Manchester air, notwithstanding the fact that the coal consumed in Manchester is generally understood to be much more sulphurous than that burnt in London.

AN ingenious method of photographing the spectrum of lightning is proposed in the current number of *Wiedemann's Annalen* by G. Meyer. The difficulty of directing the slit of the spectroscope upon the flash is got over by substituting a diffraction grating for the prism. A grating ruled on glass is placed in front of the object-glass of the apparatus, the object-glass being focussed for infinite distances. Under these circumstances several images of the flash are obtained, a central image produced by the undiffracted rays, and images of the first and higher orders belonging to the diffraction spectra. The number of images of each order corresponds to the number of lines in the spectrum of the lightning. The arrangement was tested during a night thunderstorm. Two plates were exposed in a camera with a landscape lens of 10 cm. focal length, provided with a grating with 40 lines to the mm. One of the plates showed two flashes with their diffraction images of the first order, but representing one line only. The other showed a number of flashes, and one very strong one, passing apparently between two chimney-pots, with its diffraction images well marked. A calculation of the wave-length of the light producing these images gave  $382 \mu\mu$ . The measurement was not sufficiently accurate to warrant an identification of this line with a known wave-length, but it is certain that a radiation of about this wave-length must be added to the lines determined by Schuster and Vogel. It is probable that with better apparatus the method may be made to considerably increase our knowledge of the ultra-violet spectrum of lightning.

THE current number of the *Electrician* contains an abstract of a paper, by J. Sahulka, on the measurement of the capacity of condensers under alternating currents. The author has found that condensers with a solid dielectric have a smaller capacity when used with alternating currents than is given by measurement by direct current methods. He considers that the reason for this phenomenon lies in the condition of the dielectric; for even if it has a very high electrical resistance it absorbs energy in the process of charging, which energy is partly returned to the circuit in the discharge, and partly converted into heat. Thus, if a measurement of charge or discharge is made, the galvanometer deflection is too high, for it is a measure not only of the quantity of electricity passing on to or out of the coatings, but also of that taken up or returned by the dielectric. Now it is well known that the dielectric takes an appreciable time to take up this quantity of electricity, and since in alternate-current working charge and discharge occur successively with great rapidity, it follows that the dielectric has not time at every charge to take up as much electrical energy as it would if it

were charged by an electromotive force applied for a much longer time. It is thus necessary to define what is meant by the capacity of a condenser where alternating currents are concerned, and the author proposes the following definition:—"The capacity of a condenser on an alternating current circuit is equal to the reciprocal of the product of  $2\pi n$  and its inductive resistance, the latter being equal to the quotient of the potential difference at the condenser terminals caused by the charge, divided by the strength of the current flowing into it." The author mentions an experiment on a condenser with paraffined paper as dielectric, having a capacity of about one microfarad when measured on direct currents, which was found on an average of several experiments with alternating currents to have a capacity about 14 per cent. lower. Steinmetz's law, according to which condensers having solid dielectrics should absorb, under alternating currents, an amount of energy proportional to the square of the potential difference, was found by the author to be very approximately true.

WE have received a copy of the seventh annual report of the Liverpool Marine Biology Committee and their Biological Station at Port Erin (Isle of Man), by Prof. W. A. Herdman, F.R.S. The report shows that progress has been made in the scientific exploration of the Irish Sea during 1893, and a number of important investigations have been carried out by the sixty naturalists who worked at the station. The protective colouration of *Vibriss varians* was under observation during last summer. The manner in which individuals of this small prawn resemble the green, red, or brown seaweeds with which they are associated, on even sandy and gravel bottoms, was discussed in the report for 1892, and the question was raised as to whether, or to what extent, the adult animal could change its colour. Prof. Herdman says that a number of specimens, of various colours, were kept under observation in the laboratory during the year, in jars with various colours of seaweed and of background, and in very different amounts of light. The results of these experiments show clearly that the adult animal can change its colouring very thoroughly, although not in a very short space of time. The change in colour is due to changes in size and arrangement of the pigment granules of the chromatophores. It is remarked that an interesting point to determine is whether in this case, as in some others of similar colour changes, the modification of the chromatophores is due to nerve action and is dependent upon sight, or is the result of the direct action of light upon the integument.

A FURTHER contribution to our knowledge concerning the action of sunshine on microbes is to be found in a recent number of the *Comptes Rendus* (vol. cxviii. p. 151). MM. d'Arsonval and Charrin find that if the *b. pyocyanus* (an organism frequently found in the pus from wounds) is exposed to sunshine in culture liquid (presumably broth) for from three to six hours, it is deprived of its pigment-producing power; if, however, it is only subjected to the influence of the red rays in the spectrum, it exhibits subsequently the typical fluorescent green colour on cultivation in agar-agar at  $37^{\circ}\text{C}$ . Moreover, if the amount of sunshine it receives is extended, no growths at all subsequently make their appearance, showing that it has been destroyed; whilst it can tolerate a similar exposure to the red rays without exhibiting any signs of discomfort. This loss of pigment-producing power may also, these investigators state, be brought about by subjection to very low temperatures; thus at between  $-40^{\circ}$  and  $-60^{\circ}\text{C}$ . this bacillus loses its characteristic rod-like shape, frequently becoming ovoid; it multiplies very slowly, and exhibits only creamy white growths on agar-agar.

WE have received a volume containing statistics of the colony of Tasmania for the year 1892, compiled in the office of the Government Statistician from official records.

THE February *Journal* of the Royal Microscopical Society contains the address on "The Progress and Present State of our Knowledge of the Acari," delivered by the president, Mr. A. D. Mitchell, on January 17 of this year.

THE number just issued of the *Journal* of the Institution of Electrical Engineers contains Prof. G. Forbes's paper upon "The Electrical Transmission of Power from Niagara Falls," and the valuable discussion which it raised.

MESSRS. WITHERBY AND CO. will issue next month a volume of essays on zoological and geological subjects by Mr. Richard Lydekker. The volume is to be entitled "Life and Rock," and will be fully illustrated.

A FIFTH edition of Mr. W. Larden's "School Course in Heat" has been published by Messrs. Sampson Low, Marston, and Co. The book has been enlarged, and in places rewritten, and has gained in value by the refining process to which it has been subjected.

A FIFTH edition of the late Prof. Tyndall's biographical sketch of Faraday has been published by Messrs. Longmans, Green, and Co. The preface of this new edition possesses a melancholy interest, for, in a brief note appended to it, Mrs. Tyndall says it was only written a few days before her husband's death.

JUDGING from the twenty-fourth annual report just received, the Wellington College Natural Science Society is in a very satisfactory condition. The report contains abstracts of the papers read before the Society during the year, the results of meteorological readings, observations of plants and insects, and a statement of entomological occurrences and peculiarities. The Society is certainly a creditable part of the College to which it belongs.

THE 1894 *Annuaire* of the Municipal Observatory of Montsouris contains, in addition to the usual meteorological, physical, and chemical tables, an article by M. Albert Lévy on the chemical analysis of air and water, and a memoir by Dr. P. Miquel on the organic matter in air and water. The latter paper deals with the microscopic analysis of the air of Montsouris and that of the centre of Paris, the microscopic analysis of water, and statistics as to ammoniacal ferments in the air and water of different places.

THE Universal Electrical Directory (J. A. Berly's) for 1894 has been published by Messrs. H. Alabaster, Gatehouse, and Co. It contains the names of the members of the electrical and kindred fraternities throughout the world. For simplicity and facility of reference the work is divided into four groups, dealing respectively with British, Continental, American, and Colonial names, and these parts are again subdivided into alphabetical and classified sections. Several thousands of new names have been incorporated in the present issue, and 104 pages have been added, making a total of 888 pages.

IN March of last year we noticed the first report of the proceedings of the International Congress of Prehistoric Archaeology and Anthropology held at Moscow in 1892. The second volume has now reached us. The memoirs included in it are arranged into three classes, referring respectively to prehistoric archaeology, anthropology, and prehistoric ethnology. In addition to these memoirs, many of which are of great importance, the present volume contains the *Procès-verbaux* of the meetings. Another volume that has also been recently published contains descriptions of the places and institutions visited during the Congress, and reports on some of the questions discussed.

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IT is announced that a new monthly review of current scientific investigation—*Science Progress*—will make its *début* to-day. The new journal will be published by the Scientific Press, and will be edited by Prof. J. Bretland Farmer, with the assistance of an editorial committee, consisting of Prof. H. E. Armstrong, F.R.S.; Prof. C. S. Sherrington, F.R.S.; Prof. J. W. Judd, F.R.S.; Prof. R. T. Weldon, F.R.S.; Prof. G. B. Howes, and Prof. H. Marshall Ward, F.R.S. The editors propose to include in *Science Progress* notices and reviews of all the effective work that is being accomplished in the various branches of science, and the articles will aim at providing a critical exposition of current work in the departments to which they refer. In this way it is hoped that the journal will be of use, not only in recording what has actually been done, but also as indicating the direction and general tendency of research.

THE first number of the new series of *Science Gossip* contains, among other articles, one by the editor, on science at the free libraries. A recent tour through the metropolitan libraries, and those in some of the larger midland counties' towns, has shown Mr. Carrington that in many cases the income of the library goes in the purchase of fiction or general expenses, and the librarian depends upon donations for the science section of his catalogue, and must accept whatever comes to hand. To remedy this, it is suggested that some authoritative body, such as the Education Department of the Imperial Government, or failing that, the Library Association, should invite the councils of various learned societies, like the Royal, Linnean, Zoological, Geological, Geographical, Astronomical, Botanical, Chemical, Anthropological and Meteorological, to draw up a list of works dealing with their especial subjects, so as to get a list of good textbooks and authorities. This list might be revised from time to time, as changes became necessary through the progress of research.

THE atomic weight of palladium has been subjected to revision by Prof. Keiser and Miss Breed. A previous investigation of the value to be ascribed to this metal was carried out by Prof. Keiser in 1889, the salt palladium diammonium chloride,  $Pd(NH_4Cl)_2$ , which was considered for many reasons to be particularly suitable, being employed. The number derived from nineteen determinations was 106.27. Since that time three other determinations of the atomic weight of palladium have been carried out, by Bayley and Lamb, and by Keller and Smith in 1892, and by Joly and Leidié in 1893, the results of which are most discordant, differing by as much as a unit and a half. Dr. Keiser has therefore returned to the work, and has succeeded in discovering a compound of palladium which can be vapourised, and therefore subjected to fractional distillation, a method which Stas considered as the only one by which substances may be obtained in the highest state of purity. The compound in question is the dichloride  $PdCl_2$ , which can be distilled at a low red heat in a current of chlorine. The pure chloride thus obtained was converted into pallad ammonium chloride, and the latter compound analysed by reduction to metallic palladium in a current of pure hydrogen. The results of all the analyses afford as the final mean value for the atomic weight the number 106.25, which agrees remarkably closely with that previously obtained by Dr. Keiser. The most divergent of all the individual values are only 0.07 apart, so that it would appear that the atomic weight of palladium is now definitely determined.

A FURTHER communication upon the subject of the artificial preparation of the diamond is contributed to the *Comptes Rendus* by M. Moissan. It was shown in an earlier memoir that when carbon is dissolved in various fused metals at the temperature of the electric furnace and at the ordinary pressure,

it invariably crystallises out upon cooling in the form of graphite of density about 2; but that when the operation is performed under increased pressure the density and hardness of the carbon which eventually separates are augmented, and black diamonds are produced in considerable quantity. A modification of the original form of these pressure experiments is now described, which results in the production of small but perfectly transparent and colourless diamonds similar to those found naturally. The former experiments were made with iron and silver as solvents for the carbon, the mixture of metal and excess of charcoal being heated in the arc of the electric furnace under pressure until most of the charcoal was dissolved in the white-hot metal, after which the hot crucible was thrown into a tank of water to effect sudden cooling. Bismuth has since been tried as a solvent, but is not found suitable, as a violent explosion is caused when the fused mass is projected into water, probably owing to the sudden decomposition of a carbide of bismuth. Iron is therefore used, and the cooling is effected by pouring the contents of the crucible into a bath of just melted lead. The solution of carbon in molten iron, being lighter than liquid lead, rises to the surface in spherical globules; the smaller spheres solidify before reaching the surface of the lead, but the larger ones are still liquid and are still so hot that they cause the lead at the surface to burn in contact with the air, incandescent particles of metal and oxide being projected out, and torrents of fumes of litharge produced. Upon removing the globules floating at the surface of the lead, dissolving their leaden coating in nitric acid, and subsequently removing the iron by suitable solvents, as previously described by M. Moissan, the transparent diamonds are readily isolated. They frequently exhibit well-defined crystal faces, which are usually curved and striated and etched with cubical markings exactly like those of natural diamonds. They possess the same wonderful limpidity, high refractive power, hardness, and density (3·5) as native diamonds, and exhibit many of the properties, such as anomalous polarisation and occasional spontaneous disruption, owing to their state of strain resulting from their formation under high pressure, which are characteristic of some Cape diamonds. The hemihedral forms of the cubic system appear to predominate in the crystals examined. They scratch rubies, and resist the action of a mixture of potassium chlorate and fuming nitric acid, but burn in oxygen at a temperature of about 900° with formation of pure carbon dioxide.

NOTES from the Marine Biological Station, Plymouth.—During the past fortnight the alga *Halosphaera viridis* has frequently been present in the tow-nettings. The proportion of Mollusc, Polychæte, and Cirripede larvae to the rest of the floating fauna has become still greater. The medusa *Phialidium variabile* is obtainable in about the same numbers as previously, and a few *Obelia* medusæ have made their first appearance for the year; but, strange to say, *Rathkea octopunctata* has not been observed, and even the ephyrae of *Aurelia*, although numerous in the open Channel, have been scarce within the Sound. No Echinoderm larvae have been yet observed. The Hydroids *Tubularia indivisa*, *Eudendrium ramosum*, and *Sertularia argentea*, and the Molluscs *Nassa reticulata*, *Lamellaria perspicua* and *Lamellidoris pusilla* are now breeding.

THE additions to the Zoological Society's Gardens during the past week include two Mozambique Monkeys (*Cercopithecus pygerythrus*, ♂ & ♀) from East Africa, presented by Lt.-Gen. Owen L. C. Williams; a Hooded Crow (*Corvus cornix*) from Norway, presented by Mrs. Wroughton; a Puff Adder (*Vipera arietans*), a Hoary Snake (*Coronella cana*) from South Africa, presented by Mr. B. Matcham; a Hairy Porcupine (*Sphingurus villosus*) from Brazil, deposited.

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#### OUR ASTRONOMICAL COLUMN.

A LARGE SUN-SPOT.—During the foggy days of last week, when the brightness of the sun was not too great to permit direct observation, a sun-spot, which was very plainly visible to the naked eye, attracted general attention. It was first seen in the south-east quadrant on February 19, and will probably pass off the visible disc about March 2. It has been somewhat remarkable for its relatively large penumbra and the scattered character of the umbra; a very distinct nucleus was also observed. In the course of an interview, Mr. Maundier stated that the spot was at a maximum on February 20, when it was about 48,000 by 46,000 miles, and the area 1870 millions of square miles. It was therefore much smaller than the great spot of February 1892. Though the magnetic disturbances have not been so great as in the case of the 1892 spot, a marked effect on the Greenwich recording magnets was noticed at 3.15 p.m. on February 20, the disturbance lasting about twenty-seven hours. After an interval of about twenty-four hours, another and more intense storm commenced, and reached a maximum at 3 p.m. on February 23. In the case of the spot of February 1892, the violent magnetic storms occurred *after* the spot had passed the central meridian; but in the present instance, the disturbances seem to have preceded the central transit of the spot.

ANDERSON'S VARIABLE IN ANDROMEDA.—Prof. E. C. Pickering announces in *Astronomische Nachrichten* (No. 3213) that an examination by Mrs. M. Fleming of photographs taken at the Harvard College Observatory confirms the variability of the star in the constellation Andromeda (R.A. oh. 14m. 48s. Decl. +26° 10' 3") observed by Dr. Anderson (NATURE, Nov. 30, 1893). The observations, and those quoted by Dr. Anderson, as having been made at Bonn and Cambridge, indicate that the period of the variable is 281 days, and that the next maximum will occur on March 30. A determination of the form of the light curve led to the interesting result that during the three months following a maximum, the diminution in light is at the uniform rate of one magnitude in twenty-five days; for the three months preceding the maximum the increase is also uniform, and at the rate of one magnitude in twenty-six days. Prof. Pickering points out that this great uniformity in the variation in light of the star appears less extraordinary if a similar uniformity in the diminution of the light of Nova Aurigæ is considered. From March 7 to March 31, 1892, the light of this star diminished from magnitude 6·3 to 13·3 with almost perfect regularity at the rate of three-tenths of a magnitude per day.

Following Prof. Pickering's note is one in which Dr. E. Hartwig gives observations to show that the next maximum of the variable under consideration will occur on March 10, and that the period of variability is 74·4 days.

A BRIGHT METEOR.—Mr. Andrew Greig writes to us as follows:—"A very bright meteor was seen at Dundee at 7h. 18 $\frac{1}{2}$ m. p.m. on Wednesday, February 21. It was a little to the east of south, and midway between Sirius and Orion's belt. It was falling in a westerly direction, or parallel to a line joining the stars Betelgeux and Rigel. It was visible for about three seconds. There was a slight haze above both southern and northern horizons at the time, but Vega could easily be seen low down in the north. The portion of the sky around Jupiter and the Pleiades was quite clear. 'Streamers' were observed in the north for about three minutes afterwards."

This meteor was also seen in North Lincolnshire. To an observer in that district it appeared in the north-west by northern part of the sky, and fell in a westerly direction. Among other places in which the object was observed are Colwyn Bay, Whitby, Howden, and Sandal; but no details as to the path it traversed, or the times of observation, have reached us from these places. An explosion was heard at Colwyn Bay, but no sound is mentioned by other observers.

#### THE BAKERIAN LECTURE.

AN investigation on the internal friction of liquids, carried out by Prof. T. E. Thorpe, F.R.S., and Mr. J. W. Rodger, formed the subject of the Bakerian Lecture delivered at the Royal Society on February 22. The following is an abstract of the communication:—

The purpose of this paper is to throw light upon the relations between the viscosity of homogeneous liquids and their chemical nature.