

only point out that light, especially direct sunlight, is always very destructive to the colours of butterflies (though some colours fade more quickly than others), and though they will preserve their colours fairly well for centuries *if kept from the light*, we should strongly recommend any person who values specimens of butterflies to keep them carefully covered, except when actually undergoing inspection.

We have before us copies of the reports of the U.S. National Museum, Washington, for the years ending June 30, 1905, and June 30, 1906. These reports are for the future to be restricted to accounts of the administrative operations of the museum. The interesting and well-illustrated papers based on the collections of the museum, which in past years have appeared in the appendix to the reports, are for the future to be published in other series. The report for the year ending June 30, 1906, shows that the total number of accessions received by the museum during that year was 1516, comprising 257,605 specimens, of which 8232 were assigned to the department of anthropology, 227,633 to the department of biology, and 21,740 to the department of geology. In ethnology, large accessions were received from Arizona and New Mexico, the Philippine Islands, and Malaysia. The collections in physical anthropology were mainly enriched by material from Malaysia and from ancient Indian ruins and mounds in the western parts of the United States. The most important addition to the biological department was the collection of 75,000 American Lepidoptera given by Mr. William Schaus, and, besides these, 33,000 insect specimens were received through the U.S. Department of Agriculture. In view of annual additions such as these, it is not surprising to learn that "year by year the exhibition cases have been brought closer and closer together, and great spaces have been shut off from the public view to permit of the shelter of thousands of new accessions." Fortunately, the new building for the museum is making satisfactory progress, and its completion will make it possible to reveal to visitors the wealth of scientific material which has been amassed in recent years.

THE untrustworthiness of the underground conduit system for tramways when confronted with a heavy snow-fall is once more brought to our notice in the reply of the manager of the Grand Berlin Tramways Company to the criticisms passed upon the recent breakdown of the few underground conduit lines in Berlin. Assertions were made that with the same system other towns on the Continent were free from interruption to their tramways during the recent fall of snow, but the manager in his reply clearly shows that, with the exception of Vienna, all the leading towns on the Continent in which the underground conduit system is employed were in a similar plight, and in Budapest the tramways were completely stopped for several days. The report of the Brussels Tramway Company also states that their troubles during the snowy period were due to the underground conductors, and that the working of the lines could not be carried out with a repetition of similar events, in spite of the fact that a large reserve plant was available. Vienna is almost an ideal city for conduit work, and has nothing like the traffic of Berlin, and is not, therefore, a fair comparison of everyday working conditions such as we have in London. We have before pointed out in NATURE the difficulties attendant on the working of the underground conduit system directly any unusual weather sets in, and the above reports fully bear out the contention that the underground conduit system is not so perfect as some of its disciples would have us believe.

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UNDER the title "Erinnerungen an Johannes Wislicenus," Dr. W. Sonne has published (Leipzig: W. Engelmann, pp. 36, price 1.20 marks) a number of personal recollections of Wislicenus during the years 1876-1881, when, at the height of his activity, he was filling the chair of professor of chemistry at Würzburg. It was during this period that his work on ethyl acetoacetate was published, partly in collaboration with Conrad and others. In 1880 he was associated with Hantzsch, who succeeded him both at Würzburg and Leipzig. The "Erinnerungen" are of value as throwing light on the inspiring personality of Wislicenus, and may be regarded as supplementing the more complete accounts recently given of Wislicenus's work by Prof. Beckmann and Prof. W. H. Perkin, jun.

MUCH confusion arises at the present time from the lack of understanding, either here or abroad, as to the exact sense in which the various names applied to proteins and their derivatives shall be used. Difficulty is created by the use of a term in different senses, as well as ambiguity of meaning in some cases. The Chemical Society has for some time had this matter of nomenclature under consideration, and has just issued a series of recommendations in its Proceedings (vol. xxiii., No. 321). The first two recommendations are:—(1) The word *proteid*—which is used in different senses in this country and in Germany—should be abolished. (2) The word *protein* is recommended as the general name of the whole group of substances under consideration. It is at present so used both in America and Germany. It admits readily of the use of such derived words as *protease* and *proteose*. If used at all, the term *albuminoid* should be regarded as a synonym of *protein*.

MESSRS. CROSBY LOCKWOOD AND SON have published a second edition of Mr. George Clapperton's "Practical Paper-making." The work has been carefully revised and enlarged by twenty pages, so as to bring the information up to date.

MESSRS. MACMILLAN AND CO., LTD., have issued separately certain parts of "An Introduction to Practical Geography," by Mr. A. T. Simmons and Mr. Hugh Richardson, which was reviewed in our issue for May 10, 1906 (vol. lxxiv., p. 27). Section i., maps; section ii., the globe; and section iii., climate, may be obtained in small volumes bound in limp cloth, and the price of each is 1s.

THE Bulletins of Miscellaneous Information issued during 1906 from the Royal Botanic Gardens, Kew, have been bound together in a single volume, the price of which is 4s. The work can be obtained in London from Messrs. Wyman and Sons, Ltd., or through any bookseller. Reference has been made to separate bulletins from time to time in these columns, and botanical readers of NATURE are familiar with the general character of the publication.

#### OUR ASTRONOMICAL COLUMN.

**PERTURBATIONS OF HALLEY'S COMET.**—From an investigation of the Jupiter perturbations of Halley's comet, Messrs. Cowell and Crommelin find that the perihelion passage of that comet will probably occur about a fortnight earlier than the date given by Pontécoulant, that is, in the first half of May, 1910. What is more important, they also find that Pontécoulant's perturbations were about ten times too great, and consequently the perihelion distance will be appreciably the same (0.59) as at the last return, instead of being shifted some nine million miles nearer to the earth as found by the French investigator (Monthly Notices, vol. lxxvii., No. 3, January).

STARS HAVING PECULIAR SPECTRA.—Circular No. 124 of the Harvard College Observatory contains the particulars of a number of variable stars and other objects which the Henry Draper memorial photographs, examined by Mrs. Fleming, show to have peculiar spectra.

The chief peculiarities are bright or multiple hydrogen lines, as, for example, in the spectrum of B.D.+47°939, a 4.5 magnitude star in Perseus, in which H $\beta$  is bright and the lines H $\gamma$  and H $\delta$  appear to be double, probably because fine bright lines are superposed on them. A star in Scorpio, of magnitude 7.1, is found to have a spectrum similar to that of  $\zeta$  Puppis. Several of the variable stars mentioned show a range of about five magnitudes.

SIMULTANEOUS DISPARITION OF JUPITER'S FOUR SATELLITES.—From a study of the phenomena of Jupiter's satellites, Signor Enzo Mora finds that on October 3, 1907, all four of the larger moons will be invisible, for several minutes, at the same time, and, as this is a rare occurrence, he directs attention to the matter in No. 4148 of the *Astronomische Nachrichten*. From 7h. 48m. to 7h. 54m. (Greenwich Civil Time) No. 1 will be eclipsed and occulted, No. 2 will be in transit, No. 3 will be eclipsed, and No. 4 occulted. The satellites will again be invisible at 9 p.m. on the same evening. The last time this phenomenon occurred was October 21, 1895, and, after October next, it will not occur again until October 22, 1913.

PHOTOGRAPHS OF FAINT STARS.—In Circular No. 123 of the Harvard College Observatory Prof. E. C. Pickering outlines a plan by which the information to be gathered from photographs of stellar regions, taken by numerous observers in various countries, may become readily available to anyone in search of such information. For stars of the thirteenth magnitude and brighter, the Harvard collection of photographs largely supplies the necessary data. For example, for each of the stars of magnitude 5.0 and brighter, some 2000 in number, the collection contains about one thousand photographic images taken during the last twenty years; similarly, for the thirteenth magnitude stars, about five million in number, there are about 200 images of each.

Prof. Pickering now suggests that anyone having in the possession photographs which might furnish useful information, such as the earlier appearance of Novæ, variable stars, &c., should publish particulars of the same, or should forward to him the necessary information in order that it may be included in a publication which the Harvard authorities are preparing, and so become available generally.

MODEL TO ILLUSTRATE EFFECTS OF THE EARTH'S ROTATION.—In No. 7 (February, 1907) of the *Comptes rendus* M. G. Blum describes a simple apparatus for reproducing the phenomena observed in the Foucault-pendulum experiment for showing the earth's rotation. Briefly, the apparatus consists of a sphere, representing the earth, and a small pendulum which may be made to oscillate on its surface in any latitude. The sphere rotates on an axis, and is slotted along a meridian so that the gallows carrying the pendulum may be clamped on to it at different points representing different latitudes. The oscillation of the pendulum—which consists of a thin wooden rod with a small wooden bob—is produced by a coiled spring, and always takes place in a plane normal to the sphere. With this apparatus the rotation of the plane of oscillation with regard to that of the sphere may be shown to be equal in period and opposite in sense at the poles, and to have a slower period as it approaches the equator, the change being so marked that it can be readily seen and its nature recognised.

PROMINENCE OBSERVATIONS (1906).—No. 1, vol. xxxvi. (1907), of the *Memorie della Società degli Spettroscopisti Italiani* contains a posthumous note of Prof. Mascari giving the results of the solar-prominence observations made at Catania during the first half of 1906. Three hundred and forty prominences were observed on eighty-seven days, giving a daily frequency of 3.91. In the northern hemisphere the daily frequency was 2.32 and the mean heliographic latitude 31°.6, the corresponding figures for the southern hemisphere being 1.59 and 29°.2 respectively.

#### METEOROLOGICAL OBSERVATIONS.

SUNSHINE and Snowfall in 1906.—In *Symons's Meteorological Magazine* for January, Mr. R. H. Curtis gives an interesting summary, with map, of the bright sunshine over the British Isles, registered by the Campbell-Stokes (burning) recorder. The year was one of the sunniest on record; the most favoured region was the English Channel, all stations from Torquay to Lowestoft recording approximately 2000 hours of sunshine. At inland stations the amount became less, yet, broadly speaking, all the region south of a line drawn from the Humber to the Bristol Channel received 200 hours more than the yearly average. In north-west Scotland the amount was below 1200 hours, which was not far from the average of that district. The most brilliant months (relatively to their possible amounts) were February, April, June, July, and September; the most sunless months were May and November, in both of which the amounts recorded were generally below the average.

The snowfall is preliminarily dealt with by the editor, with especial reference to the storms between December 25–30, which occurred over nearly the whole of the British Isles. Considerably more than half the kingdom received above 5 inches, and some districts, especially north-east England and the southern uplands of Scotland, from 1 foot to 2 feet in depth. In the south of Scotland trains were blocked; Aberdeen was isolated for several days, and a most serious railway collision occurred near Arbroath. Although the greatest amounts recorded were in Scotland, Dr. Mill points out that the severity of the storm in Ireland, where more than a foot was recorded in the north and west, was noteworthy, owing to its usual immunity from heavy snowfalls, an amount of 5 inches over wide districts being very unusual there.

Rainfall of Scotland in May, 1906.—In discussing this subject in the *Journal of the Scottish Meteorological Society*, Mr. A. Watt shows that the rainfall of Scotland in that month was of a very exceptional character; in the eastern districts, generally, the fall was much the heaviest in May during the last fifty years. The rainfall on the east coast was heavier than that on the west; only a few scattered stations towards the north-west did not receive as much as 3 inches, about nine-tenths of the mainland received at least 4 inches, while a large area in the south and south-east and other isolated parts received 6 inches and upwards, or about thrice their normal amount. A note by Mr. R. C. Mossman on the conditions experienced by himself in the Greenland Sea during the month in question shows that the weather there was unusually inclement; the characteristic features were high barometric pressure, accompanied by strong north-west and north winds and gales, very low mean temperature, and densely overcast skies. Mr. Mossman states that there can be little doubt that the Arctic anticyclone was the dominating factor in the production of the abnormal rainfall in Scotland, and also of the unusually high temperatures observed in Russia at the same time, referred to in Mr. Watt's paper.

The Atmosphere in the Tropics.—In the Proceedings of the American Academy of Arts and Sciences for December, 1906, Mr. A. L. Rotch gives the results of the Franco-American expeditions undertaken at the expense of M. Teisserenc de Bort and himself to prove, by means of kites and unmanned balloons, the direction of the upper return currents above the trade-wind region of the North Atlantic. For this purpose M. Teisserenc de Bort purchased and equipped the steam yacht *Otaria*, of 350 tons, and expeditions were made in the summer of 1905 and in the winter (February) of 1906. With regard to the results of the first expedition, Mr. Rotch states:—(1) north of Madeira and near the Azores the upper winds are chiefly from west and north-west; (2) winds blowing towards the equator are from north-east to east in the lower region, and generally from north-west to north-east above 1000 metres; (3) the return currents from the equator, or antitrades, are formed by winds having a southerly component, being generally south-west in the latitude of the Canaries, and south-east near the Cape Verdes. As most of the observations of direction of the upper currents found by Prof. Hergesell during the cruises of the *Princesse Alice*