

THE publication of Mr. Hutchinson's "Archives of Surgery," which has lapsed for six months, is now being resumed. No. 21 will appear in a few days, with additional letterpress as well as nine plates, and this number, which commences vol. vi., will contain a chronology of medicine from the fifteenth to the nineteenth century. The publishers will in future be Messrs. West, Newman, and Co.

A ROUGH list (No. 147) of rare and valuable books for sale, has been issued by Mr. Bernard Quaritch. The list includes a number of important archæological works, and a few works belonging to the natural sciences. Mr. W. F. Clay has also just issued a list of scientific books, including the works on chemistry lately purchased by him from the library of the late Prince Lucien Buonaparte.

WE have received a copy of *El Obrero*, a fortnightly paper published at Quito, Ecuador, with a summary of meteorological observations made at the astronomical observatory at that place for the month of September. Observations at that locality are very desirable, and we are glad to see that their publication is to be continued, and copies to be distributed to a number of places.

THE Meteorological Office of Argentina has just issued vol. ix. of its *Anales* in two large quarto parts, forming a splendid contribution to the climatology of that part of the globe. The first part, which contains 678 pages, gives the observations and the means deduced from them, for Cordova, during the years 1872-1892; while the second part, which extends to 400 pages, contains an exhaustive discussion of the data, and of the influence of the various elements on each other, e.g. of wind on temperature, &c. It is not possible to give in a brief space any summary of so comprehensive a work. We merely note that the monthly mean temperature varies between 73° in January and 50° in June. The rainfall varies considerably; the mean of a number of years gives about 26 inches. The Director of the Service is G. G. Davis, who is also a member of the International Meteorological Committee, and attended the meeting at Upsala in August last.

Science Gossip is now one of the brightest and most diversified monthlies for the lover of science. The January number is remarkably good. Mr. J. T. Carrington, one of the editors, contributes a number of replies he has received to a letter asking for an opinion upon the use of the word "scientist." The word is never allowed knowingly to appear in contributions to NATURE. A twin-elliptic pendulum, exhibited by Mr. Joseph Gould at the Royal Society's soirées last year, is described by the inventor, and seven exceedingly fine figures, drawn by means of the apparatus, are reproduced. There is also a summary of Schiaparelli's views about Mars; and a page of astronomical ephemerides and notes, as well as scientific news, and notes on various branches of natural science. We are glad to see that physical science comes in for a fair share of attention, but there is still room for improvement.

SIX volumes have lately been added to the comprehensive series of reprints, "Ostwald's Klassiker der Exakten Wissenschaften," published by Engelmann, of Leipzig. No. 54 contains J. H. Lambert's paper, published in 1772, on the projection of terrestrial and celestial maps. The following number is also on map projection, and is made up of memoirs by Lagrange (1779) and Gauss (1822). Translations of two papers by Sir Charles Blagden, from the *Philosophical Transactions* for 1788, appear in No. 56. The subject is the effect of various substances in lowering the freezing point of water. Treatises on thermometry find a place in No. 57, which includes five of Fahrenheit's papers, three of Réaumur's, and a paper by Celsius. The volume thus comprises all the important communications con-

nected with the foundation of the three thermometric scales. The classical work of Scheele on the nature of air and of fire is reprinted in No. 58 of the series; and No. 59 contains Otto von Guericke's experiments with Magdeburg hemispheres, carried out in 1672. The quaint illustrations of the original paper give this volume additional interest.

THE additions to the Zoological Society's Gardens during the past week include a Black-eared Marmoset (*Hapale penicillata*) from South-east Brazil, presented by the Lord Auckland; a Pardine Genet (*Genetta pardina*), a Two-spotted Paradoxure (*Naudinia binolata*) from West Africa, presented by Lieut. F. E. W. Batt; a Sparrow Hawk (*Accipiter nisus*), British, presented by Mr. A. M. Lees Milne; two Long-nosed Crocodiles (*Crocodylus cataphractes*) from West Africa, presented by Captain F. W. Raisin; a Robben Island Snake (*Coronella phocorum*) from South Africa, presented by Mr. G. R. Picton Thwaites; two Grey Parrots (*Psittacus erithacus*) from West Africa, deposited.

Erratum.—In NATURE of December 13, 1894, p. 157, column two, line one, for "of a" read "near the." The cascade represented in the note serves to show clearly the overhanging ledge of limestone.

OUR ASTRONOMICAL COLUMN.

THE GREATER NEBULA OF ORION.—The numerous photographs that have been taken by means of portrait lenses during the past few years, go to show that many of the so-called celestial spaces are really filled with filmy nebulosities. Dr. Robert's classical photograph greatly extended the limits of the old Theta nebula in Orion, but few astronomers would care to say that it represents the great "tumultuous cloud" in its entirety. Indeed, three photographs obtained by Prof. W. H. Pickering in 1889, with a portrait lens, revealed a large zone of nebulosity surrounding the belt and sword handle, and extending towards γ Orionis. The significance of these photographs has perhaps been somewhat overlooked, but attention is again directed to them by a paper communicated by Prof. E. E. Barnard to *Astronomy and Astro-Physics* for December. By means of a lens only 1½ inches in diameter and 3½ inches focus, Prof. Barnard has recently taken two photographs of the Orion constellation (for the lens takes in nearly the whole constellation at one view), with exposures of two hours and one hour fifteen minutes respectively. These pictures show "an enormous curved nebulosity encircling the belt and the great nebula, and covering a large portion of the body of the giant." Without doubt, the nebulous stream which has left its impression upon Prof. Barnard's photographs, is the same as that of which the existence was recorded by Prof. Pickering. The "Great Nebula" in Orion is therefore but a pigmy compared with the greater nebula thus revealed. It is not too much to believe that in a few years the immense band of nebulosity will be shown to be more or less filled with luminous haze, the old nebula being probably but the brightest part of a nebula involving the whole constellation.

THE TRANSIT OF MERCURY.—We have already noted observations of the transit of Mercury on November 10, 1894, made in Europe and America. News has now reached us of successful observations, made under the direction of Mr. J. P. Thomson, at Mr. F. D. G. Stanley's Observatory, Brisbane. The instrument employed was a 6 inch equatorial by Grubb, stopped down to four inches. Times of contact at egress were carefully taken. When the planet had come sufficiently above the horizon to be observable, it had advanced about two-thirds across the solar surface. The whole periphery of Mercury was remarkably clear and well-defined. There was no trace of haze or vaporous aureola around the disc of the planet, but a bright spot was distinctly seen near the centre. At the instant of internal contact at egress there was a faint phenomenon resembling ligament. This, however, was only momentary. When the external contact occurred, the planet's limb tangential with that of the sun was remarkably clear and sharp. There was not a trace of disturbance, and the phase was regarded as a pure

geometrical contact. No trace of the planet's periphery could be seen when it left the solar disc, although it was carefully looked for.

The Government Astronomer at Sydney, Mr. H. C. Russell, states that fifteen photographs were taken of the transit of Mercury. He reports that as the planet crossed the sun it presented the appearance of a round and intensely black disc without any fringe such as has been noticed in former transits, and owing to the unsteady state of the air towards the close of contact, the "black drop" phenomenon took place, preventing clear definition.

AN IMPORTANT ASTEROID.—The minor planet BE 1894 proves to be a very important member of the community to which it belongs. M. Tisserand remarks, in *Comptes rendus* for December 26, that, of all the asteroids, it has the smallest perihelion distance, leaving out of count Brucia (963), of which the elements are very uncertain. When BE is at its descending node, its distance from the orbit of the earth is only 0.67 the radius of this orbit. On account of this circumstance, the asteroid is most favourably situated for the determination of the solar parallax. The elements given by M. Tisserand are as follows:—

		1894 November 4.7 Paris Mean Time.		
<i>m</i>	...	23	18	38.5
π	...	357	25	53.5
Ω	...	212	36	51.4
<i>i</i>	...	23	5	5.7
ϕ	...	18	4	8.1
μ	...	1002	151	
log <i>a</i>	...	0.366049		

} Mean Eq. 1894.

PROF. ADAMS' COLLECTED MEMOIRS.—A note in the *Observatory* informs us that Prof. R. A. Sampson, formerly Isaac Newton Student at Cambridge, is gradually reducing to order the large quantity of MSS. left by Prof. Adams. The memoirs relating to lunar theory have been completely separated and arranged, and the lectures on Jupiter's satellites are also well advanced. Memoirs on the solution of the infinite determinant, and others on some small matters, have been separated from incidental and preparatory work; but a considerable quantity of matter is still outstanding, so it may be one or two years more before the examination can be completed, and the collected works be ready for publication.

THE BIRD-WINGED BUTTERFLIES OF THE EAST.

IN the days of Curtis and Stephens, the late Mr. W. C. Hewitson was a diligent collector and observer of British insects of all orders, and likewise an ornithologist, who published several editions of a well-known work on British birds' eggs. But the day came when he was to discover, as he says in one of his own publications, that a butterfly might be beautiful, though it was not a British species; and he became thoroughly infatuated with these beautiful things, to the study and illustration of which he devoted the remainder of his life. And this is how it came about, as he used to relate to those who had the privilege of the acquaintance of a kind old enthusiast, whose work was of immense value to the progress of entomology in its day, though he was unable to sympathise with or to appreciate the vast revolution in modern biology which many men with whom he was intimate—and men, too, not much younger than himself, with Darwin, Wallace, and Bates at their head—succeeded in effecting in a comparatively short time.

One day of the days, as it says in the "Thousand and One Nights," he happened to be at Stevens's Auction Rooms, when a lot was put up containing several species of the well-known genus *Adelpha*, Hübner, or *Heterochroa*, Boisduval, as it was then called, which replaces our European White Admirals in South America. The butterflies attracted his attention, for at that time it was a novelty to him to see a number of butterflies so closely resembling each other, and yet quite distinct; and he bought the lot. He turned round, and saw Prof. Westwood, who said to him, "What, are you buying butterflies?" "Yes, I am," he answered; and thus he commenced the formation of his great collection of butterflies, now in the British Museum, which was fed by the cream of the expeditions of Wallace and

Bates, and remained unrivalled up to the day of his death, in 1878, though there are now several collections in England, France, and Germany which surpass it.

The exact date when this epoch-making event in the history of the study of butterflies occurred, we do not know. It is true that the first paper published by Hewitson on exotic butterflies related to the genus *Heterochroa*, and was published in the *Annals and Magazine of Natural History* in 1847; but in the previous year, Edward Doubleday had commenced his great work on the "Genera of Diurnal Lepidoptera," the letter-press of which was completed after his death by Westwood; and Hewitson executed all the plates, as joint author. It is, therefore, probable that Hewitson had already commenced the formation of his collection before that time, especially as his own great work on exotic butterflies was commenced before the actual completion of the "Genera."

Yet, since the death of Hewitson, new countries have been opened up, and wonderful butterflies have reached Europe, never dreamed of by Hewitson, or which remained unattainable objects of his desire, to the last. Chief among these may be mentioned the butterflies of Central Asia, a *terra incognita* except for Eversmann's and Nordmann's papers, in Hewitson's time; and the butterflies of the Eastern Archipelago, for the older naturalists, and even Wallace and Lorquin, much as they were able to accomplish, only succeeded in sampling some few islands, and many others now known to produce some of the strangest and grandest butterflies in existence, remained unvisited and unexplored.

Chief among the butterflies of these islands are the grand species to which Boisduval applied the generic name of *Ornithoptera*, or bird-winged butterflies, of which only a few, and those not the most remarkable, are found on the mainland of India, the Malay Peninsula, and South China. Many of the species are very closely allied, but others are so different that they can hardly be regarded as congeneric; and it will be well to discuss them by groups.

First of all, we may divide them into the black and yellow species, and those with black and green, orange, or blue males; and each of these two main groups includes a variety of species, which are hardly all congeneric.

Two species only, *O. Priamus* and *O. Helena*, were known to Linné. Several more were figured and described before the end of the last century; but only eight species were described as late as 1836, and though several others were afterwards described, Hewitson's collection only included eighteen, counting several forms which he treated as varieties. Now, however, Mr. Rippon's large work, "Icones Ornithopterorum," at present in course of publication, is intended to extend to eighty folio plates. But there is always some difficulty in determining the exact number of species, for these butterflies are variable, and in the numerous islands of the East there are a great number of closely allied local races, and we are hardly in a position at present to determine whether it is best to treat them all as distinct species, or as different forms of two or three, and especially is this the case with the group of *Ornithoptera Priamus*.

It will be best to commence with the black and yellow species, which are found on the Asiatic Continent, and the Malay Islands, and therefore in nearer and more accessible localities than any of the green species, except *O. Brookeana*. They are also found in the Moluccas, &c., but less numerous, being more abundant in the Malay Islands.

Of this group, *Ornithoptera Pompeus*, Cramer, from Java, may be regarded as typical. The males of this and the allied species are of a velvety black, with the nervures more or less bordered with grey, and the spaces between the ends of the veins on the hind margin, bordered with white. The hind wings are of a beautiful golden yellow, intersected with the black veins, and bordered with black along the hind and inner margins. The inner margin forms a fold which conceals the brown scent-bearing scales, and is fringed with long hairs.¹ On the inner margin, the black border projects into the wing in a series of long cones between the nervures. The females are similar, but the grey markings of the fore wings are more extended, and on the hind wings the scent-organs are wanting, and there is a row of black spots opposite the cones of the border, which are often connected into a continuous series, as

¹ See, for a fuller description of the scent-organs in *Ornithoptera*, Haase, "Correspondenzblatt des entomologischen Vereins, Iris zu Dresden," 1. pp. 93-94.