North India, presented by Lieut. E. A. P. Hobday; three Black-eared Marmosets (*Hapale penicillata* ♂ ♂ ♂) from South-East Brazil, presented by Mr. H. F. Makins, F.Z.S.; a Purple-faced Monkey (*Semnopithecus leucoprymnus* ♀) from Ceylon, presented by Mr. J. W. Dring; a Common Heron (*Ardea cinerea*), British, presented by Mr. T. E. Gunn; a Leach's Laughing Kingfisher (*Dacelo leachi*) from Queensland, presented by Dr. Carl Lumholtz; a Laughing Kingfisher (*Dacelo gigantea*) from Australia, presented by Mr. E. R. Oliver; a Great Grey Shrike (*Lonius excubitor*), British, presented by Mr. J. Pratt, F.Z.S.; a Spotted Bower Bird (*Chlamydodera maculata*) from Australia, presented by Lieut.-Col. W. Hill James; four River Frogs (*Rana fortis*) from Germany, presented by Mr. G. A. Boulenger, F.Z.S., a Green Turtle (*Chelone viridis*) from West Indies, presented by Mr. J. Wyan Thomas; a Tarantula Spider from Brazil, presented by Mr. C. A. Craven, C.M.Z.S.; a Common Boa (*Boa constrictor*) from South America, deposited; a Chimpanzee (*Anthropopithecus troglodytes* ♀), a Bosman's Potto (*Perodicticus potto* ♂) from West Africa, a Duyker-bok (*Cephalophus mergens* ♀) from South Africa, a Ring-tailed Coati (*Nasua rufa*) from South America, two Blood-stained Finches (*Carpodacus hæmorrhous*) from Mexico, a Snow Bunting (*Plectrophanes nivalis*), North European; an Angola Vulture (*Gypohierax angolensis*) from West Africa, a Guatemalan Amazon (*Chrysotis guatemalæ*) from Central America, four Elegant Grass Parrakeets (*Euphema elegans*) from South Australia, two Wild Ducks (*Anas boschas*), two Call Ducks (*Anas boschas*, var.), two Common Wigeon (*Mareca penelope*), two Common Pintails (*Dafila acuta*), six Common Teal (*Querquedula crecca*), two Muscovy Ducks *Coirina moschata*), European, two Mandarin Ducks (*Æx galericulata*) from China, purchased; a Common Wombat (*Phoscolomys wombat*) from Tasmania, received in exchange.

OUR ASTRONOMICAL COLUMN

THE TOTAL SOLAR ECLIPSE OF 1889, JANUARY 1.—The general circumstances of most of the total eclipses of the sun more or less available for physical observations before the close of the present century have been already described in this column: it remains, however, to make reference to that which will take place on January 1, 1889, and which will be total in the western part of the United States.

The central eclipse commences on the North Pacific Ocean in about longitude 178° E. and latitude 53° N.; it occurs with the sun on the meridian in 137° 57′ W. and 36° 42′ N., and ends in about 95° W. and 52° 15′ N. It strikes the American coast in the State of California in latitude 38° 50′, and the town of Hamilton, according to our approximate computation, would appear to be upon the central line: here the middle of totality occurs at 1h. 40m. 34s. local mean time, with the sun at an altitude of nearly 25°, and the duration of the total phase is 2m. 4s. The important observatory lately established on Mount Hamilton is outside of the zone of totality, the magnitude of the eclipse at that station being 0·98, and the middle at 1h. 45m. The following are points upon the line of central eclipse:—

Longitude	112° 34′ W.	Latitude	43° 15′ N.	Sun's altitude	15°·9
,,	106 14 ,,	,,	46 15 ,,	,,	10·2
,,	100 21 ,,	,,	49 9 ,,	,,	5·0

It will be seen that the sun will set totally eclipsed on British territory after the total phase has crossed the Assiniboine River and the southern extremity of Lake Winnipeg.

The second total solar eclipse in 1889 was described in NATURE in June 1877. It will be visible in Martinique, St. Lucia and Barbados, but with the sun at a low elevation, totality continuing about one minute and three-quarters, and will meet the coast of Africa in Angola in about 10° south latitude, where the total phase will have a duration of 3m. 30s., the sun at an altitude of 56°.

VARIABLE STARS.—In 1859 Hencke of Driesen drew attention to a star in Carrington's Redhill Catalogue which he had found to be variable. It is No. 1902, and was observed on three nights in March and April 1856, the magnitude being twice noted 9·5 and once 10·5. Hencke had observed it 8m. at the time he wrote, but believed it had probably been invisible with his means for some years previously. His notice appears in Peters' *Zeitschrift fiir populare Mittheilungen aus dem Gebiete der Astronomie*, &c., vol. i. p. 131. The star is not found in the catalogues of Fedorenko or Schwerd. Its approximate position for the beginning of 1885 is in R.A. 12h. 44m. 49s., N.P.D. 7° 39′·8.

At p. 150 of the Redhill Catalogue Carrington mentions that Oeltzen's No. 515, a seventh magnitude once observed by Schwerd had been looked for ineffectually. Oeltzen had re-examined his reduction of the observation which was made at Speyer on October 19, 1826, and found it correct. The star's place for 1885 is in R.A. 8h. 27m. 54s., N.P.D. 6° 52′·7. Close to this position there is a star in Fedorenko's catalogue from Lalande's observations (Nos. 1305-6) which is once called 8m., and once 5·6, the observations having been apparently made on March 19 and 20, 1790. It is 6m. in Groombridge, and 7m. in the *Durchmusterung* and in the Radcliffe Catalogue. Perhaps the discordance in Lalande's published estimates is occasioned by a misprint, and unfortunately there are several obvious errors of this kind in the catalogue deduced from his observations. The star in question is Groombridge 1431.

While writing upon polar variables we may once more refer to Bradley 396, R.A. (1885) 2h. 53m. 58s., N.P.D. 8° 58′·6, which, unless the existence of very improbable errors of estimation in the various catalogues is admitted, would appear to vary between the fifth and seventh magnitudes at the least, and there is a suspicion that the period may not be long.

A minimum of χ Cygni was due on May 22, and a maximum may be expected about November 16; from three determinations Schmidt found that the minimum preceded the maximum 178 days. The average period since 1877 has been 408½ days. The variable is the true χ (Bayer) Cygni, not the 17 Cygni of the catalogues.

GEOGRAPHICAL NOTES

THE fifth fascicule of A. E. Nordenskjöld's "Popular Scientific Appendix to the Voyage of the *Vega*" ("Studier och Forskningar föranledda af mine resor i höga norden") will be most welcome to the general reader, and we hope it may be translated into English. It contains a profusely illustrated, lively sketch, by M. Hans Hildebrand, on art among lower primitive populations. The drawings of the Chukches are especially remarkable. Caravans of sledges drawn by reindeer or by dogs, hunting scenes, splitting drift-wood, and sea-hunting, are most interesting, and not the slightest mistake is possible as to what the Chukche artist intended to represent. The Chukches are as successful, too, in drawing subjects less known to them, such as the *Vega* at its winter-quarters, or two men of the crew exercising in fencing. The most remarkable piece is that given to Baron Nordenskjöld by Lord Walsingham, which is reproduced by means of photography. The original is drawn on walrus-skin, and represents on the borders of the skin the shores with their hills, Chukche settlements, and a variety of scenes from Chukche life on shore; while the interior contains a variety of scenes from sea-hunting, harpooned whales pretty well represented with their waterspouts, ships, boats, and so on. The Europeans, sometimes with umbrellas, sometimes fighting with Chukches, are perfectly recognisable. The engravings showing the carvings in bone that are made by Chukches and Esquimaux are also very interesting, whilst other drawings allow us to compare the Northern primitive art with the art of Boshmans and North American Indians. M. Hildebrand's remarks on the art of prehistoric man and his parallels with the Normannic drawings—also well illustrated—will be equally attractive to the general reader. The same fascicule contains the first pages of a paper on the life of insects in Arctic regions, by M. Christopher Aurivillius.

THE *Bolletino* of the Italian Geographical Society for May contains a brief account of Signor Maurizio Buonfanti's late expedition across North Africa. The traveller, leaving Tripoli early in the month of April 1881, proceeded first in the direction of Lake Chad, mainly along the route already followed by Denham and Clapperton, Barth, Rohlfs, and other modern explorers. His chief object was to penetrate into the hitherto unexplored region stretching south from Adamawa, which territory was reached by the direct road from Kuka on Lake Chad through

Dikoa to Doloo. But a further advance in this direction was prevented by the disturbed state of the frontiers between Bornu and Adamawa. Buonfanti was consequently compelled to retrace his steps to Kuka, whence he turned westwards along the route recently opened by Lieut. Massari to Kano. After some trips to Yakoba and other little-known parts of Sokoto, he made his way through Gando to the Niger at Say, about midway between Timbuktu and the Binue confluence. Here he turned north, and for the first time *ascended* the Niger as far as Timbuktu. This feat, hitherto supposed to be impossible, was performed *in the dry season*, and the problem thus successfully solved possesses considerable geographical and commercial importance in connection with the attempts now being made to establish regular lines of water communication between Western and Central Sudan and the Gulf of Guinea. From Timbuktu the route lay through the States of Massina and Bambarra to the almost unknown territory of Tombo, the attempt to explore which region ended in disaster. Attacked in the Sanghi district by the natives, the expedition was plundered and almost completely dispersed, being reduced from an escort of 250 to six persons. Thus reduced to the greatest straits, the traveller was driven eastwards, and after enduring fearful sufferings reached the Bussanga country north of Dahomey. Here he fortunately came upon a Roman Catholic mission, which provided him with the means of continuing his journey southwards to the coast of Guinea. He arrived at Lagos on March 5, 1883, having lost all his scientific collections during the disastrous journey through Tembo.

WE received last year complete reports of the state of the ice around Greenland, from Nordenskjöld, and in the Siberian Seas, from Hovgaard, but no report as to the conditions around Spitzbergen. As complete reports of the state and conditions of the ice in the various Arctic seas from year to year will greatly tend to assist glacialists in their researches and future Polar travellers, we publish some particulars furnished by the well-known Arctic hunter, Capt. M. E. Arnesen, of Tromsö, of his voyages in the Spitzbergen seas last summer:—Leaving Tromsö on April 21, he encountered the ice on April 28 in lat. 68° 28′ N. and long. 41° 18′ E. On May 4 the first seal was shot in lat. 68° 50′ N. and long. 42° 10′ E. A storm clearing the ice away, he was able to sail as far as 69°. Here a large ice-field stretched west-north-west as far as lat. 69° 55′ N. and 44° 30′ E., where it curved in a north-easterly and easterly direction. During the fifteen years Capt. Arnesen has sailed in the Arctic seas he never experienced such an early and warm spring. The heat was at times quite oppressive. On the night of July 14 he rounded South Cape at Spitzbergen. The ice lay towards Whales Point, close to the western shore. The Thousand Islands were on July 16 entirely surrounded with ice, stretching about a mile out to sea on the west side. From High Rocks an ice-field runs to the south-south-west. The wind was generally northerly and light, with alternating fogs and clear weather. Deicrow's Sound was entirely free from ice, but, at Black Point, passage between Halfmoon and the other islands was impossible. Encountering the ice on July 20, west of Whales Point, he found no change in its state. On July 22 the edge of the ice was lying from High Rocks to the southern point of Hope Island. For two days a thick fog prevailed. On July 24 the southern point of Hope Island was passed, where close ice stretched south-south-west. The wind was during this week slight, but came alternately from all quarters, sometimes with rain and fog. On July 28 the current set the ice southwards, so that the Thousand Islands were in open water, and towards Hope Island only a few floes were seen. The Halfmoon Islands were in clear water. On the 29th the wind fell, "ice-blink," *i.e.* the reflection of new ice in the sky, being seen to the eastward. On the 30th compact ice was encountered south of Ryk Vs's Islands. On July 31 Whales Point was found free from ice. On August 4 the country at the mouth of Walter Thyrnen Strait was perfectly free from ice, only old glaciers being visible on the mountains. The grass was quite out. The north-eastern part of Hans Foreland forms a great low plateau with good grazings for the reindeer, where large herds are found. The reindeer were in a very good condition, a circumstance which further proves the early and mild spring of last year. On the afternoon of August 6 the temperature in the shade was 12° C., and that of the surface of the water 9° C. On the night of the 17th a little snow fell in the mountains. An old ox, castrated and marked in the ear, was shot. It was believed to be one of those which escaped from Nordenskjöld at Mossel Bay in 1872. East of Hans Foreland and Barents Land there was then no trace of ice; in fact the sea ran mountains high on that side.

THE last volume of the *Memoirs of the Russian Geographical Society* (vol. xii. No. 4) contains the "Memoirs of the Interpreter Otano Kigoro on Corea," translated from the Japanese by M. Dmitrevsky. The author was interpreter of the Corean language on the Tsousima Island, and compiled his book in 1794 on information gathered from Corean officials, as also from Chinese and Japanese works on Corea. The Russian translator of this book has added to it most valuable information gathered especially from the great Corean Code, published in 1785 (Da-dyang-tun-byang), which contains a detailed description of Corea, as well as from several other Chinese and European works, such as the "History of the Corean Church," by Dallet. The extracts from the Corean Code are especially numerous and of great value. The work of Kigoro contains interesting descriptions of the "Customs at the Court," the provincial administration, the geography of Corea, its inhabitants, their customs, habitations, food, and agriculture, as also notes on the Corean administration, army, and literature.

THE last number of the Irkutsk *Izvestia* contains an interesting paper by Dr. Martianoff on his journeys in the north-eastern part of the Minusinsk district. In a note on antiquities in the basin of the Yenisei M. Bogolubsky mentions, among others, that on the Ouzynjoul gold-washings on a river of the same name belonging to the basin of the Abakan, implements consisting of a red copper nail, a marmor ring, and a knife and an arrow of bone, were found, together with bones of mammoth, rhinoceros, *Bos urus*, horse, antelope, wolf, and domestic animals, at a depth of from ten to thirteen feet. If implements from different levels were not confounded together, this find would surely be of great value. We notice also a note on a little-known subject, the "Scythic disease" among Aleutes and Kamchadales, by M. Grebnitzky, and another on the rapids of the Angara, with a map.

THE prospects of a trade between Europe and Siberia, through the Kara Sea, do not seem to be cheering. According to a private correspondent in Moscow, the steamer *Dallmann*, built at the Vulcan Engineering Works, Stettin, for towing on the Yenisei, lies at the trading station, Strelka, 75 versts south of Yeniseisk, where also two iron lighters of 5000 poods carrying capacity, and a wooden one capable of carrying 2000 poods, as well as two steam launches, now are. They are all to be sold, along with the buildings, depots, and factories at Strelka and the stations not far from the mouth of the Yenisei, about 800 versts north of Turukhansk. At the latter station large quantities of wheat, rye, and oats have been collected with a view to being exported to Europe. There seems at present little probability of their ever reaching their destination. During the last five or six years the steamer *Louise* has only twice succeeded in reaching the Yenisei and returning with cargo to Europe; three times the vessel failed in the attempt.

THE last issue of the *Journal of the Ceylon Branch of the Royal Asiatic Society* (Colombo, 1883) is wholly occupied by a translation of that part of Ibn Batuta's travels relating to Ceylon and the Maldive Islands, accompanied by notes. The account of the customs of the primitive inhabitants of the Maldives is especially interesting.

ON THE NOMENCLATURE, ORIGIN, AND DISTRIBUTION OF DEEP-SEA DEPOSITS[1]

III.

IT remains now to point out the area occupied by the red clay. We have seen how it passes at its margins into organic calcareous oozes, found in the lesser depths of the abysmal regions, or into the siliceous organic oozes or terrigenous deposits. In its typical form the red clay occupies a larger area than any of the other true deep-sea deposits, covering the bottom in vast regions of the North and South Pacific, Atlantic, and Indian Oceans. As above remarked, this clay may be said to be universally distributed over the floor of the oceanic basins; but it only appears as a true deposit at points where the siliceous and calcareous organisms do not conceal its proper characters.

Having now indicated its distribution, we must consider the mode of its formation, and give, in addition, a concise descrip-

[1] A Paper read before the Royal Society of Edinburgh by John Murray and A. Renard. Communicated by John Murray. Continued from p. 117.