

rounded rock surfaces in the Sierra de Tandil in the Argentine Republic, which have thus been formed. The third article in the series discusses the organic and chemical theories of the origin of the Chilian deposits of saltpetre. The next subject considered is the method of the silicification of fossil wood: the author readvances his old theory, and replies to the criticisms made by Rothpletz and Solms-Laubach upon it, and advances nine arguments against Solms-Laubach's rival theory. The fifth paper describes cases in which deposits of salt have been formed under continental instead of marine conditions, which the author explains as due to the decomposition of minerals containing chlorine in rocks destroyed by subaerial denudation. The last and longest paper in the collection, rediscusses the old problem of the formation of coal. He considers the three alternative theories as to whether coal is allochthon, *i.e.* formed from vegetable material deposited elsewhere than on its place of origin; or is autochthon, or formed by the decay of plants *in situ*; or is pelagochthon, *i.e.* formed under the sea. The author advocates the last. He gets over the difficulty of Stigmaria, by declaring that his fellow botanists are wrong, and that its supposed rootlets are really floating leaves. He says that the figures, given in the text-books, are all copied from one source, and declares that there are no specimens in the museums of "Dresden, Vienna, London, Paris, Berlin, &c.," which give any support to the rootlet theory. He gives an ideal view of a landscape in the Carboniferous period, showing the Stigmaria spreading over the floor of a sheet of water, with the "rootlets" rising as aquatic leaves.

MR. JAMES R. GREGORY, the mineralogist and dealer, wishes it to be known that he has removed from 88 Charlotte Street, Fitzroy Square, to more convenient premises at 1 Kelso Place, Kensington, W.

MESSRS. CHAPMAN AND HALL have been constituted sole agents in this country, the continent, and the colonies, for the sale of the important scientific and technological publications of Messrs. Wiley and Sons, of New York.

THE August *Journal* of the Anthropological Institute contains papers on Prehistoric remains in Cornwall; the northern settlements of the West Saxons; changes in the proportions of the human body during the period of growth; the languages spoken in Madagascar; and on a collection of crania of Esquimaux. There is also a description, by Mr. M. V. Portman, of the methods that should be employed by anthropological photographers.

WE have received a copy of a "Report on Slavery and the Slave Trade in Zanzibar, Pemba, and the Mainland of the British Protectorates of East Africa," by the Special Commissioner of the British and Foreign Anti-Slavery Society. The Commissioner spent pretty nearly six weeks in East Africa in studying the subject. Probably the most valuable and trustworthy conclusion in this report, though perhaps not the one to which its author attaches most importance, is that "the whole question of slavery in Zanzibar and Pemba is a very complicated question."

THE volume of *Transactions and Proceedings* of the New Zealand Institute for the year 1894, has reached us. A few of the papers have already been noted in these columns, and as more than seventy papers are included in the volume now published, it is only possible for us to refer to a few of them. A synoptical list of Coccidæ, reported from Australia and the Pacific Islands up to the end of last year, is given by Mr. W. M. Maskell. Sir W. L. Buller, K.C.M.G., F.R.S., has several ornithological papers in the volume, and Captain F. W. Hutton, F.R.S., adds to the knowledge of the axial skeleton in the Dinornithidæ, and there are a number of other papers referring to the same birds. Prof. Arthur Dendy describes some land planarians, bringing the total number of species found in New

Zealand up to twenty. The editor of the volume, Sir James Hector, K.C.M.G., F.R.S., contributes several papers to it, and the Rev. W. Colenso, F.R.S., with others, make contributions to the knowledge of the botany of New Zealand.

AMONG the new editions lately received is a translation of Prof. Oscar Hertwig's book "Die Zelle und Die Gewebe," published by Messrs. Swan Sonnenschein and Co. The work has been translated by M. Campbell, and edited by Dr. H. Johnstone Campbell. As we reviewed the original edition in 1893 (vol. xlvii. p. 314), it is only necessary to express satisfaction that such an important treatise on the functions and structure of cells has been brought within the reach of students who do not read German easily. Under this translation from the German, we find on our table two translations into German of papers by British men of science. The papers are published by W. Engelmann in Ostwald's *Klassiker der Exakten Wissenschaften*. No. 61 of this series contains George Green's essay on the mathematical analysis of the theories of electricity and magnetism, edited by Dr. A. J. von Oettingen and Prof. A. Wangerin, and No. 62 is a translation of papers on the physiology of plants, published by Thomas Andrew Knight between 1803 and 1812. This is edited by Prof. H. Ambronn. A third volume (No. 60), just received in the same series, contains papers by Jacob Steiner on geometrical construction, and is edited by Dr. Oettingen. In the Aide-mémoire Series, published by Gauthier-Villars, we have received two books on ballistic subjects, viz. "Balistique Extérieure," by M. E. Vallier, and "Bouches a Feu," by Lieut.-Colonel E. Hennebert. We have also before us "An Elementary Text-book of Mechanics," by Mr. W. Briggs, and Mr. G. H. Bryan, F.R.S., published in the Tutorial Series of the University Correspondence College. The volume is concisely and clearly written, and may be recommended as a useful text-book.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*, ♀) from India, presented by Mr. R. Norton Stevens; a Yellow Baboon (*Cynocephalus babouin*, ♀) from Parrapatti, Eastern Coast of Africa, presented by Mr. J. V. Williams; a Kinkajou (*Cercoleptes caudivolutus*, ♀) from Demerara, presented by Mr. Sydney Mathews; three Alligators (*Alligator mississippiensis*) from Florida, presented by Mr. Ernest H. Shackleton; two Green Turtles (*Chelone viridis*) from Ascension, presented by Commander Duncan Campbell; a Common Viper (*Vipera berus*), British, presented by Mr. A. Old; a Macaque Monkey (*Macacus cynomolgus*) from Java, a Lion (*Felis leo*, ♀) from India, a Sooty Phalanger (*Phalangista faliginosa*, var.) from Tasmania, a Larger Hill Mynah (*Gracula intermedia*) from Northern India, a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, a Derbian Sternotherere (*Sternotherus derbianus*) from West Africa, three South American Rat Snakes (*Spilotes variabilis*) from South America, deposited; a Blossom-headed Parrakeet (*Palcornis cyanocephalus*) from India, a Tuberculated Iguana (*Iguana tuberculata*) from the West Indies, purchased; three Pumas (*Felis concolor*), eight Black Salamanders (*Salamandra atra*), born in the Gardens, two Triangular-spotted Pigeons (*Columba guinea*), two Crested Pigeons (*Ocyphaps lophotes*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE ROTATION OF VENUS.—Since our note last week on this subject, Signor G. Schiaparelli has published in the *Astronomische Nachrichten* (No. 3304) two letters concerning markings observed on the planet in July, and their bearing upon the question of rotation. The planet was observed from July 3 to 8 under all kinds of conditions, and the conclusion arrived at was that "the aspect of the dusky markings distributed over the disc did not undergo any important modification in form or situation during this period. Save a few small exceptions, all the variations

observed belong to the category of those apparent changes of diurnal period which may be explained by the varying state of rest and purity of the atmosphere and the different grades of illumination of the background of the sky. I have sought with particular care for an indication of any change of place of the most pronounced markings, with reference to the horns and with reference to the terminator; but I have not been able to make out anything with certainty which would indicate a more rapid rotation." This letter is accompanied by a sketch showing a marking diverging from the north pole, and another and more decided one proceeding from the terminator near the south pole in an easterly direction, and then curving round towards the north in the direction of a meridian. This marking underwent some slight change between July 5 and 7, the marking along the meridian only appearing on the latter date. In conclusion, Schiaparelli observes that the period of 224.7 days appears to be placed beyond all reasonable doubt. The second letter, written after the publication of Brenner's observations, contains a detailed description of Brenner's great marking, which is identical with the marking just described, and also with that observed in December 1877. Schiaparelli remarks that the view, advanced by him in "Considerazioni sul moto rotatorio del Pianete Venere," that the markings, though in reality atmospheric phenomena, depend to a certain extent upon the topographical conditions underneath, and recur under the same conditions, appears to be confirmed.

THE OBSERVATORY OF YALE UNIVERSITY.—The report of Dr. W. L. Elkin on the work done and in hand at the Observatory of Yale University, has been received. From the report we learn that the series of heliometer measures on the parallaxes of the first magnitude stars has been brought to a close, and the definitive results will be presented in the near future. The series on the parallaxes of the larger proper motion stars, on which Dr. Chase has been mainly engaged, now comprises 99 stars, all but two of which have been observed at two parallax maximum epochs, in general on three nights. Before drawing any conclusions from these data, it is proposed to secure two further epochs for each star, in order to eliminate the effect of the proper motion. An arrangement has been made with Dr. Gill that the observations and discussion of the *Iris* series for the determination of the solar parallax should be printed and included with his similar investigations on *Victoria* and *Sappho*. For the photography of meteor trails, an equatorial mounting, to carry a number of cameras, has been constructed and set up. The mounting carries four cameras, two with lenses of about 6 inches, and two with lenses of about 5 inches effective aperture. Some valuable results will, undoubtedly, be obtained from the photographic data accumulated by instruments of this kind. Already the Yale Observatory is in possession of some twelve impressions of Perseid trails, four of which were secured there and two at Ansonia by Mr. John E. Lewis, working in collaboration with Dr. Elkin. Prof. Barnard has sent three plates exposed also on August 9, 10, and 11, 1894, for about 8 hours in all, which show four and possibly five meteor trails. And Prof. Pickering has found on an examination of the Harvard Observatory plates one fine trail on a plate taken August 8, 1893, and sent it to Yale for measurement. Dr. Elkin has carried out a discussion of these trails, which will be very shortly ready for publication, and seems to lead to some interesting conclusions.

THE NEBULA N.G.C. 2438.—The first of a new series of celestial photographs, taken by Dr. Isaac Roberts, appears in the current number of *Knowledge*. It is a photograph of a portion of the constellation Argo, and shows the beautiful cluster M 46, and the involved nebula N.G.C. 2438. The nebula is a very small one, and was classed as a planetary nebula by Sir John Herschel; Lord Rosse, however, on some occasions, observed it as an annular nebula with two stars and a suspected third one enclosed; Lassell described it as a planetary nebula with two stars involved. The photograph, which was exposed for 90 minutes in the 20-inch reflector, shows the nebula to be as perfectly of the annular type as that in Lyra. It is circular in form, with three stars in the interior, the ring being most condensed on the north following side. The brightest star is near the centre, and is estimated at from 13th to 14th magnitude; on the south preceding side is a star of about 16th magnitude, and a still fainter one almost touches the ring on the south preceding side. There are indications of faint luminosity in the interior of the ring.

The cluster depicted in the same photograph is a "magnificent aggregation of stars between the 9th and 16th magnitude."

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THE VOYAGE OF THE "ANTARCTIC" TO VICTORIA LAND.¹

ALLOW me first to explain that my scientific observations were made under the disadvantageous circumstances of a sailor before the mast on board the whaler *Antarctic*. There seemed no choice between adopting this course and remaining on shore, and I was consequently able to take very few instruments. This explanation may to some extent lighten the criticism of my results.

We left Melbourne on September 20, 1894. It was originally our intention to spend a few weeks in search of sperm whales off the south-west of Tasmania; but not meeting with any, we steered for Royal Company Islands. On October 18 we had snow on board for the first time. It came in heavy squalls, bringing a large specimen of the *Diomedea exulans* albatross on board for refuge. At night it was moonlight, and at twelve o'clock the Aurora Australis was visible for the first time, with white shining clouds, rolling from west to east, at an altitude above the southern horizon of thirty-five degrees. The *Antarctic* was at the time in the vicinity of Macquarie Island, in latitude about 50° south. The aurora seemed to be constantly reinforced from the west, the intensity of the light culminating every five minutes, dying out suddenly, and regaining its former brilliancy during the succeeding five minutes. The phenomenon lasted until two o'clock, when it was gradually lost in an increasing mist. As the snow was heavy, and there was little probability of any material benefit from landing, we set out for Campbell Island on the 22nd, and dropped anchor in North Harbour on the eve of October 25, drifting the following day down to Perseverance Bay, a much safer harbour, where we filled our water-tanks and made final preparations before proceeding south. Campbell Island shows from a great distance its volcanic origin and character, undulating ridges rising in numberless conical peaks to from 300 to 2000 feet above sea level. The land around the bay is rich in vegetation, and most of the island is covered with grass, on which a few sheep seem to live in luxury. Numerous fur seals were basking on the rocks, and we also found many sea-leopards (*Stenorhynchus leptonyx*). They seemed to thrive well, their skins being without scar or cut, and, except human beings, they appear to have no enemies in these waters.

While duck-shooting on the Campbell, I came on three graceful waders of the snipe type (*Novae Zealandia*). In the interior of the island grass was everywhere to be seen except where stunted brushwood covered the ground. I have no doubt that some of the hardy species of Scandinavian trees would do well on this island.

We weighed anchor on October 31. During the next few days, proceeding further into the fifties, the air and water remained at an equal temperature of 44° F. A large number of crested penguins were seen jumping about like small porpoises. We met with several icebergs from 100 feet to 150 feet in height. These bergs were solid masses of floating ice, with perpendicular walls and an unbroken plateau on the top.

On the 6th of the following month, in lat. 58° 14' and long. 162° 35', we sighted an immense barrier of ice, or chain of icebergs, extending for about forty to sixty miles from east to north-west, in fact as far as the eye could reach, the top being quite level and absolutely white, and the greatest height 600 feet. The perpendicular sides were dark ashy grey, with large worn green caves. Several icebergs, similar to those we had encountered before, were floating in all directions, and were undoubtedly children of this enormous monster.

By the time we had reached 55° the albatross had left us, as likewise the Cape pigeon (*Daption capensis*); but the white-bellied storm petrel still followed in our track. A lestris, with dark brown head and white bordered wings, and a small blue petrel put in an appearance. On December 7 we sighted the edge of the pack ice and shot our first seal, which was of the white kind (*Stenorhynchus carcinophaga*), its skin being injured by several deep scratches. We had also a very heavy snowfall, the vessel being covered on deck and rigging for the first time.

On December 8, in lat. 68° 45', long. 171° 30', large streams of ice drifting around us, a strong ice blink appearing towards the south, and the presence of the elegant white petrel (*Procellari Nivea*) gave us unmistakable evidence that we had now before us those vast ice-fields into which Sir James Ross successfully entered with his famous ships *Erebus* and *Terror*, on January 5, 1841. In the evening we slowly worked our way in

¹ Abstract of a paper read by Mr. C. E. Borchgrevink at the Sixth International Geographical Congress on August 1