

4° and 6°, and even on some days not lower than zero (= 32° F.). This was particularly the case whilst the north-east "Föhn" wind prevailed, to which East Greenland is indebted for its comparatively mild winters; but there are places where the ice lies firm throughout the winter. On December 5, during a "Föhn" wind, the thermometer rose to +10° C. After the beginning of the new year, however, the cold became more severe, and the "Föhn" winds less frequent.

Towards the end of January and in February the thermometer sometimes registered 20° C. of frost, and on March 9 it fell to -21°·5, the lowest temperature registered during the winter.

Some interesting particulars are also given of the almost unknown district in which the Expedition wintered. The station Namortalik is described as situated on an island, and as having a population of 250 souls. The island, which bears the same name, is surrounded by several others, which, lying further out to sea, are visited during the spring by the natives, who catch seals and eider-ducks there. To the north the scenery of Greenland is seen in all its grandeur and beauty; wild mountains with lofty cones rising above the clouds. These are on the beautiful but almost unapproachable island of Sermerok. If the air be clear, and the weather calm and sunny, the little island lies so peacefully in the ocean that one feels tempted to climb the lofty mountains; but when the storm hovers around the peaks, half hidden in drifting clouds, and the Polar Sea is a mass of foam, the giant forms of the mountains deter even the boldest. The mainland is rugged, like the island just mentioned; in fact, the whole southern portion of Greenland is a region of wild mountains, furrowed by tremendous ravines, and rising to a height of nearly 8000 feet, from which enormous glaciers descend to the sea. The landscape produces by its wildness and desolation very striking impressions.

There are thirty little turf-covered houses at Namortalik, including a bakery and a brewery. The so-called "Royal Commerce of Greenland," a Danish Company, has also a depot here. There is, besides, a Lutheran mission, a church, and a school attended by half-caste Greenlanders.

The Expedition has erected two observatories on the rocks, about 1000 feet from the dwelling-houses, but connected by telephons.

Close to Namortalik is the Tasermint Fjord, some fifty miles in length, one of the loveliest in South Greenland. On its shores the vegetation is very luxuriant in summer, and the heat and mosquitoes are so troublesome that one could imagine one's self in the tropics. This fjord is of great importance to the Namortalik people, as its shores provide them with fuel, its streams and waters with salmon, seals, and herrings, and its mountain-slopes with ptarmigans, Polar hares, and foxes.

When the summer commenced, the Expedition intended to leave their quarters, and continue the exploration of the east coast; but there is at present no news of their achievements this summer. The programme is, however, to explore the east coast by sea and land as far north as possible, and to get into communication with the natives whenever opportunity offers, in which latter attempt nearly all previous Expeditions have been disappointed.

At the beginning of this winter one half of the Expedition was to return to Namortalik, while the second endeavoured to spend the winter as far north as possible. The Expedition will leave Greenland in the autumn of next year.

SCIENTIFIC SERIALS

Journal of Botany, August to November.—The most important article in the recent numbers of this magazine is Mr. Charles Bailey's paper on the structure, &c., of *Najas graminea*, Delile, var. *Delilei*, Magnus, illustrated with four plates and many woodcuts. This interesting addition to the British flora—first found in 1883 in a canal in Lancashire—is a native of warmer climates, not being indigenous anywhere in Europe, and has probably been introduced with Egyptian cotton. Mr. Bailey gives an exhaustive account of the morphology of its various organs, and especially of its mode of fertilisation. The *Najas* belongs to a class of plants that may be called "protozoophilous," the pollen being carried to the stigma by aquatic animals of low organisation, in this instance by the currents caused by the rotating cilia of species of Vorticellidæ.—Most of the other articles in these numbers are of more limited interest, being topographical papers on the flowering plants or cryptogams of

particular districts, or descriptions of new or little-known species.—Additional instalments are also given of Mr. J. G. Baker's synopsis of the genus *Selaginella*, which is still uncompleted, the species now described amounting to 180.

Nuovo Giornale Botanico Italiano, July to October.—The greater part of the space in the July number of this magazine is occupied by descriptive papers. The paper of most general interest is that by A. Piccone, on the algae of the Red Sea. He shows that the algal flora of this sea shows much closer affinities to that of the Indian Ocean than of the Mediterranean. It is characterised by the small number of diatoms and of green algae generally, by the entire absence of Laminariæ, and, above all, by its extraordinary richness in species of *Sargassum*, many of them endemic.—In the October number are a synopsis of the flora of Sicily, and a list of the "pronubi" or insect-fertilisers of flowering plants in Calabria and Piedmont; also a note by R. Pirota, showing, from an examination of the oospores, the identity of *Cystopus capparidis*, parasitic on the caper, with *Cystopus candidus*, the common parasite of cruciferous plants.

SOCIETIES AND ACADEMIES

LONDON

Linnean Society, November 6.—Sir J. Lubbock, Bart., President, in the chair.—A letter was read intimating that their late President, Mr. G. Bentham, had bequeathed in his will a legacy of 1000*l.* to the Society.—A notice of invitation for the Fellows to attend the centenary (December 4) of the Royal Bohemian Society of Natural History in Prague was also read from the chair.—Mr. W. T. Thiselton Dyer exhibited the following plants and their products:—(1) *Vaccinium arctostaphylos*, from which the Trebizonde tea ("Thé-du-Bu-Dagh") is prepared at Amassia and Tokat. The tea has a pleasant odour, but a somewhat harsh taste when drunk. (2) *Pueraria Thunbergiana*, specimens of this Korean plant and of the cloth made from it. (3) *Pachyrhiza sinensis*, with the native name of "Kopoo," a leguminous plant from the fibres of which the yellow and more expensive summer cloth is made.—Mr. Thos. Christy showed and made remarks on a specimen of *Kola acuminata*.—Mr. R. A. Rolfe afterwards exhibited examples of British oak-galls produced by Cynipidean insects of the genus *Neuroterus*. These were the silk-button gall formed by *N. numismatis*, the globose gall produced by *N. ostreus*, the smooth-spangle gall formed by *N. fumipennis*, the scarce-spangle gall formed by *N. leviusculus*, and the common spangle gall produced by *N. lenticularis*, as also a purple variety of the latter gall. He stated that the plan and details of the galls depend on the nature of the irritating fluid deposited by the insect; but on the other hand the different species of oak seem to have an influence in determining certain variations as to colour, and, it may be, general growth, of the galls.—Mr. Geo. Brook read a paper on the development of the Five-bearded Rockling (*Motella mustela*) in which the following points were enunciated:—(1) Whereas there is only one large oil globule in the normal egg of *Motella*, sometimes this is subdivided into from two to eight or even more; but in these cases there is always an abnormal development which often results in the death of the embryo. In those that survive, the small oil globules always coalesce to form one large one before the embryo hatches. (2) In the further development of the newly-hatched embryo there is a cranial flexure produced which is analogous to that so characteristic of Elasmobranchs. This is caused by the rapid development of the dorsal portion of the head, while the ventral portion remains comparatively quiescent. Later, the ventral portion plays its part, and, with the development of the jaws the brain is pushed back to its normal position. (3) As in other pelagic Teleostean eggs, there is no circulation observable either in the embryo or in the vitellus up to the time of hatching, nor indeed for some days afterwards. (4) In *Motella* the anal gut does not open on the ventral surface for at least a week after hatching. Ryder has shown the same to be the case with the cod-fish, so that the young *Gadide* would not appear to be in a position to take solid food at nearly so early a period in their existence as is usual with Teleosteans. Mr. Brook also called attention to the influence of temperature on the rate of development of pelagic eggs, and suggested that, until we know the temperature at which the various observations are made on these forms, no true comparison can be established.—The next communication was on a collection of

plants made in Timor Laut by Henry O. Forbes. Therein a short account is given of the nature of the islands and of the general character of the vegetation, after which comes a technical list of about eighty plants.—Prof. Oliver adds a note that, "This collection, so far as it goes, is made up in great part of the more widely diffused species of the Indian Archipelago. The most interesting plants appear to be: one in fruit only, referred to the meliaceous genus *Owenia*, probably *O. cerasifera*, Muell., of Queensland; a fine *Mucuna*, of the section *Stigolobium*; a *Selarbrea*, an araliaceous genus hitherto only received from New Caledonia, and a fruit of possibly a *Strombosia*. Mr. Forbes himself is inclined to regard the Timor Laut flora and fauna as having affinities with the Moluccan (Amboina) region.—A paper by T. H. Potts was read, containing notes on some New Zealand birds. This consisted chiefly of field observations on the habits of the quail hawk, harrier, owl, kaka, kea, long-tailed cuckoo, kingfisher, and native wren.—There followed a note on the reproduction of the heterocœsimal Uredines by Charles B. Plowright. Therein the author affirms that, when the reproduction of these fungi takes place without the intervention of Ascidiospores, the resulting Uredospores are far more abundant than in the case when they arise from the implantation upon the host plant of the Ascidiospores, this inference being supported by various detailed observations of the author.

Zoological Society, November 4.—Prof. W. H. Flower, F.R.S., President, in the chair.—Mr. Sclater exhibited and made remarks on the skin of a Woolly Cheetah (*Felis lanea*), obtained at Beaufort West, South Africa, sent to him by the Rev. G. H. R. Fisk, C.M.Z.S.—The Secretary exhibited, on behalf of Major W. Brydon, B.S.C., C.M.Z.S., an egg of Blyth's Tragopan; and on behalf of Mr. J. C. Parr, F.Z.S., a specimen of the chick of the Vulturine Guinea-fowl (*Numida vulturina*) hatched in Lancashire.—The Rev. H. H. Sclater, F.Z.S., exhibited a specimen of the Barred Warbler (*Sylvia nisoria*) obtained on the Yorkshire coast.—Mr. H. E. Dresser, F.Z.S., exhibited specimens of the Barred Warbler (*Sylvia nisoria*) and of the Icterine Warbler (*Hypolais icterina*), killed in Norfolk.—Mr. W. B. Tegetmeier, F.Z.S., exhibited a specimen of the File-fish (*Balistes capricus*), which had been recently caught off Folkestone.—Mr. F. E. Beddard, F.Z.S., read a paper on the anatomy of a gigantic Earthworm, *Microchaeta rappii*, and pointed out its systematic position. For this very interesting specimen the author was indebted to the Rev. G. H. R. Fisk, C.M.Z.S., of Cape Town.—Mr. A. G. Butler, F.Z.S., gave an account of a collection of Lepidoptera made by Major J. W. Yerbury at or near Aden. The author looked upon this collection as one of the greatest interest, since it not only contained a fine series of the beautiful species of *Teraolus* recently described by Col. Swinhoe, but also many remarkable intergrades between certain long-established species, tending to prove either that hybrids between allied species are fertile, or that in Aden a condition of things still exists which in Asia proper and in Africa has long passed away.—A communication was read from Lieut.-Col. C. Swinhoe, F.Z.S., containing an account of the Lepidoptera collected by him at Kurrachee between the years 1878 and 1880.—A communication was read from Mr. Thomas H. Potts, of Ohinitaki, New Zealand, in which he described a case of hybridism between two species of Flycatchers of the genus *Rhipidura*.

Mathematical Society, November 13.—Prof. Henrici, F.R.S., President, in the chair.—Prof. Karl Pearson was elected a member of the Society.—The Chairman in very feeling terms referred to the losses the Society and he himself personally had sustained by the deaths of Prof. Rowe, a member of the Council, and of Prof. Townsend, F.R.S., during the recess. After a slight pause, he presented the De Morgan Medal to Prof. Cayley.—The Treasurer's report, showing that the financial position of the Society was most satisfactory, and the Secretary's report having been read, the meeting balloted for and duly elected the following gentlemen to constitute the Council for the present session:—President: J. W. L. Glaisher, F.R.S.; Vice-Presidents: Dr. Henrici, F.R.S., Prof. Sylvester, F.R.S., J. J. Walker, F.R.S.; Treasurer: A. B. Kempe, F.R.S.; Secretaries: M. Jenkins, R. Tucker; other members: Prof. Cayley, F.R.S., Sir J. Cockle, F.R.S., E. B. Elliott, Prof. Greenhill, J. Hammond, H. Hart, Dr. Hirst, F.R.S., S. Roberts, F.R.S., and R. F. Scott.—Mr. Tucker then read abstracts of the fol-

lowing papers:—On the theory of screws in elliptic space (supplementary note), and on the theory of matrices, by A. Buchheim; on spherocyclides, by H. M. Jeffery, F.R.S.; results from a theory of transformation of elliptic functions, by J. Griffiths; on the limits of multiple integrals, by H. MacColl; on the motion of a viscous fluid contained in a spherical vessel, by Prof. H. Lamb, F.R.S.; on certain conics connected with a plane unicursal quartic, by R. A. Roberts; note on elliptic functions, on an integral transformation and a theorem in plane conics, by Asutosh Mukhopādhyāy. He then stated that he had found that the six Simson-lines corresponding to the angular points of the pedal and medial triangles of a given triangle with reference to the medial and pedal triangles respectively, the circum-circle being in this case the nine-point circle, co-intersect in a point which lies on the axis connecting the circum-centre and the Symmedian-point, midway between the circum-centre and the ortho-centre of the pedal triangle, and is also the centre of Mr. H. M. Taylor's circle.—The President (Prof. Henrici taking the chair) brought the meeting to a close by reading a paper on certain systems of g -series in elliptic functions, in which the exponents in the numerators and denominators are connected by recurring relations.

Geological Society, November 5.—Prof. T. G. Bonney, F.R.S., President, in the chair.—The Secretary announced the gift to the Society of a water-colour picture of the hot springs of Gardiner's River, Wyoming Territory, U.S.—The following communications were read:—On a new deposit of Pliocene age at St. Erth, fifteen miles east of the Land's End, Cornwall, by S. V. Wood, F.G.S. The deposit in question, about five miles north-east of Penzance, consisted of a tenacious blue clay with shells, resting on sand, and passing upwards into a yellow unfossiliferous clay, overlain unconformably by the earth with angular fragments, under which were buried the ancient beaches of the British Channel. Of over forty species of Mollusca obtained by the author some appeared to be wholly new, others characteristic species of the Red Crag, some not known alive, some still living. Most interesting of all, six species of *Nassa* were, all but one (*N. granulata*, Sow., or *granifera*, Dujardin), unknown from any formation of Northern Europe, and occurring, living or fossil, only in the southern half of Europe. Of these *Nassa mutabilis*, Linné, lived in the Mediterranean, but otherwise not north of Cadiz, while two others were new species of this southern *mutabilis* group. In the opinion of the author the bed was Pliocene, and newer rather than older, coeval with the Red Crag, but having more affinities with the Pliocene of Italy than with that of the North Sea region, a fact which seemed to indicate that during its deposition the only communication between the Atlantic and the North Sea was round the coast of Britain, a passage unavailable to the Italian group of *Nassa* on account of the refrigeration of its 9° of latitude. The bed was the deposit of a strait connecting the present St. Ives Bay with Mount's Bay, and detaching the high ground of the Land's End district from the rest of Britain. The shell-bearing part of the clay was 98 feet above mean-tide mark in Hayle Estuary. Dr. Gwyn Jeffreys, in a discussion on the paper, recognised among the fossils of the St. Erth deposit forty-four or forty-five species, eleven or twelve recent, thirty-three or thirty-four extinct. A bed near Antibes, in the south of France, seemed to resemble the St. Erth deposit, and the Mollusca of the two should be critically compared.—On the Cretaceous beds at Black Ven, near Lyme Regis, with some supplementary remarks on the Blackdown beds, by the Rev. W. Downes, F.G.S. The cliff section measured 300 feet in height, the Lias occupying 200 feet and the Cretaceous beds 100 feet, of which the lower 25 feet were a black loamy clay, and the upper 75 feet yellowish-brown non-calcareous sands. From one point in the clay the author obtained a few fossils, the most abundant being *Limna parallela*, and 50 feet above that point was a small patch of fragmentary silicified fossils. In the author's opinion the fauna of the sands approached the Blackdown fauna, and from all the evidence he had found, concluded that the conditions of deposition rendered it impossible to recognise in the Cretaceous beds of the West of England the subdivisions of Gault and Upper Greensand so well marked to the eastward.—On some recent discoveries in the submerged Forest of Torbay, by D. Pigcon, F.G.S. The submerged forest rested on clay, the soil in which the forest grew, which, again, rested on Trias, a breccia of Devonian fragments intervening in places. During the gales of 1883-84, two aggregations of rolled trap pebbles were found, these pebbles having probably served as smelting-hearths. In their neighbour-

hood were discovered an ingot of copper, some tin slag, a piece of glass, flint implements, &c., together with remains of piles driven into the ground—traces of human work belonging, apparently, to the Bronze Age. The author thought it the more probable view that the clay bed was deposited in a shallow marsh of land-water kept back by the sea-beach, then some hundreds of feet further to seaward, and that the forest, which consisted chiefly of willows, grew on the marsh.

EDINBURGH

Mathematical Society, November 14.—Dr. Thomas Muir, F.R.S.E., President, in the chair.—Mr. John S. Mackay read a paper on the geometrical figure known to the Greeks as "The Shoemaker's Knife."—The following office-bearers were elected:—President: Mr. A. J. G. Barclay; Vice-President: Mr. George Thom; Secretary: Mr. A. Y. Fraser; Committee: Drs. R. M. Ferguson and Thomas Muir, Messrs. R. E. Allardice, W. J. Macdonald, John S. Mackay, and David Munn.

PARIS

Academy of Sciences, November 10.—M. Rolland, President, in the chair.—Additions to the memoir on complex unities, by M. L. Kronecker.—Remarks on the fourth part of the map of Africa, presented to the Academy, on behalf of the Minister for War, by Col. Perrier. This map has been prepared by Capt. de Lannoy, of the War Department, on a scale of 1:2,000,000. The present part comprises the whole of the Congo region, in six sheets, which have been issued for the use of the members of the International Congress now assembled in Berlin to discuss matters relative to West Africa.—Note on Messrs. Renard and Krebs' new balloon, by M. Hervé Mangon. Two ascents were again made on Saturday, November 8, which are described as completely successful. On the first occasion the machine was propelled at an absolute speed of 23 kilometres per hour against the wind blowing at the rate of 8 kilometres per hour. The problem of directing balloons independently of aerial currents is regarded by the author as practically solved by these experiments.—Observations, elements, and ephemerides of Wolf's comet, by M. Gonnessiat. The observations were made with the Brunner 6-inch equatorial of the Lyons Observatory.—Observation of the same comet made with the meridian circle of the Bordeaux Observatory, by M. Courty.—Note on the sinuosities and variations of curvature in the shadows cast during lunar eclipses, by M. P. Lamey.—On an equation analogous to Kummer's equation, by M. E. Goursat.—On algebraic curves of any degree described on a plane, by M. Maurice d'Ocagne.—On atomic and molecular movements, by M. M. Langlois.—On the depth to which sunlight penetrates the waters of the Lake of Geneva, by MM. H. Fol and Ed. Tarasin. From a series of experiments carried out in August and September of this year the authors conclude that light reaches a depth of 170 metres and probably a little more, the luminosity at this point being about equal to that of a clear moonless night.—On a general statement of the laws of chemical equilibrium, by M. H. Le Chatelier.—Note on the polymorphism of the phosphate of silica, by MM. P. Hautefeuille and J. Margottet. The authors infer from several experiments that at temperatures ranging from 300° to 1000° C. this phosphate crystallises spontaneously in four crystallographic forms incompatible with each other, and consequently constituting four distinct chemical species.—On fluoretted apatites, by M. A. Ditte.—On the action of the primary alcoholic iodides on the fulminate of silver, by M. G. Calmels.—Analytical study of the atmosphere of the city of Algiers, by M. Chairy.—On the hydrate of neutral sulphate of alumina, by M. P. Marguerite-Delacharlonny.—Saponification of the simple aromatic ethers of neutral substances, by M. A. Colson.—The microbe of yellow fever: prophylactic inoculation, by MM. D. Freire and Rebourgeon. After a series of extensive experiments conducted at Rio de Janeiro during the years 1880-84, Dr. Domingos Freire has succeeded in attenuating the virus of yellow fever and reducing it to a vaccinal virus. With this, 400 persons have already been treated with complete success. But fresh experiments will be needed to determine the duration of immunity obtained by this preventive inoculation.—On the effects of inflation of the lungs with compressed air, by MM. Gréhant and Quinquaud.—Researches on the genesis of saccharine in beetroot, by M. Aimé Girard.—On peptonic fermentation, by M. V. Marcano. This new process is described as a simple and economic means of preparing in a few hours extremely pure peptone at a cheap rate. It is capable

of being advantageously applied in a large way to the exportation of meat in a far more nutritive and economic form than that of the extracts of meat now in use.—Origin and mode of formation of the phosphates of lime found deposited in large quantities in sedimentary lands: their connection with the iron ores and clays of siderolithic levels, by M. Dieulefait.—Contributions to the anatomy and morphology of the Malpighian vessels in the Lepidoptera, by M. N. Cholodkovsky. Completion of the biological evolution of *Chatophorus aceris*, Fabricius (sub-Aphis), by M. J. Lichtenstein.—Note on the characteristics of a Tertiary Conifer (*Araucarites Sternbergi*, Goepf.) allied to the Dammareæ (*Dolostrobos Sternbergi*), by M. A. F. Marion.—On a great oscillation of the Cretaceous seas in Provence, by M. L. Collot.—On the limestones containing fossil Echinids occurring at Stramberg, Moravia, by M. G. Cotteau.—Observations of the solar corona in Algeria, by M. E. Fuchs.—Account of a magnificent meteor observed at Morges on November 3, by M. Ch. Dufour.

VIENNA

Imperial Academy of Sciences, October 16.—On bodies with a maximum of density, and on the conclusions derived from their behaviour, by C. Puschl.—On the passing of luminous rays through glass pipes, and on a method based thereupon for determining the refractive indices of condensed gases, by T. Dechant.—On the influence of pressure on the magnetisation of iron and steel rods, by H. T. Ibrailean.—Computation of the orbit of the planet Cœlestina (237), discovered by T. Palisa on June 27, by F. von Oppolzer.—Geographical determination of the place of San'a (capital of the Yemen Vilayet), by E. Glaser.—Calculation of the orbit of Wolf's comet, by K. Zelbr.—On the action of zinc-ethyl on $\alpha\beta$ dichlorocrotonaldehyde, by A. Lieben.

CONTENTS

	PAGE
Bacteriology	49
Heroes of Science	50
Our Book Shelf:—	
Bentley's "Student's Guide to Systematic Botany"	51
Wigan's "Electrician's Pocket-Book."—Prof. A. Gray	51
Hinton's "Science Note-Book."—Dr. Karl Heun	51
Bottone's "Dynamo: How Made and How Used"	52
Letters to the Editor:—	
Natural Science in Schools.—Prof. W. A. Shensone	52
Do Flying-Fish Fly or Not?—Robert W. S. Mitchell	53
Earthquake Measurement.—Dr. H. J. Johnston-Lavis	53
Autumn Flowering.—Joseph John Murphy	54
The Northernmost Extremity of Europe.—W. Mattieu Williams	54
Breeding of the Quadrumana.—Arthur Nicols	54
Fly-Maggots Feeding on Caterpillars.—R. McLachlan, F.R.S.; F. W. Elliott	54
The Sunday Question.—Mark H. Judge	54
A Pugnacious Frog.—Edwin H. Evans	55
A Disease-Germ Myth	55
The Buddhist Theory of Evolution. By J. Starkie Gardner	55
The Rainfall of 1884. By Fredk. J. Brodie	56
Ancient Chinese Geography	58
Colour. (<i>Illustrated</i>)	58
The Late Ferdinand von Hochstetter	61
Notes	62
Our Astronomical Column:—	
The Saturnian System	65
The Variable Star U Geminorum	65
Encke's Comet	65
Wolf's Comet	65
Geographical Notes	65
An Account of some Preliminary Experiments with Biram's Anemometers Attached to Kite Strings or Wires. By Prof. E. Douglas Archibald	66
The Classification and Affinities of Dinosaurian Reptiles. By Prof. O. C. Marsh	68
The Danish Expedition in Greenland	69
Scientific Serials	70
Societies and Academies	70