J. B. Mackintosh, on sundry yttria and thoria minerals from Llano County, Texas; and by O. C. Marsh, on the skull of the gigantic Ceratopsidæ.

THE *American Meteorological Journal* for November contains the first part of an article on "Theories of Storms, based on Redfield's Laws," by M. H. Faye, member of the French Institute. In support of his "whirlpool" theory, he urges that meteorologists have constructed a theory of storms on the basis of a single fact, viz. that storms which burst over a region cause a fall of the barometer there, and he points out that starting with the idea of an ascending column, exercising an aspiration below, a thing is invariably produced which neither turns nor progresses. Mr. A. L. Rotch contributes the first part of an article on "Meteorology at the Paris Exposition," dealing with the instruments exhibited in the French Section. Among the most interesting are (1) the actinometers exhibited by the Montsouris Observatory; (2) the Richard actinometer, which has bright and black bulbs *in vacuo*, connected with two thermometers, by which curves are traced giving at each instant the radiation from the sky, both at night and day; (3) the Richard anemographs, which have, instead of the usual Robinson cups, a fan wheel formed of six blades inclined at 45°, and fastened to a very light axis, one revolution of the wheel corresponding to one metre of wind. Parrigou-Lagrange's anemometer (NATURE, vol. xxxvii. p. 18), giving the vertical component of the wind, was also exhibited. M. Baudin showed some very fine standard thermometers, and Mr. Rotch describes various other instruments, such as hygrometers, aneroids, &c. Dr. F. Waldo continues his discussion of the "Distribution of Average Wind-velocities in the United States." The present article deals with the comparison of average wind-velocities with other elements, *e.g.* with barometric minima. Lieutenant Finley contributes State tornado charts for Arkansas, North Carolina, and Dakota.

THE numbers of the *Journal of Botany* for November and December are chiefly occupied with articles of special interest to students of British botany. Mr. Thiselton Dyer gives a very interesting biography of the late Mr. John Ball, F.R.S., first President of the Alpine Club, Under-Secretary of State for the Colonies under Lord Palmerston, an ardent explorer in all the four quarters of the globe, and a botanist of wide and varied knowledge. In the December number is a remarkable article on the disappearance of British plants, mainly through the depredations of collectors.

Rendiconti del Reale Istituto Lombardo, November 1.—Physical researches on the lakes of North Italy, by Prof. F. A. Forel. During a visit to this lacustrine region, last autumn, the author studied the waters of Lakes Maggiore, Como, Piano, and Lugano, with a view to determining their temperature, colour, and transparency, as compared with the analogous properties of Lakes Lucerne and Geneva. The results, which are here tabulated, show that the temperature is generally higher, and the colour deeper in the Italian than in the Swiss lakes, while the transparency is about the same, except in the shallow Lake Piano, where the temperature is lower and the transparency less than in any of these basins.—Meteorological observations made at the Brera Observatory during the month of September. These observations include records of temperature, barometric pressure, atmospheric moisture, rainfall, direction of the winds, and cloudiness.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, December 12.—"The Relation of Physiological Action to Atomic Weight." By Miss E. J. Johnston, University College, Dundee, and Thos. Carnelley, Professor of Chemistry in the University of Aberdeen. Communicated by Sir Henry Roscoe, F.R.S.

A. *As deduced from the Character of the Elements occurring naturally in Living Organisms.*—It is shown (*a*) that life is associated with a low atomic weight, so that elements with an atomic weight of 40 and under are required by the living organism, whereas those of an atomic weight greater than 40 are more or less inimical to life (compare Sestini, *Gazz. Chim. Ital.*, vol. 15, p. 107). (*b*) That the eight elements which enter most largely into the composition of the earth's crust, and which, therefore, are the most easily accessible to the living organism, are all included, with the exception of aluminium, in the fourteen elements which are required by the living organism.

A consideration of the exceptions (viz. Li, Be, B, Al, and Fe) to the first rule and of all the known facts bearing on the question leads to the conclusion that, "*The degree of necessity of an element to the living organism is a function of, first, its atomic weight, and, second, its accessibility to the organism.*" An element may be inaccessible to living organisms either because it is rare (*e.g.* Li and Be); or because, though moderately common, it has a very limited distribution (*e.g.* B); or because, though plentiful and widely distributed, it does not occur in nature in a form in which it can be assimilated (*e.g.* Al, on account of the insolubility of its native compounds).

That elements which are necessary to life must be readily accessible is self-evident, but that living organisms should require elements with low atomic weights, while elements with high atomic weights are inimical to life, is not so evident. This, however, may be due, in part at least, to the fact that the elements with low atomic weights are on the whole the most common elements (as shown by Gladstone, *Phil. Mag.* [5], vol. 4, p. 379; compare also Mendeljeff, *Zeit. f. Chem.* vol. 5, 1869, p. 405), and therefore the most accessible, so that *from the first the elements utilized in vital processes have been those which have been the most accessible, and therefore those with the lowest atomic weights.*

B. *As deduced from the Toxic Action of Compounds administered artificially.*—In view of the somewhat discordant results obtained by previous observers as to the relation between atomic weight and physiological action, the authors have reinvestigated the subject as carefully as possible. Their experiments have been made partly with fish (sticklebacks) and partly with aërial micro-organisms, the salt being administered by solution in the medium (water or Koch's jelly) in which the organism lived. the following conclusions are drawn from the results of about 800 experiments which the authors have made during the two years they have worked on this subject:—

1. *With corresponding compounds of elements belonging to the same sub-group, the toxic action*[1] *alters regularly* (i.e. *increases or diminishes*) *with the atomic weight.*

2. *In almost all cases this alteration takes place in such a way that the toxic power increases with the atomic weight.* (This is analogous to increase in toxic action in homologous series of carbon compounds.)

3. *Elements belonging to odd series* (Mendeljeff's classification) *are much more toxic than the corresponding elements of even series.*

4. *Other things being the same, the greater the ease of reducibility of an element from a state of combination to the free state the greater its toxic action.* (Applicable to compounds of odd as compared with those of elements of even series, and also to compounds of the elements of odd series belonging to the same group when compared with one another.)

5. *Other things being the same and the compounds comparable, the greater the heat of formation of a compound from its elements the smaller is its toxic power;* or, in other words, the greater the stability of a compound the smaller its toxic power. (Applicable to elements belonging to odd series; data for those belonging to even series are wanting or are too incomplete.)

There is a close connection between rules 3, 4, and 5.

6. *Lithium forms a very marked exception to all the above rules*, for notwithstanding its very low atomic weight, its difficult reducibility to the free state, the fact that it belongs to an even series, and the great stability of its compounds, as indicated by their relatively great heat of formation, its toxic power is, nevertheless comparatively very great. This exceptional character of lithium, however, is not limited to its physiological action only, but applies likewise to many of its purely chemical and physical properties. So much so, indeed, is this the case that its exceptional physiological character might have been foreseen.

7. *The toxic action of a series of comparable salts runs parallel with the solubility in such a way that as the solubility increases the toxic action either increases likewise or else diminishes.*

8. *When the quantity of salt present in Koch's jelly is less than the minimum dose required to prevent the development of micro-organisms, the number of colonies which develops increases as the amount of salt diminishes, but as a rule much more rapidly.*

[1] As represented in terms of either the minimum toxic weight of metal or of the minimum molecular toxic dose. The minimum molecular toxic dose = minimum toxic weight of salt ÷ molecular weight of the salt.

9. When Koch's jelly has been previously neutralized with sodium carbonate the minimum quantity of metallic salt required to prevent the development of aërial micro-organisms is scarcely altered in the case of KCl, NaCl, $MgCl_2$, and $HgCl_2$, but is slightly greater in that of $CaCl_2$, and much less in the case of KBr, KI, NaBr, NaI, $ZnCl_2$, and $CdCl_2$, than when the jelly has not been neutralized.

10. *Mercuric iodide,* notwithstanding its comparative insolubility, *has an exceptionally high antiseptic power*, which is 1½ times as great as that of mercuric chloride per weight of salt, or 2½ times as great per weight of metal, or 3 times as great per minimum molecular toxic dose.

Geological Society, November 20.—Mr. W. T. Blanford, F.R.S., President, in the chair.—The Secretary announced that a series of specimens from the line and the neighbourhood of the Main Reef, east and west of Johannesburg, Witwatersrand Gold Fields, had been presented to the Museum by Dr. H. Exton, and a letter from that gentleman in explanation of them was read. In this Dr. Exton stated that all but one of the mines represented were on the main reef of the district, which has a general direction east and west, its dip varying generally from 45° to 80°. South of the main reef, and parallel to it at a distance of 15–20 feet, is a narrow reef known to the miners as the "south leader," and generally much richer than the main reef. The gold-bearing deposits consist of conglomerates, specimens of which, and of a purplish-red rock which forms a jagged ridge at some distance north of and parallel to the so-called reef, were contained in the collection. The President considered the occurrence of the gold in large quantities in such a conglomerate was a remarkable and interesting case. The rock was an ancient-looking one, and the country appeared to have undergone much disturbance. Dr. Hinde remarked that in Nova Scotia beds of conglomerate of supposed Carboniferous age were formerly worked for gold, but the yield had not been very great.—The following communications were read:—On the occurrence of the striped hyæna in the Tertiary of the Val d'Arno, by R. Lydekker.—The catastrophe of Kantzorik, Armenia, by Mons. F. M. Corpi; communicated by W. H. Hudleston, F.R.S. Secretary. The village is 60 km. from Erzeroum, and 1600 metres above sea-level. Subterranean noises and the failure of the springs had given warning, and on August 2 last part of the "eastern mountain" burst open, when the village, with 136 of its inhabitants, was buried in a muddy mass. The author described the district as formed of Triassic, Jurassic, and Cretaceous strata, subsequently broken up and torn by granitic, trachytic, and basaltic rocks, which overlie the Secondary rocks, according to the nature of the dislocation. The flow was found to have a length from east to west of 7–8 km., with a width ranging from 100 to 300 metres, and the contents were estimated at 50,000,000 cubic metres. It appeared as a mass of blue-grey marly mud, which, after the escape of the gases, solidified at the top; the inequalities projected to the extent of 10 metres. The site of the village was marked by an elevation of the muddy mass, some of the *débris* of the houses having been carried forward. The lower part of the flow was still in a state of motion, and carried forward balls of marly matter. It was difficult to approach the source of this flow on account of the crevasses in the side of the mountain. An enormous breach served as the orifice for the issue of the mud, which emitted, it was said, a strong odour. The violent projection of this marly liquid and "incandescent" (?) mass had carried away a considerable portion of the flanks of the mountain, whose *débris* might be recognized on the surface of the flow by the difference of colour. Great falls were still taking place, throwing up a fine powder which rose into the air like bands of smoke. There were also fissures and depressions of the ground at other localities in the neighbourhood. The President, in commenting on the remarkable nature of the phenomenon, said it was not a volcanic eruption, but more of the nature of a mud-flow produced by a big landslip—possibly connected with the stoppage of the springs. Still it was on a very large scale, though clearly the effect of water and not of fire. Dr. Evans agreed with the President. It was difficult to reconcile the alleged incandescence with the other phenomena. Infiltration of water probably had something to do with the outburst. It was not even a mud volcano. The falling in of the mountain, he thought, might have been due to soft beds covered by harder material having oozed out. It would be interesting to know if there had been an increased rainfall prior to the occurrence. There was nothing of a truly volcanic nature mentioned in the paper. He should like to have further information about the incandescence. Mr. Dallas (the translator of the paper) said that the "redness" was reported by the people to the author. Rev. Edwin Hill thought that the mud-balls could in no way be explained by igneous agency. The photographs gave no indication of the presence of steam. As a landslip the amount was very great, and possibly the phenomenon might be something similar to the overflow of peat-bogs. Mr. Hudleston recalled the statement of the author regarding the geological constitution of the district, where masses of Secondary rocks are folded within igneous ones, probably of Tertiary age. It was likely, therefore, that some of the softer Secondary marls, pressed in more than one direction by harder rocks and soaked by water, might at last have given way. The immediate cause of the catastrophe could scarcely be indicated without a knowledge of the district. Such events occurred from time to time elsewhere. The Russian topographers, if his memory served him right, had described the bursting of a mountain-side with fatal results, in one of the valleys near Lake Issyk Kul. The smoke-like powder, resulting from the continued falls of rock, had often given rise to the notion of volcanic action. There could be no better instance of this than the case of Mount St. Elias, the highest mountain in North America. In geography-books this mountain has almost invariably been described as a volcano, and a portion has actually been designated as the crater. This illusion had been occasioned by the dust of rock-falls resembling smoke. We might well pardon the author for speculating on the probability of a return to volcanic activity in a region which bears so many traces of it as this part of Armenia.—On a new genus of Siliceous sponges from the Lower Calcareous Grit of Yorkshire, by Dr. G. J. Hinde.

December 4.—Mr. W. T. Blanford, F.R.S., President, in the chair.—The President stated that a circular letter had been received from the Secretary of the Committee on Geological Photographs, formed at the last meeting of the British Association for the Advancement of Science, to arrange for the collection, preservation, and systematic registration of photographs of geological interest in the United Kingdom, in which the aid and co-operation of geologists is earnestly requested. Copies of instructions, &c., drawn up in order to secure uniformity, are to be obtained on application to Mr. O. W. Jeffs, Secretary to the Committee, 12 Queen's Road, Rock Ferry, Cheshire, and one would be suspended on the Society's notice-board.—The following communications were read:—On remains of small Sauropodous Dinosaurs from the Wealden, by R. Lydekker.—On a peculiar horn-like Dinosaurian bone from the Wealden, by R. Lydekker. Among a series of vertebrate remains sent from the Dorsetshire County Museum to the British Museum, there is an imperfect, stout, short, cone-like bone from the Wealden of Brook, Isle of Wight. It appears to present a close resemblance to the horn-cores of the Dinosaur described by Prof. Marsh as *Ceratops*. The author did not regard the specimen as affording conclusive evidence of the existence in the Wealden of a large Dinosaur furnished with horn-like projections on the skull like those of the American *Ceratops*, but suggested that such might really prove to be its true nature.—The igneous constituents of the Triassic breccias and conglomerates of South Devon, by R. N. Worth. The reading of this paper was followed by a discussion, in which the President, Prof. Bonney, Dr. Geikie, Dr. Hicks, Mr. Hudleston, Prof. Hughes, and Prof. Judd, took part.—Notes on the glaciation of parts of the valleys of the Jhelam and Sind Rivers in the Himalaya Mountains of Kashmir, by Captain A. W. Stiffe. After referring to the previous writings of Messrs. Lydekker, Theobald, and Wynne, and Colonel Godwin-Austen, the author gave an account of his observations made during a visit to Kashmir in 1885, which appeared to him to indicate signs of former glaciation on a most enormous scale. A transverse valley from the south joins the Sind valley at the plain of Sonamurg, and contains glaciers on its west side. These, the author stated, filled the valley at no remote period, and extended across the main Sind valley, where horseshoe-shaped moraines, many hundred feet high, occurred, and dammed the river, forming a lake of which the Sonamurg plain was the result. The mountains which originated the above glaciers were described as being cut through by the Sind river, and the rocks of the gorge were observed to be striated, whilst rocks with a *moutonnée* appearance extended to a height of about 2000 feet. The whole of the Sind valley was stated to be characterized by a succession of moraines through which the river had cut gorges, whilst the

hillsides were seen to be comparatively rounded to heights of 2000 feet or more. The author had also formed the opinion that at Bâramulla the barrier of a former lake occupying the Kashmir valley was partly morainic, before reading Prof. Leith Adams's view of the glacial origin of some of the gravels of this point. The whole valley of the Jhelam from this point to Mozufferabad showed extensive glacial deposits, which had been modified by denudation and by the superposition of detrital fans, widely different in character from the glacial deposits. Below Rampoor the valley was thickly strewn with enormous granite blocks resting upon gneiss, and the author believed that they had been transported by ice. In conclusion, it was noted that the existing torrential stream had further excavated the valley since Glacial times, and, in places, to a considerable depth. Comments on this paper were offered by the President, Mr. Lydekker, General MacMahon, and Prof. Hughes.

Entomological Society, December 4.—The Right Hon. Lord Walsingham, F.R.S., President, in the chair.—Prof. Franz Klapálek, of Prague, was elected a Fellow.—Mr. W. L. Distant exhibited, on behalf of Mr. Lionel de Nicéville, a branch of a walnut tree on which was a mass of eggs laid by a butterfly belonging to the *Lycænidæ*. He also exhibited two specimens of this butterfly which Mr. de Nicéville had referred to a new genus and described as *Chætoprocta odata*. The species was said to occur only in the mountainous districts of North-West India, at elevations of from 5000 to 10,000 feet above the sea-level.—Dr. D. Sharp exhibited the eggs of *Piezosternum subulatum*, Thunb., a bug from South America. These eggs were taken from the interior of a specimen which had been allowed to putrefy before being mounted. Although the body of the parent had completely rotted away, the eggs were in a perfect state of preservation, and the cellular condition of the yelk was very conspicuous.—Mr. J. H. Leech exhibited a large number of Lepidoptera recently collected for him by Mr. Pratt in the neighbourhood of Ichang, Central China. The collection included about fifty-four new species of butterflies and thirty-five new species of moths. Captain Elwes observed that he noticed only two genera in this collection which did not occur at Sikkim, and that the similarity of the insect fauna of the two regions was very remarkable; about fifteen years ago, in a paper "On the Birds of Asia," he had called attention to the similarity of species inhabiting the mountain ranges of India, China, and Java. Mr. McLachlan, F.R.S., remarked that he had lately received a species of dragonfly from Simla which had previously only been recorded from Pekin. Mr. Distant said he had lately had a species of *Cicada* from Hong Kong, which had hitherto been supposed to be confined to Java.—Mr. W. H. B. Fletcher exhibited a preserved specimen of a variety of the larva of *Sphinx ligustri*, taken in a wood near Arundel, Sussex. Mr. W. White exhibited drawings of the larvæ of this species, and called especial attention to one of a variety that had been exhibited at a previous meeting by Lord Walsingham.—Mr. F. D. Godman, F.R.S., read a letter from Mr. Herbert Smith, containing an account of the Hymenoptera, Diptera, Hemiptera, and Coleoptera, he had recently collected in St. Vincent, where he was employed under the direction of a Committee of the Royal Society, appointed to investigate the natural history of the West Indies. A discussion followed, in which Dr. Sharp, Captain Elwes, Lord Walsingham, and Mr. McLachlan took part.—Captain Elwes read a letter from Mr. Doherty, in which the writer described his experiences in collecting insects in the Naga Hills, by means of light and "sugar." Colonel Swinhoe said that the attractive power of light depended very much on its intensity, and on the height of the light above the ground. By means of the electric light in Bombay he had collected more than 300 specimens of *Sphingidæ* in one night. Mr. J. J. Walker, R.N., stated that he had found the electric light very attractive to insects in Panama. Dr. Sharp, Mr. Leech, Captain Elwes, the Rev. Canon Fowler, and others continued the discussion.—Mr. de Nicéville communicated a paper entitled "Notes on a New Genus of *Lycænidæ*."—Mr. F. Merrifield read a paper entitled "Systematic Temperature Experiments on some Lepidoptera in all their Stages," and exhibited a number of specimens in illustration of his paper. The author stated that the darkness of colour and the markings in *Ennomos autumnaria* resulted from the pupæ being subjected to a very low temperature. In the case of *Selenia illustraria*, exposing the pupæ to a low temperature had not only affected the colour of the imagos, but had altered the markings in a striking manner. Lord Walsingham observed that it appeared that exposure to cold in the pupa-state produced darker colouring in the imago, and that forcing in that stage had an opposite effect; that insects subjected to glacial conditions probably derive some advantage from the development of dark or suffused colouring, and that this advantage was, in all probability, the more rapid absorption of heat. He said he believed that an hereditary tendency in favour of darker forms was established under glacial conditions, and that this would account for the prevalence of melanic forms in northern latitudes and at high elevations. Captain Elwes, Mr. Jenner Weir, and Dr. Sharp continued the discussion.

Linnean Society, December 5.—Mr. J. G. Baker, Vice-President, in the chair.—Mr. George Murray exhibited and made some remarks upon specimens of *Struvea macrophylla* and *S. plumosa*.—Mr. A. W. Bennett communicated some observations on a new and a little-known British fresh-water Algæ—*Schizothrix anglica* and *Sphæroplæa annulina*. It was pointed out that *Schizothrix* of Harvey's "Phycologia Britannica" is really an *Inactis*.—Mr. E. M. Holmes exhibited, as a new British marine Alga, a specimen of *Gracilaria divergens*, a rare native of the warmer portions of the Atlantic and the Mediterranean, which had been recently found at Brighton by Mr. J. Myles. The specimen exhibited possessed tetrasporic and cystocarpic fruits not described by Agardh.—Mr. Pascoe exhibited (with a view of eliciting information as to the *modus operandi*) a number of Crustacea and certain shells of the genus *Phorus* having various foreign substances attached to them. Commenting upon these specimens, Prof. Stewart gave an interesting account from personal observation of the way in which certain Crustacea collect and adorn themselves with fragments of shell, seaweed, &c., apparently as a protective covering.—Mr. T. Christy exhibited and made remarks on some "liquid-amber" or resin (*Attingia excelsa*) from Cochin China.—A paper was then read by Mr. George Massee on the life-history of a stipitate fresh-water Alga, illustrated by some excellent diagrams. A discussion followed, in which the chairman, Mr. Murray, and Mr. Bennett took part.—In the absence of the author, Mr. Harting detailed the chief points of interest in a paper by Mr. George Sim on the anatomy of the sand grouse (*Syrrhaptes paradoxus*), and the habits of this bird as observed on the sand hills of the coast of Aberdeenshire. A comparison was made of the sternum and the alimentary organs with the same parts in the pigeon and red grouse.

Chemical Society, December 5.—Dr. W. J. Russell, F.R.S., in the chair.—The following papers were read:—Compounds of phenanthraquinone with metallic salts, by Prof. F. R. Japp, F.R.S., and Mr. A. E. Turner. The authors have obtained several double compounds of phenanthraquinone with metallic salts, viz. $C_{14}H_8O_2$, $ZnCl_2$, crystallizing in dark, reddish-brown needles; $(C_{14}H_8O_2)_2$, $HgCl_2$, crystallizing in red, obliquely truncated prisms; and $(C_{14}H_8O_2)_2$, $Hg(CN)_2$, crystallizing also in red forms. They have prepared a similar compound from mercuric chloride and β-naphthaquinone, but could not obtain double compounds from benzoquinone, α-naphthaquinone, anthraquinone, diacetyl, or benzil. It would, therefore, appear that compounds of this class are derivable only from orthoquinones, and not from paraquinones or open-chain α-diketones. The intense colour of the double compounds indicates that in them the quinone preserves its distinctive character. In this respect they differ from the colourless compounds of the orthoquinones with sodium hydrogen sulphite, which, inasmuch as their formation involves reduction, are to be regarded as quinol derivatives.—Action of aldehydes and ammonia on α-diketones, by Mr. G. H. Wadsworth.—Phenylhexamethylene derivatives, by Dr. F. S. Kipping and Prof. W. H. Perkin.—Diphenylfurfuran, by Prof. W. H. Perkin and Dr. A. Schloesser.

Royal Microscopical Society, November 13.—Dr. C. T. Hudson, F.R.S., President, in the chair.—The Rev. Armstrong Hall exhibited a Bacillus from urine, which closely resembled *B. tuberculosis*.—Mr. Hardy exhibited and described a little apparatus which he had devised for the purpose of photographing an object under the microscope, without having to alter the position of the instrument in any way. He had originally made it in metal, but had found it too heavy; the one now before them was made of wood, and weighed about one ounce, the cost being nothing at all beyond the trouble of making it.—Mr. Watson exhibited and described a new pattern microscope for students (the "Edinburgh student's microscope"), and a student's petro-

logical microscope made upon the same lines; also, a small box for holding slides, for which a patent had been obtained by Mr. Moseley, its inventor. The slides were held in flat trays in the usual way, but they were so arranged that, upon opening the front of the box, the trays were drawn forward so as to form a series of layers overlapping sufficiently to expose the labels at the front end of each row, and enabling the position of any particular slide to be seen without the necessity of removing the trays in search of it.—Mr. Crisp exhibited apparatus by which it was proposed to convert a microscope into a microtome by placing the embedded substance in the lower end of the tube, and cutting sections by means of a blade fitted to move upon the stage plate.—Mr. J. Mayall, Jun., described the various microscopes and accessories which he had examined at the Paris Exhibition, pointing out that, whereas at former International Exhibitions most of the best makers in England, America, and other countries were exhibitors, on this occasion they had been rather conspicuous by their absence. The French opticians were fairly well represented as to numbers, but the instruments they exhibited were for the most part of the old, not to say antiquated, types. He had seen very little that was new in the matter of design.

Zoological Society, December 3.—Mr. Osbert Salvin, F.R.S., Vice-President, in the chair.—The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of November 1889.—An extract was read from a letter received from the Rev. G. H. R. Fisk, concerning some specimens of *Bipalium kewense*, which he was keeping in captivity at Cape Town.—Mr. Henry Seebohm exhibited and made remarks upon some specimens of new or rare species of birds lately received from the Bonin Islands, North Pacific.—Mr. Sclater exhibited and made remarks on an egg of the crested screamer (*Chauna chavaria*), from the collection of Mr. J. J. Dalgleish.—Mr. F. E. Beddard read the first of a series of contributions to the anatomy of Picarian birds. The present communication treated of some points in the structure of the hornbills (*Bucerotidæ*), particularly of the syrinx, and of the muscular anatomy of these birds.—Mr. Beddard also read a paper upon the anatomy of Burmeister's cariama (*Chunga burmeisteri*), and pointed out the differences between this form and *Cariama cristata*.—Mr. G. W. Butler read a paper on the relations of the fat-bodies (subperitoneal and subcutaneous) of the Sauropsida. The author showed that a consideration of the subperitoneal fat-bodies appeared to throw light on the condition of the abdominal membranes in the monitors.—A communication was read from the Rev. H. S. Gorham, containing descriptions of new species of the Coleopterous family Erotylidæ from various localities.—A communication was read from Mr. L. Taczanowski, containing the description of a new warbler of the genus *Locustella* from Corea, which he proposed to call *Locustella pleskei*.—Mr. Oldfield Thomas pointed out the characters of a new mungoose, allied to *Herpestes albicaudatus*, which he proposed to call *H. grandis*. The type specimen (a skeleton) had been obtained by Mr. T. E. Buckley in South-East Africa.

STOCKHOLM.

Royal Academy of Sciences, December 11.—The Asceratidæ and the Lituitidæ of the Upper Silurian formation of Gotland described, by Prof. G. Lindström.—Researches on the constitution of the spectra of emission of the chemical elements, by Dr. T. R. Rydberg.—On the observations at the Observatory of Upsala to determine the equinoctium of the spring 1889, by Dr. K. Bohlin and C. Schulz-Steinheil.—Definitive elements of the orbit of the comet 1840, by C. Schulz-Steinheil.—On the ores and minerals of the Gellivard district, especially the apatite, by Herr A. Sjögren.—The English edition of the atlas of fac-simile maps, by Prof. A. E. Nordenskiöld, exhibited by himself.—On the conductibility of snow, by Dr. S. Hjältström.—On the influence of the averting force of the telluric rotation on the movement of the air, by Dr. N. Ekholm.—A large collection of mosses from Japan, Korea, and East India, presented to the State Museum by Captain S. Ankarcrona, R.N., and determined by Dr. W. Brotherus, of Helsingfors, and by Dr. Carl Müller, in Halle, exhibited by Prof. Wittrock. On the recently-published first part of the second supplement to C. F. Nyman's "Conspectus floræ Europeæ," by Prof. Wittrock.—Echinologica, by Prof. S. Lovèn.—Some morphologic researches on the arteries of the brain of the Vertebrata, by Herr A. Klinkowström.—Derivatives of ortho-amido-benzyl alcohol, ii., by Dr. G. H. Söderbaum and Prof. Widman.—On distri azol combinations, by Dr. Bladin.—On naphtoe acids, by Dr. Ekstrand.—Derivatives of sulphate of ammonium, by Herr O. S. Hector.—Demonstration of some theories of Poincaré, by Herr de Brun.

DIARY OF SOCIETIES.

LONDON.

SATURDAY, DECEMBER 28.

ROYAL INSTITUTION, at 3.—Electricity (adapted to a Juvenile Auditory): Prof. A. W. Rücker, F.R.S.

TUESDAY, DECEMBER 31.

ROYAL INSTITUTION, at 3.—Electricity (adapted to a Juvenile Auditory): Prof. A. W. Rücker, F.R.S.

WEDNESDAY, JANUARY 1.

SOCIETY OF ARTS, at 7.

THURSDAY, JANUARY 2.

ROYAL INSTITUTION, at 3.—Electricity (adapted to a Juvenile Auditory):

FRIDAY, JANUARY 3.

GEOLOGISTS' ASSOCIATION, at 8.

SATURDAY, JANUARY 4.

ROYAL INSTITUTION, at 3.—Electricity (adapted to a Juvenile Auditory): Prof. A. W. Rücker, F.R.S.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

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