and under another altar-mound were eighteen pits of smaller size, but of similar character. Beneath a small mound containing skeletons was an excavation, six feet wide and twenty-seven inches deep, filled with ashes mixed with animal bones, potsherds, and other objects. This is the first time that pits of this character have been discovered in connection with the mounds; and their presence gives an additional interest to this group. In another mound, containing a human skeleton, a small copper celt was found on the bones of a hand, which is of special interest, as it has a cast of the papillae of the fingers distinctly preserved in the carbonate of copper. Under the centre of one mound was a bed of ashes, in which were three pottery vessels.

Dr. Metz also examined a conical mound on the farm of Mr. Gould, about two miles from Reading, on an elevated and commanding site. The mound was six feet high, and sixty feet in diameter at the base. An earth embankment, three feet high and twenty-two feet wide at its base, encloses the mound, forming a circle about it one hundred and fifty feet in diameter, with an opening thirty-seven feet wide looking to the south-east. The mound was found to be stratified; the outer layer was composed of fifteen inches of very hard yellow clay; under this was a layer, ten inches in thickness, of hard clay, burnt to a brick-red color, and mixed with ashes and charcoal; below this was a stratum fifteen inches in thickness of compact grayish ashes containing pieces of burnt stone; beneath this again ten inches of burnt clay, in which were a small chipped flint and a fragment of burnt bone, which was the only piece of bone found in the mound; beneath this last stratum, and occupying the central portion of the mound, was a conical heap of hard gray earth in which were small flakes of charcoal. This gray earth was so hard that it could only be removed by the use of the pick: it was eight by ten feet in diameter, and twenty-two inches in thickness in the centre. Under this hard mass, and below the natural surface of the clay, were four circular pockets or excavations about four inches apart, each of which was ten inches deep and fourteen inches wide; three of them were filled with a dark pasty substance, which became hard on drying, and the other contained fragments of stone, burnt clay, and earth. The structure of this mound is unusual; and the purpose for which it was erected over the four small holes is at present unknown, adding one more to the problems relating to the mounds, which we can only hope to solve by thoroughly exploring such as have not yet been disturbed.

NOTES AND NEWS.

Since the first pages of this issue were in form, it has been announced that a party for the relief of the observers under Lieut. Greely at Lady Franklin Bay will leave St. Johns, Newfoundland, on one of the steam sealing-vessels belonging at that port, about June 15, probably accompanied by a naval vessel as tender. It will be commanded by Lieut. E. A. Garlington, U.S.A., and composed of twelve men, of whom ten are stated to be old sailors and accustomed to the use of boats. Twenty dogs, native drivers, and a supply of fur clothing, have been secured at Godhavn, Greenland. The party at Lady Franklin Bay will be reached and withdrawn if the state of the ice permits. If not, the relief-party is to be landed on Littleton Island; and, while part of them are engaged in preparing winter quarters, Lieut. Garlington will endeavor to open communication by sledges with Greely's people. In the failure of the first attempt, another will be made in the spring of 1884. It is to be hoped, if Greely is not reached, that an attempt will be made to leave at Cape Hawkes or Cape Sabine, if not the relief-party as a whole, which would be best, at least a boat by which the open water to be anticipated between those points and Littleton Island next year (1884) may be passed by a retreating party, which might well find their own boat unseaworthy after dragging it over many miles of hummocky ice, if, indeed, they did not find themselves obliged to abandon it.

— The schooner Leo is on the point of sailing for Point Barrow to withdraw the signal-service observing party under Lieut. Ray, in compliance with the act passed by the last Congress. To utilize the opportunity, Mr. Marr of the U. S. coast-survey will accompany the vessel with the design of making absolute magnetic determinations, of fixing the astronomical position of the station, and of making pendulum observations.

— In 1880 the French minister of public instruction appointed a commission to investigate the zoölogy and physical features of the deep sea under the direction of M. Alphonse Milne-Edwards. It carried on its investigations that year principally in the Bay of Biscay; in 1881, in the Mediterranean; and, in 1882, in the Atlantic as far as the Canaries. This year it will push its researches farther in the Atlantic as far as the region opposite the coast of Senegal and in the Sargasso Sea. The present commission is composed of Professor Alphonse Milne-Edwards, president; the Marquis de Folins; Professors Léon Vaillant and Edmond Perrier, of the Paris museum; M. Fischer, aide-naturaliste at the same establishment; and Professors Marion of Marseilles and Filhol of Toulouse; MM. Charles Brongniart and Henry Villaine, of Paris, are also attached to the commission as 'membres adjoints.'

— By the programme for the summer meeting of the American institute of mining engineers, the opening session will be held in Roanoke, Va., on June 4. A visit to Lynchburg will be made on June 5. On arrival at Lynchburg, a train will take the party to the iron-mines on the James River, at Riverville, and, if time allows, also to Stapleton. In the afternoon a session of the institute will be held. Return to Roanoke in the evening. On June 6 there are to be local excursions around Roanoke, visiting the Crozer furnace, Upland and Houston mines, Rorer iron company's mines, and the Roanoke machine-works; evening session. June 7, excursion to Pocahontas (Flat Top coal-fields), and the Southwest Virginia improvement company's coal-mines and coke-ovens. Returning, the Ripplemead mines

and Bertha zinc-works will be visited. The night will be spent at Abingdon or Wytheville. June 8, excursion to the Cranberry magnetic iron-ore mines in East Tennessee, returning to Roanoke in the evening.

On returning home, members can stop at the Natural Bridge and the Caves of Luray. Those wishing to visit the Cripple Creek ore region can do so by remaining after the close of the meeting. The Shenandoah Valley and the Norfolk and Western railroads have generously offered free transportation to members and the ladies of their families over their lines to and from Roanoke, and also for the excursions of the meeting. The local committees of arrangements are, in Roanoke, J. H. Bramwell, chairman; J. H. Sykes, secretary; Dr. F. Sorrell; Frank Maddock; Major Andrew Lewis; J. Allan Watts; in Lynchburg, Capt. C. M. Blackford, chairman; John H. Flood; George M. Jones; P. J. Otey; W. B. Robinson; T. B. Deane; C. W. Button; T. D. Davis; H. Grey Latham; Alex McDonald; L. S. Marye; John Stevenson, jun.

— An enterprising railroad in Ohio, the Cleveland, Akron, and Columbus railway, has made a new departure in its time-tables by adopting a system which has been approved of, but not ventured upon by many railway companies in the country. On its time-cards the hours are numbered from one up to twenty-four, the latter being midnight. The confusion which so often exists between the A.M. and P.M. hours is thus avoided. Thus one train arrives in Cleveland at 19.30, and one departs from Columbus at 17 o'clock. This road also carries upon its morning trains weather-signals, devised and set by the Ohio meteorological bureau, from predictions furnished by the United States weather-service. It is believed to be the first railroad in the country, if not in the world, to adopt either of these schemes.

— In the Missionary herald for November, 1882, Dr. Nichols wrote from Bailunda, West-central Africa, June 26, "There has been a notable comet hanging in the sky near Venus for weeks; but the natives, so far from feeling any superstitious dread, seem utterly indifferent to it." After this was published, Gen. Hazen, of the Signal-service at Washington, wrote to the Missionary house, inquiring about the letter of Dr. Nichols. Gen. Hazen thought the writer must have been mistaken, as this would be, he thought, the earliest announcement of the comet. He suggested that perhaps the zodiacal light had been mistaken for a comet. By the next mail, Dr. Nichols's attention was called to this; and in a letter received April 22, dated Bailunda, Jan. 25, to Dr. Means of the Missionary house, he writes, "Be certain that that comet of ours was a veritable one, and not a zodiacal light. There was a small but well-defined nucleus, and its motions amongst the constellations were watched by all here."

— Interesting investigations have been carried on during the past year by the agricultural experiment-station recently established in connection with the chemical department of Cornell university. The work done includes experiments on fodders, ensilage, and analysis of agricultural products, the results of which have been collected in the annual report now in press. The analyses were made by the chemist of the station, under the direction of Professor Caldwell, who, in conjunction with the professor of agriculture, superintended the experiments on feeding and ensilage.

— S. Philipp has lately published a philosophical work on the ego of organisms, and the origin of life in unorganized matter, which, together with the cognate writings of Montgomery, are briefly noticed in the *Biologisches centralblatt* for April 1. Those sceptical as to the value of such lucubrations will attribute a meaning to the date in this connection.

— Professor Targioni Tozzetti has just published a report on *Ortotteri agrari*, under the direction of the Italian department of agriculture, industry, and commerce. The introduction relates chiefly to the external anatomy of Orthoptera. In the classification of the order, Professor Tozzetti uses the term 'Orthoptera' in its widest sense, and divides the order into the following suborders: 1. Tisanuri; 2. Ortotteri veri; 3. Corrodenti (Psocidae and Termitidae); 4. Ortotteri amfibiotica (the rest of the Pseudoneuroptera). After treating of the migrating locusts (cavalette) of all countries, and the means for their destruction, a third part gives short instructions how to prevent and counteract the ravages of the Italian species of Acrididae. This seems to be intended for separate distribution among farmers, as the illustrations are repeated from the first part of the volume. A collection of the locust laws made in Italy (beginning with the Mandate from the 'consules agriculturae,' dated April 27, 1654), France, and Spain, and the collected citations from ancient authors relative to Orthoptera, appear in appendices.

The report contains much interesting matter, and will, no doubt, prove useful to the Italian agriculturist; but in its economic and natural history parts it is a mere compilation from other sources, and bears evidence, we regret to say, of hasty work, such as we should not expect from its author. We notice many inaccuracies and typographical blunders, and the figures are for the most part at second hand and poorly copied.

— Some vine-cuttings from Madeira, recently received at New York, caused no little consternation on the supposition that they were infested with Phylloxera. Samples were referred for examination to Dr. J. P. Battershall, who, after microscopic examination, was unable to detect the presence of Phylloxera, but concluded that the vines looked suspicious. Samples were finally sent to the department of agriculture, and submitted to Professor Riley, who found no trace of Phylloxera, and who recommended that the cut-

tings be forwarded for the following reasons: 1. The cuttings came from an uninfested district, so far as known; 2. The insect could only be found at this season on such cuttings in the winter-egg, which, even in countries where the Phylloxera abounds, is extremely rare; 3. Did the cuttings come from a country badly infested with Phylloxera, the danger of the introduction of the pest upon them would be very slight, as the natural history of the insect shows; 4. Even were it possible to introduce the insect with the cuttings, no harm could result, so long as they were sent to any part of the United States east of the Rocky Mountains, since the insect is indigenous here. Were the cuttings known to be infested then, and then only, Professor Riley thinks that prudence would dictate that they should not be sent to the Pacific states, or those portions where the Phylloxera does not now exist.

— Those who have resided a short time in the low pine regions of the Atlantic coast, from Virginia to Carolina, are familiar with the word 'tuckahoe.' The term is a very old one, found in Smith's History of Virginia as 'tockawhoughe,' and in other old writers under different spellings. Professor Gore, of the Columbian university, has been investigating the subject, and has brought to light many important facts relative to it, which appear in the Smithsonian report for 1881. The word has been made to apply to almost every tuberous root and subterraneous fungus which the aborigines were supposed to have used as food. The qualities of all these substances have gradually come together, and by tradition have settled upon one that has little or no value as food, — the Pachyma cocos. This interesting fungus has been analyzed by several chemists, Dr. Torrey among the number, and finally by Dr. Parsons of the department of agriculture. The most notable peculiarities are the entire absence of starch, the small amount of extracted solvents, the gelatinous character of the cellulose, and the very small amount of albuminous substance. The fungus resembles a large yam, with a rough, blackish exterior, and a white, cream-colored interior, very soft when first found, and becoming hard and ivory-like when thoroughly dry.

— The International African association was formed in Brussels in 1876, with an executive committee consisting of the King of Belgium, Dr. Nachtigal, De Quatrefages, and Sir Bartle Frere, the latter being replaced on his departure for the Cape of Good Hope by Mr. Sanford. In the first year of its existence, Belgium alone furnished half a million francs, and the remaining branch societies in other countries about a hundred thousand francs, towards the expenses of exploration. In June, 1877, a commission of delegates from all parts of Europe laid out a plan of work, deciding to begin the establishment of stations between Zanzibar and Tanganyika, of which Karema, five hundred miles from the coast, was the first. A small steamer was placed on the lake. Other stations in the same region were later undertaken by different branches of the association. In November, 1878, a '*Comité d'études du Haut-Congo*' was formed, with a capital of one million francs. This was essentially a subdivision or a new form of the old society; and its first work was to send Stanley to the Kongo at the end of 1879, where he spent two years in constructing a road along the unnavigable part of the river. The funds of the committee are exhausted, and contributions are asked for to continue the work thus begun.

— The April number of the *Johns Hopkins university circular* contains abstracts of many of the recent papers published by members of the university. Under the heading of 'correspondence' are several letters to Professor Sylvester. As a foot-note to one of these, Professor Sylvester remarks, that the last few months will be a period forever memorable in the records of mathematical science as one in which came to light the three great discoveries of a proof being possible of the impossibility of the quadrature of the circle, the existence of an assymptotic value to the sum of the logarithms of the inferior primes to a given number, and the falsity of the ordinarily assumed postulate in the theory of invariants.

— Mr. Robert Ridgway is engaged in a field-examination of the avi-fauna of Illinois and Indiana.

— Dr. R. W. Shufeldt, U.S.N., on duty at New Orleans, La., is engaged in the study of the zoölogy and archeology of southern Louisiana. He has already made very extensive collections of the reptiles and birds of that region.

— In view of the proposed meeting of the British association for the advancement of science in Montreal in 1884, a committee, consisting of Messrs. H. Carvill Lewis, Edward D. Cope, Persifor Frazer, Angelo Heilprin, and Henry C. McCook, has been appointed by the Academy of natural sciences of Philadelphia to secure the co-operation of other societies and institutions of the city in extending an invitation to the American association for the advancement of science, to meet in Philadelphia the same year, directly after the Montreal meeting, so as to increase the facilities for communication with the representatives of the British association. Similar action has been taken by the American philosophical society and the Franklin institute; and the University of Pennsylvania has offered the use of its halls for the meetings.

— It is now stated that as many as four hundred members of the British association have signified their wish to attend the meeting in Montreal in 1884. The local committee at Montreal has decided to suggest the week beginning on Aug. 27 as the most suitable for the meeting.

— A circular has been issued by the Forestry division, department of agriculture, calling attention to

the interest now taken in planting trees in school-grounds, and giving information as to where to plant, what should be planted, and when to plant. It is suggested that the formation of arboretums is desirable, and that collections at the schools, of the native woods of the locality, might increase the interest of the scholars.

RECENT BOOKS AND PAMPHLETS.

Absterbeordnung, Ausgeglichene, mortalitätstafel u. tafel der lebenserwartung f. d. gesammtbevölkerung d. Preuss. staates. Berechnet aus d. mittelwerthen d. preuss. sterbetafeln f. d. j. 1867, 1868, 1872, 1875, 1876, u. 1877. Berlin, 1883. f°.

Album schweizerischer rindvieh-rassen. 20 Photographien. Luzern, 1883. f°.

American museum of natural history (Central Park, N.Y.). The fourteenth annual report. N.Y., *Martin pr.*, 1883. 38 p. 8°.

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Andra, E. Le gélatino bromure d'argent, sa préparation, son emploi, son développement. Paris, *Gauthiers-Villars*, 1883. 77 p. 18°.

Becker, Les arachnides de Belgique. Vol. i. Attidae Lycosidae, Oxyopidae, Sparassidae et Thomisidae. Bruxelles, 1883. 246 p., illustr. f°.

Bedriaga, J. v. Beiträge zur kenntniss d. amphibien u. reptilien d. fauna von Corsika. Berlin, 1883. 150 p., illustr. 8°.

Behrend, G. Die eismaschinen und ihre verwendung zur kühlung von räumen u. flüssigkeiten. Halle, 1883. Illustr. 8°.

Bovey, H. T. Applied Mechanics. 2 parts. (I. Definitions and general principles as to the strength of materials; The strength and stiffness of beams; Resistance to compression and crushing, etc. II. Frames; Roofs; Bridges; Suspension Bridges, etc.) Montreal, 1883. 8°.

Comité, international des poids et mesures. Sixième rapport aux gouvernements signataires de la convention du mètre sur l'exercice de 1882. Paris, 1883. 52 p. 4°.

Cotteau, E. De Paris au Japon à travers la Sibérie, voyage exécuté du 6 mai au 7 août 1881. Par Edmond Cotteau, chargé d'une mission scientifique. Paris, *Hachette*, 1883. 456 p., illustré. 18°.

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Ganguillet u. Kutter. Versuch zur aufstellung einer neuen allgemeinen formel für die gleichmässige bewegung des wassers in kanälen u. flüssen, gestützt auf die resultate der in Frankreich vorgenommenen umfangreichen u. sorgfältigen untersuchungen u. der in Nordamerika ausgeführten grossartigen strommessungen. Bern, 1883. 123 p. 8°.

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Glaser-DeCew, Gustav. Die magnetelektrischen und dynamoelektrischen maschinen und die sogenannten secundärbatterien; mit besonderer rücksicht auf ihre construction. Mit 54 abbildungen. Wien, etc., *Hartleben*, 1883. (Elektro-techn. bibl., i.) 16+263 p. 16°.

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