doubt that an extensive traffic was carried on in this material for a considerable length of time by the aboriginal tribes, extending from the Atlantic coast to the Rocky Mountain system and from New York and Minnesota on the north to the Gulf of Mexico. The fact that objects of catlinite have been taken from Indian graves in the state of New York, and that others were found on the ancient site of an abandoned village in Georgia, at opposite points twelve hundred miles distant from the pipestone quarry of Minnesota, reveals the great extent of intercommunication which formerly existed among the North American peoples. When we consider that many pipes of catlinite have been taken from the bottom of mounds from four to seven feet deep, where they were found in connection with cloth-wrapped copper axes and many other objects of high antiquity, and that some of them are of the typical form of the oldest mound-pipes, we are forced to ascribe to some of them a high antiquity. — (*Amer. nat.*, July.) J. W. P. [169

The Charnay collection. — Visitors to the National museum at Washington are surprised to find the great hall adjoining the last doorway on the south side shut off by screens. Looking behind this barricade, the visitor may imagine himself transported to Central America, and in the presence of some of her grandest aboriginal remains. Here M. Barbier, from the Trocadero museum at Paris, is setting up casts of the most celebrated relics of Mexican and Central American ruins secured by M. Charnay. The readers of SCIENCE will recall that Mr. Pierre Lorillard of New York, conjointly with the French government, equipped an expedition in 1880, and maintained it for two years, for a systematic investigation of the so-called 'ruined cities' and other remains of ancient civilization in Central America and Mxeico. The expedition was placed under the charge of M. Désiré Charnay, and thoroughly furnished with the means of making photographs and casts by the process of M. Lotin de Laval. Copies of these casts were first to be presented to the Smithsonian institution and to the French government, the latter set to be placed in the Trocadero museum at Paris. The story of M. Charnay's travels and successes has been told in the *North American review*, commencing with August, 1880; the editor, Mr. Thorndike Rice, favoring and encouraging the expedition from the first. M. Charnay's moulds having been transported to Paris, he proceeded to make his reproductions. With reference to the Smithsonian series, now being set up in the National museum, Mr. Rice writes, "These casts are duplicates of those now on permanent exhibition at the Trocadero, Paris. The casts have been made in order to afford to students of American antiquities the fullest opportunity for studying these products of indigenous art and the hitherto indecipherable inscriptions." The collection includes a bas-relief from Ocosingo, the stone of Tizoc, fragment from Tezcuco, thirty-eight pieces from Palenque, including the most celebrated sculptures and inscriptions, and thirty-four pieces from Chichen-Itza. M. Hamy will shortly send a detailed account of each piece, and the readers of SCIENCE will receive the benefit of his information. Professor Baird will have the bas-reliefs of the Temple of the Sun and those of the Temple of the Cross mounted in wooden frames, the exact reproduction of the rooms which they occupied in Palenque. — J. W. P. [170

EARLY INSTITUTIONS.

The Nottingham records. — The records of the borough of Nottingham have been published by Quaritch in London. They cover the period from 1155 to 1399, and contain much interesting matter bearing upon the history of town customs and government in England. Mr. G. L. Gomme, the author of Primitive folk-moots, reviews the volume, and gives us some extracts from it. Assuming that the municipal corporation of the thirteenth century is the primitive village community in a late stage of development, he discovers various customs which he describes as belonging to the primitive village. The history of the primitive village is in this way extended and enlarged. Some very interesting passages, illustrative of the right of pre-emption which kinsmen enjoyed, are given. It appears, that, "if a person sold his land [in Nottingham], his nearest heirs might lawfully enter into such lands and tenements if they offered to the purchaser, in the gild hall of the town, the money which he had given for the property." Some passages bearing upon the history of the open-field system are also cited. Mr. Gomme regards the open-field system as 'the best evidence of the old primitive tenure of land.' The custom of borough English — or 'junior-right,' as Mr. Elton calls it — obtained at Nottingham. — (*The antiquary*, April, 1883.) D. W. R. [171

NOTES AND NEWS.

It is hoped that the new section for mechanics of the American association for the advancement of science will receive the earnest co-operation of all interested, who may find it convenient to attend. The approaching meeting at Minneapolis will be the second held by the section. Those having matters of interest to present are requested to notify the secretary of section D (A. A. A. S.) at Minneapolis as early as possible. Circulars relating to the meeting may be obtained of the permanent secretary of the association, F. W. Putnam, at Minneapolis.

— During the coming year, experiments will be made at the physical laboratory of Johns Hopkins university with a view to aid in establishing an international unit of electrical resistance. The experiments will be carried on, under the direction of Professor Rowland, with an appropriation from the government of the United States. The results will be communicated to the International commission of electricians, meeting in Paris.

— We alluded a few weeks ago to the award of the first Walker prize of the Boston society of natural history to Mr. Howard Ayres of Fort Smith, Ark., for his memoir on the development of Oecanthus. This memoir is now printing by the society. The award of the second prize has now been made. Several papers of unquestionable merit were before the

committee, and the subjects were so diverse as to make it difficult to decide between them. Expert aid was sought; and it has been at last concluded to divide it equally between William Patten of Watertown, Mass., who offered an essay on the development of Phryganidae, and H. W. Conn of Johns Hopkins university, who presented an essay on the life-history of Thalassema millita.

— Recognizing the demand for thoroughly trained engineers conversant with electrical science, at the beginning of the next academic year (Sept. 18, 1883) the trustees of Cornell university will receive students who desire to fit themselves to enter this new and constantly extending field. While the general studies are mainly those of the departments of civil and mechanical engineering, the special studies of the course embrace the theory of electricity, the construction and testing of telegraph lines, cables, and instruments, and of dynamo machines, and the methods of electrical measurement, electrical lighting, and the electrical transmission of power.

— During the past year original investigations, the results of which either have been or soon will be published, have been made in the biological laboratory of Johns Hopkins university, in the following subjects: the direct action upon the heart of ethyl alcohol, the influence of digitaline upon the heart and blood-vessels, the influence of quinine upon the blood-vessels, the influence of variations in arterial pressure upon the time occupied by the systole of the heart, the minute structure of the kidney, the life-history of Penicillium, viscous fermentation, the influence of various illuminations on the growth of yeast, the structure of Porpita, the structure of the gasteropod gill, the development of the mammary gland, the structure and properties of the cavernous tissue beneath the olfactory mucous membrane.

— The U. S. geological survey has appointed Prof. H. S. Williams of Cornell university upon its staff. Under its auspices he will carry out more fully the studies he has long undertaken upon the upper Devonian fossils of the rich localities of his neighborhood in New York, and extend the work beyond the limits of the state, as well as into the immediately underlying and overlying strata, for better comparison of the upper Devonian species, and study of their faunal relations. Professor Williams has been endeavoring to build up a thorough school of comparative paleontology at Cornell with good success; and the assistance he will gain from his connection with the U. S. survey will offer a special attraction to those wishing to pursue paleontological studies under him. Mr. C. S. Prosser, a recent graduate of Cornell, assists him this summer in his geological work in connection with the U. S. survey.

— A very interesting sketch of the life of Count Rumford, by Professor Tyndall, is printed in the *Contemporary review* for July. An account of his scientific labors is promised in a future issue.

— W. H. M. Christie, F.R.S., astronomer royal, has withdrawn from the editorship of *The observatory*, a monthly review of astronomy. This periodical will now be edited by E. W. Maunder, F.R.A.S.; and all communications should be addressed to him at the Royal observatory, Greenwich, as formerly.

— Dr. M. Braun in Dorpat proposes a zoölogical investigation of the Gulf of Finland. The Russian government will furnish a steamer, and the explorations are to be made on behalf of the Naturalists' society of Dorpat.

— The *American apiculturist* is the ninth periodical in the United States devoted to bees and apiculture. Several of these papers have a circulation numbering thousands, and one is a weekly. It would seem rash to start another bee paper under these circumstances. Silas M. Locke, editor of this new journal, seems, however, to have counted the cost, and means to act on the principle that there is always room up higher. He is an experienced bee-keeper, and expert in all the manipulations of the apiary. He has paid special attention to the qualities of the several races of bees, and is alive to the importance of great care in breeding bees, if the apiarist would secure the highest success. It is evident that he intends to give special attention to matters of scientific interest connected with bees and bee-culture.

Mr. Locke has also secured the assistance of the ablest writers on the apiary in the country, — not men who are simply given to fine writing, but practical men, who have won eminent success in the art which they practise. The paper is published at Salem, Mass., and, in typography and general style, has no superior among our apiarian periodicals.

— According to *Nature*, the report of the sanitary commissioner with the government of Bombay shows, that, among other causes of death in that presidency in the year 1881, 1,209 persons died from snake-bite. A comparison of the deaths in 1881 with the mean of those of five preceding years shows, that, in 1881 at least, the number had increased. These figures prove that one person in 13,610 of the whole population of the twenty-four presidency districts died from snake-bite. Adding to this the destruction of human life effected by other venomous and carnivorous animals, we see how important a matter to the residents of those regions is the destruction of this unfavorable environment.

— All the readers of SCIENCE have been familiar with the word 'wampum' from their childhood. Roger Williams wrote in his Key, "The New-England Indians are ignorant of Europe's coyne. Their owne is of two sorts, — one white, which they make of the stem or stock of the periwincle, which they call meteauhok when all the shell is broken off. This they call *wampam* (white). The second is black, inclining to blue, which is made of the shell of a fish which some English call hens (poquahock)." This money was called suckauhock (*sucki*, black). Various shells were used in different parts of the country under names adopted from the languages of the tribes who coined the money. But in the history of the early colonies the name 'wampum' has gained a footing for all shell-money as well as for its imitations. Mr. Earnest Ingersoll has brought together a large amount of information on the subject in the May *Naturalist*.

— The death is announced of E. Mohler, secretary of the Danube commission, and of Hermann Alexander von Berlepsch of Zurich, the latter in his seventy-first year.

— The death is also announced of Dr. J. S. Bailey of Albany, a young entomologist who had published a few papers of some importance on Lepidoptera.

— In the June number of the *Journal of science* is given the following account of a bird-eating frog. "A lady living in the George district (Cape Colony) supplies the *G. R. herald* with the following particulars of the remarkable habits of this creature: 'I have much pleasure in furnishing all the information we have, regarding the large frogs which have proved so destructive to our young chickens. A water-sluit runs round our terrace, and passes through the ground over which the poultry range, and in this the frogs harbor. The first time our attention was drawn to their bird-eating propensity was by the cries of a small bird in a fuchsia near the stream. Thinking it had been seized by a snake, several hastened to the spot, and saw a beautiful red and green sugar-bird in the mouth of a large greenish frog. Only the bird's head was visible; and, its cries becoming fainter, the frog was killed, and the bird released. Its feathers were all wet and slimy, and for some days after we could distinguish it in the garden by its ruffled plumage. Since then the same species of frog has on several occasions been killed with young chickens, half-swallowed; and once a duckling was rescued from the same fate. Whether the noise is natural to these frogs, or assumed to decoy the chickens within their reach, we know not; but they constantly make a chuckling sound so exactly like a hen calling her chickens for food that we have seen whole broods deceived, and rushing towards the sluit, where they supposed the hen to be. The frogs are very wary, and it is difficult to find them unless by the screams of their victims. We have lost large numbers of small chickens in an unaccountable manner, and feel sure now that these frogs must be answerable for very many of them, as there are no rats here, and the chickens are carefully housed at night. If I can give you any further details, I shall be glad to do so.'"

— The distinguished spectroscopist, M. Thollon, is now working at the observatory at Paris, as has been his custom during previous summers. The proposed observatory on the top of the Pic du Midi — where the brothers Henry saw the planet Venus with the naked eye in full daylight, when only three or four degrees from the sun, and two days after the transit — is said to be making great progress toward completion. It is expected that Admiral Mouchez, M. Thollon, and other astronomers will visit it toward the end of August.

— The *Vierteljahrsschrift der astronomischen gesellschaft* (18 jahrgang, erstes heft) is frontispieced with a solar print of Dr. Carl Christian Bruhns, the late director of the observatory at Leipzig. In the *nekrologe* are brief notices of Bruhns and C. Baeker, and a more extended one of E. Plantamour, by Dr. Rudolph Wolf of Zurich. Among the *literarische anzeigen* are the following: Backlund, Zur theorie des Encke'schen cometen, by Paul Harzer; Callandrean, Détermination des perturbations d'une petite planète par les méthodes de M. Gyldén, by O. Backlund; Ginzel, Astronomische untersuchungen über finsternisse, by Th. von Oppolzer; and Fischer, Der einfluss der lateralrefraction auf das messen von horizontal-winkeln, by Wilhelm Schur. Among the newly elected members of the *gesellschaft* are P. Harzer of Leipzig, J. Holetschek of Vienna, J. Scheiner of Bonn, and C. Wagner of Kremsmünster. The next meeting of the *gesellschaft* will be held at Vienna, commencing on Friday, Sept. 14, and lasting four days.

— The geological commission of Spain has prepared a pamphlet of twenty pages for the mineral exhibition, now open at Madrid, giving a brief account of the different geological formations occurring in Spain, their geographical distribution, general characters, and the minerals of economic interest occurring in each. It also gives a short orographical account of the country, which has a higher average elevation than any country in Europe excepting Switzerland. The highest peak is that of Mulahacen, in the Sierra Nevada, 3,554 metres above the sea-level. The formation which has the greatest extent in Spain is the tertiary, which covers 34 per cent of the surface; next comes the primary, covering 27 per cent; the secondary, 18½ per cent; the hipogenica, 10 per cent; the quaternary, 10 per cent; and the azoic, ½ per cent. Given in numerical order, the miocene and oligocene cover together 137,877 □ kilom.; the Cambrian and Silurian, 114,382; the hipogenica, 49,665; the quaternary, 49,477; the cretaceous, 47,002; the eocene, 23,564; the Jurassic, 22,697; the triassic, 22,443; the carboniferous, 11,301; the pliocene, 9,064; the Devonian, 5,780; and the crystalline strata, 1,694, — a total of 494,946 □ kilom. The term '*rocas hipogenicas*' is applied to what are generally called plutonic and volcanic rocks, both old and recent eruptive rocks.

— Père Vidal, French missionary at Tutuila, Navigator's Islands, announces the discovery, made last year, of the place of burial of Commandant Fleuriot de Langle, of the unfortunate expedition of la Perouse. De Langle and his companions were killed by the natives at a point named Massacre Bay, in December, 1787; but up to this recent date their remains and place of burial had not been discovered. The pious missionary intends to erect an expiatory chapel for the converted natives on the spot where their barbarous ancestors' victims were buried.

— Mr. Henry H. Howorth, who is our standard authority on the Mongols, reviews with favor the work of the Rev. James Gilmour, who has lived as a missionary among them. We have space only for a brief abstract upon the hospitality of these least sophisticated tribes of men: "Any traveller is at perfect liberty to alight at any village he may wish, and demand admittance; and any Mongol who refuses admittance, or gives a cold welcome even, is at once stigmatized as not a man, but a dog. Any host who did not offer tea without money and with-

out price would soon earn the same reputation; the reason being, I suppose, that Mongolia has no inns, and all travellers are dependent on private houses for shelter and refreshment. At first sight it seems rather exacting to leap off your horse at the door of a perfect stranger, and expect to find tea prepared and offered to you free; but probably the master of the tent where you refresh yourself is at the same time sitting likewise, refreshing himself in some other man's tent some hundred miles away; and thus the thing balances itself. The hospitality received by Mongols in travelling compensates for the hospitality shown to travellers."

— Two noteworthy ornithological papers appear in the August magazines. The habits and mental traits of the cat-bird in confinement have found an excellent student in Olive Miller, who gives us in the *Atlantic* a vivid picture of its curiosity, and its tyranny over weaker birds, with proofs of how it can learn by experience, and its capacity for jealousy. The article is well worth reading.

The friends of Prof. A. M. Meyer of Hoboken, who are aware of his zeal as a sportsman, will be less surprised than those who know him only by his professional studies, at his interesting paper on the quail, or 'Bob White' as it is familiarly known, which appears as the leading paper in the midsummer *Century*. Eight or nine exquisite woodcuts by Beard illustrate the different species of this class of game-birds in Europe and America, and far surpass in finish, and in excellence of delineation, any previous pictures we have seen.

— An increased interest in economic entomology is being shown in England. The Council of education (My lords of the privy council) have formed a committee of advice and reference regarding the entomological collections which have existed for some time in connection with South Kensington museum. This committee is under Professor Huxley as chairman; and among the members are Professor Westwood, Mr. Dyer (sub-director at Kew gardens), and Miss Ormerod. It is planned to form a collection of cases that shall show the insects commonly injurious to a serious extent to the crops, fruit and timber trees, of the British Isles. Each case is to be accompanied by short life-histories of the species in it, and descriptions of the most serviceable methods of preventing their ravages. It is the purpose of the committee to make the collection thoroughly plain to be understood, so that farmers and gardeners may be able to consult it serviceably. As far as possible, the insects will be shown in all stages, together with specimens of the injured plant. In those cases where specimens are too small or too perishable to be used, drawings or models will be substituted. The carrying-out of this plan in a thoroughly scientific manner has been assured by placing the preparation of the cases in the hands of Professor Westwood and Miss Ormerod.

— In order to bring together the greatest amount of solid information respecting the natural history of man, students have published manuals of anthropology from time to time, formulating the questions they desire to have answered. In 1800 Degeraudo, a member of the Institut de France, published a quarto of fifty-seven pages, entitled 'Considérations sur les diverses méthodes à suivre dans l'observation des peuples sauvage.' The Société ethnologique de Paris, in 1839, published its first memoir, which was preceded by general instructions addressed to travellers, among which were three chapters on the individual, family, social, and religious life of peoples. Mr. Gallatin, in our own country, while preparing his comparative Indian linguistics, issued circulars to all army officers, Indian agents, and travellers. Mr. Schoolcraft prepared a very elaborate scheme. George Gibbs published through the Smithsonian institution a linguistic circular, and the same institution has issued a number of others on anthropological subjects. The most elaborate published in our country are Major Powell's manual for collectors of linguistics, and Professor Mason's directions to collectors for the Centennial exhibition, and his pamphlet on the study of North American antiquities. In 1875 the Geographical society of Paris published 'Instructions aux voyageurs.' The British association have printed three sets of questions, in 1851, 1854, and in 1874. The last named bears the title 'Notes and queries on anthropology for the use of travellers and residents in uncivilized lands.' The Austrian expedition in the frigate Novara was furnished with a very elaborate volume of questions upon anthropology. In addition to these, we have 'Instructions anthropologiques' and 'Instructions craniologiques' by the Paris society, and manuals by Roberts and Kaltbrunner. Finally, the last-named society has been discussing with much learning and a slight loss of temper a 'Questionnaire de sociologie et d'ethnographie.'

— The following investigations have been completed by advanced students at the chemical laboratory of Johns Hopkins university during the past year: on the conduct of moist phosphorus and air towards carbon monoxide; white phosphorus; oxidation of a compound containing the sulphamine and propyl groups in the ortho-position with reference to each other, showing protection of the propyl; oxidation of paradipropylbenzine-sulphamide, showing protection of the propyl; on the nature of sinapic acid; the influence of light on fermentation; chemical examination of minerals from the neighborhood of Jones's Falls.

— Regarding the early telescopic observations of the ring of Saturn, DR. H. G. van de Sande Bakhuyzen, the director of the observatory at Leiden, writes to the editor of *The observatory:* It is clear that Bell is not the discoverer of the division of Saturn's ring; but that Cassini ought to be accounted the discoverer is not quite so certain. In a volume of MS. observations by Huygens, in the library of the university of Leiden, there is a drawing of Saturn, made 1675, Dec. 8 (and which has been copied, and published by Kaiser in 1855), wherein the division in the ring, and the difference of brightness of the two parts, are clearly indicated. Above and on the side of the drawing, Huygens wrote, among other things, ". . . Saturnus cum comite observatus tubo 36 pedum Campani;

aderat de Cassinius. . . . [A description of the ball and the ring as seen by the observer here follows, and succeeding the words] quod a Josepho Campano jam olim observatum, ut figura ab ipso edita comprobat. . . ." When Huygens made this observation, Cassini was with him; but, from the notice in the *Philosophical transactions*, it is probable that Cassini saw the division of the ring in August or September, 1675; so that there is no sufficient ground to think that it was Huygens who showed the division to Cassini. But with regard to the allusion of Huygens to the observation of the two parts of the ring, made by Campani, and the figure of the same which he had published, Dr. Bakhuyzen searched in vain in different books for the figure until he found, between a number of letters addressed to Huygens from Leopold, Prince of Etruria (the same to whom Huygens dedicated his 'Systema Saturnium'), a sheet of paper with two printed drawings of Saturn and Jupiter. The details in the belts of the latter planet show that Campani's telescope was a very good one. The shadow of the ring is to be seen on the disk of Saturn; and the outer part of the ring, for somewhat less than half the total breadth, is dotted, whilst the inner part is bright. There is no line between the two parts, but they are distinctly separated from one another by the difference in brightness. One can also see traces of the inner dark ring. It is highly probable that the above words of Huygens refer to this figure of Saturn; and Dr. Bakhuyzen therefore concludes that Joseph Campani was the first astronomer who, by means of a very good telescope made by himself, saw distinctly the darker and the brighter part of the ring in 1664. It is, however, possible that Cassini was the first who saw the line of separation. The drawings of Saturn and Jupiter made by Campani are printed in 'Stanislai Lubiensecii de Lubienietz Theatrum Cometicum,' Pars prior, page 574. Lubienietz received the drawings from Athanasius Kircher in Rome.

— The proprietors of the *Melbourne age* have sent an exploring expedition to New Guinea.

— In the *Proceedings of the American philosophical society* (xx. no. 113) Professor Pliny Earle Chase has a long paper, thirty-three pages, on 'photodynamics,' in which, starting with 'combined cometary harmonics,' he comes out at 'lines of force and of motion;' and Professor George F. Barker gives an account of his very simple form of constant battery.

— The aeronautical exhibition was held in Paris, at the Palais du Trocadéro, from June 5 to 24, — one week longer than was the intention. There were a number of plans for flying-machines shown, but a strange lack of successful results.

RECENT BOOKS AND PAMPHLETS.

**** *Continuations and brief papers extracted from serial literature without repagination are not included in this list. Exceptions are made for annual reports of American institutions, newly established periodicals, and memoirs of considerable extent.*

Adams, R. C. Evolution; a summary of evidence: a lecture delivered in Montreal, March, 1883. New York, *Putnam*, 1883. 44 p. 12°.

Amsterdam. — Wiskundig genootschap. Catalogus der bibliotheek. Amsterdam, *Sikken*, 1883. 8+112 p. 8°.

Béguyer de Chancourtois. Questions de géologie synthétique; études, documents et modèles exposés à l'exposition de 1883 à Madrid. Paris, *impr. nat.*, 1883. 27 p. 8°.

Bentley, R. The student's guide to structural, morphological, and physiological botany. London, *Churchill*, 1883. 490 p. 12°.

Bernard, G. Champignons observés à La Rochelle et dans les environs. Paris, *Baillière*, 1883. 300 p., 56 pl., atlas. 8°.

Boulnois, H. P. The municipal and sanitary engineer's handbook. London, *Spon*, 1883. 398 p. 8°.

Boussinesq, J. Cours d'analyse infinitésimale de l'Institute industriel du Nord. Lille, *Danel*, 1883. 28+254 p. 4°.

Carr, H. Our domestic poisons; or the poisonous effects of certain dyes and colors (especially those containing arsenic) used in domestic fabrics. London, *Ridgway*, 1883. 47 p. 8°.

Carton. Solutions raisonnées des exercises de géométrie contenus dans les deux cours de M. l'abbé Carton, professeur de mathématiques à l'institution Notre-Dame à Valenciennes. Paris, *Poussielgue*, 1883. 312 p. 12°.

Cassé, E. Aérostation pratique; épure et construction des aérostats et montgolfières, avec quatre planches explicatives. Paris, *Hennuyer*, 1883. 41 p. 8°.

Crié, L. Cours de botanique: organographie et familles naturelles pour la classe de quatrième, les écoles normales et les écoles d'agriculture. Paris, *Doin*, 1883. 12+481 p., 865 fig. 18°.

Daguillon. Entre vignerons à la veillée, causeries sur la culture de la vigne, la vinification et la conservation du vin. Clermont-Ferrand, *impr. Mont-Louis*, 1883. 463 p. 18°.

Davy, G. Tout par l'électricité. Tours, *Mame*, 1883. 475 p. 8°.

Dubois, A. Histoire naturelle vulgarisée, ornithologie populaire; grand et petite rapaces, oiseaux chasseurs. Limoges, *Barbou*, 1883. 124 p. 12°.

—— *The same.* Oiseaux fantastiques et oiseaux chasseurs. Limoges, *Barbou*, 1883. 125 p. 12°.

Duclau, S. La science populaire: les ballons et les premiers voyagers aériens. Limoges, *Ardant*, 1883. 143 p. 12°.

Fontannes, F. Note sur la découverte d'un Unio plissé dans le miocène du Portugal. Paris, *Savy*, 1883. 24 p., pl. 8°.

Graeff, A. Traité d'hydraulique, précédé d'une introduction sur les principes généraux de la mécanique. 3 vol. tom. i.: partie théorique, 8+333 p.; tom. ii.: partie pratique, 541 p.; tom. iii.: tables numériques, notes, errata, planches, 52 p. Paris, *impr. nat.*, 1883. illustr. 4°.

Herrick, C. L. Types of animal life, selected for laboratory use in inland districts. pt. i.: Arthropoda. Minneapolis, *Kimball pr.*, 1883. 33 p., [7] pl. 8°.

Holmes, A. Bromley. Practical electric lighting. New York, *Spon*, 1883. 154 p., illustr. 8°.

Johnston's new map of South Africa, with index. London, *Johnston*, 1883.

Lalande, J. de. Tables de logarithmes pour les nombres et pour les sinus. Revues par le baron Reynaud. Édition stéréotype, augmentée de formules pour la résolution des triangles, par M. Bailleul, typographe, et d'une nouvelle introduction. Paris, *Gauthier-Villars*, 1883. 42+236 p. 16°.

Lambert, J. The germ theory of disease concisely and simply explained. London, *Baillière*, 1883. illustr.

Lyras de Moléon. La mer, description de ses merveilles, ses curiosités les plus remarquables. Limoges, *Ardant*, 1883. 144 p. 12°.

Martin and **Watson.** Handbook to the fernery and aquarium. London, *Unwin*, 1883. illustr.

Mascart, E., and **Joubert**, J. A treatise on electricity and magnetism. Translated by E. Atkinson. vol. i. London, *De la Rue*, 1883. 662 p. 8°.

Oliver, J. A. W. Sunspottery; or, What do we owe to the sun? A popular examination on the cycle theory of the weather, famines, pestilences, commercial panics, etc. London, *Simpkin*, 1883. 54 p. 8°.

Pierret, P. Le livre des morts des anciens Égyptiens. Traduction complète d'après le papyrus de Turin et les manuscrits du Louvre, accompagnée de notes et suivie d'un index alphabétique. Paris, *Leroux*, 1882. 9+665 p. 18°.

Simmonds, P. L. A dictionary of useful animals and their products: a manual of ready reference for all those which are commercially important, and others which man has utilized; including also a glossary of trade and technical terms connected therewith. London, *Spon*, 1883. 136 p. 12°.

Woolcock, J. Studies in anthropology; or, lectures on man. London, *Partridge*, 1883.