mon is of the opinion that such diseases as Texas fever, charbon, and pleuro-pneumonia, are the results of germs which he has found in his post-mortem examinations, and that it is possible to protect unaffected animals from these diseases by dilute inoculation.

The precautions which the government has taken to prevent the importation of infectious diseases from abroad, by the establishment of quarantine stations, are praiseworthy, and it is of the greatest importance that proper regulations relative to the transportation of infected cattle from place to place should be adopted; but it is manifestly of far greater importance to ascertain the laws which control the diseases themselves, and to discover some cheap and obtainable means by which the farmer can protect his herds when attacked.

PUBLIC AND PRIVATE INSTITUTIONS.

Peabody museum of American archaeology, Cambridge, Mass.

Stone graves of the Cumberland valley. — In what was formerly an extensive cemetery covering several acres, at Brentwood, Tenn., eighty graves which had not been disturbed were opened during explorations the past summer. These graves were made by placing slabs of stone edgewise, forming the sides and ends of the graves; and on these, other flat stones were placed after the body was deposited. The bottoms of these cists were sometimes lined with small stones, but oftener with large potsherds. In some instances the lining was probably of bark. In several of these graves, two or three, and even, in one instance, five bodies were buried. In two graves, besides the skeleton of the person for whom each grave was made, one or two bones were found belonging to a second individual, in such positions as showed that they had been carefully placed in the grave. In one grave containing five skeletons, two of the three adult crania had persistent frontal sutures; and these were the only crania, in all the eighty graves, presenting this peculiarity. One adult skull had an extra suture, dividing the parietal of the left side into two nearly equal portions. This skull was also remarkable for the extreme occipital flattening, and great development of large Wormian bones; also for the absence of the two lateral incisors of the upper jaw, which, if they were ever present, must have been lost early in life, as all signs of the alveoli, or of wide gaps between the teeth, were obliterated. Many bones bearing evidence of simple inflammatory disease, but none of any specific taint, and several showing united fractures, were also found.

The pottery resembles in type that from the Missouri graves, but is, as a whole, of better finish. There were no large and coarse vessels in the graves, although the large fragments of thick pottery with which the bottoms of many graves were lined show that large vessels were made. The pottery from the stone graves consists principally of water-bottles of various shapes, small food-dishes, and bowls. Some of these are ornamented by incised lines, and others by designs in colors. Among the stone implements found were a large and finely polished celt of chert, several long chipped points with serrated edges, and a few arrow-heads, one of which was found embedded in a dorsal vertebra of the skeleton in the grave. Several implements and ornaments made of bone were obtained, among them two long bone pins with large, flat heads, — both found close to skulls, suggesting that they were probably used for hair-ornaments; also a number of shell and terra-cotta beads, and a single carved disk of shell, resembling those previously found in the stone graves of the Cumberland valley; together with a clay pipe having an ornamental bowl. Only eight pipes have previously been obtained in the several thousand graves which have been explored for the museum. Of these eight, three were of pottery, and the rest of different kinds of stone; one of the latter was elaborately carved, representing a man holding a cooking-pot which formed the bowl of the pipe.

An interesting discovery was made in the cemetery near the top of the hill, which at this place had gradually been gullied, and disclosed a mass of charcoal. On removing with a trowel all the earth about the charcoal, it proved to be the remains of burnt logs. A man was kept at work for several days following out the lines of charcoal and burnt clay; and after a time he succeeded in bringing to light, from under a few inches of clay, the charred floor-beams of a wooden structure of some sort. Within the enclosure formed by the charred logs were discovered a bed of ashes, a number of fragments of pottery, one perfect dish identical in character with those found in the stone graves near by; also a few burnt bones, two small discoidal stones, and two discoidal pieces of pottery. The logs had been supported by clay, which partly covered them, and thus prevented their total destruction when the building, of whose floor they formed a part, was destroyed by fire. About ten feet in length and five in width of this structure were traced, of which a drawing was made before any thing was disturbed. While stone graves were found on all sides, and within ten to twenty feet of the site of this structure, none were discovered under it; and there seems no reasonable doubt that these charred logs were the remains of a wooden structure of the period of the stone graves.

NOTES AND NEWS.

— In continuation of the work of establishing and verifying secondary meridians of longitude, Lieut.-Commander F. M. Green, assisted by Lieut.-Commander C. H. Davis and Lieut. J. A. Norris, U.S.N., under the direction of the Bureau of navigation, has determined a chain of geographical positions, commencing at Madras, in British India, and extending through the China and Japan Seas to Vladivostok, in Siberia. The stations occupied were Vladivostok, Yokohama, Nagasaki, Shanghai, Amoy, Hong-Kong, Manila, Cape St. James, Singapore, and Madras.

In measuring differences of longitude, the method adopted was in all cases to establish portable observatories in each of the two places between which the measurement was to be made, connecting the observatories with the telegraph-offices by short lines; so that the two observers were in telegraphic communication with each other. The errors of the chronometers on local time were then determined by means of numerous star-transits, and the chronometers were compared by repeated telegraphic signals sent both ways over the cable. The latitudes were determined by zenith telescope observations of pairs of well-determined stars.

A full account of the work, with details of the observations and computations, has been prepared, and will be published by the U. S. navy department.

— The seventeenth annual course of lectures to mechanics at the Sheffield scientific school, New Haven, Conn., just completed, embraced the following subjects: The Luray caverns as seen by electric light, Rev. H. C. Hovey; The transit of Venus, Professor Newton; Modern fiction, Mr. Charles Dudley Warner; Photo-chemistry of the retina, Prof. R. H. Chittenden; The trades-unions of the middle ages, Professor Farnam; The history of Connecticut as illustrated in the names of its towns, Professor Franklin B. Dexter; Domestication of animals, Prof. W. H. Brewer; Heat and work (two lectures), Prof. A. Jay Du Bois; The Veda, Prof. W. D. Whitney; Facts illustrative of the Darwinian theory, Prof. A. E. Verrill; The agency of insects in the fertilization of flowers, Dr. E. H. Jenkins.

— The Woman's education association of Boston has made arrangements with Professor George L. Goodale and Dr. W. P. Wilson for a course of ten lectures upon the relation of plants and animals to food. The course is now in progress, on Tuesdays and Fridays, at 11 A.M., in the lecture-room of the Boston society of natural history, having begun on Tuesday, March 27.

— *The American* reports that the Virginia board of education has accepted the Griffin farm, near Petersburg, as the site for the Colored normal and collegiate institute, provided the city council of Petersburg will give five thousand dollars. The college building will be erected near the spot where the memorable 'crater' fight occurred during the war; and the amount appropriated by the legislature for the establishment of the school is one hundred thousand dollars.

— "It is expected," says *Nature*, "that the French government will take in hand the celebration of the centenary of the discovery of balloons. The two committees which had been formed by several aeronautic societies have been amalgamated, and M. Gaston Tissandier has been appointed president. The scheme of an international exhibition for balloons and instruments used in aerial investigations has been adopted by M. Herrisson, the minister of public works, and will be carried into effect by M. Armengaud Jeane, the well-known civil engineer."

— A meeting of the U.S. naval institute was held at Annapolis, March 28, to consider the prize essay for 1883. The subject was, "How may the sphere of usefulness of naval officers be extended in time of peace with advantage to the country and the naval service?" The prize, consisting of a gold medal, one hundred dollars, and a life-membership, was awarded to Lieut. C. G. Calkins, while the essays of Commander N. H. Farquhar and Commander A. P. Cooke received honorable mention. The judges of the relative merits of the essays were Ex-Gov. Alexander H. Rice, Rear-Admiral George H. Preble, and Judge Josiah G. Abbot.

— At the meeting of the Biological society of Washington, March 30, Mr. Newton P. Scudder read a paper on The length of the hatching-period of the domestic fowl, and was followed by Dr. Thomas Taylor, on Section-cutting and mounting of hard woods, and A new parasite in fowls, of the nature of Trichina; Prof. J. W. Chickering, jun., on Mount Kataadn; Prof. L. F. Ward, on Hybrid oaks of the District of Columbia. During the meeting there was an exhibition of specimens (limited to five minutes each), illustrating accidents to animals, by Mr. F. A. Lucas; the bones of the sea-cow (Rhytina), by Mr. F. W. True; another jumping-seed, Remarks on beefly larvae and their singular habits, A burrowing butterfly larva, — by Prof. C. V. Riley.

— Rev. R. W. Logan, missionary of the American board of missions at Ponape, Micronesia, states that the remains of buildings, etc., represented to be found at Ponape, are simply basaltic columns such as are found at Staffa. There is no mark of their having ever been used for buildings, and they bear neither inscriptions nor other sculptures.

— The third annual exhibition of the society of American taxidermists will be held in New York, opening to the public at Lyric Hall, 723 Sixth Avenue, on May 1, and continuing five days. The general meeting will also be held during the same week. Since the Boston exhibition, the society has nearly doubled its membership; and the exhibits entered for New York give promise of a very extensive and attractive display. Inasmuch as this organization has for its special aim the improvement of museum taxidermy, in which there is certainly wide room, its work is an important one, and of great interest to all who visit our American museums.

— The English national smoke-abatement institution is making arrangements for opening a permanent exhibition in a central part of London. It will be free to the public. A hall for the reading of papers and the instruction of classes will be provided; also testing-rooms for the continuation of the series of tests and trials commenced in connection with the South Kensington and Manchester smoke-abatement exhibition of 1882. Particulars may be obtained at the offices of the national smoke-abatement institution, 44 Berner's Street, Oxford Street, London, W. —

— S. E. Cassino & Co. of Boston announce a revised translation of Haeckel's letters of Indian travel, by J. S. Kingsley; The history and uses of limestones and marbles, by S. M. Burnham; A handbook of entomology, by C. V. Riley; and Tables for the use of students and beginners in vegetable histology, by D. P. Penhallow.

— The treasurer of the Balfour memorial fund acknowledges the following subscriptions: Dr. R. H. Fitz, Harvard medical school, $10; Professor Asa Gray, Harvard, $5; Prof. H. P. Bowditch, Harvard medical school, $5; medical classes, '83, '84, '85, Univ. of Michigan, $23.25; previously acknowledged, $423.

— The Bureau of ethnology has just received a copy of Duruy's photographic reproduction of the Maya Codex, known as the 'Manuscript dit Mexicain, or Codex peresianus.' According to Dr. Brinton, only ten copies of this work were issued, one of which is in his library. The one received by the bureau is, therefore, the second which has found its way to this country.

— The more prominent geographers deceased in the year 1882 are: Antinori, known for his travels in Africa; Crevaux, supposed to have been killed by Indians while descending the Pilcomayo; Darwin, who began his great work by a voyage around the world; Delitsch, most widely known as editor of Aus allen welttheilen; Desor, whose work was chiefly geological, in Switzerland and this country; Gill, an explorer of inner China, massacred with Palmer, by the Arabs on the Sinai peninsula; Lütke, the Russian navigator; Parish, author of works on the Argentine Republic; Petherick, an early explorer of the upper Nile; Nain Singh, the most celebrated traveller of the Indian pundits; Rawson, a member of the recent English arctic expedition under Nares, who died from wounds received at Tel-el-Kebir; Rodgers, of our navy, an explorer of the northern Pacific and Arctic; H. v. Schlagintweit-Sakünlünski, one of the three brothers widely known for their explorations in the Alps, and later in India and central Asia; Wyville Thomson, chief of the scientific staff of the Challenger; and Warren, of our engineer department.

—The zoölogical gardens at Cincinnati seem to be in a flourishing condition. The receipts for 1882 were nearly $50,000 ($3,418 in excess of expenditures), of which nearly $30,000 came from gate-money. The animals on exhibition numbered nearly 800; and among those bred in the garden during the year were grizzly bears, the zebu, the bison, and half a dozen kinds of deer.

— In SCIENCE, p. 266, column 1, line 8, for 'dollars' read 'shillings.'

RECENT BOOKS AND PAMPHLETS.

Behrens, Wilhelm. Hilfsbuch zur ausführung mikroscopischer untersuchungen im botanischen laboratorium. Braunschweig, *Schwetschke*, 1883. 12+398 p., illustr. 8°.

Boudet de Paris, M. Des applications du téléphone et du microphone à la physiologie et à la clinique. Paris, *Henry*, 1880. 11+171 p. 8°.

Brass, Arnold. Zur kenntniss der eibildung und der ersten entwicklungsstadien bei den viviparen aphiden. Halle, *Schwetschke*, 1883. 40 p., illustr. 8°.

Cavallero, Agostino. Le macchine a vapore, il materiale e l'esercizio tecnico delle strade ferrate: termo-dinamica-aerodinamica. Forino, *tip. Camilla e Bertolero*, 1883. 24+705 p., illustr. 8°.

Claparède, Alexandre. Quelques nouvelles kétones aromatiques obtenues par condensation moléculaire. Dissertation présentée à la faculté des sciences de l'université de Genève. Genève, *Georg*, 1882. 63 p. 8°.

Compagnie internationale des téléphones. Situation des réseaux téléphoniques. Paris, *Dupont*, 1883. 53 p. 4°.

Deutsche botanische gesellschaft. Berichte. i. heft. Berlin, *Borntträger*, 1883. 56 p. 8°.

Duclau. La science vulgarisée. L'éclairage au gaz et la lampe de sûreté, leçons populaires mises au niveau de la science moderne. Limoges, *Ardant*, 1883. 143 p. 8°.

—— *The same.* Les cristaux et la cristallisation. Limoges, *Ardant*, 1883. 144 p. 8°.

Entomological papers from the transactions of the Iowa state horticultural society for the year 1882. Des Moines, *Mills pr.*, 1883. 42 p. 8°.

Filachon, J. E. Principes de cosmologie. Paris, *Durand et Pedone-Lavriel*, 1883. 87 p., illustr. 12°.

Girard, M. Les insectes. Traité élémentaire d'entomologie. Tom. iii. fasc. i. Hyménoptères térébrants; macrolépidoptères. Paris, *Baillière*, 1883. 640 p., illustr. 8°.

Godefroy-Lebeuf et Bois. Les plantes vivaces de la maison Lebeuf, ou Liste des espèces les plus intéressantes cultivées dans cet établissement, avec quelques renseignements sur leur culture, etc. Argenteuil, *Godefroy-Lebeuf*, 1883. 180 p., illustr. 18°.

Graham, R. Algebraic factors: Resolution of elementary algebraic expressions into simple factors by easy methods; with numerous examples and exercises. Dublin, *Pousonby*, 1883. 100 p. 12°.

Grégoire, L. Nueva geografia universal. Traducida y ampliada por D. Nicolas Estevanez. Tom. i. Paris, *Garnier*, 1883. 8+799 p., illustr. 4°.

Guvard, S. Melanges d'assyriologie, notes de lexicographie assyrienne, suivies d'une étude sur les inscriptions de Vau. Paris, *Maisonneuve*, 1883. 2+148 p. 8°.

Jouffret, E. Introduction à la théorie de l'énergie. Paris, *Gauthier-Villars*, 1883. 200 p. 8°.

Klein, D. Sur les acides borotungstiques. Paris, *Gauthier Villars*, 1883. 87 p. 4°.

Krieg, Otto. Die dobschauer eishöhle u. gletscherspuren im Riesengebirge. Vortrag in der aula d. gymnasiums zu Hirschberg am Jan. 22. Hirschberg, *Richter*, 1883. 39 p. 8°.

Kruger, Paul. Rotations-und pendelbewegung eines körpers in einer flüssigkeit. Inaugural dissertation. Danzig, 1882. 42 p. 8°.

Martin, H. N., *and others.* Lectures delivered to the employees of the Baltimore and Ohio Railroad Company, by Prof. H. Newell Martin and Drs. Henry Sewall, William T. Sedgwick, and William K. Brooks. Baltimore, *Friedenwald pr.*, 1882. 98 p., illustr. 8°.

Meyer, Loth, u. **Seubert**, Karl. Atomgewichte der elemente aus den originalzahlen neu betrachtet. Leipzig, *Breitkopf & Härtel*, 1883. 10+245 p. 8°.

Moncel, Count Th. du. Elements of construction for electro-magnets. Translated from the French by C. J. Wharton. London and N. Y., *Spon*, 1883. 90 p. 8°.

Munker, J. G. Grundsätze der electrodynamik, synthetisch hergeleitet u. experimental geprüft. Nürnberg, *v. Ebner*, 1883. 4+27 p., illustr. 8°.

New Jersey — Geological survey. A topographical map of a part of northern New Jersey, from surveys and levellings made and local surveys corrected by George W. Howell and C. C. Vermeule upon a projection made by the U. S. coast and geodetic survey. *Bien, lith*, 1882. Scale, 1 m. to 1 in. 87.5×88.5 cm.

Orchauski. Recherches craniologiques sur une série de crânes d'assassins. Paris, *Hennayer*, 1883. 13 p. 8°.

Reade, A. A. Study and stimulants; or, the Use of intoxicants and narcotics in relation to intellectual life as illustrated by personal communications on the subject from men of letters and science. Manchester, *Heywood*, 1883. 204 p. 8°.

Sbriziolo, Marco. Trattato di chimica analitica qualitativa e quantitativa. Napoli, *Eschera*, 1883. 574 p. 16°.

—— Trattato di chimica generale inorganica ed organica, esposto sotto il punto di vista della dottrina moderna. Napoli, 1883. Illustr. 8.°

Schiaparelli, G. V. Misure di alcune principali stelle doppie di rapido movimento orbitale. Milano, *tip. Lombardi*, 1883. 43 p. 8°.

Science nouvelle (La). Red. Adolphe Bitard. 1re ann. no. 1, Mars 15. Paris, 1883. 8 p., illustr. 8°. *w.*

Seaton, A. E. A manual of marine engineering: comprising the designing, construction, and working of marine machinery. London, 1883. 446 p., illustr. 8°.

Ulmi, K. Populäre mittheilungen über heizung und ventilation. Mit vorschlägen zur einführung der antiken heizungs-und ventilationsmethode, zum gebrauch für hausbesitzer, anstaltsvorsteher, und bauhandwerker. Bern, *Krebs*, 1883. 144 p. 8°.

United States geological survey. Bulletin No. 1. Washington, *Government*, 1883. 42 p., 2 pl. 8°.

Vicentini, Giuseppe. Gli elettromagneti. Roma, *tip. Cecchini*, 1882. 45 p. 8°.