it is based on wide observations of facts and long reflection on the elements of the problem, in which I have had the assistance and support of many able geologists, and they are views which cannot wisely be dismissed without careful consideration of the arguments upon which they rest. The theory is not without its difficulties; neither is any other. Geology is not an exact science. There is no infallible court of appeal for the settlement of theories. Observers and students of the facts may widely differ for a long time in their conclusions without discredit to either party. I can only ask for freedom of opinion and freedom of utterance.

G. FREDERICK WRIGHT.

Oberlin, O.

Notice of the Occurrence of Nyctale Richardsoni, Richardson's Owl, in Nebraska.

THE occurrence in this region of Richardson's owl, *Nyctale Richardsoni*, seems to be entirely established by the recent capture of one in Lincoln. This is a long distance below its southern limit, and its appearance is something of a surprise.

However, Professor Lawrence Bruner, who has stuffed and mounted this rare owl, noticed one as a boy, twenty four years ago, near Omaha. Ornithologists at the time questioned the accuracy of his observations, but this specimen confirms the probability of his claim.

The present specimen, which is the first actually taken in the State, was captured on 33d Street, in the city of Lincoln, Dec. 12, and was brought alive to the State Museum. It lived but a short time, however, owing perhaps to injuries, or to the heat. The bird is an adult, in fine plumage.

The unexpected appearance of this inhabitant of Arctic regions seems the more striking from the fact that the weather in Nebraska thus far, barring one snow-storm, has been a mild, protracted autumn rather than winter. ERWIN H. BARBOUR.

University of Nebraska, Lincoln, Neb., Dec. 14.

Vagueness of Localization in a Child.

The following are illustrations of the vagueness of the localization of cutaneous sensations in children. The one referred to is 16 months old. The morning after she had been vaccinated, and for a considerable time afterward, she was unable to tell on which arm the sensitive spot was situated, often looking at or touching the wrong one. On one occasion the child sat down with her back close to a grate-fire; as soon as the heat had penetrated the clothing, she began pulling at and striking her chest as though the sensation were there. M. SCRIPTURE.

New Haven, Conn.

Ballistic Galvanometer.

CAN any of your readers furnish me with complete references on the use of the ballistic galvanometer for measurements of time? E. W. SCRIPTURE.

Yale University, New Haven, Conn.

BOOK-REVIEWS.

The California Vine Disease. By NEWTON B. PIERCE Bulletin No. 2. Division of Vegetable Pathology, U. S. Dep't. Agric. Washington, 1892. 222 p, pl. 25, charts 2.

Report on the Experiments made in 1891 *in the Treatment of Plant Diseases.* By B. T. GALLOWAY. Bulletin No. 3. Division of Vegetable Pathology, U. S. Dep't. Agric. Washington, 1892. 76 p. pl. 8.

Grasses of the Pacific Slope, including Alaska and the Adjacent Islands. By GEO. VASEY. Bulletin No. 13. Division of Botany. U. S. Dep't. Agric. Washington, 1892. 50 plates, with descriptions.

THESE three publications which have followed one another rapidly from the Government printing office are of diverse character. The first deals with the results of an investigation extending over two years into the character of an obscure but virulent disease of vines in California; the second records the results of a series of experiments to prevent the ravages of several plant-diseases in the eastern portion of the country; and the third gives descriptions and plates of fifty-two species of grasses found growing on the Pacific coast of our country, including Alaska.

The California vine disease seems to have first appeared in the vicinity of Anaheim, Orange County, in 1885, but it did not attract great attention until the following year, when it caused the death of a large number of vines. From this, its first appearance, it has spread over a wide section of the surrounding country and has caused the death of many thousands of vines and entailed a loss of many thousands of dollars. Mr. Pierce, as the special agent of the Department of Agriculture, had spent two years in studying the subject when the present report was submitted, in June, 1891, and since then has continued his investigations. The report is an exhaustive one in many respects, an unsatisfactory one in others. For example, while he has given a very full account of the rise and progress of the vine industry in California and Mexico, and has examined with great care the bearings of soil conditions and of meteorological phenomena on the disease, the remedy for the evil, or even suggestions for palliation of it, are meagre in the extreme. It might be said, it is true, that as the origin and cause of the disease is still unknown, it is not possible to prescribe a remedy. Everything that has so far been tried has given negative results. Numerous facts have been brought out by the investigation. Among them may be noted that drainage, irrigation, soil characters, rainfall, and temperature have had no effect in causing the disease. But that shade has in some unknown manner the effect of retarding the progress of the malady. It has also been ascertained that the disease is not caused by certain species of fungi or by certain animal or insect parasites, and that it differs in several ways quite markedly from Chlorosis and Pouritiore as these occur in Europe. The colored plates that are given illustrate very well the effects of the disease on the leaves and canes.

The second of the titles above given is an account of experiments conducted in the vicinity of Washington and in New York State for the prevention of plant diseases. These experiments bear out the previous work of the department. They show that, in the treatment of black rot of the grape, Bordeaux mixture still takes the lead; and that half strength, i. e., 3 pounds of copper sulphate, 2 pounds of fresh lime, and 22 gallons of water, gives as good practical results as full strength. In the treatment of apple scab, Bordeaux mixture was also very effective, but not so much so as Paris green. This is a new fact inasmuch as this substance, while known to be effective against insects, has not been generally supposed to be a fungicide. There was a higher percentage of first quality fruits and a less percentage of third quality as well as wormy fruits when this substance was used than any other. The experiments in New York were largely negative, since the amount of disease present was comparatively slight. The subjects treated were various kinds of nursery stock, and here again Bordeaux mixture gave as a whole the best results. Two plates showing sprayed and unsprayed grapes bear testimony to the good effects of the treatment for black rot.

The third title, "Grasses of the Pacific Slope," consists of illustrations and descriptions of grasses growing in California, Oregon, Washington, and Alaska. Some of them are of value for forage, while others are of scientific interest only. This is Part I. of the second volume of "Illustrations of North American Grasses," the first volume, also in two parts, having treated of the grasses of the south-west. The reports cannot fail to be of great interest and value to all students of botany.

JOSEPH F. JAMES.

Comparative Architecture. By BARRE FERREE. The author, New York.

THIS is a reprint of a paper read before the American Institute of Architects at its twenty-fifth annual meeting, at Boston, in October, 1891. It is handsomely printed in royal octavo, and covers fifteen pages in clear and pleasing type. In this discourse, the distinguished author applies to architecture the comparative method which has proved so fruitful in the study of language and of biology. "Comparative Architecture" takes "the facts of historical and descriptive architecture, and describes the comparative progress made by all nations, and under all conditions."

It is thought that thus "the rich results obtained by the comparative method in natural and human sciences justify the hope that not less valuable returns will be obtained" by this extension of the system. Architecture falls under the domain of law, and the immense walls of the Assyrians and the ponderous arches of the Romans are the product, not of fancy, but of the condition of environment of their builders. Mr. Ferree believes with Freeman; "Deal worthily with the history of architecture and it is worthy to take its place alongside the history of law and of language." "Comparative architecture has to do with architecture as the product of the human mind, as the result of intellectual processes and reasonings; and each day these things enter more and more into the making of modern architecture." The paper is well worthy of the careful perusal of the architect whether professional or amateur.

Energy and Vision. By S. P. Langley. Washington, Nat. Acad. 18p. 4°.

This small volume contains, as is always expected of the papers of the distinguished astronomer and physicist, very important matter. The work was first presented to the National Academy of Sciences at its April meeting in 1888. It relates to the differing optical effects produced by waves of light of varying magnitude though containing equal energy. Two lines of research are marked out: the one to ascertain the quantity of energy in each ray; the other to measure the corresponding visual effect. In the first the "bolometer" of Langley is used to measure energy of various heat and light waves. Solar measures constitute the second. The result gives the value of equal amounts of energy at different points in the spectrum as affecting the retina. It was at once found that energy itself is not uniformly distributed in the spectrum. The gauge of energy was taken as the intensity of light required to read a table of logarithms; which method is thought more accurate than any of the usual photometric systems. It is found that the eye requires more time to regain its sensitiveness for violet light, after having been exposed to sunlight, than for any other color. It is found that the eye can perceive lights varying in intensity in the proportion of 1 to 1,000,000,000,000,000. The same amount of energy may produce 100,000 times as much effect in one portion of the spectrum as in another. Work done in giving rise to deepest red light amounts to about 0.002 erg per second.

Spons' Tables and Memoranda for Engineers. By J. T. Hurst Eleventh edition. New York, Spon & Chamberlain.

This is a little pocket-edition of Hurst's tables, and is likely to prove, as indeed the issue of eleven editions shows to be the fact, a very useful miniature reference-book. It is about one and a half by two and a half inches, and 140 pages of carefully selected tables and data, with a good index. It can be carried in the waistcoat-pocket. It is even smaller than the admirable little pocket-book published by the American Iron Works of Jones, Laughlin, & Co., and but a fraction of the size of Hurst's larger tables, of Molesworth, and other so-called pocket-books.

AMONG THE PUBLISHERS.

— The tenth and concluding volume of the new edition of "Chambers's Encyclopædia" will be issued by J. B. Lippincott Co. in a few weeks. Mr. Stanley Lane-Poole writes on Swift and Turkey; Mr. F. T. Palgrave contributes the memoir of Tennyson and that of Wordsworth, Mr. Richmond Ritchie that on Thackeray. Sir W. Lawson treats of Temperance, Mr. R. W. Lowe of the Theatre, Mrs. Besant of Theosophy, and Mr. G. Howell of Trades-Unions. Mr. Hamerton is the author of the biography of Titian and of that of Turner, while Mr. J. Gray writes on Van Dyck. The article on Anthony Trollope is by his brother, the late Thomas A. Trollope. Mr. Vámbéry writes on Turkestan, Professor Shaler on the Geology of the United States, Professor J. Geikie on Volcanoes, Mr. Austin Dobson on Horace Walpole, Mr. Loftie on Westminster and Windsor, Mr. Fraser

CALENDAR OF SOCIETIES.

Biological Society, Washington.

Dec. 17.—Principal topic of the evening, What should be the Scope and Object of a Biological Society? introduced by Mr. B. E. Fernow. Communications: Lester F. Ward, Frost Freaks of the Dittany; Erwin F. Smith, Notes on Peach Rosette; M. B. Waite, Destruction of Lichens on Pear Trees; D. G. Fairchild, Notes on Apple and Pear Fusicladii.

New York Academy of Sciences.

Dec. 19.—W. B. Scott, Fossil Hunting in the North-West.

New York Academy of Sciences, Biological Section.

Dec. 12.—The following is a synopsis of the papers: On the Miocene Deposits of the White River, by Dr. T. L. Wortman. These deposits were arranged in three groups, Lower, or Menodus, beds; Middle, or Orcodon, beds; and Upper, or Protoceros, beds. The Protoceros beds were regarded as in part contemporary with the John Day beds of Oregon. On the Ilco-Colic Junction of Procyon lotor and Allied Arcthoids, by G. S. Huntington. The absence of caccum in Procyon was noted as repeating the condition found in Hyena and the Ursidæ. The provision for preventing return of contents of large intestine appears to consist in a series of constructions in the terminal part of the ileum together with increase in the circular muscular fibres in these situations as well as at the ilco colic junction itself. There is a complete absence of an ilco-colic valve. On the Origin of West Indian Bird Life, by F. M. Chapman. Conclusions from study of bird (and mammal) life were (1) distinctness geologically of Lesser from Greater Antilles; (2) independence of islands and mainland since the appearance of the present fauna; (3) original connection of Indes to Central America by way of Jamaica, Central America at this time an archipelago created by passage leading from Pacific to Carribean Sea; (4) the older faunal forms of the Indes represent survivors of the insular Tertiary species; (5) the newer forms are immigrants and become differentiated under new conditions of living. H. F. Osborn reported the discovery in the Miocene of South Dakota of a horned Artiodactyl represented by male and female skulls and complete fore and hind feet. The female skull is comparatively hornless and proves to be identical with Protoceras celer Marsh. The male skull exhibits no less than five protuberances upon each side, or ten altogether. Two of these upon the frontals and sides of the maxillaries are very small; the parietal, supra-orbital, and maxilliary protuberances are very prominent and hed, apparently, a dermal covering, as in the giraffe. There are four toes in front and two behind, as in the early Tragulidæ. The types were found by Dr. T. L. Wortman, and are in the recent collections of the American Museum of Natural History.

Society of Natural History, Boston.

Dec. 21.—W. F. Ganong, Some New Experiments on the Absorption of Liquids by Aerial Parts of Plants; S. H. Scudder, The Abdominal Pouch of Butterflies of the Genus Parnassius; W. H. Niles, Columnar Structure in Stratified Rock.

Publications Received at Editor's Office.

George, Henry. A Perplexed Philosopher. New York, C. L. Webster & Co. 319 p. 12°. $1.

Hale, George E. Ultra-violet Spectrum of the Solar Prominences; The Yerkes Observatory of the University of Chicago: Some Results and Conclusions Derived from Photographic Study of the Sun. Reprints. Chicago, The Author.

Newth, G. S. Chemical Lecture Experiments. London and New York, Longmans, Green & Co. 323 p. 8°. $3.

U. S. Navy Dep't Notes on the Year's Naval Progress. Washington, Government. 366 p., pl. 8°.