typical specimens, representing seventy-eight species described by Mr. U. P. James, from the Hudson River group in southern Ohio. These are the gift of Mr. James, and have been recorded. Mr. Walcott has also received, from Cornell university, for study and illustration, the type specimens used by Prof. C. F. Hartt, in Dawson's 'Acadian geology,' in his descriptions of the fossils of St. John, N.B. All the species described by Professor Hartt will therefore now be illustrated for the first time.

Prof. O. C. Marsh, in charge of vertebrate paleontology for the survey, has had parties working in Wyoming during the past season, and also in the Jurassic of Colorado, and reports to the director that they have made large additions to the collections, and very important discoveries, the results of which will be reported later.

Chemistry. — The chemical division of the survey will hereafter occupy the laboratory of the U. S. national museum, where work will be begun at once on material that has been accumulating in the hands of the chief chemist, Prof. F. W. Clarke.

Professor Clarke has been appointed honorary curator of mineralogy in the U. S. national museum. At the New Haven laboratory, Dr. Carl Barus and Dr. William Hallock are conducting thermo-electric investigations. They find that thermo-electric couples containing nickel behave anomalously at temperatures above 400° C., but that couples of platinum, with palladium or iridium, are available for the measurement of high temperatures. With such couples, temperatures as high as 1200° may be measured as exactly as with the air-thermometer.

Fresh-water shells from the paleozoic rocks of Nevada. — The bed of calcareo-argillaceous strata containing this unusual fauna is situated near the base of the great lower belt of carboniferous limestone of the Eureka mining district, Nevada. The argillaceous layers pass into calcareous strata above, that contain a few plates of crinoidal columns, and fragments of brachiopods, and besides these a fauna of forty or more species that is purely marine, and closely related to that of the lower carboniferous fauna of the Mississippi valley.

Although there is now a large collection of material from the band containing the fresh-water shells that was collected subsequent to the geologic field-work, during which the specimens now to be mentioned were collected, it will not be studied until after the publication of the report on the Eureka district. This brief notice is to call attention to the occurrence of fresh-water shells in the paleozoic rocks, and also to state that more is to be presented when the paleontologic collections shall have been thoroughly worked over and studied.

The first species discovered was a Physa, — a form of the genus so characteristic that there is no need of making any other generic reference; judging, of course, from the shell, and not presupposing that any variation existed in the animal inhabiting it. For this species I have proposed the name Physa prisca (fig. 2). The second is a species so Ampullaria-like that a reference is made to that genus (fig. 3). The operculum is shelly, calcareous, concentric (fig. 3*a*). If not generically identical with Ampullaria, it certainly belongs to the group in a closely allied genus. The name Ampullaria? Powelli is proposed for it. The third species is a pulmonate shell that appears to be closely related to Auricula, and for which the name Zaptychius carbonaria (*nov. gen. et sp.*) is proposed.

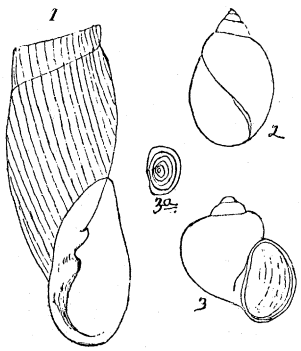

Fig. 1. — Zaptychius carbonaria × 5. Fig. 2. — Physa prisca × 2. Fig. 3. — Ampullaria? Powelli × 2. Fig. 3*a*. — Operculum of A.? Powelli.

A small lamellibranchiate shell that may be a Nucula, Corbicula, or Cyrena, probably one of the two latter, is associated with the above, and also fragments of twigs and small cones that may be referred to the Coniferae. The land-shells thus far described from the paleozoic series are all referable to the sub-order Geophila or terrestrial pulmonates, and comprise six species; viz., Pupa vetusta, P. Bigsbyi Dawson, P. vermilionensis, Dawsonella Meeki Bradley, Zonites (Conulus) priscus Carpenter, Anthracopupa ohioensis Whitfield (from the horizon of the coal-measures), and one species (Strophites grandaeva Dawson) from the erian plant-beds of St. John, N.B. To these we now add two species of the Limnophila (Physa prisca and Zaptychius carbonaria), and one species of an operculated fresh-water shell (Ampullaria? Powelli). It may be said of these species, as Principal Dawson has said of Pupa vetusta, they are remarkable not only for their great antiquity, but also because they are separated by such a vast interval of time from other known species of their race.

Charles D. Walcott.

PUBLIC AND PRIVATE INSTITUTIONS.

Williams college, Williamstown, Mass.

The natural-history department. — Through the liberality of friends, the college has secured a permanent table, with the necessary facilities for its use, in the museum of the U.S. fish-commission at Wood's Holl. The table will be occupied every summer by the department. The college has also leased for a series of years a table at Professor Dohrn's international zoölogical station at Naples, from the use of which it is hoped that permanent benefits will inure to this department. The conditions of the gift of the late Dr. William J. Walker make provision for a scientific expedition every fourth year.

NOTES AND NEWS.

The extensive collections of American Coleoptera made by the late Dr. J. L. LeConte, containing an immense number of original types, become the prop-

erty of the Museum of comparative zoölogy at Cambridge, Mass.

— We reproduce by photo-engraving, from *The photographic news*, a cut prepared from nature by the Luxotype process of the English firm of Brown, Barnes, & Bell. It should be mentioned that considerable clearness has been lost in the reproduction on account of the fineness of the stipple in the original, and the acknowledged hasty printing of the *News*. *The photographic news* has given during the last few months a number of separate imprints from plates made by processes similar to that of Mr. Ives of Philadelphia; that of Sara Bernhardt, in the issue for Nov. 23, being possibly the most satisfactory. Any one interested in the advances in the methods of making relief-plates for printing with type will find much in this series of articles of great interest. The portrait of Dr. LeConte, in this number of SCIENCE, was made by the Ives process, no hand-work having been used in the preparation of the plate from a photograph.

— While we are prosecuting our researches among the mounds, shell-heaps, and pueblos, of our own territory, we must not forget the thorough work going on in India under the patronage of the British government. For about ten years, an archeological survey of the ancient cave and rock-hewn temples of western India has been in operation, and, previously to the present year, three handsome quartos, profusely illustrated, have been published. The third volume treated more especially of the cave-temples of India.

During the present year, volumes iv. and v. have been issued, and complete the report of the survey, extending from 1876 to 1880. These volumes are about the size of the Smithsonian contributions, and are printed on fine paper, and elegantly bound. In volume iv. are forty heliotype plates and twenty-five woodcuts, and in volume v., sixty-one plates and eighteen woodcuts. It is not necessary here to enter into a minute description of these temples, since that has been done by Mr. Fergusson and Mr. Burgess, in their 'Cave-temples of India,' published in 1880. The method pursued is purely technical, "enabling the architect and the student to form a tolerably correct idea of the style and character of the plans and ornamentation. The facsimiles and translations of the inscriptions will afford fresh materials of a trustworthy character for the epigraphist and philologist." The principal group of rock-temples of western India is the magnificent series at Elura, consisting of splendid representatives of the three classes, Baudha, Brahmanical, and Jaina cave-temples. The village of Elura is in the Nizam's territory, about fourteen miles west of Aurangâbâd. Of this group, M. Baudrillart says, "All commentary grows pale before these magnificent ruins. Here the development of the plastic arts and of public religious luxury amongst the Hindus receives the most striking attestation in the magnificence of these temples, in the infinite diversity of their details, and the minute variety of their carvings."

— The Ottawa field-naturalists' club held the first *soirée* of their winter course on Thursday, Dec. 6, when the president, Dr. H. B. Small, delivered his inaugural address. After remarks on the past operations of the club, and suggestions as to its future management, he gave an excellent summary of past and present systems of the classification of the animal kingdom. The necessity of a knowledge of this character was strongly urged, in order that a just conception might be obtained of the relations of the different members of our fauna, and narrowness be avoided by those pursuing special studies. In his opinion, many persons who commenced the study of natural history abandoned it after a short time solely because, through ignorance of the relations of various objects, they failed to become imbued with that love of nature which the more carefully educated student possesses. An interesting discussion ensued on the address, in which several members shared. His excellency the Marquis of Lansdowne, governor-general of Canada, has consented to become patron of the club.

— At the annual meeting of the Boston zoölogical society, held Dec. 4, 1883, the following officers were elected for 1884: president, F. C. Bowditch; vice-president, F. H. Brackett; secretary, R. Hayward; treasurer, A. C. Anthony; librarian, H. Savage.

— In the Iowa weather bulletin for November, attention is called to "The most beautiful phenomena of the entire month . . . the varying and brilliant tints of sunset during the last five days of the month." These brilliant sunsets seem to have been noticed over the whole country.

The prediction is made, that "the winter now beginning will probably be a moderate or mild winter for Iowa and the adjacent parts of the northwest. The observations of the past ten years make the above probability very high, and, taking into account the entire series of forty years' observations, the chances for this winter proving a severe one are less than one in twenty."

— One of the most excellent of the familiar British museum catalogues is that lately published of the Batrachia, Gradientia, and Apoda, in the British museum, by Mr. George A. Boulenger. This work is called a 'second edition' of the catalogue of the same animals, published in 1850, by Mr. John Edward Gray; but it is a second edition only in name, as very little of Gray's work remains in it. The material studied by Boulenger (comprising ninety-seven of the one hundred and thirty-three species recognized, instead of forty-three) is far greater than that at Gray's disposal, and the character of the work done by the younger author is far higher.

The classification adopted by Boulenger agrees in many respects with that of Professor Cope; but some of the families and genera adopted by the latter are here given lower rank. The commonly accepted rules of zoölogical nomenclature are carefully followed by Mr. Boulenger, who evidently does not consider his own whims or prejudices, or even the traditions of the British museum, as forming a law higher than the law of priority.

Among the changes of current nomenclature considered necessary by Mr. Boulenger, we may note the substitution of the generic name 'Molge Merrem' for the later 'Diemyctylus' or 'Notophthalmus,' for our common red or green newt or 'evet;' of 'Cryptobranchus Leuckart' for the 'hellbender,' instead of the later 'Menopoma;' and of the name 'Necturus maculatus Raf.' for the 'mud-puppy,' instead of 'Menobranchus' or 'Necturus lateralis.'

An instructive discussion is given of the geographical distribution of the Batrachia, the geographical divisions with that group coinciding very closely with those recognized in the distribution of the freshwater fishes.

— The Society of naturalists of the eastern United States will hold its second meeting at Columbia college, New-York City, Dec. 27, at ten A.M.

— Gen. Richard D. Cutts, first assistant superintendent of the U. S. coast-survey, died at Washington, Dec. 13, at the age of sixty-six. Gen. Cutts was born in Washington, and was connected with the coast-survey the greater part of his life. During the war he served on the staff of Gen. Halleck.

— On the 25th and 26th of October, there fell at Hilo, Hawaii, $17\frac{15}{100}$ inches of rain in twenty-two hours, by rain-gauge.

— The December number of *Van Nostrand's engineering magazine* contains an announcement, that, as the publication of the magazine has continually entailed a loss, the magazine will not be continued after the coming year, unless an increased support should justify it. That a magazine of such great merit should succeed is most heartily to be wished.