for instance, stretch from Missouri to Arctic America, and are enclosed in sediments of similar character throughout these limits. Aside from defects of particular arguments, and aside from any weight attributable to this essay, the question is one which will undoubtedly provoke competent and deliberate discussion. Mr. Scribner's monograph is well written, with some local diffuseness, and an occasional sentence of intolerable length, but, on the whole, a timely, suggestive, and pleasant little volume.

INTELLIGENCE FROM AMERICAN SCIENTIFIC STATIONS.

GOVERNMENT ORGANIZATIONS.

Geological survey.

Rocky Mountain division. — Upon the organization of the survey, the area of the United States was divided into eight districts, in order that the progress of the work might be systematically facilitated. Of the four western districts, the 'Rocky Mountain district' includes the state of Colorado and the territories of New Mexico, Wyoming, and Montana.

Geologic work. — Colorado has been the principal field of geologic activity in the district; and the work has been carried on under the supervision of Mr. S. F. Emmons, who is the geologist in charge, with headquarters at Denver. The mining-geology of the state has been made the subject of special study, and the investigations have been confined mainly to questions of direct economic importance. Prior to 1883 the work done was principally in the Leadville and Ten-mile regions. Last season an examination of the Silver Cliff mining-district was undertaken. The geologic work was begun by Mr. Whitman Cross about the 1st of July, and was carried on through the summer, and completed in September. The topographic work had been previously completed. The preparation of the geologic map was intrusted to Messrs. Cross and Chapman, assistant geologists. Messrs. Jacob and Eakins were detailed to report on the mines and ore-deposits, under the personal supervision of Mr. Emmons. Mr. S. S. Sackett was engaged in gathering statistics as to the reduction of the ores of the district, and secured material for a chapter on the mills and reduction-works of the district.

The report on this mining-district will be of especial value, as the Silver Cliff is a mining-camp of abortive processes, a true history of which may well serve as a warning, by pointing out the errors, which there led to the failures in mining and in the reduction of the ores.

From the Silver Cliff district a short trip was made to the Sangre de Christo range, which lies on the opposite side of the valley. This was made with a view to determine the geologic relations of the Silver Cliff ore-deposits to the rocks of the range. Some field-work was also done by Mr. Cross on the mesozoic rocks exposed in the vicinity of Golden and of Morrison. In the Denver coal-basin progress was somewhat retarded by the absence of Mr. Karl, who has charge of the topographic survey of the region. Although temporarily suspended during the summer, work in this basin can be carried forward during the winter months, when the snow causes the abandonment of the field in the mountainous sections of the state. The map of the basin is to include some thirty square miles, on a scale of one mile to one inch. Information on the subject of the artesian wells in this basin is being secured, and will be embodied in the report. Voluminous rock-collections were made during the season, especially in the Silver Cliff district; and a special trip was made to Buffalo Peaks for the collection of typical specimens of hypersthene-andesite.

Besides the field-work, considerable office-work was accomplished. The notes on the Ten-mile district were worked up, and a geological map and sections of the area were made. Manuscript for the following monographs by the 'Rocky Mountian division' are in advanced stages of preparation: viz., 1°, Geology and mining industry of Leadville, by S. F. Emmons (an abstract of this paper appeared in the second annual report of the survey); 2°, Geology and mining industry of Ten mile district; 3°, Geology and mining industry of the Silver Creek district; 4°, The basaltic mesas near Golden, and their relation to the contiguous tertiary and cretaceous beds. During the season the bulletin on hypersthene-andesite, by Mr. Whitman Cross of this division, was published.

Laboratory work. — The laboratory at Denver is in charge of Mr. W. F. Hillebrand, chemist, who has been busy with the chemical and lithological examination of the rocks collected in the district, and on the ores from the various mining-districts. Some of the details of his work have already been given in *Science*. Mr. Whitman Cross has carried on the microscopical examination of the numerous thin rock-sections made of the rocks collected in the district.

Topographic work. — Mr. Anton Karl has been carrying on the topographic surveys in the district, and during the season of 1883 was in the Elk Mountains, mapping the Gunnison mining-region. His triangulation was based on Snow Mass and West Elk Mountains, two points located by the Hayden survey. These were occupied, and a system of triangulation was extended from them over the whole area surveyed. The principal mines in the Ruby basin, lying between Mount Owen and Irwin Peak, were all located, as well as Anthracite Mountain and the property of the Denver and South Park coal company. Topographical data were obtained for

mapping the Ruby and Irwin regions preliminary to future geologic work. The country lying between Beckwith, Marcellina, and Anthracite Mountains was also worked up, and each of those points occupied, and the valley of Ohio Creek surveyed. In the early part of September, work was begun in Poverty and Washington gulches and in Baxter basin, and the East River valley, between Schofield, Gothic, and Crested Buttes. Fair results were obtained, although severe snow-storms impeded progress. About the middle of the month Mr. Karl was directed to co-operate with special agent J. A. Bently, of the Interior department, to ascertain the accuracy of the Land-office survey of the Maxwell grant in southern Colorado and northern New Mexico. He was occupied on this work the remainder of the season, and in the latter part of November presented to the court a map prepared by him in support of his evidence.

RECENT PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Chemical society, Washington.

Feb. 28. — Mr. W. H. Seaman exhibited and described a new form of burette, and also a graduated pipette, modelled after the ordinary medicine-dropper. —— Prof. F. W. Clarke exhibited a copy of Lothar Meyer's curve of atomic volumes, drawn to large scale, with the most recent data. With it, upon the same sheet, was compared a similar curve of melting-point.

Biological society, Washington.

Feb. 23. — Dr. Elliott Coues read a paper on the present state of North-American ornithology. In discussing the precontemporaneous history of the subject, he defined the following epochs: 1, The archaic (prior to 1700); 2, The pre-Linnean (1700–50); 3, The post-Linnean (1750–1800); 4, The Wilsonian (1800–25); 5, The Audubonian (1825–50); and, 6, The Bairdian (1850+). A number of periods were also defined as follows: 1. The Lawsonian (1700–30); 2. The Catesbian (1730–48); 3. The Edwardsian (1748–58); 4. The Linnean (1758–66); 5. The Fosterian (1766–85); 6. The Pennantian (1785–90); 7. The Bartramian (1790–99); 8. The Vieillotian (1800–1808); 9. The Wilsonian (1808–24); 10. The Bonapartian (1824–31); 11. The Richardsonio-Swainsonian (1831–32); 12. The Nuttallian (1832–34); 13. The Audubonian (1834–53); 14. The Cassinian (1853–58); 15. The Bairdian. The establishment of the American ornithologists' union, he thought, would probably mark the establishment of a new epoch, — one in which the existing intricacies of ornithological nomenclature will be replaced by a consistent system founded upon a rational code: the present is simply a period of transition. Dr. Coues laid before the society the plate proofs of the forthcoming new edition of his Key to North-American ornithology.

Mr. C. D. Walcott exhibited a second time the rocks from Maine, containing fossil corals. He stated, that having received a number of additional specimens of the granite-like rock containing fossils, Stromatopora, corals, plates of crinoid stems, etc., from Litchfield, Me., he found that he had been incorrect in calling the rock a granite, as it was of sedimentary origin, — a clastic rock, so changed in the specimens examined that it might be called a conglomerate gneiss.

Prof. Lester F. Ward exhibited a specimen of the 'diamond willow,' — a variety of Salix cordata occurring in the upper Missouri region, distinguished by a great exaggeration of the scars left by the early growths of limbs which form series of large diamond-shaped cavities along the stems. He also exhibited some canes carved by the people of that region, which show the so-called diamonds in a striking manner. Professor Seaman advanced the theory that these scars are caused by the influence of some fungus or of some insect which lays its eggs in the buds.

Linnaean society, New York.

Feb. 8. — The publication of vol. ii. of the Transactions was ordered. —— Dr. C. Hart Merriam read a biography of the muskrat (Ondatra zibethicus), giving its life-history as noted by him in the Adirondack region of north-eastern New York. The paper was followed by a general discussion as to its differing habits in a less boreal locality. —— A translation from the Spanish of Rafael Montes de Oca by L. S. Foster, and the subsequent discussion, developed many interesting facts concerning the Trochilidae. —— Mr. William Dutcher remarked upon the scarcity of the snowy owl (Nyctea scandiaca) this winter on Long Island, and upon the presence in considerable numbers of the thick-billed guillemot (Lomvia arra), as well as the razor-billed auk (Utamania torda); while not a single sea-dove (Alle nigricans) had come under his observation. His Long Island records for the Ipswich sparrow (Passerculus princeps) give the capture of thirty-three specimens since their arrival, Dec. 16, after a severe snow-storm.

Academy of natural sciences, Philadelphia.

Jan. 22. — Mr. F. W. Putnam made a communication on a group of mounds occurring on the Miami River, which in many respects he considered the most important in the country. The methods of investigation, and the objects found in the mounds referred to, were described in detail, and illustrated by means of specimens and photographs. While no doubt exists as to the construction of mounds by some of our existing Indians, those he described had absolutely nothing in common with the more modern structures, except in so far as they indicated the Mongoloid type.

As the essentially fresh-water character of the worm Manayunkia speciosa (the forms related to