hands of the present owner, improvement, cuttings and other topics are discussed. While it was not expected that the forest would be self-supporting from the start, it has been nearly so, the expenditures for the year ending April 30, 1893, being $9,911.76, and the income from sale of ties, cord-wood, lumber and posts, together with the estimated value of stock on hand, amounting to $9,519.36. Part of the tract will be managed on the regular high forest system with a 150-year rotation; the rest, on a selection system. Steps have also been taken to reforest a thousand acres of waste land, using many kinds of native and foreign trees. In connection with this work it is designed to build up an arboretum second to none in the world. This is under the direction of Mr. Frederick Law Olmsted. Already there are in the nursery more kinds of trees and shrubs than in the gardens at Kew, and the number is being steadily increased. This arboretum will form the borders of a drive about five mile long. Careful records are being kept in connection with the work, and a forest botanical library, already of considerable extent, will furnish the necessary aid to study. Accompanying the report is a map of the forest and a number of good half-tones showing original condition, proper and improper methods of lumbering, etc. This is the first time proper forest management has ever been undertaken in the United States, and as time goes on the results will undoubtedly become an object lesson of prime importance, and one badly needed by the American public, whose delight from the earliest settlement of the country has been to destroy trees.

E. F. S.

SOCIETIES AND ACADEMIES.

GEOLOGICAL SOCIETY OF WASHINGTON.

The following are abstracts of the communications presented at the 33d meeting, April 24, 1895:

W J McGee. 'The topographic development of Sonora.'

The territory described, lying between the Gila river on the north and the Rio Sonora on the south, and extending from the Sierra Madre to the Gulf of California, is about 400 by 200 miles square. Essentially it consists of an undulating plain with embossed mountain ranges. The plain varies from sea-level to some 4000 feet in altitude; the mountain ranges, commonly 4000 feet or less in height above the plain, are rugged, narrow and generally parallel, trending somewhat east of south. These ranges are remnants of larger mountain areas, shaped by erosion, and sometimes they are connected by transverse ridges which, like the ranges themselves, are residua of ancient masses. The area is one of complete gradation within itself, *i. e.*, the rainfall is so slight that the material degraded from the mountain is aggregated on the intermontane plains, as the storm-waters sink or evaporate—for none of the rivers between the Gila and Yaqui ever reach the sea. Certain peculiarities of the topography grow out of this condition.

The entire plain inclines southwestward, having evidently been tilted in this direction during late geologic time, though the date is not yet fixed. A consequence of this tilting was the stimulation of the streams flowing westward, southward and southwestward, and partial paralysis of the streams flowing in the opposite direction; and by reason of previous adjustments of topographic processes and products under the peculiar climatal conditions of the region these effects were greatly increased. Accordingly the southwestward-flowing streams retrogressed and pushed their headwaters through the parallel ranges and sometimes through the transverse ranges connecting them, while the northeastward-flowing streams practically ceased to corrade. Accordingly the area is characterized

by retrogression; the main waterways diverge from the main valleys, and cut through the ranges and athwart the valleys; and the primary and secondary divides do not coincide with the mountain ranges, but traverse the valleys in a singularly erratic manner. By reason of the combination of epeirogenic and meteorologic conditions, the region affords a remarkable example of the retrogression of streams and of the development of unusual topographic forms thereby.

WHITMAN CROSS. 'The Geology of the Cripple Creek Gold Mining District, Colorado.' This important new gold district lies on a granite plateau, some ten or twelve miles southwest of Pike's Peak, at an elevation of 9,000 to nearly 11,000 feet. There is at this point a small volcanic vent, to be regarded as an outlier of an extensive volcanic region to the westward, lying between South Park and the Arkansas River.

While the area of the Cripple Creek volcano is small, there has been a very complete cycle of events at this center. Explosive eruptions in the earlier periods built up a cone of fine tuff and breccia, through which numerous eruptions in narrow fissures and irregular channels took place in later times. Erosion has now removed a large part of the ejected material, though not clearly disclosing the volcanic neck.

The igneus products of the volcano are andesites of several kinds, phonolite, phonolitic trachyte, nepheline-syenite, syenite-porphyry, and several dense varieties of basalt. Phonolite is the specially characteristic rock of the center, and in dike form in granite occurs for several miles about it.

Fumarole and solfataric emanations of chlorine, fluorine and sulphurous gasses undoubtedly characterized certain periods of the volcano, followed by hot waters containing the same agents in solution. By these processes the rocks of the district have been very extensively decomposed. The ore deposits are very intimately connected with the volcanic center.

This communication presented the general geological results of a detailed study of the district made last fall. An examination of the ore deposits was made at the same time by Prof. R. A. F. Penrose, Jr., and the two reports, with a geological map, will be issued by the U. S. Geological Survey during the coming summer.

W. H. WEED. 'The Shonkin sag, an abandoned channel of the Missouri river.' The Shonkin sag is a peculiar topographic feature of the country south of the big bend of the Missouri River in central Montana. It is an abandoned river channel which was formed by the waters of the Missouri River flowing around the margin of an extension of the great Canadian ice sheet (the Laurentide glacier). The sag consists of a winding valley from a quarter of a mile to two miles wide with rocky bluff walls, and holds a succession of lakes, several of them without outlet. The continuity of the channel is interrupted by modern stream valleys cutting it transversely, but their later origin is clearly apparent, and even the settlers of the region recognize the fact that the sag is an old water way. It begins near the mouth of Highwood Creek, east of the Great Falls of the Missouri River, and extends in a general easterly direction over 100 miles to the mouth of Judith River. Throughout its course the northern wall marks the limit of the glacial moraine. Glacial drift is found in a few places a short distance south of the channel, but in small quantity. In general the sag defines the moraine front. It is, therefore, believed that the ice sheet ponding the waters of the Missouri near the mouth of Sun River deflected the stream, which at that time flowed northward, and caused it to flow about the margin of the ice. Upon the recession of the glacier the river abandoned this temporary channel for the old valley to the northward, which was

but partially filled by glacial material. The present course of the Missouri, for some distance below the cataracts, is cut in black shales of the Fort Benton period, capped by 100–250 feet of glacial till and silt.

Whitman Cross,
Secretary.

ENTOMOLOGICAL SOCIETY OF WASHINGTON.

The 108th regular meeting was held May 3d. Mr. L. O. Howard read a paper entitled 'Some New Scale Parasites,' in which he discussed several species of the family Chalcididæ which are new to science, and which are important parasites of destructive scales. A paper entitled 'Two Leaf-beetles that Breed on the Golden-rod,' by F. H. Chittenden, was read by title, and another, 'Sexual Dimorphism in the Scolytid Genus Xyleborus,' by E. A. Schwarz, was also read by title and referred to the committee on publications. Mr. Ashmead presented a communication on Lysiognatha, a new and remarkable genus in the Ichneumonidæ. The form described was an extraordinary one, possessing the head and jaws of the Braconid sub-family Alysiinæ, the wings and remainder of the body resembling those of the Ichneumonid subfamily Ophioninæ. Mr. Ashmead considered it typical of a new sub-family of the Ichneumonidæ. Dr. Theodore Gill expressed himself as of the opinion that the form is really typical of what should be a new family. A note from Mr. H. G. Barber, of Lincoln, Neb., a corresponding member of the Society, was read by the secretary. The note was entitled 'Food-habits of *Hypatus bachmanni*.' This butterfly, which has recently been observed migrating in great numbers in the Southwest, has been previously supposed to feed only on species of Celtis. Mr. Barber considers Symphoricarpos to be probably its favorite food plant. Mr. W. T. Swingle made some remarks on the effects of the December and February freezes in Florida upon the insects injuring the orange. The really important insects, namely, the red scale and the white fly, have been seriously checked. All specimens occurring upon foliage have been killed. In discussing this paper, Mr. C. L. Marlatt called attention to the fact that the serious injury to the trees caused by the cold has already resulted in the appearance of a number of bark-boring beetles, which will undoubtedly do much damage during the next two or three years.

L. O. Howard,
Recording Secretary.

NEW BOOKS.

Proceedings of The American Association for the Advancement of Science for the Forty-third Meeting held in Brooklyn, N. Y., August, 1894. Salem, The Permanent Secretary. 1895. Pp. xiii + 486.

Der Gute Geschmack. Lothar Abel. Vienna, A. Hartleben. Pp. vii + 368.

The Geological and Natural History Survey of Minnesota, Vol. III., Part I., Paleontology. N. H. Winchell. Minneapolis, Minn., Harrison and Smith. 1895. Pp. lxxv + 474.

John Dalton and the Rise of Modern Chemistry. Sir Henry E. Roscoe. London and New York, Macmillan & Co. 1895. Pp. 212. $1.25.

Missouri Botanical Garden. Sixth Annual Report. William Trelease. St. Louis, Mo., The Board of Trustees. 1895. Pp. 134.

The Origins of Invention. Otis T. Mason. London, Walter Scott; New York, Charles Scribner's Sons. 1895. Pp. 413. $1.25.

Chemical Analysis of Oils, Fats and Waxes. From the German of Professor Dr. R. Benedict. Revised and enlarged by Dr. J. Lewkowitsch. London and New York, Macmillan & Co. 1895. Pp. xviii + 683. $7.00.