

masses in a canyon which in grandeur is only second to the Canyon of the Colorado. It is an abrupt trench cut to a depth of over 5,000 feet in the basaltic plateau. The deepest and most impressive part lies in the vicinity of the Seven Devils, a group of peaks rising to elevations exceeding 9,000 feet on the eastern side of the river. From the summits of these there is a sharp and continuous slope of 8,000 feet down to the level of the river. The exposures along the canyons are magnificent, showing from 1,000 to 4,000 feet of horizontal lavas covering a series of older slates and greenstones.

The Salmon River Canyon, for a long distance above its junction with the Snake, is between 4,000 and 5,000 feet deep. Except in its lowest portion, it is cut in the rocks of the older series. Granitic rocks, forming a large part of the great Idaho granite area, occupy a large space in Idaho adjacent to the Columbia lava. Instead of being of Archean age, as has been hitherto supposed, the granite is probably post-Carboniferous, as shown by the contact metamorphism of the Paleozonic series adjoining on the north.

This series of slates, limestone, schist and greenstones present the greatest similarity to the Auriferous slates of the Sierra Nevada. Round Crinoid stems were found in one of the limestone lenses. Excellent exposures are found in the lower Salmon River Canyon and along the Snake River. The Columbia lava flows are of Miocene age. They consist nearly exclusively of massive basalt, and are piled up one on another in seemingly endless succession. Slight differences of structure make the individual flows conspicuous and from a distance the exposures along the canyon side appear like those of a sedimentary series. The lava flows were poured out over an exceedingly uneven surface of deep valleys and precipitous mountain ranges. The latter tower far above the summit of the lava plateau, while the bottom of the former lie below the level of the river. Coupling this evidence with the fact that the sediments in the lower Snake River Valley, above Weiser, are of great depth, their bottom probably not being far from sea level, it appears that this whole area has suffered a depression since pre-volcanic times. The great outpouring

of the Columbia lava evidently dammed a gap between the two high pre-volcanic ranges, the Blue Mountains of Oregon on the west and the Salmon River Ranges on the east. This barrier produced a great lake, the Miocene and Pliocene sediments of which now fill the upper Snake River Valley. The inland sea overflowed its barrier, established an outlet and the mighty volume of water has worn a canyon which eventually drained the lake.

At this meeting the Society elected officers for the ensuing year. These are: President, Arnold Hague; Vice-Presidents, Joseph S. Diller and Whitman Cross; Treasurer, M. R. Campbell; Secretaries, C. Willard Hayes and T. W. Stanton; Members-at-Large of Council, S. F. Emmons, George P. Merrill, W. H. Weed, David White and Bailey Willis.

W. F. MORSELL.

U. S. GEOLOGICAL SURVEY.

NEW BOOKS.

The Smithsonian Institution, 1846-1896. The History of its first half century. Edited by GEORGE BROWN GOODE. City of Washington. 1896. Pp. 856.

Audubon and his Journals. MARIA AUDUBON. With zoological and other notes by ELLIOTT COUES. New York, Charles Scribner's Sons. 1897. Vol. I., pp. x + 532. Vol. II., viii + 535. \$7.50.

Revision of the Orthopteran Group Melanopli (acridiidae). With special reference to North American Forms. SAMUEL HUBBARD SCUDDER. Washington, Government Printing Office. 1897. Pp. 421. 26 plates.

An Elementary Course of Infinitesimal Calculus. HORACE LAMB. Cambridge, The University Press; New York, The Macmillan Company. 1897. Pp. xx + 616. \$3.00.

Theoretical Mechanics. A. E. H. LOVE. Cambridge, The University Press; New York, The Macmillan Company. 1897. Pp. xiv + 370. \$3.00.

Lessons With Plants. L. H. BAILEY. New York and London; The Macmillan Company. 1898. Pp. xxxi + 491. \$1.10.