

States as he may deem expedient, with a brief description of the lands to be offered—showing the number and locality of the mines known, the practicability of discovering others, the quality of the ores, the facilities for working the mines, and the means and expense of transporting their products to the principal markets of the United States; and that all of the lands in the said district not reported as mineral be regarded as agricultural.

The third section secures the rights of those persons in possession by occupancy under permits, or leases, from the Secretary of War. The other sections of the act in no way relate to the objects of the survey, and a recital of their provisions is omitted.

From the time of the issuing of the permits the business of mining has been prosecuted with vigor, and in many instances with success. The day is not distant when the product of these mines will supply the home demand, and add much to the national wealth. In a business like this, proverbially uncertain the world over, there have been many failures, many schemes of wild and extravagant speculation, and many plans of ill-advised and ill-directed mining, which have resulted in the ruin of those engaged in them. Extravagant expectations were held out in the commencement, which the mining experience of the world declared could never be realized.

These, however, have passed away, and the business has settled down into a regular, methodical pursuit, affording an admirable field to the mining engineer for the display of skill and judgment, and yielding to the adventurers a reasonable return for the capital invested.

In the spring of 1847, pursuant to the provisions of the above-recited act, the Secretary of the Treasury appointed Dr. Charles T. Jackson to execute the required survey. After having spent two seasons in the prosecution of this work he resigned, and its completion was confided to Messrs. J. W. Foster and J. D. Whitney, the results of whose observations will be found embodied in the subjoined report.

In the prosecution of this work they have been aided by Messrs. S. W. Hill and Edward Desor, as first assistants, by Mr. William Schlatter as draughtsman, and Mr. W. D. Whitney as botanist.

The aid of Mr. Hill has been of the most essential service. His long residence in the district and his connexion with several public surveys in the Northwest, had given him opportunities of collecting a large fund of information, which has been cheerfully contributed to this work. His measurements and plans of the mines, his observations on the phenomena of veins, his contributions to the boundaries of the rocks, as illustrated on the accompanying maps, and his thorough and laborious explorations during his connexion with the survey, are all gratefully acknowledged by the geologists in charge.

The phenomena of the *drift* and alluvial deposits of this region have been ably investigated by Mr. Desor, and the results of his observations will be found embodied, by him, in that portion of the work which relates to the superficial and transported materials.

His previous investigations of the drift in parallel latitudes in western Europe, and of glacial action as manifested in the Swiss Alps, and the formation of shoals along the coast of the Atlantic as observed by him during his connexion with the Coast Survey, had qualified him to enter upon this field with every prospect of success.