

P R E F A C E.

IN the preparation of the new edition of this Manual, the work has been wholly rewritten. North American Geological History is still, however, its chief subject. The time divisions in this history, based on the ascertained subdivisions of the formations, were first brought out in my Address before the meeting of the American Association at Providence in 1855; and in 1863, the "continuous history" appeared in the first edition of this Manual, written up from the State reports and other geological publications. The idea, long before recognized, that all observations on the rocks, however local, bore directly on the stages in the growth of the Continent derives universal importance from the recognition of North America as the world's type-continent—the only continent that gives, in a full and simple way, the fundamental principles of continental development.

Since 1863, when the first edition of this work was published, investigation, through the geological workers of the United States, Canada, and Mexico, has been extended over nearly all parts of the continent, so that its history admits of being written out with much fullness. The Government Expeditions over the Rocky Mountain region, under F. V. HAYDEN, CLARENCE KING, CAPTAIN WHEELER and others, and earlier, those especially of the Pacific Railroad Explorations, and the Mexican Boundary Commission, were large contributors to this result; and also, since 1879, the able corps of the United States Geological Survey.

As the rewritten book shows, new principles, new theories, and widely diverse opinions on various subjects are among the later contributions, along with a profusion of new facts relating to all departments of the science.

The Cambrian formation has been traced through a large part of the continent, and the number of its fossils has been increased, chiefly by C. D. WALCOTT, from a few to hundreds. The Appalachian Mountain structure has been shown by CLARENCE KING, Dr. G. M. DAWSON, and R. G. McCONNELL to have been repeated in the great post-Cretaceous mountain-making of the Rocky Mountain region. The Reptiles, Birds, and Mammals of the Mesozoic and Tertiary have continued coming from the rocks until the species recognized much outnumber those of any other continent. The cañons and other results of erosion in the west have thrown new light, through their investigators, on the work of the waters. Besides, the science of