GEORGEOLOGICAL MAP OF THE UNITED STATES AND TERRITORIES

BY CHAS. H. HITCHCOCK AND W. P. BLAKE.

GENERAL OBSERVATIONS UPON THE REPRESENTATION OF THE GEOLOGY OF THE EASTERN PORTION OF THE UNITED STATES.

By C. H. HITCHCOCK.

This work of the first group form a continuous belt from the northeastern boundary south-eastward to Alabama. From their broadest expansion at the north, they gradually narrow southeastward through New England to New York and then extend southwest through the Southern States. They form the mountain region of the Eastern States, and, together with the broad development of the same formations in Canada, skirt the Great L光辉; and considerable areas about Lake Superior, form the southerly or east end of the great interior region of comparatively horizontal Palaearctic formations, holding the vast cool areas of the continent. The natural geological and geographical outlet of this interior basin, with its series of broad coal, iron, and ferric lands, are on the southeast, through the open valley of the Mississippi to the Gulf, and on the east, across the northern portion of the Erie to New York.

These Devonian and Metamorphic rocks constitute what is generally known as the granite region. It is the nucleus of the later rocks, of the Paleozoic on the west, and the Mesozoic and Cenozoic on the east. The principal division, the Labradorian is relatively narrow; it runs north and south along the valley of the St. Lawrence, and north along the Atlantic to the White Mountains of New Hampshire.

The Atlantic system is best carefully distinguished from the other in the first volume of the geological report of New Hampshire (1872). It is the same as the so-called White Mountain series, and has a large development along the Atlantic border. A considerable portion of the New England metamorphic rocks, particularly in Maine, is now referred to the Huronian system.

The Silurian and Cambrian systems are extended to form the Precambrian beds to the Lower Helderberg inclusive; in accordance with the general views of American geologists, the Carboniferous misdescribes Vermont, the Coal group and certain shale series of New Hampshire, are provisionally included in this division. Certain shales in North and South Carolina, largely those called Taconic by Professor Emmons, are excluded, and referred to the Huronian upon the authority of Professor Kerr. A large area of quartzites in Minnesota and Dakota, consisting chiefly of the Plateau de Losos del Pinar, are, for the first time united with this division. Hereafter opinion has been divided in regard to them, whether they should be called Huronian or Carboniferous.

The Devonian system is now separated from the Lower Carboniferous, and is chiefly developed over the interior of the country.

The Coal measures are not separated from the Carboniferous, because a map representing them and other subdivisions is included in this publication. The representation of the entire Carboniferous system by Strickland and others, is a series of disconnected data having been collected from time to time, and the map, at the present time, is divided into many small quadrangles, a large portion of the coal being known. The Coal formation is in the center of the country in the Ohio Valley.

The Carboniferous formation may be treated almost continuously from the southeast end of Long Island through the Carolinas to Alabama; thence northerly along the Mississippi valley to the mouth of the Ohio River; thence southwesterly into Mexico, and northerly to the British Dominions, covering immense areas in the Territories and in the States of the Pacific coast. The formation is perhaps the most extensive of any in the country. With the approval of Prof. Kerr we have represented a continuous area of Carboniferous strata as far west as the western boundary of the Great Salt Lake region, and considerable areas about Lake Superior, form the margin or rim of the southern part of the New England metamorphic rocks, particularly in Maine, is now referred to the Huronian system.
probably connected together across Indiana; the boundaries between the Silurian and Devonian, as given, being based upon Sir William Logan's map. The northwest part of Iowa, here colored as Cretaceous, is by Prof. White in his Iowa report to be so deeply covered by clay that no rocks appear upon the surface. The Devonian along the Red River, in Minnesota, is given upon the authority of Dr. Winchell's Map. In Texas a few changes are made upon the authority of a manuscript map furnished by A. B. Rosendal. The coal area of Northern Texas is represented from that of the Indian Territory by the overlying Cretaceous along the valley of Red River. The Tertiary area of the Great Plains is retained in accordance with the results of this summer's explorations (1874), specially communicated by Prof. S. B. Buckley. Improvements will doubtless be made hereafter in the representation of the upper parts of Lake Superior. We have not altered their delineation from that of the first edition.

A few general statements are suggested by even a casual inspection of the map. First, there is a wide contrast in color between the east and the west, indicating that the land, with its enormous supplies of coal and iron, is adapted by nature to be the manufacturing region, while the latter, with its immense plains and its store of the precious metals, is more properly an agricultural and mining country. Second, the general throwing out of the Tertiary rocks on the Atlantic, suggests the probability of a considerable submarine elevation of the coast of New England and the British Provinces in very recent times, so that the latter rocks are entirely concealed. Third, the arrangement of the formations along the Mississippi valley indicates a subsequent continuous depositing at the mouth of the Platte and continuing down to the present coastal line of the great lakes. Fourth, the overflows of Iowa are confined to the Rocky Mountain region and westward. There are no evidences of igneous overflows in the east later than the Jurassic. Fifth, the great plains west of the Mississippi occupying more than a fourth part of the country, belong to nearly horizontal deposits of the Cretaceous and Tertiary. Sixth, the central portion of the main Rocky Mountain range seems to belong to the Eocene system; but not to have been eroded extensively, so early as the same formation along the Atlantic border. The principal epoch of Rocky Mountain elevation seems to have been in the late Tertiary.

GENERAL VIEW OF THE GEOLOGY OF THE WESTERN PORTION OF THE UNITED STATES.

By William P. Blake.

The following brief notices of the salient geological features of that portion of the United States west of the 100th meridian are designed to supplement and explain the Map and so assist in giving a general idea of the geographical range of the principal formations and their relation to each other. Some of the difficulties of the task of delineating the geology over such an extended region, as yet but imperfectly known, are stated in the foregoing joint article by Prof. Hitchcock and the writer, to which reference is made.

SOCIOLOGY AND PALEOZOIC.

The most widely distributed and recognized member of the Mesozoic series is the Cretaceous, which includes the Great Plains westward from the Missouri, the triangular zones, the Rocky Mountains, and the Colorado area. It is believed to constitute an important feature of the Oregon coast range, and to be present in many parts extending westward from the Rocky Mountains and beyond into British America. It is believed to continue in an unbroken line from the Great Salt Lake, and through the central portions of the United States, to the eastern boundary of Mexico. It forms the surface of a great basin, and is present in the greatest part of the region. It is believed to constitute a great surface, and the coast is believed to be continuous from coast to coast. The Cretaceous is generally believed to be the surface of the whole region. It is believed to constitute a great surface, and the coast is believed to be continuous from coast to coast. The Cretaceous is generally believed to be the surface of the whole region.
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plutonic rocks, and also in the west ranges of the Humboldt Mountains, notably at Star Mountains, rising to a height of 9000 feet and largely made up of Tertiary strata.

Jawaiat, and probably Triassic beds, highly folded, form a part of the western slope of the Sierra Nevada of California, and are the probable seat of the igneous activity known as Tertiary volcanism, and of the copper ores. With these beds the Cenozoic formations are not conformable.

Thus the great fault of the Sierra Nevada, and of many parallel ranges in the Great Basin, of which there are many, is taken place at the close of the Tertiary period, introducing a great change in the topographical and physical conditions of the Cordilleran.

The relations of the Mesozoic, in the Sierra Nevada, to the Paleozoic, have not been satisfactorily shown. The Carboniferous has been identified near Fort Bridger, in Wyoming, and in the Coast Mountains of California.

The interior region east of the Sierra Nevada is studded at intervals with extinct cones and lava streams, many of them looking as fresh as if they were now cooling. Some of the more important of the extinct volcanoes of the interior have poured floods of lava upon the long valley at the head of the Gulf of California, now a desert, leaving behind them floor-like beds of fine clay and well-marked terraces and water-lines. The latest having occupied the long valley at the head of the Gulf of California now a desert, leaving behind them floor-like beds of fine clay and well-marked terraces and water-lines.

The largest of these ancient lakes may be designated as the Humboldt, the Timpanogos, and modern lacustrine deposits. It is to be particularly noted that in the region of the Great Basin, and in a portion of Montana, Idaho, and Oregon, the color represents not the tufa but the last most recent deposits washed down by rains and streams from the adjoining mountains, and opened up in gentle valleys.

The Indiana limestone, to which reference has been made, constituted one of the most interesting records presented to us in the whole series of formations. They show the former extent of immense deciduous forests, now either wholly or partially dried, buried behind them flower-like beds of fine clay and well-marked terraces and water-lines. The largest of these ancient lakes may be designated as the Humboldt, the Timpanogos, and modern lacustrine deposits. It is to be particularly noted that in the region of the Great Basin, and in a portion of Montana, Idaho, and Oregon, the color represents not the tufa but the last most recent deposits washed down by rains and streams from the adjoining mountains, and opened up in gentle valleys.

The transitions from one formation to another are rapid and sudden. It is a region of brackish and fresh-water deposits which, as well as extended basins in the Tertiary of the United States, have been identified near Fort Bridger, in Wyoming, and in the Coast Mountains of California.

The earlier publication of a general Geological Map of the United States was by Sir Charles Lyell, in 1817, in a Monograph before the American Philosophical Society. It was separately published in a small volume in Philadelphia in 1817. The coloring does not extend westward beyond the mouth of the Kansas in the Missouri. He adopted the Wennerian classification—the Pliocene, Tertiary, Secondary, and Recent.

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