SKETCHES: THE OLEAN ROCK CITY:
HISTORIC GLIMPSES OF OLEAN,
NEW YORK: THE BRADFORD OIL
DISTRICT: HISTORIC GLIMPSES OF
BRADFORD, PENNSYLVANIA

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Sketches: The Olean rock city: Historic glimpses of Olean, New York: The Bradford oil district: historic glimpses of Bradford, Pennsylvania by Katherine Eaton Bradley

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THE OLEAN ROCK CITY.

IT may be that the surveyors who laid out the Kittanning Road during the War of the American Revolution were the first white men to gaze upon the glittering pebbles of the huge conglomerate rocks now called the Olean Rock City. This military highway, cut through the forest one hundred and forty years ago, passed near these rocks, and its builders must have asked the question, "How and when were these immense boulders scattered upon the hilltops?" This remarkable group of rocks, situated in the northern portion of the Bradford Oil District, is perched upon a ridge of the Great Divide of the Alleghany Mountains, one thousand feet above Olean, in southwestern New York. It is six miles south of the city and near the New York-Pennsylvania boundary. The group is an isolated fragment of a layer of rock which has been given a variety of names. It is called the Olean Conglomerate because of this bold outcrop at the Olean Rock City; the Great Conglomerate; Farewell Rock; and Puddingstone. In Ohio, it is known as the Sharon Conglomerate, and in England, as the Millstone Grit. Between 1836 and 1840, three geologists connected with the first New York geological survey visited the rock cities of the state. Mr. Horsford described the large rock city seven miles south of Ellicottville as the locality most visited, and as being in the highest degree imposing. He also mentioned similar boulders at Chipmunk Riffle, and a group in Alleghany County. Professor James Hall said of the group near Olean, "To these broken outliers of conglomerate the fanciful name of 'Ruined City,' has been applied; the broad fissures resemble streets, and the huge rocks on either side dilapidated houses. There are subterranean passages and courts, now the abode of bears and wolves."

In the corner stones of these houses is no information as to how or when they were built, but on their walls the eye of the geologist finds their history plainly written. At Rock City "though inland far we be," we are near the shore of what was once the great Carboniferous Ocean. Its thundering waves wore down the primitive rocks into sand and mud, and on its beaches were rolled the white and gray quartz pebbles of the conglomerate boulders, pebbles ranging in size from a pea to a goose egg. The pebbles and sand, gradually settling upon the ocean's bed, made a layer varying in thickness in this locality from thirty to two hundred feet. Near Lehigh, Pennsylvania, this stratum has a thickness of fifteen hundred feet. The bottom of the stratum is always composed of larger pebbles than the upper portion, showing that the materials were carried in water, the heavier portions sinking first. Mother Nature stirred up a mixture of sand, pasty mud and pebbles, which from its appearance has been termed puddingstone. "Pebbly beaches now forming will when consolidated produce conglomerate."

In the dim past "when the morning stars sang together," the Great Conglomerate was long ages in being created, and was remarkable as the floor upon which were laid those deposits of incalculable value to mankind-the Coal Measures of the world. By the geologist's hammer and by borings for coal and petroleum, the conglomerate can be traced as it inclines from the surface of the ground at Rock City to a depth at Pittsburgh of three hundred feet, and at Wheeling, West Virginia, of seven hundred feet, with nine seams of coal resting upon it. It was necessary that there should be an elevation and a subsidence for every seam of coal. This rock is the best guide for the coal and oil prospector and he always keeps a record of its depth and thickness.

For a clear knowledge of the story of the rock cities we are indebted to the researches of Dr. Charles A. Ashburner, who conducted the Pennsylvania Geological Survey in this region in 1877. He has explained the conditions necessary to the making of rock cities. Before his time it was a popular be-

lief that the rocks had been brought from the north and dropped by melting glaciers and had been broken into their curious forms by earthquake shocks. These theories have been disproved by established facts. The ice sheet stopped in the center of the valley in which Olean is built, and did not extend as far south by several miles as Rock City. Regarding earthquake disturbances in this region the rocks tell a story of quiet upheaval. There is probably no region in Pennsylvania which has been affected less by earth crust movement that the northwest portion. Dr. Ashburner cites the Bradford oil sand as bearing testimony to this fact. It is found at an approximate depth of eighteen hundred feet, its wide spread sheet being remarkable for its evenness and regularity.

After the formation of the conglomerate, it quietly sank, probably not more than a foot in a century. It is probable that during the Carboniferous Age it had sunk forty thousand feet, and by the close of this period the rock was comparatively level. Then occurred the stupendous uplift of the Appalachian Mountain system, forcing up with it the Great Conglomerate with its precious load of coal lying on its breast. When it became stationary, its base at the Olean Rock City was 2,310 feet above present sea level. As to the force which throws up mountain systems, President Holland in