Salt Lake City, then flows northward for more than 100 miles, to lat. 42° 40', when it turns and follows an almost exactly opposite course, finding its way round the north end of the Wahsatch range and emptying into Great Salt Lake. In the loop thus made by Bear river is the Bear River range, in which North Logan Peak rises to 10,004 feet, and others are of nearly equal altitude. The whole of the Wahsatch region—the range of that name as well as the parallel ranges and spurs on the east—is one of difficult and complicated topography. It forms the connexion between the north and south divisions of the Rocky Mountains, and connects by spurs and irregular lines of elevation with the Wind River range, the range of the Tetons, and the Snake River Mountains.

Although Bear river runs for more than a hundred miles in a northerly direction before crossing the Wahsatch range, the Weber river, which rises in the Uintah range, within three or four miles of the head of Bear river, runs with a pretty direct north-westerly course across that range, breaking through it where it is from 8000 to 9000 feet in elevation, and affording an easy route for the railroad from the Bridger and Green river basin to Salt Lake.

(B) The northern division of the Rocky Mountains has been much less fully explored than the southern. It also is made up of a large number of ranges, having a general though by no means uniform north-west south-east trend. As a whole, this division is lower and less impressive from the grandeur of the masses than the southern ; and as we advance north-westerly we find more monotony in the scenery, more uniformity in the height of the ranges, and an almost entire absence of dominating peaks. Striking exceptions to this condition are offered by the Wind River range and the Yellow­stone geyser region.

The Northern Pacific Railroad, by which access is had from the east to this portion of the Cordilleras, strikes across the plains from the western end of Lake Superior, directly west to the Missouri, which it crosses in 101° W. long., at Bismarck, near the centre of Dakota. From this crossing it runs in almost a straight line to the Yellowstone river, which it follows for a distance of 340 miles. It then crosses to the Missouri at Gallatin, and follows that stream to near Helena, a distance of about 100 miles. From here the ascent of the main divide of the Rocky Mountains is made by way of Mullan’s Pass, the summit being crossed by a tunnel 3850 feet long, at an elevation of 5548 feet. Thence the line follows Hell-Gate river, the Missoula, and Clarke’s Fork, to Lake Pend d’Oreilles (2059 feet), which it curves round on the north, and then strikes directly south-west to the junction of Snake river with the main Columbia.

The Rocky Mountains, in their north-western portion in Montana and Idaho, are more irregular in their development than they are farther south. There is, however, a similar tendency in both regions to the formation of those mountain-encircled valleys which are so generally known in this region as “parks,” although not infrequently called “prairies.” These parks are mostly destitute of timber, excepting the cotton-woods along the banks of the streams. The mountains are more or less covered with coniferous trees, not of great size, but sufficiently large for ordinary building purposes. As the ranges themselves are lower than in Colorado and in the southern division generally, so the high enclosed valleys are also proportionally lower. Portions of them have a soil suitable for cultivation ; other portions are covered with bunch grass and well adapted for grazing. There is considerable uncertainty in the nomenclature of the various individual ranges. The name Bitter Root is most frequently given to an important range, which in a portion of its course forms the main divide between the Missouri and the Columbia, but which, farther to the north-west, separates the waters tributary to the Snake from those which unite to form the Clarke’s Fork. The Lapwai and Cœur d’Alene ranges lie west and north-west of the Bitter Root Mountains, and unite the Rocky Mountains with the Blue Mountains, an important, but little-known group of ranges occupying a considerable portion of the region lying west of Snake river. There are also various groups of mountains, more or less isolated in position, and lying to the east of the main range of the Rocky Mountains in this portion of their extension. The Crazy Mountains form an isolated group immediately north of the Yellowstone river. They occupy an area about 40 miles long and 15 wide ; the highest point is Crazy Peak (11,178 feet), and there are numerous others approaching 11,000 feet. The mass is formed by immense outbursts of volcanic rocks through horizontally lying strata consisting of sandstones and shales of Cretaceous age. The Judith Mountains form another more or less isolated group farther north-east, in 109°-110° W. long. To the south-east, again, are the Big Horn Mountains, an extensive range forming an advance guard, as it were, of the main chain, between 43° and 46° N. lat. Still farther east, and in entire isolation from the main range, is the large and important group known as the Black Hills, in 103° to 105° W. long., embracing a region which has lately become of considerable importance on account of its mineral wealth. This group covers an area of an irregularly oval shape, about 120 miles in length and from 40 to 50 in width ; the average elevation is from 2000 to 3000 feet above the surrounding country ; but the highest point—Mount Harney —reaches 9700 feet. Deadwood, the principal mining settlement, has an elevation of 4630 feet. The geological structure of this range is comparatively simple, and typical of that of a very con­siderable portion of the Rocky Mountains, especially of the ranges of the northern division. The central or axial mass is of an oval form, about 70 miles in length by 40 broad, and is made up of crystalline rocks,—granitic, gneissoid, and schistose in character. The sedimentary rocks rest upon it unconformably, folded like a mantle around its base, and everywhere dipping from it, at a higher angle near the axial mass, and at a lesser one as we recede from it. The lowest fossiliferous rock is the Potsdam sandstone, from 200 to 300 feet in thickness. On this rests conformably a series of beds of Carboniferous age, 600 to 700 feet in thickness, and this group is succeeded by the series of deep-red sandy gyp­siferous strata, the “ Red Beds ” of the Rocky Mountain geologists, a very conspicuous feature of the geology through a large portion of this region, and the more so because often eroded into peculiar fantastic and picturesque forms. These beds are considered to be of Triassic age. In the Black Hills their total thickness varies from 300 to 400 feet. Above the Red Beds lies the Jurassic, which here has a quite uniform character, and is made up of grey or ash-coloured marls, marly limestones, and soft sandstones. The thickness of this group in the central region of the Black Hills is about 200 feet, increasing to the north, and attaining in Belle Fourche Valley a maximum of 600 feet. In the Wind River range the Jurassic is more largely developed, and farther to the south and south-west, through the Rocky Mountains and in the ranges south of the Great Basin, it is still thicker. Above the Triassic and Jurassic, and conformable with them, are the various members of the Cretaceous series, so largely developed in this region, varying in lithological character, the upper 600 feet composed of soft, easily eroded materials, and containing many characteristic Cretaceous fossils. The position of these various groups of strata, some quite hard and others very soft, wrapped concentrically around the axial mass, and cut through by a radial drainage, has given rise to an interesting topography, easily understood from its simplicity, and little obscured by any covering of forest vegetation. A remarkable feature of the landscape, on the western bank of the Belle Fourche, is the Bear Lodge, or Devil’s Tower, "a great rectangular obelisk of trachyte, with a columnar structure, giving it a vertically striated appearance,” rising 625 feet from its base, the summit being entirely inaccessible.

II. The Great Basin is the name now given to a region embracing an area of about 225,000 square miles, and having no drainage to the sea. Its shape is roughly triangular, the apex of the triangle being near the mouth of the Colorado river, and its base extending in an irregular line, approximately east and west in direction, from near the north-eastern corner of California to a point on the northern slope of the Uintah range, where, as already mentioned, Bear river has its source. The length of the east side of the triangle thus designated is approximately 600 miles. From the northern side or base the drainage is into Snake river; on the south-eastern side rise various branches of the Colorado ; and the south-western is very distinctly marked, for the greater part of its length, by the crest of the Sierra Nevada.

The Great Basin is an elevated plateau, traversed by numerous ranges of mountains, having a general north and south trend, and a very considerable elevation above the intervening valleys. While there is a marked tendency in these ranges to isolation from each other, and to separation by deep and persistent valleys, there is still so much inosculation of one range with another, and so much irregularity in their development, that it is extremely difficult to define their number or to group them. Starting from the crest of the Sierra Nevada, at a point west of Pyramid Lake, and going in a direction a little north of east to Salt Lake, the traveller would cross about twenty mountain chains, mostly very distinctly marked, and separated by deep valleys of from 4 to 20 miles in width. The height of the plateau from which these chains rise is greatest in its central portion, and it declines east and west and also towards the south, where considerable areas are actually below the level of the sea. The most important centres towards which the drainage con­verges are Salt Lake, about 4250 feet above the sea, and the sink of the Humboldt and Carson, very nearly at the same elevation. The head of the Humboldt river is near Cedar Pass (6263 feet), about 100 miles west of Salt Lake. This river therefore marks a distinct line of depression near the northern edge of the Great Basin, and in going south from this we rise in the various valleys to heights of from 5000 to 7000 feet. The Humboldt Sink not only receives the surplus drainage of the northern portion of the Basin, but is on the same level, and after a wet season in actual continuous con­nexion, with the Carson Sink, into which quite an extensive portion of the eastern slope of the Sierra Nevada is drained. Throughout the Great Basin the valleys between the ranges are themselves usually sinks, the lower portion being frequently occupied by bodies of water which vary in size according to the atmospheric precipita­tion of the preceding winter, and in many cases are hardly more