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Extracts from 1875 Hayden Geological Survey of Colorado

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Hayden and Bechler Reports — 1875.

The following extracts are taken from the "Report of F. V. Hayden, United States Geologist-in-Charge," addressed to the Secretary of the Interior, under date of March 15, 1877.

This report is contained on pages 1 to 28 of the "Ninth Annual Report of the United States Geological and Geographical Survey of the Territories Embracing Colorado and Parts of Adjacent Territories: Being a Report of Progress of the Exploration for the Year 1875."

Copied 1-26-28 by gas. Selected by RWT

Extract from pages 10, 11, 12

The work of the fourth division, directed by G. R. Bechler, extended over several isolated areas, all situated between meridians $104^{\circ} 30'$ and $106^{\circ} 30'$ and parallels $39^{\circ} 40'$ and $40^{\circ} 30'$, or from the foot-hills of the Rocky Mountains to the Upper Arkansas and Eagle Rivers, and from a point six miles south of Pike's Peak to within fifteen miles of Long's Peak.

In this district, the entire Middle and South Parks are located, and three of the large rivers of the West, the Arkansas, Grand and Platte Rivers, together with several of their large tributaries, have their origin. The principal branches are Blue, Snake, Williams, and Frazer Rivers, on the west slope, and Tarryall, Fountain qui Bouille, Bear, Clear, Saint Vrain, Boulder, Thompson, and Buckhorn Rivers on the eastern slope.

The main Rocky Mountain Range and its minor ranges are, in this district, peculiarly complicated; for the latter, at times, on account of their height and magnitude, seem to lose their subordinate character, and become independent ranges, while the main range contains groups or clusters of peaks so complicated in their form and connection, that it requires close observation on the part of the topographer to lay down the true drainage.

Crossing Gore's Range and the Blue River, Mr. Bechler passed through the Middle Park and over the Boulder Pass to the sources of the Big Thompson Creek, an important stream rising on the east side of the Long's Peak group. Much excellent work was done in the ridges of hogbacks at the east base of the mountains, thus bringing the season's labors to a most successful termination. One hundred and six stations were made; barometrical elevations were 450; and the number of elevations taken with the gradiometer were about 6,000.

Extract from page 12 and page 18

The party under Mr. Gardner had made but four stations when it was prevented from further prosecution of that duty by Indians. One of the stations occupied was very important, viz, the Sierra la Sal Mountain, which enabled Mr. Gardner to secure an excellent set of observations, thus extending the triangulation far into Utah, and connecting our eastern work with the great Colorado River of the West.

During the season of 1875 Mr. J. T. Gardner, then in charge of the primary triangulation, made four important stations in Southern Colorado, viz: West Elk Mountain, Leon Peak, North Mam, and Sierra la Sal. The last station is located beyond the extreme western boundary of Colorado, in Utah, and the observations were very complete and valuable. From this point the party under Mr. Gardner proceeded toward the Abajo Mountain, but were attacked by a lawless band of Ute Indians, and thus their season's work was closed. In the autumn of that year Mr. Gardner resigned his position on the survey to accept the very important one of director of the trigometrical survey of the State of New York.

Extract from pages 21 and 22

The photographic work has been under the direction of Mr. W. H. Jackson, an experienced landscape photographer, who has made an average of 400 negatives each year, ranging in size from the stereoscopic up to plates 20 by 24 inches square. The first year the work lay entirely within Wyoming and Utah Territories. In 1871 and 1872, the expeditions to the Yellowstone regions afforded opportunities that were not lost, and the splendid series of photographs then secured have retained their popularity to this day. In 1873, 1874, and 1875, the work was transferred to Colorado, and the operations of the first season were confined to the mountain ranges bordering the Middle and South Parks and the Elk Mountains beyond. It was on the trip of 1873 that Mr. Jackson made one of his greatest successes, in securing a fine view of the Mountain of the Holy Cross. In 1874, the views covered a much greater range of subjects, taking in the Parks, the San Juan Mountains, and the remarkable ancient ruins south of the La Plata Mountains. These ruins were first brought to the notice of the world through the photographs made of them by Mr. Jackson. The interesting results secured the previous year justified the sending of Mr. Jackson to the same region again in 1875, but extending his journey down the hitherto unexplored San Juan to the mouth of the Rio de Chelly, and then to the Moquis Pueblos in Arizona, many interesting ruins were discovered, which were fully described and illustrated in the Bulletin and also the Annual Report for that year. Returning from Moqui via the De Chelly, the plateau country between the Sierra Abajo and La Plata was found to contain many interesting ruins, and was thoroughly photographed. An interesting feature in connection with this season's work was the success attending the production of a series of 24 by 20 inch negatives of the most prominent points in the San Juan Mountains, the very first plate of this size ever made among the Rocky Mountains.

Extract from page 26

When finished, Colorado will have a better map than any other State in the Union, and the work will be of such a character that it will never need to be done again. Colorado will never support so dense a population that a more detailed survey will be required. Accurately located points on which the local surveyors can base their work are abundant in all parts of the State. The work of the geological survey should always precede that of the land survey, as the former indicates what portions of the country are suitable for settlement and should be sectionized.

The following extracts are taken from the "Report of Gustavus R. Bechler, Topographer, 1873, -'74, -'75." Letter of transmittal to Dr. F. V. Hayden is dated April 30, 1877. The report is entitled "Geographical Report on the Middle and South Parks, Colorado, and Adjacent Country."

The report is contained on pages 369 to 440 of the Hayden Report for 1875, or, to quote the front~~ic~~ page; "Ninth Annual Report of the United States Geological and Geographical Survey of the Territories, embracing Colorado and Parts of Adjacent Territories: Being a Report of Progress of the Exploration for the Year 1875. By F. V. Hayden, United States Geologist. Conducted under the Authority of the Secretary of the Interior. Washington: Government Printing Office, 1877."

Extract from page 371

During the years 1873, '74 and '75, it has fallen to my lot to survey the area bounded by the Arkansas, Eagle River and Park Range on the west, and the Foot Hills on the east, and extending from parallel 38° 45' 0" north to 40° 30' 0", the whole area comprising 8,500 square miles; but not until the present time have I been able to write such description of its features as I could have wished.

The nomenclature for topographical objects in our Rocky Mountain territory is very inadequate, as we lack names for hundreds of remarkable peaks, as well as for large streams, high sub-ridges, saddles, spurs, and topographical objects in general.

The difficulty for an orographic description of that zone is therefore increased. Over a large mountain area, with the crest or the main water shed of 200 miles in length dotted with hundreds of peaks, we have only a very few names for landmarks or points of recognition, which have become familiar with everybody. These few are principally Long's Peak, Pike's Peak, Gray's Peak, Mount Lincoln, and perhaps Mount Evans.

The introduction of names like Audubon, James, Guyot, Silverheels, Yale, Harvard, etc., is comparatively of recent date, and the people have not yet become familiar with their location. This applies, and with greater force, to the comparatively few names which the Geological and Geographical Survey has seen fit to introduce during their four years of exploration in Colorado. Names like Park View, Vasquez, Byers, Arapahoe, Whale, White Face, Corral, Williams, Blue River Peaks, &c., are still more recently introduced names, and therefore, as to their location, even less fixed in the people's mind.

Extract from pages 373 and 374

Long's Peak, the highest point in northern Colorado, is detached $1\frac{1}{2}$ miles east of the Colorado or Front Range. Its precise location is longitude $105^{\circ} 37'$, latitude $40^{\circ} 15'$. The trend to the north of the Front Range from near Long's Peak is directly north 45° west. This course is unchanged for 20 miles until the range approaches the western limit of the district to be described in these notes, viz, $80^{\circ} 30'$, where a sudden turn changes its direction to the west until the range abuts against the Medicine Bow Range in longitude $105^{\circ} 54'$ and about latitude $40^{\circ} 30'$. The part of the Front Range referred to here represents perhaps the most rugged and extensive mountain mass in the whole Front Range. The immense spurs which are detached all along from the range in the direction of the Grand Lake and Grand River resemble in their massiveness short but powerful separate ranges. The drainage on the western slope flows in deep and rugged cañons toward the Upper Grand River. To the north of Long's Peak and 6,000 feet beneath its lofty summit lies that beautiful valley area called Estes Park, with a chain of huge mountains and peaks encircling it on nearly all sides in a grand amphitheatrical shape. The average height of the mountain crest north of Long's Peak is 12,250 feet, while the mean elevation of the peaks is 12,600 feet. The east side of the crest is much eroded, and the spurs thrown out in the direction of Estes Park are, particularly in their upper and middle portion, sharp and serrated. Their bold and weather-beaten appearance adds much to the impressiveness and magnificence of the scenery which we obtain from Estes Park in a western direction.

Directly west of, and only 2,640 feet distant from, Long's Peak lies a saddle, with an elevation of 13,000 feet, and only $1\frac{1}{2}$ miles west of Long's Peak rises another lofty point with an elevation of 13,800 feet. This latter peak attaches itself again to the main crest, which trends from here almost due south in the direction of the Arapahoe Peak.

The distance along the crest from Long's Peak to Arapahoe Peak is 21 miles, while in a straight line it is only 16 miles. The number of prominent peaks and points to be seen on the crest amount to thirty-one, having a mean height of 12,800 feet. Fifteen more peaks and prominent points exist on eastern side spurs, reaching a mean elevation of 12,600 feet. The saddles have a general height of 12,200 feet. The highest portion of this crest is much eroded, particularly on the east side. Large mountain amphitheatres, with a chaotic accumulation of debris, and immense snow flats, characterize the upper portions of these mountains. The water accumulates from these snow flats in small, narrow and rugged mountain cañons, impenetrable to most men, in which the turbulent and ever-foaming water is hurried down with great rapidity into the larger cañons below. These streams sometimes fall from 3,000 to

4,000 feet within a very few miles. For about 12 miles south of Long's Peak the western side spurs of the Colorado or Front Range are more massive, more numerous, and of greater length than those on the east side. Heavy, rugged spurs, all of them above timber-line, with thirty-five dominating points and peaks, averaging a height of 11,700 feet, are detached from the range, to slope toward the north-eastern part of the Middle Park, and powerful mountain streams have carved between these spurs fantastic and dusky-looking canons, in which their turbid waters are rolled down into the Grand River.

Near Arapahoe Peak there is a displacement in the axis of the mountains, which causes an abrupt turn to the west for a distance of 6,000 feet. The first saddle-depression beneath and west of Arapahoe Peak is 12,225 feet elevation, and down to this saddle the west slope of Arapahoe Peak descends 1,000 feet within the short distance of one-half mile. On either side of this saddle originates an important stream - the south prong of North Boulder on the south side, and the east fork of Grand River on the north side.

The length of the main crest from Arapahoe Peak to Boulder Pass is 9 miles, and within that distance we can count twelve peaks or points with a mean height of 12,560 feet on the main escarpment - the most elevated ones being 12,800 feet, while the saddle between the peaks shows a mean elevation of 11,110 feet. The eastern slope of this mountain portion from Arapahoe Peak to Boulder Pass is extremely eroded, with an abrupt descent to the bank of Boulder Creek. Among the many weather-beaten spurs we find numerous mountain amphitheatres, snow flats and little mountain lakes, from which the North Boulder receives a large share of its waters.

The western slope shows only in a few locations a sudden descent, the steepest slope being seen adjacent to Arapahoe Park. The remainder of the slope shows a gradual descent toward the Middle Park, and the spurs leading thereinto have in general a bulky and massive character.

Extract from page 382

In order to acquire a proper understanding of the relative geographical position which the Continental Divide holds to the Colorado Front Range, we have to recapitulate in a few words its connection with the Front Range, and using as a base point Long's Peak.

From a point $1\frac{1}{2}$ miles west of Long's Peak, the direction of the Front Range is *for* 12 to 14 miles northwest, thence for a distance of about 8 miles almost due north, to parallel $40^{\circ} 30'$, from which point the range turns abruptly westward for 6 miles, abutting against the high and rugged mountain range, claimed by some authority (?) as the "Medicine Bow Mountains," while on the advanced proof-sheet of Clarence King's map it is recorded simply as "Park Range." As the mixing up of names is not at all uncommon in different maps, made by different surveys pertaining to the western and especially to the Rocky Mountain area, we will abstain from arguing our preference to the name of Medicine Bow, on any other ground except the one that the name of Park Range has, and as I think very properly, been given to that long range which forms the western barrier along South and Middle Parks.

The Medicine Bow Range has a direct north and south trend, and from where the Front Range strikes it, extends southward ten miles "on the west side of North Fork of Grand River" to a point from where the Continental Divide assumes a general west course, its crest winding irregularly for 5.5 miles until it meets the Park Range at a point called Rabbit Ears.

On the point referred to, where the Continental Divide separates or rather starts from the Medicine Bow Range, stands a prominent peak of 12,513 feet elevation, which for the sake of locating a landmark in this region, so destitute of names, we named Upper Grand Valley Peak. This peak stands not only on the terminus of the high and rugged portion of the Medicine Bow, but is also the most conspicuous landmark of the remote southeast corner of the North Park, and in this respect has similar geographical significance to James Peak in the Middle Park.

Extract from page 388

I append hereto two tables with reference to this locality, the first showing the geographical positions and altitudes of prominent points on the crest, and the second of all of the most used passes.

Approximate geographical positions and elevations of prominent points on the crest of the main Rocky Mountains, from latitude 40° 30' to Tennessee Pass.

Names	Latitude			Longitude			Elevation above sea-level
	°	'	"	°	'	"	
Long's Peak	45	15	19	105	36	37	14,271 H. #
Mount Audubon	40	5	48	105	37	26	13,173 H.
Arapahoe Peak	40	1	13	105	38	39	13,520 H.
James Peak	39	51	10	105	41	9	13,283 H.
Mount Parry	39	50	20	105	42	32	13,133 P.
Torrey's Peak	39	38	5	105	49	0	14,336 H.
Gray's Peak, sub-range	39	38	5	105	48	46	14,341 H.
Mount Evans	39	35	21	105	38	20	14,330 H.
Glacier Peak	39	34	0	105	52	18	12,654 H.
Whale Peak	39	30	0	105	51	28	13,104 H.
Mount Guyot	39	28	0	105	56	0	13,565 H.
Mount Hamilton	39	26	25	105	58	7	13,800 H.
Mount Silverheels	39	20	0	106	0	0	13,650 H.
Quandary Peak, Park Range	39	24	0	106	6	0	14,269 H.
Mount Lincoln, Park Range	39	21	8	106	6	25	14,297 H.
Buckskin Mountain, Park Range	39	20	0	106	8	0	14,022 H.
Mount Arkansas	39	22	15	106	15	0	13,647 H.

Passes on the crest of the main Rocky Mountains from latitude 40° 30' to Tennessee Pass.

Boulder Pass	39	36	15	105	41	0	11,613 H.
Berthoud Pass							11,462 P.
Jones Pass							12,513 P.
Argentine Pass	39	37	50	105	46	30	13,100
Georgia Pass	39	28	0	105	55	0	11,437 P.
Hamilton Pass	39	24	35	105	58	0	12,370 R.
Hoosier Pass	39	21	40	106	3	30	11,314 W.
Tennessee Peak (probably refers to Pass)	39	21	30	106	18	0	10,418 H.

The letters designate the authority: H stands for Hayden; P stands for Parry; W stands for Whitney; R stands for Ruffner.

Extract from pages 391, 392, 393.

The term "park" can not be given in an abstract sense to that depressed area which is generally considered to constitute the Middle Park, for it is neither a unit in park-like features, nor is the depressed basin-area in any way proportional to the great bulk of mountains that crowd into the center to break its unity. Whatever there is of this area that might be brought under the denomination of "park" exists in more or less disconnected and fragmentary patches.

Immediately north of Frazier River Cañon, or about the junction of Vasquez, Moses, Hay, and Ranch Creeks, lies, perhaps, the most perfect portion of park-area in the district called Middle Park. A like portion is found in a small patch in the vicinity of Camp Creek, a tributary to Frazier River; and still another lies east of the junction of Grand and Frazier Rivers, including a small district about Stillwater Creek. The broad-molded valley of Williams River and narrow strip west of the Troublesome Creek are also fragmentary portions of it. The river bottoms of the Grand and Muddy and about nine miles of the lower valley of the Blue may be added to the actual park-area; but the remainder is of terraced, waving and mountainous character.

The slopes of hills, ridges, and ranges that either gird the Middle Park or crowd into its district are timberless to a great extent, but exhibit more or less a covering of grass. This, when seen from one of the high passes over which we approach the park, produces the impression that before us lies an extensive basin surrounded by mountains in diversified order. The idea disappears, however, when we descend into the basin and examine the area more closely.

However deficient the Middle Park may be in regard to absolute park-area, one thing must be admitted, that, in regard to quantity and regular distribution of water, this district can not be excelled anywhere. The drainage is remarkably well balanced for so extensive an area; and what adds additional value to the drainage-system is the fact that at no time of the year do we find parched beds of water-courses, or empty channels instead of flowing water.

The North Fork of Grand River has its sources in the vicinity of longitude $105^{\circ} 49'$ and latitude $40^{\circ} 30'$. Its sources, its tributaries, and its valley lie in a pocket caused by the main Rocky Mountain Chain and the Medicine Bow Range. The mouth of this pocket is directed toward the south. The center of it is occupied by a spacious valley of at least 6 miles in length, and in places a mile in width. This Upper Grand Valley (as the proper name would be) has but little fall for many miles, and numerous mountain-streams coming down from both sides of the ranges have turned the entire valley into an extensive beaver-meadow. Where the valley approaches the vicinity of Grand Lake, and where it naturally should become wider, it is closed up to a great extent by morainal deposits and dense timber, leaving only narrow passages for the river.

The North Fork of the Grand does not enter Grand Lake, but passes the same about two miles to the west, and is joined by the outlet or Lake Fork when two miles south below the lake.

The Lake Fork is in size and volume of water at least equal, if not superior, to the North Fork. The basin of the Grand Lake owes its existence to moraine benches deposited before the mouths of two large cañons, and it serves as a reservoir for the waters of two streams that come down from the western slope of the Front Range in the vicinity of Long's Peak.

We may consider Grand Lake and the environs of the junction between Lake Fork and the North Fork of Grand River as the extreme northeast corner of Middle Park, as the mountains to the right become very much depressed, and though the river is not absolutely freed from impediments in the way of morainal ridges and terraces, yet the opening of the country in general points to the fact that we approach nearer to the Middle Park proper. Three and a half miles south of the junction of the two northern branches, Lake Fork and North Fork, the Upper Grand River receives another of its principal tributaries, namely, the East Fork of the Grand, which has its sources on the west slope of the Colorado or Front Range, and northwest of Arapahoe Peak. This stream is 14 miles long, and, commencing at its sources, flows for about 8 miles close to the basin of the Front Range, being principally inclosed in a cañon. The mountains rise on the east side, with a slope angle of 25° while on the west side the angle is much less, but the west side immediately near the creek is steep. Before the East Branch joins the main Grand, it meanders for 3 or 4 miles in a comparatively open valley bottom, inclosed on either side by precipitous cliffs. The tributaries of note which this stream receives on its way are not very numerous; there is only one coming from the west side, while on the east side two cañon streams emerge out of dark gorges which are characteristic features to that portion of the western slope of the Front Range. The spurs between the lateral mountain-streams average about 2,000 feet in relative height, above the mean creek-level. The average fall of the East Branch is 228 feet per mile, and the total fall amounts to 3,200 feet.

The location of the junction of the two branches of the Upper Grand River is, longitude $105^{\circ} 50'$ and latitude $40^{\circ} 9' 30''$. Down to this point the North Fork meandered a distance of 22 miles from its very sources in a direct southern course, but from the junction of the two branches its direction changes into a western one with a variation of 22° to the south, which course the river maintains for 18 miles, not including the curves and smaller variations of its bends.

Not quite a mile below the junction of the two forks of the Grand two smaller streams enter into it, one coming from between the granite spurs from the south, bearing no name, and the other from the north. The latter one named Stillwater Creek is 12 miles long, and has its source in Williams Creek Mountains, which may be virtually considered

the extension of Medicine Bow Range. Stillwater Creek flows near its lower end in a broad-molded valley or basin, and carries not only abundance of splendid mountain water, but its margins, as well as the very moderate hill and terrace-slopes, are well grassed. Its average fall per mile is 192 feet.

Only half a mile below, where Stillwater Creek intersects the Grand, the river enters a granite cañon, and remains in it for a distance of $1\frac{1}{2}$ miles. The granite bluffs along this cañon are of a height of 100 to 150 feet, and constitute the end portions of a spur coming from the huge and bulky granite masses which lie directly west of Arapahoe Peak.

SAINT VRAIN'S CREEK.

This stream heads in two large branches, the North and South Saint Vrain's, just below the main crest of the main or Colorado Range. There is also a Middle Branch, which, although heading slightly further up on the range than the South Branch, is a tributary to it, and loses its name at the junction. The South Saint Vrain's does not gather its water from the main crest, but on the slopes of that long spur stretching east from Mount Audubon. The middle and north branches together drain 22 miles of the eastern slope of the main divide. The southern slopes of Long's Peak, and the huge amphitheaters to the south and west of it, furnish a large proportion of the waters of the North Saint Vrain's.

After the many fast-falling mountain streams have united below and on the southern face of Long's Peak, the stream flows along, cañoned up on the one side by the broad granite faces of Bald Mountain, and on the other by the long morainal spur of the base of Long's Peak. Soon, however, the North Saint Vrain's is completely inclosed in one of these granite cañons so common in this country, and in it receives a tributary from the south, which originates on the southeastern side of Bald Mountain. This stream, only one mile from its junction, penetrates the granite mass which holds the North Saint Vrain's in its narrow path. The united streams continue for $2\frac{1}{2}$ miles with straight cañon sides, when another cañoned tributary is received, coming from between Long's Peak and Lillie's Mountain. This completes the main volume of water which the North Saint Vrain's carries through a continuous cañon until near the "Hogbacks," among which it is joined by the South Branch, which has just completed its journey through one of the boldest districts in these parts near the foot-hills.

The whole course of the South Saint Vrain's is in cañon, partially rugged, but for the most part of only moderate steepness, the bordering country bearing the character of a granite plateau. The sources, as I have mentioned before, lie along the northern sides of the spur which form the eastern extension of Mount Audubon.

LITTLE THOMPSON

This stream enters the plains about $4\frac{1}{2}$ miles northeast of North Boulder exit. Its sources lie in the middle portion of that cluster of hills lying $5\frac{1}{2}$ miles east of Long's Peak, of which Lillie's Mountain (11,433 feet) is the dominating point.

The principal stream is formed by three large branches, the chief and most western one coming from the east slope of Lillie's Mountain. Several miles eastward, this main branch is joined by Muggins Creek, along which the road leads from Longmont to Estes Park. The third branch, being the north branch of the Little Thompson, comes directly from that immensely rugged granite mass which occupies the whole area between the Big and Little Thompson Rivers.

VICINITY OF ESTES PARK AND THE BIG THOMPSON RIVER

Within the district treated in these notes we will scarcely be able to find a region so favorably distinguished as that presented by Estes Park. Not only has nature amply supplied this valley with features of rare beauty and surroundings of admirable grandeur, but it has thus distributed them that the eye of an artist may rest with perfect satisfaction on the complete picture presented. It may be said, perhaps, that the more minute details of the scenery are too decorative in their character, showing, as they do, the irregular picturesque groups of hills, buttes, products of erosion, and the finely-molded ridges in the center of the park. Although this arrangement separates the otherwise broad expanse into a number of small areas, the total effect is pleasing in the stream. *extreme.*

From the sides of the huge mountains which here inclose us flow down the streams concentrating in Estes Park. Fish Creek comes from the south and from the northern slopes of Lillie's Mountains; South Fork of Thompson, directly from the very cañon west and beneath of Long's Peak. Main Thompson rushes its waters down from the high main range 12 miles to the northwest. Fall River originates in a great amphitheater a few miles to the east of it, and the Black Cañon Creek brings turbulent waters through a black gorge from the lofty peaks to the north.

The Big Thompson, as its united headwaters are called, flows through the middle of Estes Park, which lies just 11 miles directly northeast of the very pinnacle of Long's Peak. The park does not consist of a compact park area, but lies in separate portions along each of the streams, the largest part of which is stretched along Fish Creek and along the entrance of Black Cañon Creek, and where the former joins the Thompson River. Soon after the junction of Fish Creek, the river leaves the park to continue its journey for 9 miles through a rugged cañon, where it becomes augmented by another powerful stream, the North Fork, coming partly from along the slopes of Buckhorn Mountain and partly from the mountains to the west of it. Between the two branches, and for many miles before they join, rises a voluminous granite ridge, with its highest points 2,000 feet above the river-level. To the south of the Nine Mile Cañon the precipitous slopes of that level-topped granite ridge is upheaved, which, although eroded and bisected by many cañons, stretches on pretty much the same level for many miles to the south, and crosses even the Little Thompson 11 miles southward.

From the junction of the two branches, the river still pursues its course for 4 miles in a cañon, passing on its way the Palisades, 2,200 feet above river-level. Between the latter the river is somewhat relieved from its rocky inclosure over a mile in distance, passing after that through the last and shortest cañon, and meandering from about 6 to 8 miles among the smallest of the Foot Hills group called the Hogbacks, enters the plain very near the junction of Buckhorn and Big Thompson Rivers.