ficial forms. Near him the surface undulates as the ocean after a gale, and in the distance waving blue lines, flanked by buttes and knobs and fringed with trees, mark the windings of the streams. Upon the prairies the tall rich grasses occasionally cover the surface for miles and miles together, scarce interrupted by anything else; then the wayfarer will see bunches and zig-zag lines of alder, of hazle, and interlaced vines and briars; and, again, large spots will be invested by bouquets of wild roses and flashing flowers, filling the air with fragrant odors, and outvieing in grace and beauty the rarest exotics. There the gentle harebell, the carnation rose, the blue violet, the gaudy piony, the modest daisy, the simple buttercup, the fragrant sweet briar, the purple amorpha, and an endless variety of shrubs and flowers, are set as gems upon the deep green verdure of the plains, delighting the eye with their brilliant hues, and enriching the imagination with gorgeous pictures of grace, beauty, and grandeur.

The face of the country presents a nearly uniform succession of ridges and valleys, marked by curved lines, nowhere expanding into dead flats, save in the river bottoms, broken into knobs and bluffs along the streams, and along the entire skirts of the bottoms, but never too much so to prevent a profuse growth of grass everywhere. The soil from one hundred and fifty to two hundred miles westward and south of the Platte river has nearly the characteristics of that of the adjoining States. From the Arkansas boundary to the cross timbers, the highlands are fertile and beautifully variegated with open prairies and tufts of forest trees and glades, with an occasional intermixture of small spots too flat and marshy for cultivation. The river valleys consist of a deep rich loam, in some places subject to inundation, but for the most part tillable. That portion adjacent to the boundary of the State of Missouri, including the sources of the Neostro, the Verdigris, the Marais de Cygne, and other tributaries of the Osage, and the lower section of the Kansas river, is unparagoned for the fertility of its soil, the value of its timber and forest trees, the beauty of its rolling prairies and broad valleys, the number of its pellucid streams and rivulets, and the salubrity of its climate. Though this first section of the great Western Territory is more scant of timber than the adjoining States, it equals them in fertility and water courses, and surpasses them in the purity of its atmosphere. Travelling due west from Independence, in the State of Missouri, this dark, fertile soil, ceases at Sandy Creek, a tributary of the Kansas; moving on the route to Santa Fe, it commences deteriorating at Council Grove, near the Neostro river, and becomes more sterile thence to the Arkansas; and farther north it is intersected by the Platte river, with its double line of sterile bluffs. It is remarkable that this change of soil is not gradual, but sudden and palpable to the most careless observer. At Sandy Creek and at Council Grove the traveller sees the last timber trees, properly so called, until he approaches the spires of the Rocky Mountains; and at these points the caravans of emigrants and traders usually make a pause to provide themselves with timber to rectify any accident which may occur to their wagons.

South of Platte river this fertile district is contiguous to one directly west of it, where the soil is so intermixed with sand as scarcely to be perceptible, save in its luxuriant grasses, which extends several hundred miles towards the mountains, and is again succeeded by a bench of fertile soil in the vicinity of them. The valleys of the Platte, Arkansas, Kansas and Red rivers consist generally of rich alluvion, freely interspersed with sand; and the high dividing ridges between these great streams become more sterile as we recede from the waters, until upon their summits the grasses become stunted, and present a withered and sickly appearance.

North of the Platte river, and adjacent to the first district, and between its north and south forks, the whole soil is largely intermixed with a formation of marl and earthy limestone, so tenacious in some places as to be nearly as much indurated and give the appearance of the yellow soapstone of our streams; but this extensive district is also intersected by ridges, not of desert, but of poor soil. It is in this district that what are called *buttes* by the French, and *cerros* by the Spaniards, make their appearance. Custom has, however, enlarged these terms to include what we denominate bluffs and knobs. It is as if the whole surface had suddenly and regularly sunk, leaving points and portions of various sizes and forms from twenty to three hundred feet above the plains. The sides of these *buttes* are nearly perpendicular, and their upper surfaces flat and covered with grass, and sometimes trees. This is the formation of which what are popularly called the Court House, the Cathedral, and the chimneys in the valley of the Platte, are composed. They are so called because at some miles distance they bear a rude resemblance to the structures from which they are named. Col. Fremont has only mentioned one of the chimney rocks, of which he gives a lithograph. There were two in the summer of 1843. As the tallest of these is one of the grand landmarks of traders and hunters, it should be mentioned that it is (or was) about two hundred feet high. Between the forks of Platte river, at a place called Goshen's Hole, this formation has been worked by the elements into an extraordinary imitation of a massive fortification. At a little distance it strikingly resembles masonry, and it sweeps round an area of some three hundred yards in diameter in the form of a half moon, terminating in immense bastions, with domes and minarets along the whole line of the parapets. The formation juts for some distance across the south fork of the Platte, presenting a variety of strange and fantastical forms.

On the head waters of White river, a tributary of the Missouri, there is a space of near thirty miles in diameter broken into buttes and towers. Some miles off the traveller sees gleaming in the sun the outlines of a fairy city. Palaces, and walls and fortifications shine and frown upon the surface, and steeples, and domes and minarets, and innumerable fantastic and beautiful forms, shoot up to the height of several hundred feet. It is similar to the optical delusions described by Parry and Sconsby in the masses of ice in the Polar Seas, or the extraordinary phenomena sometimes exhibited by the reflection of light in the atmosphere, portending in the eyes of the ancients the fall of thrones and the revolutions of empires. But the delusion vanishes as we approach, and nothing is presented to the eye but cold dead masses of marl and earthy limestone worked into picturesque forms by the power and caprice of the elements. Scattered through this city of clay I found great numbers of petrefactions on the surface, principally of turtle, some of which were fifteen inches across the back, and the whole frame, shell, legs, and intestines, perfectly indurated. A few wolves' heads may also be found, with a multitude of shells and molusca. This spot is very celebrated among traders and trappers not only for its curiosities but because of its having been a great Indian battle-ground time out of mind. It is also a place of refuge and security for traders when pursued by hostile bands of Indians. Once fairly within it, the pursuer might as well attempt to thread the Egyptian labarynths, such a multitude of narrow and winding passages and strange and curious caverns does it contain. The French traders have given it the name of *La mauvaise terre*. The fugitive is amply supplied, too, with good water preserved in a number of natural reservoirs. It is impossible that such a soil can be otherwise than very productive.

Scattered all over these western savannas may be seen immense boulders distributed, if we may trust geology, by the last great flood, many of them several hundred tons in weight. Towards the western section two trees of the largest size have been hurled from the mountains by tornadoes and hurricanes, and deposited in the plains hundreds of miles from the spot where they grew.

The district between the Missouri river and the forty-ninth parallel, and west of the Territory of Minnesota, is a succession of rolling prairies, the soil of which is tolerably fertile, though rather dry and too freely intermixed with sand. They support a thick grassy sward, which yields an abundant pasture to innumerable herds of bison and other animals; and the grisly bear, the finest of all the North American land animals, has selected this as almost the only prairie district into which he will now venture from his mountain fastnesses.

The Territory of Minnesota is a beautiful and very fertile tract of country, strongly contrasted in its conformation with other sections of the United States. It is neither mountainous nor hilly, nor is it a dead flat. There are hillocks, ridges and uplands, but they are characterized by a longitudinal and horizontal instead of a vertical projection. Without exhibiting either marked or mountainous features or dead sterile valleys, the surface is sufficiently variegated with eminences and depressions, and contrasted in curving ridges and undulating plains decorated with limpid lakes and streams, to give it an aspect of deep interest. The soil, too, is rich, and the woods and waters so disposed as to render it one of the most desirable residences in the world, as well as one of the most beautiful and picturesque.

The basin of the upper Mississippi is separated from that of the Missouri by an elevated plain, the appearance of which, as seen from a distance on the east or west side, has suggested to the early traders the name of the *Coteaux de Prairie*. It would probably be more correct to designate it as a plateau, because its aspect presents to the mind an idea different from that of a plain, though it includes it. The northern extremity of this plateau is in latitude 46 degrees; from thence it decends and expands to latitude 43 degrees; after which it loses its distinctive elevation. Its length is about two hundred miles, and its general direction from north-northwest to south-southeast. It is about fourteen miles across its head. Its elevation above the ocean is 1,916 feet. It is forty miles broad on the forty-fourth parallel. The plain which expands from the head of this plateau is a most beautiful and picturesque tract, diversified with hills and valleys and woodlands, intersected with crystal streams, and dotted with silvery lakes. This is the most elevated spot between the Gulf of Mexico and Hudson's Bay. From its summit the prospect is magnificent, extending over the broad valley of the Red River of the North, the forest-crowned summits of the Hauteurs de terres, at the sources of the Mississippi, and the granite valley of the St. Peters.

Another vast plateau is interposed between the Jacques and Missouri rivers, and has been named by Noccolet the Plateau du Cotean du Missouri. The soil is a mixture of sand and gravel, and its surface is about 500 feet above the Missouri river. It is covered with a short, sweet-scented verdure. It extends indefinitely north and northwest.

The State of Iowa and Territory of Minnesota are sprinkled all over with groups and chains of lakes, united by rivulets, all of which are finally mingled with the Father of Waters. There are probably not less than three hundred of these lakes. The region between the head branches of the Des Moines and the river St. Peters is so thickly strewn with them, that Mr. Niccolet, with admirable taste, has bestowed upon it the name of the Undine region, from an exquisite German tale so designated. All of them are literally crowded with fine fish. Only one of them is tainted with animal deposits. This is the Mini-Wakan, or Devil's Lake, situated under the 48th parallel, near the sources of the Shayenne Ojer river. It is of irregular form, from thirty to forty miles in diameter, and studded with islands. Its waters are too brackish to be drank, except by horses and cattle. An analysis exhibits a mixture of sulphate and hydrochlorates of soda and magnesia. The rivers of this region flowing into the Mississippi are now too well known to need further notice.

He who casts his eyes over the broad territory south of the Missouri and west of the States will discover that it is deficient in streams of any size, and he who has travelled over it will inform him that the tributaries of the larger streams are few in number, and that springs and rivulets are of much rarer occurrence than within the adjoining States. The wanderer is seldom without water of some kind more than one or two days, but he is frequently compelled to content himself with a draught from small ponds and slews. Intervals of many miles between fountains and brooks are of frequent occurrence. This sparsity of streams is, no doubt, attributable to the rapid evaporation on these elevated plains, which rise gradually from one thousand to six thousand feet above the Mexican Gulf. It is also remarkably deficient in "water privileges." The conformation of the soil bordering the streams is unfavorable to the construction of locks and dams, and there are few places where water power could be obtained. From my observations, as well as from information received from many others of excellent practical sense, I have no doubt that windmills might be constructed almost anywhere in this territory, which would run a long period, and with as much certainty as watermills do within the States. Springs are more abundant in the vicinity of the mountains, and within their spurs rapid torents rush through the fissures of the rocks, or leap in snow-white cascades from their summits.

The Missouri river runs a course of more than 3,000 miles from the junction of its three headstreams, the Gallatin, the Madison and the Jefferson. It has been navigated with steamboats to the foot of the Great Falls, about one hundred miles above the mouth of the Yellow Stone. From its mouth, for the first five hundred miles, the river flows through a valley varying in width from three to six miles. This valley is bordered by a ridge of highlands on each side, in some places seeming to be continuous, and at others cut into segments and bluffs. The valley has a depth of one hundred and fifty feet below these highlands. The whole of it is an alluvial deposit. From the summit of the highlands the surface slowly ascends towards the plains on the north and south, and probably at no great distance these plains are elevated three hundred feet above the valley. Major Long made an erroneous guess that the soil would be found to be confined to the vicinity of the river. The soil is generally good, indefinitely north, and would have been so indefinitely south but for the interposition of the Ozark mountains. From the Kansas to the Nodaway the highlands are continuous, and generally about eight miles asunder. From the Nodaway the northern hills nearly disappear, and they again approach some miles above the Platte. On the south side the highlands skirt the stream close up as high as Council Bluffs. Above Council Bluffs the highlands diminish, and recede for two hundred miles. The valley continues to become narrower to the mountains, and the highlands, after passing Calumet Bluff become lower, until the spurs of the mountains are entered.

The lower portions of the river are thickly bordered with forest and timber trees. Above the mouth of the Platte few timber trees are found, and at intervals the river flows many miles through an open prairie. For a considerable distance above the Platte the soil of the river bottom is a deep alluvion, and the highlands, for many miles north and south, is very fertile, much more so than was supposed by Long, and Lewis and Clarke.

The spring freshet usually occurs in the early part of June, and lasts some weeks. Except during this freshet the navigation for steamboats in descending anywhere above the Council Bluffs (now Kanesville,) is nearly impossible, and the ascent is very difficult. In midsummer a fifty ton boat is doing well to ascend twenty miles per day. From its mouth upward the river becomes more and more serpentine.

It is not correct, as often asserted, that the Missouri derives its turbid water entirely from the Platte. Some of the tributaries higher up flow through the same formation of marl and limestone. The specific gravity of the waters of the Missouri at the mouth of the Kansas, is 78, whilst that of the Kansas is only 72 degrees. This was observed by Lewis and Clark, and confirmed by Dr. James, of Long's party, in 1818. The fall of the Mississippi from St. Peter's, and the fall of the Missouri from Fort Pierre, are in the ratio of 45 to 85; that is to say, the average rapidity of the Missouri is nearly twice that of the Mississippi. Long found the current at the mouth of the Platte one fathom per second; in low water it rushes through the narrow banks between its ponds at the rate of twelve fathoms per second, and when the spring rise is at its maximum, it moves at the rate of 720 feet per minute. The celerity of the Amazon equals that of the Mississippi, and the Orinoco exceeds that of the Missouri.

The difference of elevation of the valleys of the Missouri and Mississippi has been determined. The level of the Missouri at Council Bluffs is one thousand and twenty feet above the Mexican Gulf; that of the Mississippi at Rock Island, in the same latitude, only five hundred and twenty-eight feet. At Fort Pierre, in latitude 44 deg. 24 min., the elevation is one thousand and fifty-six feet, while at the lower end of Lake Pepin, in the same latitude, the elevation is only seven hundred feet above the Gulf. There are in the Missouri 210 islands between the Yellow Stone and its mouth; one half of them produce forest trees, chiefly the cottonwood and plane tree below the Platte, and above it intermingling gradually with trees and shrubs peculiar to higher regions, until the predominating growth is stunted cedar and pine. The number of its tributaries within the same space is over two hundred. Very few of them are of any size or length. The Kansas and the Platte are the only ones west of the States of any value for navigation.

Taking its rise in the North Park in the Rocky Mountains, in latitude 40 deg., and longitude 106 deg. 40 min., the Platte river winds through the mountains north, and then east, in rapids and cataracts, until it bursts through the chain, and flows rapidly east to a point in latitude 41 deg. and longitude 100 deg. 50 min., where it receives the South Fork, which takes its rise in the vicinity of the Arkansas, and flows in a northeast direction to its mouth. Immediately below the junction the stream is five thousand three hundred feet wide, and flows on with an average width of three-fourths of a mile to its mouth, in latitude 41 deg. and longitude 95. There are many islands, some of them timbered and all fertile. The river bottoms are also fertile, but destitute of timber, and in many places subject to inundation. The waters are expanded over so great a surface that it is too shallow to be navigated by anything but light flat boats, and they get along with difficulty. Nor can it be improved by art and labor.

Two great forks, the Republican and Smoky Hill, which have their sources within the spurs of the mountains, unite in latitude 39 deg. and longitude 96½ deg., to form the Kansas river, from whence it flows several hundred miles eastward to its junction with the Missouri, in latitude 39 deg. and longitude 94 deg., through a narrow valley well timbered for three hundred miles, and well wooded thence to the mountains. Like the Platte, it is too swift and shallow to be navigated with anything but very light craft.

The Yellow Stone, rising amid the peaks of the mountains, flows northeast to the Missouri. It waters a large and fertile valley, and is navigable for steamboats eighty miles, and for other craft two hundred and fifty miles. Here we anticipate the birth and growth of a considerable community.

Rising within the spurs of the mountain, the Arkansas leaves them with a breadth of fifty yards, and widening, as it flows onwards, to four hundred yards, and sometimes a mile from its tribute into the Mississippi, in latitude 31 30. Its upper portion is densely timbered, but about one hundred miles east of the mountains every trace of trees is lost, and it flows on several hundred miles through a vast expanse of undulating plains, and again penetrates fine forests near the western line of the State. It is navigable for steamboats as high as the Neostro, a distance of six hundred miles; above this point navigation is, and must continue to be, wretched even for large canoes. The Washita, one of its tributaries, is also navigable a considerable distance. The Canadian, another of its branches, rises in the Rocky Mountains, and flows through a broad valley bounded by bluffs five hundred feet high, a distance of one thousand miles, to its confluence with the Arkansas, five hundred miles above its mouth. Two hundred miles of its lower portion flow through a valley of unbounded fertility, shrowded in rich masses of trees, shrubs and flowers. The upper portion is through arid deserts, which for the greater portion of the year drinks up the whole of its waters.

The Red river rises east of Santa Fe, and flows eastwardly towards its mouth in latitude 31. This river is navigable about five hundred miles to the Great Raft. In very high water small boats pass several hundred miles above the raft. Its name is derived from the red argillaceous earth it holds in solution.

The waters of this southern region hold in solution a proportion of common salt and sulphate of magnesia, which in many instances render them too brackish and bitter for use, and all of them are colored with red earth during freshets.

I have been informed by Mr. Andrew Drips, late an Indian agent on the Upper Missouri, that he has been repeatedly assured by old trappers, at the period when he was one himself, that the head stream of Yellow Stone river, and the head stream of the Lewis fork of the Columbia, have their sources in a lake on the summit of the main chain of the Rocky Mountains. The account is that the lake is near two miles in length from north to south, and very narrow, and that there is a current in it to its extremity, where an immense mass of granite divides its waters nearly equally, one portion precipitating itself from the eastern, and the other from the western side of the summit. If this prove true, (and it is tolerably well attested,) what a theme for the poet! Moore has given us a sweet song upon "the meeting of the waters," but who, since the death of Byron, can sing of such a parting of the waters as this?

A fact nearly similar is given by Ross Cox, of the Hudson's Bay Company. "At 1 P. M.," says he, "we arrived at two small lakes, between which we encamped. They are only a few hundred feet each in circumference, and the distance between them does not exceed twenty-five or thirty feet. From them two rivers take their rise, which pursue different courses and fall into separate oceans—the first into the North Pacific, while the other, a branch of the Athabarea, unites finally with the Myrja and Mackenzie, and flows into the Arctic Sea." Lewis and Clark found the sources of the Missouri within a mile of the waters of the Columbia; Fremont those of Sweet Water within a mile of the head waters of the Colorado; and the sources of the Arkansas and Platte both interlock with branches of the Colorado.

Lakes, lagoons and bayous abound in the Delta of the Mississippi, and over the great alluvial formation extending six or eight hundred miles up the Arkansas and Red rivers, but we know of no lakes south of the Missouri and west of the States in the great Western Territory.

An error committed by Major Long, in consequence of relying too implicitly on the representations of the men of the mountains, who delight in magnifying the wonders of their wild home, deserves special correction, inasmuch as he was officially engaged in the examination of the country, and consequently has been looked to with greater confidence for correct statements of fact, both in Europe and America. This error is quoted so recently by M. de Tocqueville, in his great work, that we are warranted in concluding that it is yet the prevalent opinion among men of science. The statement is, "That from a line drawn parallel with the twentieth degree of longitude from the Red river, in the south, to the Platte, northward, and from thence indefinitely north, the whole country is unfit for cultivation, and of course uninhabitable by a people depending upon agriculture for their subsistence." It so happened that Major Long, in following the line of the Platte river to its forks, and thence across and along the south fork, passed over the only remarkably sterile district in the whole territory. The truth is, that many considerable exceptions must be made to this sweeping denunciation. From the forks of the Platte westward, there is a broad strip of marl and earthy limestone, extending from the south fork north to the Missouri. North of the Missouri the whole country is fertile back to the mountains. Along the eastern slope of the mountains, as far south as New Mexico, there is generally a broad bench of fine soil. Within the mountain chain large and fertile valleys occur. The basin of the Yellow Stone is a very rich district. Large spots of good soil are found between the Platte and the Missouri. The river bottoms are all fertile near their sources, and become much more so, as well as larger, as they are descended. On these facts I cannot be mistaken. They are the fruit of personal observation and of inquiries directed to intelligent and competent sources. Entire deserts never occur, save in a few narrow strips along the Arkansas and Canadian rivers; south of the Platte, and east of its fork, cultivation will be confined to the river bottom, west of the first district described herein; while the highlands will afford pasturage for flocks. Sparsity of timber constitutes the greatest barrier to the settlement.

Scattered throughout this territory, there are a great number of insulated table-lands or plateaus. They rise from six to eight hundred feet above the common level, and are frequently surrounded by rugged slopes and abrupt precipices, rendering their summits nearly inaccessible. A number of them are in this way perfectly insulated; but others subside into the plains below by gentle declivities from their summits to their bases on one or other side of the eminence. These tracts are more numerous but less extensive near the mountains. They have been likened without reason to the steppes of Asia. They are called mesas by the Mexicans. The largest of them is known as El Dano Escatado, which stretches north to the Canadian, east to the boundary of Louisiana, including the heads of the false Wachita and other streams, and expands southward to the sources of the Trinity, Brazos and Colorado, and westward to the Rio Pecos—embracing an area of about thirty thousand square miles. In places where the brows of these mesas approach a stream closely on both sides, the deep caverns or ravines there found are called canores by the Mexicans, and this term has been extended to include the narrow gorges in mountains and fissures of rock, through which streams are frequently found rushing in volcanic regions. Even in an open plain the small streams often cut chasms, which, although only a few feet in width, may sometimes be seen from fifty to one hundred feet in depth.

The stupendous chain of the Rocky Mountains which bound this vast territory on the west has been distinguished by a number of appellations, such as the shining mountains, the Mexican, the Andes, the Chippewayan, &c. Upon the whole, the Mexican portion should be designated as the Anahuac; that portion succeeding and extending to the forty-ninth parallel, the Rocky Mountains, and the portion north of that line as the Chippewayan. These mountains are arranged in a west-northwest and a south-southeast direction, and rise abruptly from the plain, towering into ridges and peaks of great height, becoming visible at a distance of one hundred miles. James's peak is eight thousand five hundred feet above the common level. Fremont's peak, on Wind river, is thirteen thousand five hundred and seventy feet above the Mexican Gulf, and is undoubtedly the highest peak of the whole chain. The more elevated portion of these mountains are covered with perpetual snow, presenting, at great distances, a very brilliant aspect. Here nature has undergone her wildest and deepest throes, leaving enormous masses of rugged primitive rock clad in a scattering growth of scrubby pines, oak, cedar, furze and artemisia.

Formerly this range was deemed impassable, but Mackenzie succeeded in passing it in 1793, at the head of Peace river. Lewis and Clark, in 1806, found the North Pass, near the head of the Missouri, a depression offering a good wagon road, and another good road a little south of it. The South Pass has been known to trappers since 1809. There is a difficult one at the head of the Saskatchaman river; another followed by Fremont in returning from California, in 1844; another discovered by Governor Stevens's party, and a very fine one; another sixty miles south of the South Pass, examined by Capt. Stansbury; another rough one at the sources of the Del Norte; another by which mule caravans travel from Santa Fe to Monterey, near the source of the Rio Charna; another south of it, and nearly west of Albuquerque, and many more, some of which have been traversed by trappers. With respect to the climate of the West, I cannot speak with scientific precision. Many more meteorological observations must be made before this can be done; but it is quite easy to give a popular, intelligible, and practical account of it. This whole region is exposed to the influence of the west and northwest winds, refrigerated in their passage over the broad and frozen district of the Rocky mountains, and rushing down unimpeded across the naked plains quite to the Atlantic coast. Volney thought the temperature west of the Alleghenies much milder than east of them; but subsequent observation has not confirmed his conjecture. The extremes of heat and cold are both greater at the Council Bluffs than at Germantown, in Pennsylvania. Extending, as this territory does, through many degrees of latitude and longitude, it may be expected to afford a considerable variety of climate, and this is sufficiently verified by the commencement and progress of the seasons, and of annual vegetation. The change is also marked by certain peculiarities in vegetable products. Vegetation commences at least one month earlier in Louisiana than in Missouri, and some weeks later than the latter in Iowa. Again, it commences two weeks earlier upon the Mississippi than five hundred miles west of it, and three weeks later still at the base of the mountain. The Spanish moss disappears north of the thirty-third degree of latitude. Cotton and indigo cannot be cultivated above 36 degrees; the cane brake is never found north of 36½ degrees; nor the Osage orange above the valley of the Arkansas—I mean growing spontaneously. Indian corn reaches its maximum in Missouri, and dwindles from thence to the forty-ninth parallel, where it is of inferior growth. The shrubs and flowers also vary with the progress north and south, or east and west. In 1842 the thermometer ranged at an average of 63 degrees at sunrise, and 81 degrees at noon, during the month of June, at St. Louis; whilst during the same month, Fremont, in passing from the mouth of the Kansas four hundred miles up its valley, found it at an average of 58 degrees at sunrise and 79 degrees at noon.

In 1818, Dr. James says the thermometer stood during the month of June at 72 to 92 degrees at the Wachita Springs; and in Iowa, Mr. Niccolet in 1836 found the temperature at the same season about seven degrees colder than at St. Louis. Hail in the middle of July is not a rare occurrence at the forks of the Platte, nor is snow unfrequent there and at the Ariccara village, on the Missouri, in the middle of September. At the State line of Missouri snow rarely falls before the first of November. In the spring, floods of rain descend along the whole course of the Kansas and Platte rivers, washing the bluffs with torrents, and covering the bottoms with deep sheets of water. These rains are not so frequent or copious on the Missouri and Arkansas. The air is kept on the plains in perpetual agitation by the winds. The worst of these are from the north and east, in the winter bringing heavy snow storms with them; and the best from the west and south, in summer bringing genial rains. Electrical phenomena increase in frequency and brilliancy as we ascend to the Rocky Mountains, sometimes covering the plain with a blending sheet of quivering fire, and again flashing, sprangling and shooting into curves and angles of red, blue and silver hues, accompanied with vollies and peals of thunder under which the very earth quakes and trembles. But on the plains we miss the long, varied and solemn reverberations, slowly subsiding in the distance. The undulations of the atmosphere spread unimpeded in a uniform series of circles.

Science has, so far, failed to penetrate with certainty the causes of the existence of the immense prairies of the West. Long, Wells, and others of ability, have satisfied themselves that they are attributable to the annual burnings of the Indians. To this conjecture the answer is obvious and conclusive. In the States of Indiana and Ohio, the prairies are much smaller than in the territory west of the Missouri and Mississippi; and yet the antiquities which denote a former occupation of these States are much more numerous than in the latter Territory. South of the Missouri and west of the line of the States, there is not a solitary earthenwork, or ancient mound, or fortification, to evidence the former occupancy of the country. Would this be so if it had been occupied at a period coeval with the origin of the antiquities of those States? The cause suggested is not, then, sufficient to account for the fact. The vast plains of the West are ancient floors of the ocean, as a profusion of marine remains scattered through them amply testify. When it abandoned them they were of course bare of plants, and probably saturated with salt, and must therefore have been slowly supplied as they became capable of receiving them by their gramination or contiguous and elevated areas, and the distribution of seed by the winds and waters. In this manner these plains might long since have been covered with trees as well gramina, if the progress of these natural causes had not been arrested by the migrations of animals, followed by those of Indians. It may therefore be concluded that these prairies do not owe their existence to the destruction of timber shoots by the animals and the annual burnings of the Indians, but that they are indebted for their preservation chiefly to these facts. These causes would no doubt be greatly assisted by the nakedness of the soil and the free admission of the rays of the sun. Forests attract rain and impede evaporation; but the reflection from the surface of vast plains scatters the clouds and vapors driven over them by the winds. If the Indians and animals were withdrawn, the skirts of timber would slowly enlarge, and as they enlarged they would overcome the excessive evaporation by shading the surface, and although the greatest elevations might perhaps be left bare, and the timber everywhere smaller than in lower situations, yet the forests would outmeasure the prairies, and the latter would become the exception instead of the rule. This has been the result along the line of the western border of the States wherever these impediments to germination have been withdrawn.

Mineral springs are profusely distributed over this great territory, especially within the localities where metallic ores prevail, and in the mountain regions. Lewis and Clark notice the following along the line of the Missouri: 150 miles above the mouth on Manitou Creek, several salt springs, and a number were higher up—a spring of salts, &c., near White river, and several others still higher up. In Saline county, Mo., salt water is very abundant. The like is true as respects many portions of Iowa and Arkansas. On the south bank of the Platte river there is a copious spring of salt water, and saline efflorescences cover the surface of large portions of its bottom as with hoar frost. A large district along the head waters of White and Running Water river, branches of the Missouri, are saturated with salt, and oozing springs of it are freely distributed over it. The grand saline near the Neostro, 40 miles above its mouth, consists of a number of springs, affording a sufficiency of salt water to justify extensive works. There are a number of salinas, or mines of pure salt. The most northern is fifty miles west of the Missouri, and forty south of the Platte, where the Ottoes and other tribes procure salt. The mine is inexhaustible, Capt. Nathan Boone, in 1843, during a journey between the Canadian and the Upper Arkansas, found efflorescent salt in many places. On the Red fork, he remarks in his journal, "The whole cove on the right of the two forks of the river appears to be one immense spring of salt water, so much concentrated that as soon as it reaches the point of breaking forth it begins depositing its salt. In this way a large crust or rock was found all over the bottom for 160 acres. Digging through the sand for a few inches, every where we found the solid salt so hard that there was no means in our power of getting up a block of it. We broke our mattock in the attempt. In many places through this rock-salt crust the water boiled up as clear as crystal, so salt that our hands, after being immersed and suffered to dry, became as white as snow. Thrusting the arm down into these holes, they appeared to be walled with salt as far down as one could reach. The cliffs which overhang this place are composed of red clay and gypsum. Salt is still more abundant around the sources of the Arkansas and Canadian. It abounds also in the mountains.

Prior to the present session of Congress, Col. Benton undertook to declare the Western Territory open to settlement, in the teeth of Indian treaties, and direct contravention of the intercourse act of 1834; and he urged the Northern people to enter upon and cultivate it at once. Many persons broke up their business, sacrificed their property, and foolishly made the attempt; but they were met at the threshold by the Indian agents, and forbidden to set foot upon it without a regular license to carry on a bona fide trade with the Indians. This they could not procure, and their movements were checked. The Colonel's sincerity has been since fairly tested. He was anxious for its occupation, so long as a doubt of the right to occupy existed, because he knew that under such circumstances slaveholders could not remove there and have any protection to their property; but as soon as the proposition was made to organize Kansas and Nebraska, and leave the emigrants to decide the question of slavery for themselves, the Colonel shifted his position, and we hear no more from him about the importance of an immediate settlement. But if his zeal has abated, the zeal of the pioneers has not. They are pouring into Kansas by the thousand from Missouri and Arkansas, and into Nebraska by the thousand from Iowa and Wisconsin. I see that Horace Greeley and other active abolitionists are attempting to raise a fund to colonize Kansas with abolition propagandists and kidnappers. This may be fun for Horace and others of the leaders of the disunionists; but I can assure him and them, that if persisted in, it will be death to the innocent and misguided fools who are sent there. The pioneers of the West, and the men of Kentucky and other slave States, have no objection to respectable Northern people, who come to the border as settlers in good faith, resolved to act as upright and orderly citizens, anxious for the promotion of the common good of all; but they cannot be expected to yield one inch, and certainly will not yield the tenth part of one, to the myrmidoms of a band of men who have already proclaimed their determination to break the bonds of the Union and expose the Southern States to the horrors of a servile war. Kansas will be a slave State in spite of the efforts of these incendiaries, and I advise only such of them as come with arms in their hands and hearts to wield them, to enter into this unholy crusade. Ere this reaches you, there will be more resolute men in Kansas determined to crush abolitionism and free soilism than can be mustered by Greeley and his gang in a twelve-month to come. It is to be hoped that the Indian titles along the border will be soon extinguished. They occupy by far the most valuable portions of the country, and when they are removed a prosperous community will soon spring up.

A few words of meditation, and I am done. The rambler over the plains, who is not annoyed with wagons or goods, or troubled with a tent, with only a blanket for his bed and a saddle for his pillow, has his imagination night after night put upon the wing. Having nothing to do, he usually lies down as soon as

> Night stretches forth her leaden sceptre,

and then his eyes are turned to the broad deep blue expanse, where not a dark line or spot is visible, filled with the blended light of every star whose rays have reached us during the profound six thousand years. And he may trace the light filmy clouds careering through the heavens, curling into unimagined forms of beauty, hanging in graceful folds like a veil of gossamer, streaking the distant horizon with varied and flickering colors, or rising in masses like the outlines of far off mountains, whose summits are crowned with eternal snow. How profound is his wonder that amid the busy and grovelling scenes of toil and business, his mind has so seldom been elevated to the contemplation of things so grand and magnificent; that their sizes, their motions, their distances, and the vast and various circles in which they move, should have occupied so little of his attention, and been so seldom appealed to to elevate his feeling, and animate his gratitude to their Divine Author. He discovers how futile was the fancy of that poet who complained—

> What lovely visions yield their place,
> When science has withdrawn from creation's face
> The veil of enchantment—

for the hand of science can never withdraw that veil, but only raises it here and there to open new fields of beauty for the imagination to revel in, or furnish it with more imposing images of Omnipotent power.

The features of the prairie, after a time, become somewhat wearisome. They are so indefinitely marked, and there is such a constant succession of objects bearing a general resemblance, that the mind tires of the contemplation. The objects become too familiar. There is not enough of bold outline and striking contrast. The forms are too regular, and the shades blend so imperceptibly that the different portions of the picture are not sufficiently distinct. The same lights and shadows illuminate and darken every locality. But a rich compensation awaits him who has the perseverance to encounter the dangers and privations of the route, when he approaches the mountains. At the distance of sixty miles their snow clad peaks make their appearance above the horizon, dim, white, and indistinct, like a long line of icebergs seen by moonlight. Day after day their forms seems to ascend higher and higher, and their outlines become more irregular and ragged, and at their base a long dark stripe stretches throughout their course, widening and widening until it seems like a dark and fathomless gulf separating the world of reality from the bright world of imagination beyond. Then this dark void slowly dissolves, and out of its shadows a long line of bleak, sterile, ferruginous buttes and rocks, whose soilless surfaces refuse sustenance save to a few scattered stunted pines and lifeless mosses, emerge to the view. These are the Black hills, the outer skirts of which are diminutive knobs and cones, which increase in magnitude, rising successively to the height of several thousand feet, until lost in the great chain of the Rocky Mountains. It is as if the imprisoned fires generated for ages had at last moved the superincumbent masses, swelling them into knobs and buttes at the outer circumference, and increasing in power as its activity concentrated, until the hills were pressed up to the clouds, and the mountains, "from their deep foundations torn," shattered and riven, were thrown into the upper air, and had fallen into enormous piles of unshapen granite. Into the valleys, hollows and ravines, the *detritus* of ages has accumulated, and the genial and generative powers of nature have created scenes of primeval beauty, reminding us of the prophetic new order of creation which is to spring out of the chaotic elements of a ruined world.

In the winding hollows of the black hills the wayfarer successively sees long valleys of bleak, stony surfaces, covered with the stiff, jagged, and frosty-leaved artemisia, and beautiful little bottoms profusely overgrown with grass and flowers, where the mountain sheep, the buffalo, and the antelope, delight to ramble, browsing on the rich grapes and drinking from the limpid fountains which gush from the hill sides. These are the localities, too, where the hunter finds his richest reward. Stealing around the brows of hills and rocks, whose points shade him from the view, and whose summits prevent the wind from giving notice of his approach; or, crawling on the surface through the green curtain of tall grass until he gains a point from which his shot may tell, he rarely returns, if game is in the valley, without a store of provision to make glad the inmates of his lodge.

But it is beyond and in the midst of the mountains that the mind is filled with admiration. In their valleys he may find lakes, and streams, and torrents, and trees, and vines, fruits and flowers—lakes whose broad bright surfaces expand in shining sheets of silver, still and calm as "slumbering infancy," save when their bosoms are disturbed by the plash of glittering fish as in their gambols they leap into the air and plunge into the wave; streams and torrents whose limpid waters spring in rainbow hues from the wild rocks, or ripple and wind in gentle music through the vale; trees whose tall forms clothed in dark foliage throw an impenetrable shade over his head; vines whose erratic branches stretch in festoons from limb to limb, bending beneath the weight of their berries; fruits whose rich pungent taste Lucullus would have coveted, and flowers, whose varied hues flash like the gems and stones on an Eastern monarch's robe.

If sated and cloyed with exhibitions of beauty and fragrance, he has but to pass through yonder fissure, opened up by the volcano, the dark grey walls of which rise hundreds of feet above his head, and open his eyes upon the scene beyond. He will behold a long dark valley of desolation, upon the vital energies of which the Angel of Death has set his seal. Broad slopes of discolored marl spread over the surface, with here and there black spots of extinct cinder; huge masses of granite, tumbled in inextricable confusion, with their ferruginous sides discolored with age, and plains of sand, and fragments, under the hollow surfaces of which the hoarse, roaring, and pent-up waters struggle for an outlet.

If scenes of grandeur and sublimity are desired, let him ascend the summit of some peak whose point pierces the clouds far above its rivals. In his progress he will wind through ravines, and around rocks, and labor up narrow paths which the rains and melting snows have washed out; sometimes between jutting cliffs; sometimes on the very outer edge, where hundreds of feet below the tall trees seem shrunken into shrubs; and anon he will land upon an immense broad terrace, spread thousands of yards around, with a bright lake gleaming in the refracted light, and brilliant alpine plants waving their beautiful flowers upon its margin. But he must soon leave this oasis; for when he turns his eyes upward, the goal of his ambition is so far beyond the ken of his vision that he feels as if, instead of ascending, the whole mass under him had been receding, like the mountains of ice over which Parry attempted to toil his way to the pole. He wades through snow-wreaths which the winds have eddied into the indentations; over bright, glassy surfaces of ice, and fragments of rock, until, wearied and footsore, he at last falls exhausted on the pinnacle. But not long he remains exhausted, for the objects which surround him banish the sensation of fatigue, and re-invigorate all his powers. Far away in the distance the tiny waves of streams whose accumulated waters are destined to bear upon their bosom the freighted fleets of commerce, wind their solitary way,

> Through mountains, plains—
> Through empires black with shade,
> And continents of sand.

Nearer along the broad successive terraces of the opposite mountains, where the ever green pine, the pitch, with its stiff angular branches and sombre hues, and the spruce, with its