THE DOME OF THE CONTINENT.

THE LIFE-LIMIT, GRAY'S PEAKS.—[SEE PAGE 35.]

IN these days, when every one may travel, and the great plains, the Sierra Nevadas, and even the beauteous Yosemite Valley are becoming trite and common, it will please the tourist to learn of new routes of travel, fresh sights and places to be seen. Some who have rushed across the continent to see the wonders on its western shore will yet gaze with amazement upon equal or greater wonders which they have hurried past without even imagining their existence; for men may journey and see nothing, may travel and have little for their pains. Thousands boast their overland passage from the Atlantic to the Pacific Ocean, and return, who never saw the Rocky Mountains! Not that they traversed them in the night, nor that some of the mountain ridges were not seen; but that the sea of towering snow-clad summits which mark the eminent majesty of this great range were to them distant or invisible, hidden by the foot-hills through which they passed.

Of the whole Rocky chain Colorado Territory possesses the chief mountains—certainly the most famous; for here, amidst a multitude of others, each one a monarch in itself, rise Pike's and Long's Peaks—names linked with the earliest history of the West—the landmarks of prairie voyageurs in days gone by. Further west, Gray's Peaks, Mount Lincoln, and a host besides tower, with summits crested with eternal snow, and, circling, surround those beautiful and wondrous valleys, which Rasselas might envy—the North, Middle, and South Parks. Here is the snowy range, the icy mountain wall which parts Orient from Occident—the "divide," as it is popularly called, where melting snows discharge their waters east and west to the world's greatest and most widely separated oceans.

The days of danger are past in Colorado. Upon most of the stage routes the traveler is as comfortably kept and cared for as at many Eastern summer resorts, and already Saratoga trunks are seen where but a dozen years since the bear and deer only were met. Many tourists come to see the gold mines, perhaps longing to pan out some "dust" for themselves; mineralogists and geologists here find the earth's wealth thickly spread before them; the botanist meets a new and splendid flora, and cactus growing thriftily beside the snow; the eyes of the ornithologist are dazzled with the dark blue-green iridescent plumage of the bold and fearless Rocky Mountain blue jay, and he starts at the sudden cry of the large, garrulous, black and white jackdaw. The sportsman looks to his rifle as he sees the monstrous tracks of the cinnamon grizzly, and by the camp-fire listens with surprise to stories of adventures with "mountain lions," of hand-to-hand encounters with huge elk, or of thrilling climbs amidst the cliffs in pursuit of the big-horn or mountain sheep; regrets the absence of his fly-rod as he hears of cold crystal brooks swarming with speckled trout of the same old habits and as vigorous in their play as those that haunt the Adirondack lakelets or the streams of Maine. The Alpine tourist feels anew the longing for adventure as he hears of untrodden summits vying in altitude with the loftiest of the Swiss Jura; and the artist longs to stand in the presence of those scenes which have inspired the pencil of Bierstadt.

It is a great pleasure-ground, and soon to be the resort of those that leave the stale and hackneyed routes of European travel to see and appreciate the fresh glories of their native land; the summer home of those who, loving mountains, prefer to find

THE SNOWY RANGE.

their Alps this side the stomach-troubling ocean.

The visitor to Denver has at least a distant view of the mighty mountain chain, some of the peaks and ridges of the snowy range showing slightly above the darker foot-hills. Numerous interesting routes into the mountains diverge here; but passing most of them, we will go westward on the unfinished Colorado Central Railroad seventeen miles, over the last piece of prairie land, and entering the foot-hills, rest at Golden City.

Golden City is not as auriferous as its name implies. Its mineral wealth is principally coal, and its mills and well-utilized water-power make it the manufacturing town of Colorado. It is just within the foot-hills, which, edged with vertical sandstone precipices—from which one prominent summit gains the name of Table Mountain—almost surround the valley where it lies. From here a stage can be taken for Central City or Georgetown; and while Georgetown should be the objective point, those desirous of visiting the gold mines will proceed by way of Black Hawk and Central City, re-

THE BIG-HORN.

gaining the other stage at Idaho, the celebrated soda springs. This is the route for the Middle Park *via* the lofty, snow-bound Berthoud Pass. On this line also lies Guy Hill, famous with all stage-travelers and stage-drivers in the region for the steep, almost dangerous piece of road descending it westward—a zigzag way carved in the face of the mountain—down which the six-horse coach is driven at full speed.

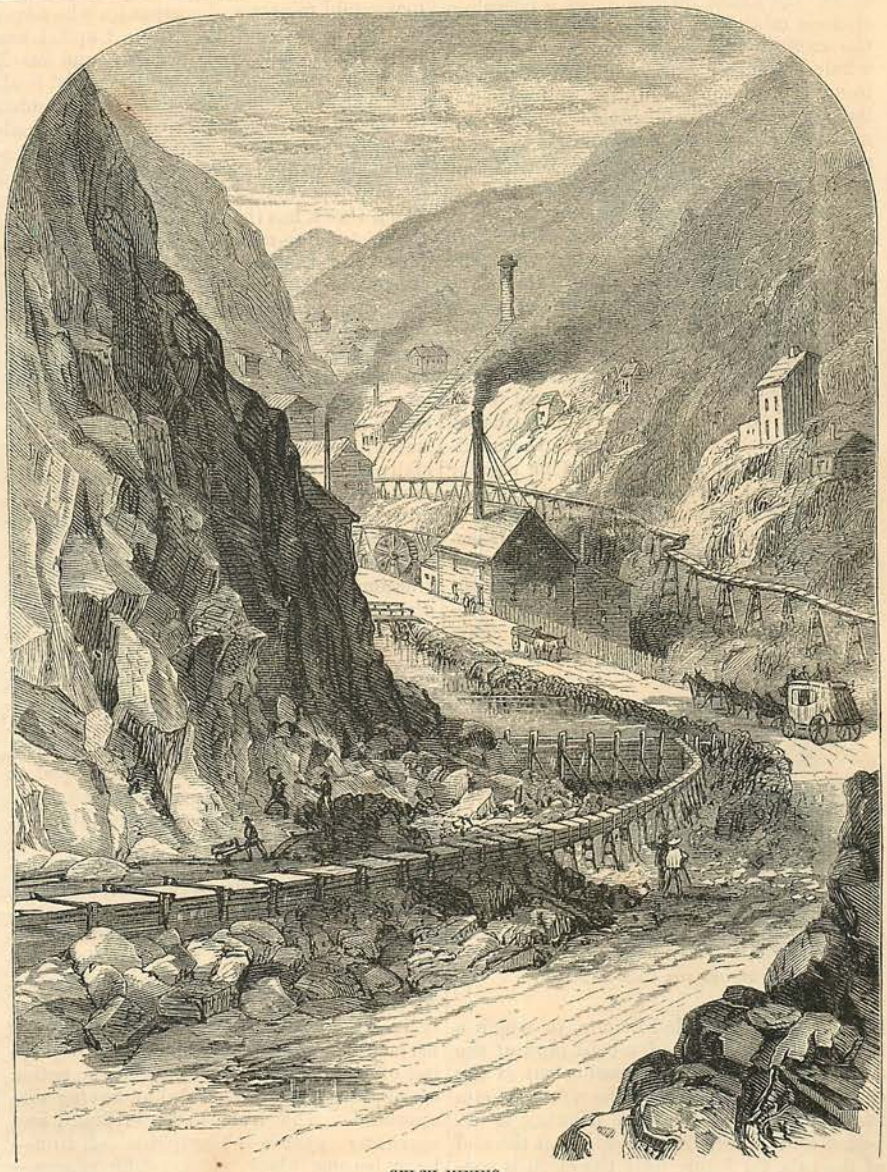
The scenery of a mining region is proverbially barren and desolate; yet here, though the axe has swept the timber from the mountains and left them a wilderness of stumps, the grand surroundings, the wonderful views of crests and chasms, compensate for the vandalism. Dinner is taken at a way-side inn, a small white frame building; then, after a few hours of up and down hill journeying, the gold mines are reached.

Suddenly debouching from a valley, we turn into a road running at right angles with our previous course. The mountains rise steeply up on either side, and along the road a stream, the north branch of Clear Creek—here any thing but *clear*—runs pent in a wooden trough, leaving dry and bare a rugged bed of cobble-stones, once its home. Among this drift men are shoveling and delving, wheeling barrow-loads of gravel to the trough or sluice-way—for this is "sluicing," a variety of placer gold digging or gulch mining. In one spot two men, apparently engaged in undermining the road, step back and look up, as though to stand from under, as we drive above; near by another stands beside the sluice with a sort of steel-pronged stable-fork in hand, and working the ringing tines through the swift-running muddy water, throws out the larger stones and gravel. All the peculiar features of a gold-mining region were here: little water-courses in board troughs ran upon stilts in various directions; skeleton undershot and overshot water-wheels abounded; and in the hills on either side were dark, cavernous openings, the mouths of tunnels or deserted claims.

Now the bottom of the narrow ravine or cañon is choked with mills, furnaces, and buildings, which often stand among the rocks and perch in almost impossible places. Through all this the road and the creek with difficulty find a passage, and while the one is frequently blockaded by teams, the other is forced through many a mill and compelled to do a deal of dirty work in the "washing way." Beyond are stores and shops and a Chinese laundry; and this is Black Hawk, the first of the string of village "cities," which are indeed but one, crammed into this red, gilded gulch, in three miles ascending 1500 feet, one town beginning where the other ends—Black Hawk, Mountain, Central, and Nevada Cities, each one greater in altitude than the other—having together a population of 4000 or 5000 souls.

Central City is well named: on all sides of it are mines, which are often as profitable as their names are singular. The Groundhog lode, on Bobtail Hill, is a veritable and wealthy mine, and, together with a host of others, is well worth visiting.

The Illinois may be taken as a type of what is here called a "quartz mine"—it being first understood that very little quartz mining is done in Colorado, the "pay rock," or ore, being principally iron and some copper pyrites, together with what is here commonly called brittle copper, with black-jack, or zinc-blende, and galena, all forming ores of the class called *sulphurets*. It is not often

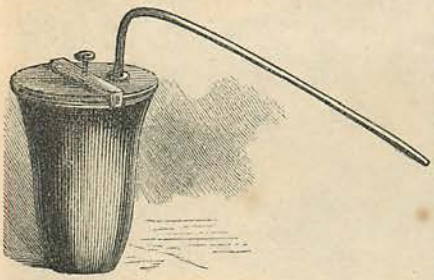


GULCH MINING.

that all of these minerals are found together. Though quartz always accompanies them in some form, the gold is here chiefly associated with the pyrites, and such is the unreliable nature of popular names that a lump of the glittering yellow "fool's-gold" is often called quartz by unlearned miners, while the same name is commonly applied to the pay rock, heavy with the cubic pyrites, by those who should know better. Native gold does occur in pure quartz rock, but it is seldom that very fine specimens are seen.

Gold mining here becomes systematized, and the history of a mine may thus be traced: The formation, or "country rock," is a common gneiss, apparently of Laurentian age; a vein or lode is found in it exhibiting "blossom rock," a yellow, spongy mass, charged with iron rust formed by the oxidation of the pyrites. The discoverer stakes out his claim, and if the "dirt pans well" the rest of the lode is soon taken up. At length the "top quartz," or "blossom rock," is worked out, and even iron mortar and pestle fail to pulverize sufficient of the now hard and refractory ore to pay the prospecter for his trouble; water, too, invades the mine and drives him out. Now comes another phase:

either the claim owners effect a consolidation—a mining company being formed—or the capitalist steps in and purchases the whole. Lumber and machinery are then brought over the mountains, and presently buildings appear, and steam hoisting and mill machinery, and true mining has commenced. Shafts are sunk, levels and tunnels made, the mine is drained, the ore brought out, and, if available, put through the stamp-mill. The product of the mill would not readily amalgamate with pure mercury. It issues from beneath the heavy stamps a grayish, sparkling, thin mud, and flowing over gently inclined sheets of amalgamated copper, bright with quicksilver, passes off under the name of "tailings," leaving the gold-dust amalgamated, fixed to the surface of the wide copper trough plates. From the surface of these plates the amalgam, thick with gold, is wiped at regular intervals, and when sufficient is collected it is placed in a cloth, the ends of which are gathered together and twisted. Upon squeezing the bag thus formed much of the mercury passes out through the pores of the cloth, while a heavy, pasty mass of gold, still silvered by the mercury, remains within. This last, with the cloth holding it, is now placed



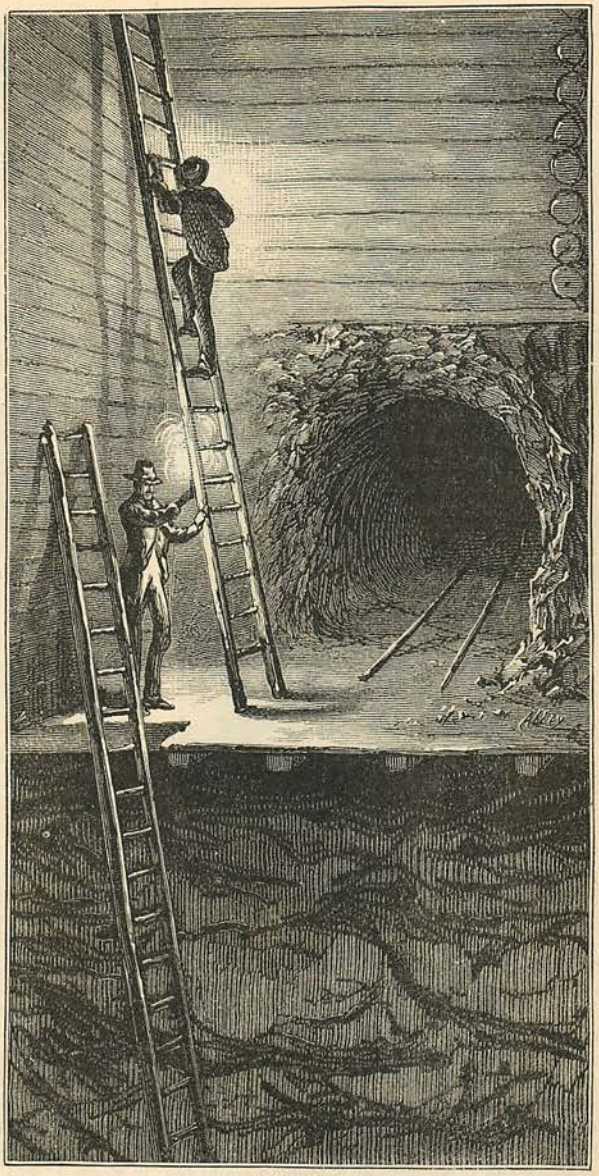
IRON RETORT FOR GOLD AMALGAM.

in a cast-iron crucible-like cup, to which a flat iron top is fastened, a bent pipe of the size of small gas tubing passing out at the centre, forming the neck of the retort. Upon the application of heat the mercury is expelled, and collected under water at the end of the tube for future use; the cloth is consumed, and the gold in its pores thus saved, while, if the heat be not raised to a height sufficient to melt the gold, its exterior still shows the shape and impression of the folds, seams, and texture of the rag or cloth which held it. In this condition is most of the raw gold in the possession of the banks of these mountain cities, though the tin pail or box in which they obligingly exhibit it will often contain at the bottom a gleaming yellow metallic sand and gravel, which have an intrinsic beauty, and are the "dust" from many a placer miner's pan.

The gold of Colorado is thus obtained; but wealth and fortune are gathered by many gold miners and companies who never see the metal that they dig. Capital has introduced a division of labor, and much of the poorer ores, in which the metal is altogether invisible—locked up and hidden in the sulphurets—never enters the amalgamator, but, after having its value ascertained by assay, is sold at fifty dollars and upward per ton at the smelting furnace. Black Hawk has the fame of possessing both the first stamp-mill and the first reduction-furnace of Colorado. The smelting-works, erected in 1867, and in charge of Professor Hill, their projector, are famous throughout this region, and are to the miner the equivalent of the grist-mill and the factory of the agriculturist. In each case the master of machinery and of skilled labor buys the crude material from the producer. At the smelting-works the poorer ores, and especially those of auriferous copper or argentiferous galena, with the tailings of the stamp-mills, are purchased. The process is the reduction of the unmanageable sulphurets by fire to a condition suitable for the rapid extraction of their precious contents. This disintegration and destruction of the pyrites is but a shortening of that natural process which has made the outcrop of every vein of the sulphurets a porous mass of blossom rock. Even at the smelting-works the pyrites are compelled to aid in their own destruction, and in the open yard of the works, broken in small lumps, they are heaped in dome-shaped piles, perhaps eight or ten feet high, in form not unlike charcoal kilns. A layer of wood underneath the pile serves as kindling, and before it is entirely consumed the pyrites themselves take fire, and, burning slowly, give off dense, stifling vapors of sulphurous acid gas, sufficient, one would think, to bleach even the dirty hats of the bull-whackers passing on the road. As this slow combustion proceeds, especially in cold weather, the tops of the heaps become incrusted with a bright yellow coating of brimstone; but at length the action ceases, about half the sulphur having disappeared. The once hard, brilliant, and sparkling pyrites—bisulphide of iron—have become black, clinker-like masses—protosulphide of iron, like that used in the laboratory for evolving sulphureted hydrogen. This particular protosulphide is too valuable for laboratory purposes; and after calcination in a long range of brick ovens, where, under intense flame-heat, it is kept stirred with iron rods, an additional portion of sulphur is expelled. It now assumes the form of a black or brown powder, and is finally thrust into the smelting furnace, which is of the reverberatory kind, strongly built of fire-brick, supported and held by a system of broad iron bars passing around and over it, and bolted and clamped together. The work of this furnace is con-

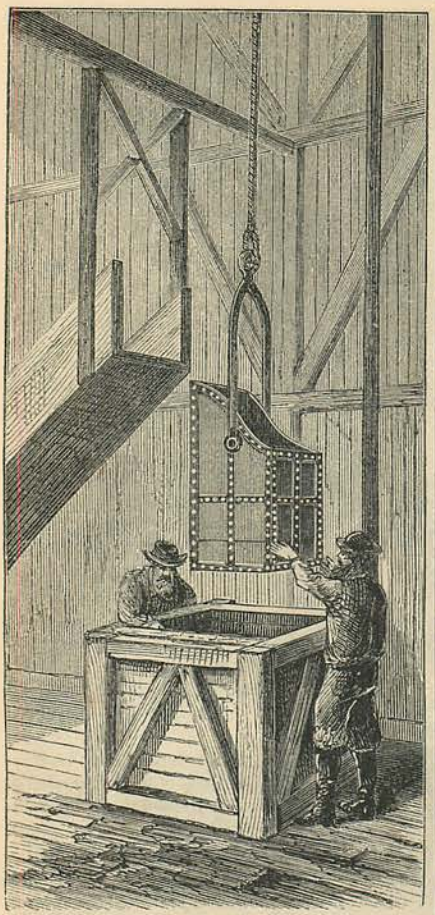
stant, the temperature maintained terrible to contemplate, and gazing in at the small door by which the process may be observed, nothing is seen, when the heat is greatest, but a white glare as dazzling as the sun. Into this furnace the roasted ore is put, an average similarity in its composition being secured by the mixture of auriferous, argentiferous, and cupriferous ores, as may be necessary, the design being to form a compound which, when melted, will react and separate into an upper and lower liquid, the one rich and heavy, the other light and containing almost all the dross.

The charge being introduced, the intense heat, *which acts upon its surface*, soon reduces it to a molten condition; but the process does not stop here, for the heat continues and grows *more* intense, till it seems to threaten the destruction of the furnace and of the great tower-like chimney, up which the white-hot blast rushes furiously. After some hours the watch-door is opened, and when a peculiar brightening of the surface of the lake of molten metal is observed the fire is withdrawn, and presently an opening on one side of the furnace, till now stopped with fire-clay, is tapped, and the lighter surface metal allowed to pour out into rough moulds of dry sand. This is worthless slag, being a mixture of silicate and protosulphide of iron, and it is moulded merely that it may be more easily handled when cool, and carted away to form roads or fill gullies. It is remarkable for its hardness and brittleness; for, while glass may be scratched with it, a mass of a hundred pounds' weight or more will fall to pieces under the boot. After the slag has been drawn off an opening is made at the other side of the furnace, and the lower liquid, the brilliant fluid metal, is led into open sand moulds similar to those that held the slag. This product is called *matt*, and though of the same dark iron-color of the slag, is a mass of gold, silver, copper, and iron, with a small amount of sulphur, which seems to remain in combination with the iron. The Colorado treatment is over, and the precious black *matt* is forthwith started upon a journey across the world by rail and sea to England—or rather to Swansea, Wales—where the gold and silver are extracted, and the copper remaining is sufficient to pay not only the expense of transportation, but the cost of the various processes through which it has passed.



THE SHAFT.

But let us turn from the consideration of gold extraction to gold mines. One bright October afternoon, accompanied by Mr. Bela

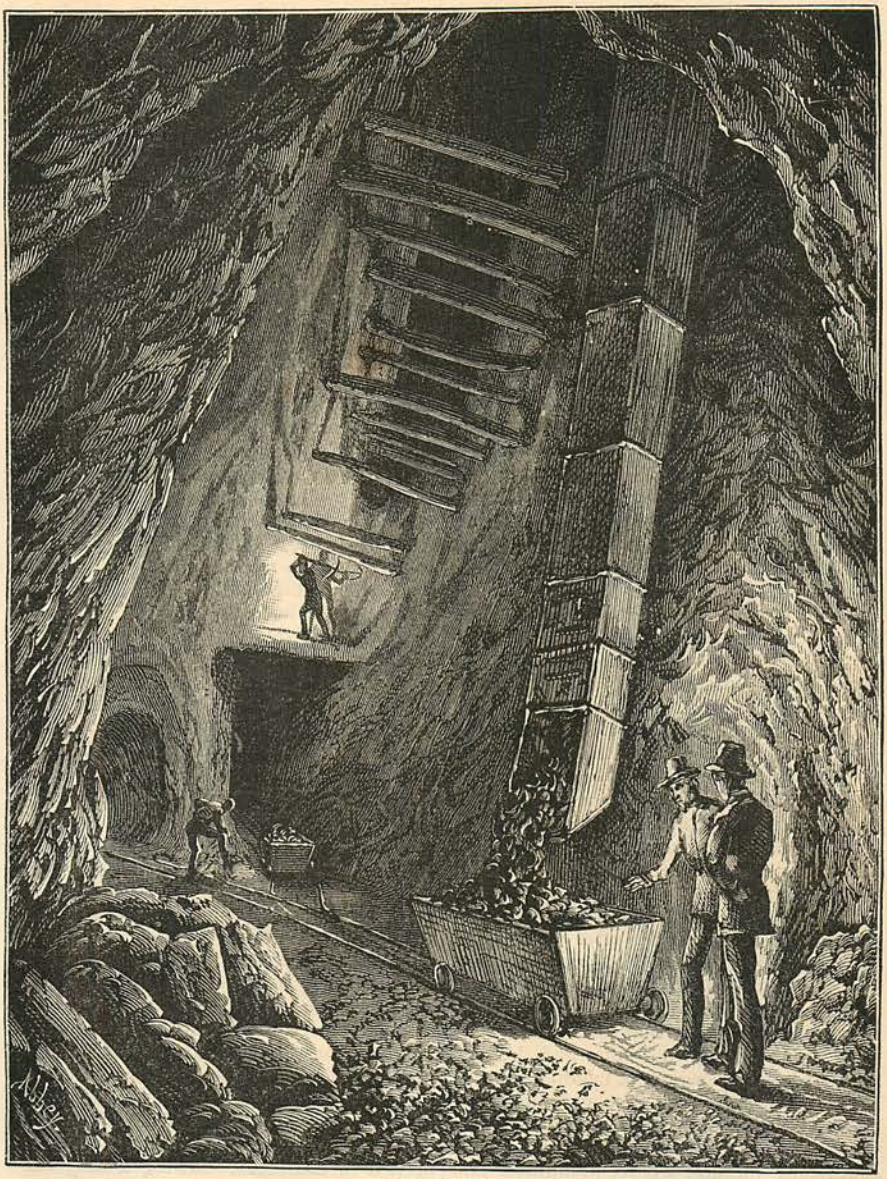


CORNISH SKIP.

S. Buel, of Central City, I examined a mine of which my companion was principal owner. The mine was situated on Quartz Hill, south of and above Nevada. In the superintendent's office we exchanged coats and hats for less worldly habiliments, and, provided with overalls of a color uncertain from the dry mud upon them, prepared to descend. The costume was nearly as picturesque as that of the oiled-skin-enveloped neophytes who haunt the rocks beneath Niagara. Having lighted our candles, a small trap-door in the platform covering the mouth of the shaft was opened, and disclosed a dark pit, perhaps eight or ten feet square at the mouth, dropping apparently fathomless into the depths of the earth. A steep ladder fastened to one of the walls showed the means of descent, and we went down into the pit; the trap-door closing left us in inky darkness, which the light of the feeble tapers we carried but partially dispelled. The steep, muddy ladders led on down till to the imagination the depth below was awful. Not a ray of light could penetrate it, not a sound or echo came up from it to indicate the existence of life below: the water dropping from the oozy walls, the scrap of rock detached, were lost and gave no sound. O gold! beloved of men, bright, glittering gold, gloomy and desolate are the pathways to thy home!

At last some slippery boards received our feet, and we paused to rest; then down again by shorter and more inclined ladders, with platforms at intervals of twenty-five or thirty feet. Occasionally dark, horizontal tunnels led off into the rock, which now formed the only walls of the deep shaft. These *levels* were passages to upper *headings*, and were not provided with rails or cars, the ore being cast below to another level, where conveniences for carrying and hoisting existed. Passing along one of these levels, we came to what was known as the skip shaft; for here, boxed off in one half of a shaft the huge *Cornish skip* carried the ore to the surface. This vessel, which has a carrying capacity of twenty cubic feet, here replaced the less spacious and heavier kibble buckets of old-time mines, and was of boiler iron, strongly bolted or riveted together, forming an oblong box, open at one of the smaller ends, which was also uppermost. A prolongation of the metal at one of the upper edges gave it a lip like that of a rectangular coal-scuttle, and served a similar purpose, preventing the spilling of the ore when the top of the shaft is reached, and the skip, by an automatic arrangement, discharges its contents. One engineer above, by levers ready to his hand, controlled both engine and skip, and, at a signal from below—the ringing of a gong-bell at the shaft mouth, by means of a cord or bell-rope passing down the shaft—would bring the skip with a rush to the surface, see it discharged, and send it swiftly down again.

Descending further, we reached another tunnel, and then a short ladder brought us to the lower level and the bottom of the shaft, a well hole, called the *sumph*, all the drainage of the mine being led this way, and the water here raised by the skip to the surface. Entering the level, which was partially floored, and had a narrow wooden railway, we went toward the heading, encountering a subterranean breeze which threatened the extinction of our lights. It was a singular avenue we traversed. Much of the ore above had been removed or worked out, and as only the ore had been taken, the bent, overhanging, and recurved walls rose above us till lost to sight in the gloom, making plain to the eye the form of a true fissure vein. The hanging wall, propped every where with short but heavy timbers, threatened us as we passed beneath, and ever and anon trembled responsive to the distant thunder of blasting. Now we passed an upward-leading shaft, arranged for ventilation,



THE HEADING.

and called a *winze;* then a board boxing was seen at one side, descending from some upper level, and crammed with ore, held back by a sort of slide-gate at the lower end. This was a *mill,* but more resembled a strange sort of hopper; it held the ore cast down by miners from above, and kept it from the rail track till a car was ready to receive it; when by simply raising the gate the ore poured forth into the car.

The heading was an interesting sight: numbers of miners were here engaged, some "pushing the level," and some on slight platforms of poles picking the gold rock from overhead; while the numerous lights, reflected with a thousand minute scintillations from the glittering walls, bright with mirror-like crystals of golden-colored pyrites, made the place appear a very cave of Monte Christo, and the walls rather of royal metal than of gleaming ore. Gold was every where; the very rock seemed to have taken a bright color, to make it a fit dwelling for the metal king. Gold under foot, gold on the walls, gold in the roof, *but really very little visible,* the brilliancy of the tawdry, tinsel associates

hiding its less brazen beauty. Seldom is it here seen until the stamp-mill and the furnace have done their work. The appearance of a sulphuret vein is worth description: the *vein-stone* does not entirely fill the fissure, and on either wall are lateral cavities containing drusy quartz, the slender crystals thickly bristling on the rock. Far more beautiful, however, are the large cubes of iron pyrites, which for perfection of shape and polish are unrivaled, while their size is a surprise to the Eastern mineralogist. No glass or metal mirror can equal the polish of their faces; but often I noticed them superficially inclosed or boxed in sheets of quartz as thin as writing-paper, which at a touch from the finger slipped aside and showed the gleaming facets of a virgin crystal, on which light never shone before.

It was late evening almost before we knew it. The miners had all left, and we hastened upward. Slowly climbing, laden with specimens, we found the ascent more toilsome than the descent; and pausing now and then to rest, noticed where the white sperm of the miners' candles had dripped upon the wet rocks of the shaft, and, changed in color by the copper salt in solution to a verdigris-green as vivid as the spring foliage of the forest, showed the mineral richness of even the water of this region.

Above-ground once more, we bade the superintendent good-night, and went quickly out into the frosty darkness on our return to Central City, and a comfortable though late supper at the Connor House.

Much may be seen at Central City even in a day or two. If the inquisitive traveler escape falling into some one of the numerous disused pits which make the mountain-sides a dangerous region after dark—if he have seen the famous silver mines at Caraboo, some twenty miles away, and the wild and beautiful Boulder Creek Cañon — he may take the stage that every afternoon goes rumbling off to Idaho, and, leaving mines, proceed in search of mountains.

Up, slowly up, we go, leaving behind Central and Nevada, till, gaining a lofty ridge, we see before us the whole bright, sun-lit southward picture, where, prominent and picturesque among other scarcely less romantic summits, rise softly and dreamily the Indian Chieftain, with Squaw and Papoose mountains at his side. Who would think that in that neighborhood lies the scenery of Bierstadt's "Storm in the Rocky Mountains," the Chicago Lakes and Chicago Mountain? Who would dream that that cloudless sky could ever be convulsed in such dark magnificence? Away to the westward are loftier, haughtier summits, dazzling in their spotless robes of white. But we have crossed the ridge, and to the crack of the whip go hurrying and jolting down to Idaho and the hot soda springs.

Idaho, named from the "purple flower" of the Utes—a rich, wild columbine here growing in profusion—is a quiet little village, and though 7800 feet above the sea, is at the bottom of the valley of Clear Creek, whose shallow, sparkling waters sever it, and give occasion for a rude, picturesque wooden bridge, over which the main road up from Golden and Denver has its way.

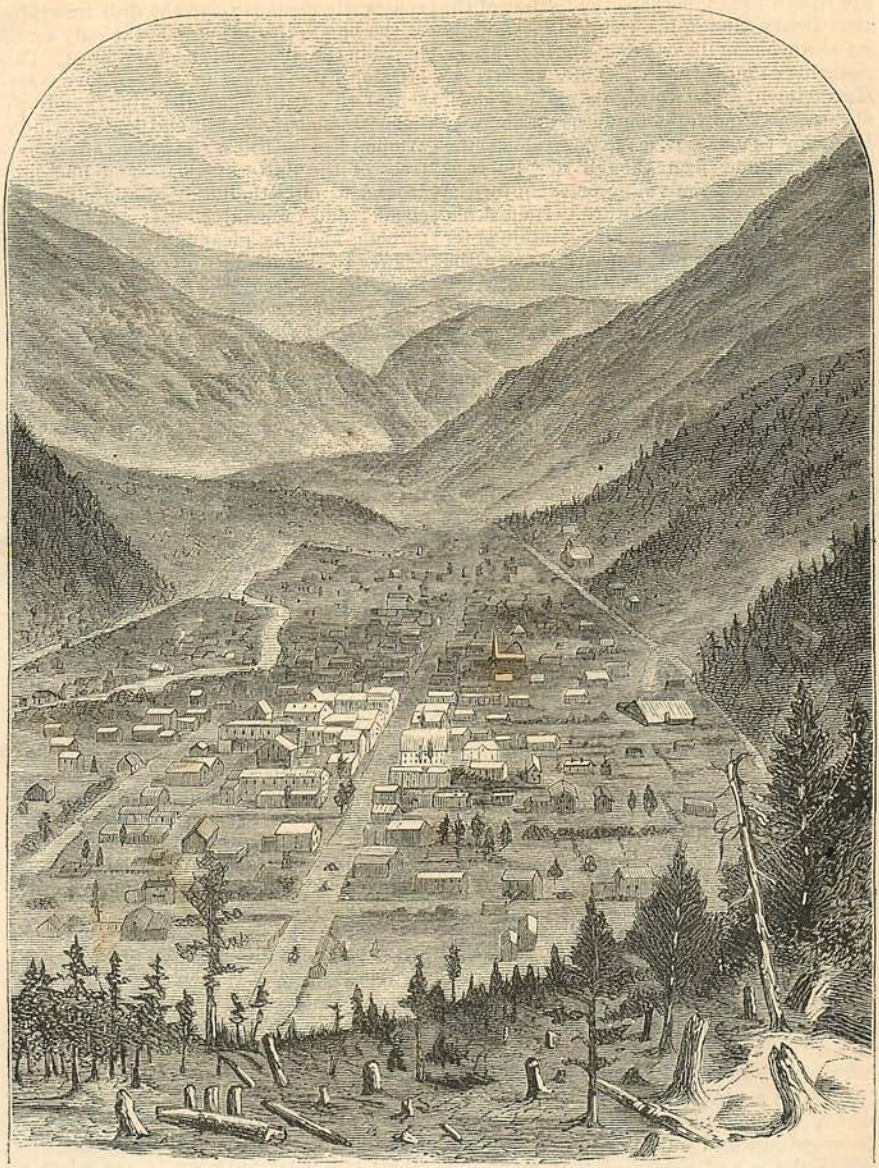
The springs, three in number, are on the south side of the creek, and the steaming alkaline water, issuing from the rock at a temperature of about 109° Fahrenheit, trickles down and forms a little brook of soda-water, better suited for washing than for drinking. This is genuine *soda*-water—cooking soda with nearly an equal amount of sulphate of soda (Glauber's-salt), and a considerable percentage of Epsom salt and salts of iron and lime, besides common chloride of sodium, forming together a mixture *probably* of great medicinal value, but certainly not agreeable when taken internally.

Idaho, being a quiet and cozy place, has become quite a resort, and few of the tired and dusty tourists from the East pass it without enjoying a hot bath. The waters have also the reputation of being curative in rheumatic and paralytic diseases, and for cutaneous affections no one can doubt their efficacy, for it is a most cleansing solution.

But now away for Georgetown and the end of civilization on the Atlantic slope, the place where silver bricks are used as paper-weights upon the public desk of the bank counter: fearlessly used, not because the spirit of absolute honesty has settled dove-like on the heads of teamsters and miners, but because the bricks of precious metal are much too large to pocket, and rather heavy for any one man to carry off.

Away, then, fast as six horses can whirl the lumbering coach, up a deep cañon valley sunk between almost precipitous mountains, along beside the flashing, hurrying creek. Spanish Bar, and Fall River with its wonderful Profile Rock, the semblance of a fierce human head, sharply projecting from the opposite mountain crest, were passed, and, as the sun's shadows lengthened, a cañon opened to the right, showing a long vista through the dark mountains up to where two white slopes bent grandly down to form the Berthoud Pass over the snowy range, its lowest point more than eleven thousand feet above the sea.

It was evening when the deep valley widened, and the mountains, parting to right and left, made space for a small plateau or upland prairie—a *bar*, in mountain parlance—then, circling and closing in darkly and gloomily, seemed to forbid further progress. Picturesquely spread and scattered on the plain which forms the pit of this great natural amphitheatre was Georgetown. Beautiful little city, nestled in this last romantic



GEORGETOWN.

nook of the mountains, with its broad streets and neat white houses, and Clear Creek winding through it like a ribbon of flowing metal from the mountain's silver veins! Beautiful valley, land-locked with granite ridges, up which the scanty evergreen forest creeps to meet the frosts of a perennial winter, and draw back, dwarfed and withered, down the steeps! It hardly seems to be a mining town, so little crowded and so quiet. How the thin air startles one! Strange spot to build a city! Europe has no place like it, for it is more than five thousand feet higher than the glacier-walled vale of Chamounix, and it is even higher than the far-famed snow-girt hospice of the St. Bernard. Yet it is *not* altogether a mining town, for already it has become a centre of resort for tourists, and in the Barton House it possesses one of the best hotels between the Rocky Mountains and the Missouri River.

Just above the town is the famous Devil's Gate, a deep chasm, cliff-walled, through which this branch of Clear Creek — Vasquies Fork—foams and leaps.

Twelve or fifteen miles from Georgetown

are Gray's Peaks, perhaps the loftiest of the true Rocky Mountains, rising, it is said, to an elevation of 15,000 feet above the sea. Securing the services of Mr. Bailey, of Georgetown, and two of his gallant black steeds, early morning found us on our way to make the ascent, cantering along the well-kept and firm though narrow road which followed the valley or cañon of the stream westward and upward. It must not be supposed that the road is maintained for the accommodation of tourists visiting the snowy summits. It leads to many a rich silver mine, and teams toil along it daily, dragging wagons heavily laden with gray, glistening ore.

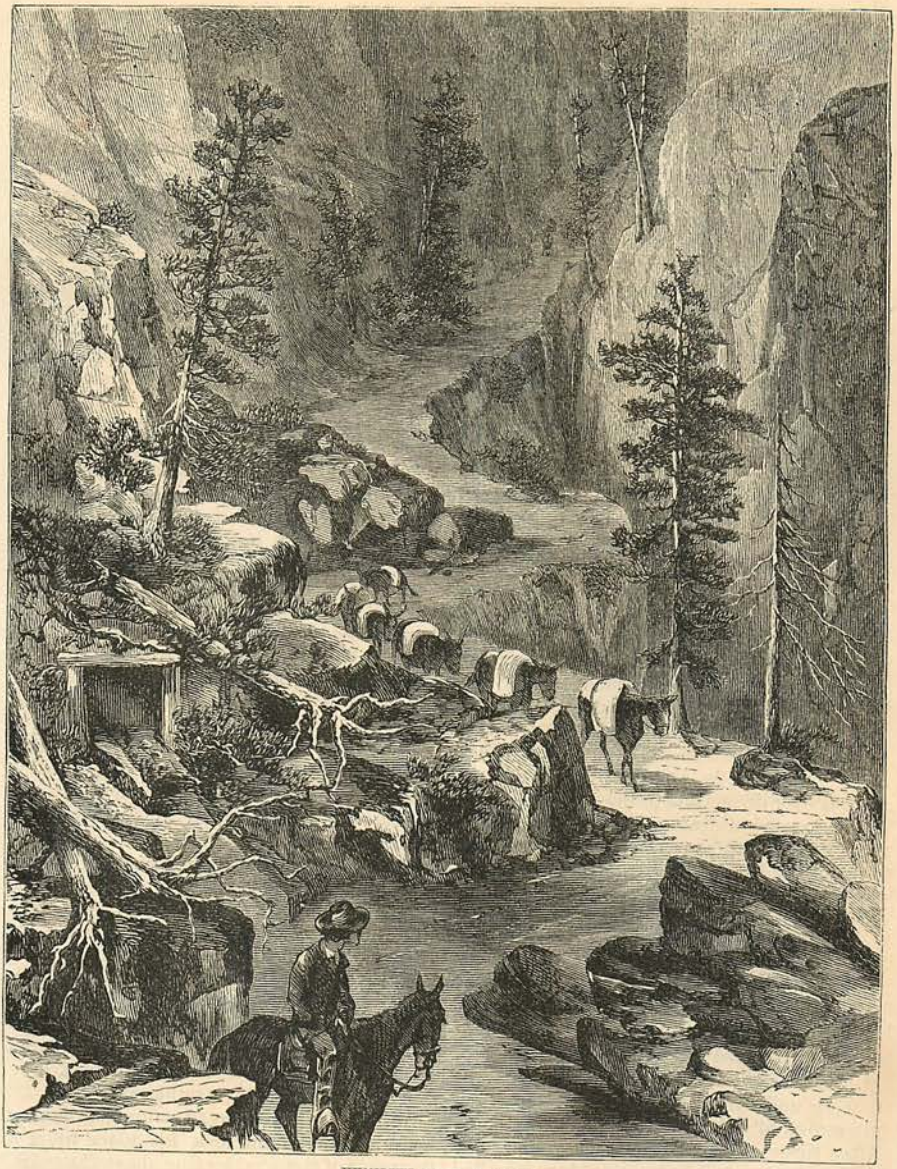
A zigzag path ascending the mountain-side from the road attracts attention. It is a trail from some silver mine among the cliffs, where wagon teams can not be brought. A dangerous path even for human foot: but see, here come *its* travelers, a sober-looking set of silver-gray donkeys! In single file, without bit or bridle, they come leisurely on, bearing upon their backs bags of silver ore slung across the pack-saddles. The sure-footed beasts neither slip nor stumble, and day after day toil on, receiving many kicks and no caresses; on Sundays only, gathering in squads, standing idly side by side with crossed necks, fondling one another; on week-days at their work, laden with precious ore, the very pictures of humility with wealth.

And here we notice a "tunnel claim," a slight excavation made into the rock, with a few timbers put up before it—two sides and a top piece—representing the commencement of the timbering of a tunnel, or adit level, to the lower portion of some vein opened on the surface further up the mountain. Such a tunnel claim, under slight rules, entitles its owner to a plot of land one or two hundred feet square around its mouth, and to property in any lodes, or metallic veins, he may discover.

The valley now opened beyond, and suddenly gave us a near view of the snowy range, which we had imperceptibly approached. How strange and solitary the aspect of the white slopes and ridges of that mountain desert! Yonder a peak of bold, sharp outline stands high above the rest; long, narrow ridges, ice-edged, leading upward to the summit, and dread crevasses and chasms forming defenses on its flanks. Is that our goal? "No; it is only the Little Professor," a much less summit than the one we have to climb. Now we turn sharply to the left, up into the mountains, following a narrow, steep, winding road, through the evergreen forest. Strange, though at Georgetown there was no snow, here the road is deep and heavy with it, and the whole scene is one of midwinter in the Eastern Middle States. The road, winding and turning, constantly ascends; and the dull trampling of the horses in the snow is the only sound heard in the silent and shadowy forest. This is October; at home the brilliant joyous season of ripe fruits and gleaming, gaudy foliage; *here* already chill and joyless winter. We had left far below the groves of aspen—trees of the fluttering leaf—and had now around us only the tall, majestic pines, the slender and graceful *Menzies* and *Douglass* spruces, and the gleaming silver-firs, that answer to the balsams of Canadian forests. Beneath the trees the snow was marked with rabbit tracks, and now and then the animal itself was seen—the great Northern hare, in fact—here already changed in color, and at times so white as to be hardly distinguishable upon the snow, while some but partially changed, mottled white and brown, were the more readily seen. To one acquainted with the habits of the animal this apparently premature change of color is remarkable. At this season of the year and in this latitude only here amidst the lofty mountains does the change occur thus early, those inhabiting less elevated regions much further north still retaining their brown summer pelage; and in the lowlands it is only when we reach the arctic circle, and the lowland zone of perpetual snow or ice, that we find the "varying hare" assuming at this season his white winter coat.

I was surprised to learn that wolves were not found in the mountains, and, from description, became satisfied that the mountain lion—which is here sometimes met with—is the panther or cougar of the Eastern States. Here, however, was the home of the monarch brute, the cinnamon bear, or cinnamon grizzly, as it is more properly termed.

It is a little remarkable that even the great savage of our continent grows less and dwindles in our estimation as we near his home. We learn not only that he does not always seek the encounter, but nowadays often has the discretion to scamper off upon the sight of man. We are not so much surprised to learn that he is not absolutely carnivorous, and that he is even capable of sustaining life upon a diet altogether vegetable; but what have we to say when we learn that this mighty beast, at certain seasons of the year, devotes the whole of his majestic mind and body to the capturing and eating of grasshoppers? It is but another example of the great law of nature, the preying of the strong upon the weak; but the strangest thing is the way in which he gets the *gryllidæ*. In the summer season these pests of plain and valley swarm up among the mountains, as though inspired with the desire which every living, progressive being has to press westward. At length in some of their airy flights they are caught by the winds, and wafted swiftly upward to the snowy range, their own strong wings



HUMILITY WITH WEALTH.

assisting. Here, alas! fortune and strength fail them, and, chilled in that unaccustomed atmosphere, they fall upon the snow lifeless. The winds that previously aided and beguiled them here now gather and drift them into funereal piles in hollows and crevices amidst the snow. Thus wonderful masses of them accumulate, and at this season Master Grizzly wanders over the snow fields, peering into crannies and crevices, and finding a hoard, deftly conveys pawfuls to his capacious mouth.

We saw nothing of these monsters, however; and now the strange and wondrous scenery withdrew my mind from them. We had reached a wide upland valley walled by naked precipitous mountains of dark gneissoid rock. The forest had grown thinner, the trees were smaller, and looking back over their tops, the depths from which we had ascended were seen, while other valleys, opening in various directions, diversified the solemn landscape. Before us the broad chasm valley came sloping down in a great curve, its terminus hidden by an intervening mountain at the right. At the left, sheer and rugged, rose M'Clellan Mountain, one long curved ridge of precipices; while on

the slopes below—the *talus* of the cliffs—were scattered the last stunted, twisted, and gnarled trees whose nature enabled them to stand the climate—the pitch-pine *(Pinus contorta)*, of shriveled and dwarfed growth.

A little further, and we crossed an ice-bound brook by a crumbling bridge of logs, which told that even here man had come in search of gain and profit. We were nearing our object, and the day was bright, clear, and so far favorable; yet the labor was still to come. Breaking a hole in the ice, beneath which the little stream went gurgling and murmuring, we gave our horses drink. A faint cry, almost lost even in that stillness, came softly quivering down as if from the sky or from the cliff-tops of M'Clellan Mountain. Glancing upward, a keen scrutiny at length discovered a small building (shed or shanty) clinging apparently upon the face of the precipice, more than five hundred feet above our heads! What could it be? What were those long ropes that sloped down at an angle of seventy degrees to a building which we now noticed in the valley?

It was the famous Stevens silver mine, located 12,000 feet above the level of the sea — nearly twice the height of Mount Washington, which, with the Baker mine upon the less precipitous mountain at the right, is probably the highest point in Colorado—perhaps in the United States—where mining is carried on. Those cables which seem but threads are endless wire ropes, moved over drums and pulleys by machinery in the lower building. The one descending carries buckets of ore; the empty buckets are returned by the ascending portion. Against the rocks hang other ropes, and there is some sort of pathway up which men, clinging and scrambling, may climb. Few care, even if permitted, to slowly pass up through the air in nothing but a kibble bucket, hung from a quivering, trembling wire cable. It was a giddy spot to look at, and I learned that it was considered the hardest place of labor in the Territory. The thin air saps the muscles and energy of the miner, and a single stroke of the pick tires his whole body. After three or four days' labor in the mine the haggard and nerveless workman is pulled up, and sent off down the mountains to Georgetown, to get breath and strength for another struggle; while if he have a trace of consumption, one effort is sufficient to send him back a corpse.

It was past, and out of sight; and we almost seemed to have reached the boundaries of the world, and the drear, barren, rocky wastes that lie between it and the blue ether of the heavens. We had reached the timber line. I turned my horse, and looked and wondered. The dark green forest had crept up into this high valley, and here ceased suddenly; in places it reached forward in short strips like courageous, undaunted squads of infantry pressing onward eagerly before their comrades upon the foe. How wonderful a war between natural forces—how obstinate the contest where they meet! The few daring trees that stood forth solitary before their fellows had been seized by some strong invisible power and twisted and contorted into shriveled, writhing agonies of dead, bleached limbs. Their tops resembled dry and weather-beaten roots, and all their life was near the ground, where some branches crept out horizontally, groveling to obtain the growth and breadth that were denied them above. Dread clime, where even the hardy evergreen is forced to yield!

We were above the timber line, here rising to 11,000 to 12,000 feet from the sea, above the limit of tree life, in the open valley where only the dwarfed forms of arctic or Alpine vegetation found existence. There was no road now, hardly a trail. At times our horses trod in snow, then their hoofs turned up the deep brown peaty soil of the Alpine bog, with its surface of microscopic plant growth, and now their iron shoes rang against fragments of stone. Suddenly we entered a forest—but what a forest! It hardly rose to our horses' knees, yet the trees were full grown. They were deciduous, their leaves all fallen, but their unmistakable growth and cottony catkins showed them to be willows. It was, in fact, a growth of the mountain willow *(Salix phylicifolia?)*, which, like the varying hare, is only abundant on the lowlands of the frozen North and the equivalent frosty regions of high mountains.

Hark! what are those strange ventriloquistic, chirping sounds, now near, now far, now like the cries of prairie-dogs, now like the piping of the partridge grouse?

"It's the conies—see!"

A little gray, mouse-colored animal, not larger than a Guinea-pig, thrust his head up out of the snow, and, motionless, as though he thought himself quite unobserved, glared at us with his wild-looking little eyes.

"Watch him; he's coming out."

With a slight awkward scramble, the tiny beast emerged, and took his place upon a fragment of stone projecting above the snow. Oddest of creatures, he had absolutely no tail!

It is peculiar to these lofty mountain deserts, and their little communities make them to the eye the equivalent of the prairie-dog of the plains. They are said to be a true cony, however, and no marmot, and consequently can not hibernate like the common woodchuck, but must remain amidst or under the deep winter snow, cutting galleries and tunnels through it to the herbs and stems on which they feed. Such channels or subniveous passages I found among the thick growth of mountain willows, but did not establish their object. The Rocky Mount-

THE CONY.

ain cony should not be confounded with the Scriptural animal, for, as already stated, it is a true cony, and is classed by naturalists with the rabbit kind *(Lepus)*, whereas that called *Shâphân* by the Hebrews owes its present name merely to a mistake of the English translators of the Bible.

"What was that?"

Something resembling a hand-breadth of snow fluttered up from among the willows, and flying a short distance, lit and was lost again upon the earth's white covering. Another and another followed, till presently the surface of the snow seemed animated.

"White partridges!" cried the guide. "How tame they are! See them, walking within stone's-throw!"

Truly it was an interesting sight. It was a flock of the rare willow-grouse, or ptarmigan *(Tetrao [lagopus] saliceti)*, another habitant of subarctic regions, here finding a congenial home. Like the Northern hare, it had already lost shade and color, and its spotless winter plumage made it all but invisible against the snow. We had roused them from their feeding ground, for they were living on the buds of the dwarf willow. After a vain attempt to shoot some with a revolver, for specimen for the taxidermist, we proceeded, satisfied that with a fowling-piece most of them could have been secured, for they are but little acquainted with man, and so tame that it is said that they have been taken by hand.

Here the valley was finally closed in and ended by the mountains, prominent among which were two lofty summits, towering and imposing still, and yet we stood more than twelve thousand feet above their deep foundations!

We saw the summits of Gray's Peaks. Grand, awe-inspiring spectacle! crests of a continent! The nearer, stern, dark, and precipitous; the other, still afar off, soft in outline, and sloping easily down to a great bed of snow and ice—the hidden, crouching, shadow-loving remnant of a glacier.

But how are we to reach that crest of snow? Midway, just beyond the great moraine, are steep precipices, dropping at the left to the very bottom of the valley, while their edges, glary with ice, slope at the right to the fathomless snow-drift which covers all that remains—if there be any remnant—of the old glacier.

"There is no difficulty," says my companion, calmly; "the trail winds along the edge of the cliff, from which the wind has blown most of the snow, and, except where the ground is slippery, it's perfectly safe."

Another half hour of constant ascent and I was upon the brink of that precipice; involuntarily drawing rein, awaiting the coming of my guide. The silence here was awful. The deep drifts at the right, on the margins of which our horses floundered fearfully, had forced us from the trail to the very edge of the cliffs. The soft, new snow, of unknown depth, looked treacherously calm and beautiful, and where it met the opposite mountain wall had a névé glacier appearance, upholding fallen boulders, and here and there scored with a long drift of rock and gravel, cast down from the over-

THE PTARMIGAN.

GRAY'S PEAKS.

hanging cliffs by frost, and which it was now its duty to slowly carry down, to form, perhaps, one last moraine. Beneath the other hand was the dark, dizzy chasm, the cliff descending sheerly six hundred feet and more.

We were above the region of plant or animal life, upon the margin of things inorganic; surely, it seemed to me, this might be termed "Life-limit."

But still far above arose the snowy crest which we designed to climb. The precipices passed, a long, steep slope of snow-clad rocks rose before us, and a narrow trail, winding in short precarious zigzags on its face, led upward toward the summit. The horses were now exceedingly distressed, and panted painfully after each exertion; their bodies were swollen from lack of atmospheric pressure. The narrow trail was hidden beneath drifts, and could hardly be followed; its turns were so abrupt, and the mountain's face so steep, that, when our horses plunged into deep snow, or stumbled over hidden rocks, it seemed as though horse and horseman must dash down headlong after the hurrying, scudding masses of snow, helplessly over the steep, glary, ledgeless crust, to be ingulfed in the deep snowy tomb below.

GRAY'S PEAKS, FROM GLACIER MOUNTAIN.

At length the fresh snow became so deep, and further progress in the saddle so hazardous, that, reaching a spot where there was standing ground, we left the horses loose, knee-deep in the downy drift, the guide sure of their remaining where we had placed them.

Making directly for the summit, in a few moments, chilled, breathless, and panting, we were compelled to rest. There was something startling about the thinness or rarefaction of the air. The lungs gasped, and yet, shuddering, almost repelled the cold, dry, strange atmosphere which offered itself to aid vitality. Too violent an exertion produced dizziness, and we were compelled to proceed with caution.

Suddenly, as we climbed, the western sky grew larger and more vast, increasing and growing as we clambered, till at once the whole westward view burst on us, and we were standing upon the very crest.

Before us, walled in by a vast mountain chain, whose average height exceeded 13,000 feet, whose passes (the Georgia, Snake River, and Berthoud) were from 8000 to 11,000 feet from the sea-level, far below, stretched like a vast topographical map, was the Middle Park, with all its subordinate mountain ranges, and numerous streams and rivers—the springs and sources of the Rio Colorado. Thousands of feet below, trees and vegetation gave color to the scenery, and marked the limits of plant growth. At the right, half-way down, in a huge basin hollowed in the gneissoid rock, was Lake Colfax, a dark green, glistening mirror. The park itself, with its valleys, plains, and prairies, stretch-

MAP OF GRAY'S PEAKS AND THEIR VICINITY.

ed away into the hazy distance westward, to where snow-crowned ridges, southward from the Rabbit-ear Mountains, were parted to give passage to the deep-flowing Colorado. Such was the view down the Pacific slope; eastward, fifty miles away across the mountain billow, like a calm ocean, lay the boundless prairies.

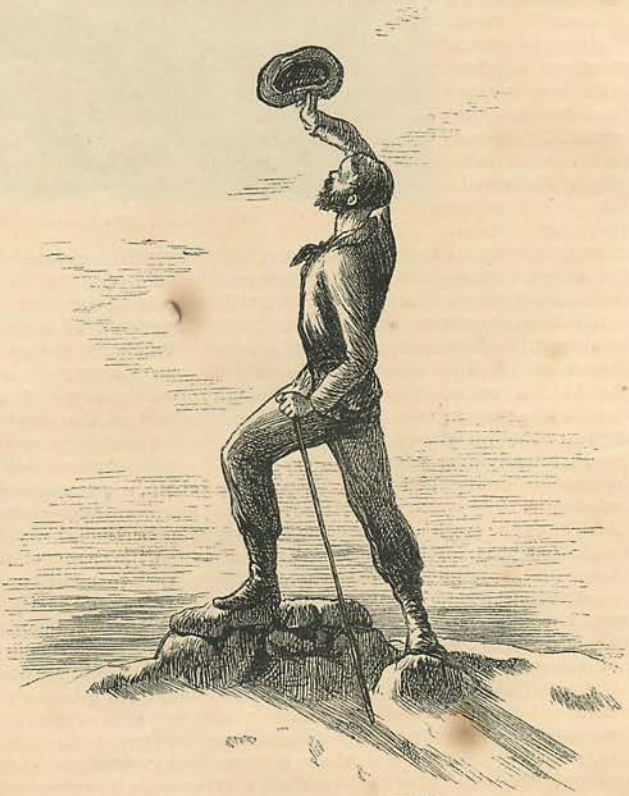
Spurned by our feet, heavy masses of snow sped eastward and westward down the mountain slopes, parting to the world's great seas. The one to thaw and glide through the dark cañons of the Colorado to the Gulf of California and the Pacific Ocean; the other to be hurried with the yellow spring floods of the Platte, Missouri, and Mississippi to the Gulf of Mexico and the Atlantic.

Call not a mountain range the backbone of the earth; to man the world is not a being, but a dwelling; rather liken these great ridges to the dome, the strange, weird, fantastically ornamented pinnacle and ridge-roof of his vast treasure-house. This was *indeed* the divide—the great water-shed of the continent, whose gutters are mighty rivers, whose cisterns are the seas!

But oh! how wonderful this mountain architecture—the unmarred handiwork of our God! Gazing down upon these frosty peaks, they seemed a sea of monstrous icebergs, a frozen ocean—a spectacle whose only equivalent would be such a scene as an ocean's bed laid bare, its waters driven back and stilled, and its deepest and most secret chasms all revealed.

The day was beautifully clear, a few light cirrous clouds only floating above. Away at the southwest were Mount Lincoln, the Sopris, and other peaks without number—a white sea of shrouded mountains; and far in the north rose Long's Peak, another chieftain, lacking only a few hundred feet of the height of Gray's Peaks. Below, in the glacial valley through which we had made the ascent, the limit of the forest was seen, at that distance appearing merely to be a dense carpeting of green; while it was remarkable that on the northern exposures of the mountains, and in the deeper ravines, the trees seemed to be more thrifty, and the timber line to be higher, than on the more open, sun-lit plateaux, or the southern fronts.

After lunching upon the summit to windward of some stones—supposed to represent a wall—we started downward, and found our horses shivering under their blankets.



THE DOME OF THE CONTINENT.

Then, leading them, we slowly but safely descended to the valley. Conies and ptarmigans were seen again, and the Alpine bogs passed; but there was no time to tarry: the sun, so bright upon the mountain-top, had here already left every thing to shadow. However, once below the snow and ice of this October winter, and upon good roads, we sped along at a swift canter, and shortly after dark dismounted before the Barton House, in Georgetown, receiving congratulations on our successful ascent at so late and unpropitious a season, while Mr. Bailey emphatically declared it the last trip which he would make that year.

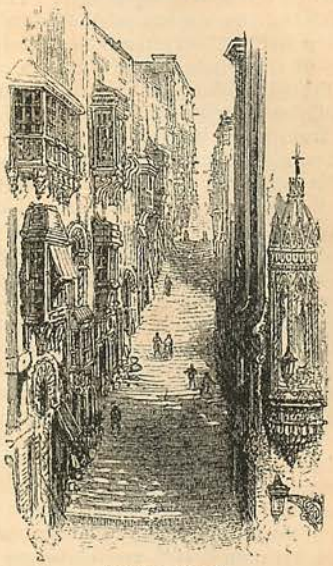
Withal it was a delightful ride, entertaining and instructive; and a ride of about thirty miles, the ascent and descent of a monarch mountain—chief of its range, and fourteen or fifteen thousand feet in altitude—is not made every day between sunrise and sunset. The Rocky Mountains are not seen till these peaks have been climbed; but in the summer season access to them is less difficult, even ladies making the ascent.

Geologically, there is hardly a more interesting ground than the region around Gray's Peaks. I have referred to the evidences of glacial action in their immediate neighborhood: the proofs of such action are conclusive. There are moraines and moraine dams and frozen lakelets, and I was informed by miners of the Stevens mine that frost is found two hundred feet deep in the gravel, and that it seems to be rather increasing in depth than decreasing. If this be so, it is a sufficient refutation of the theory recently advanced—that there is no line of perpetual congelation among the Colorado mountains; and it would prove that the present lack of ice-fields and great glaciers is owing to the deficient rain and snow fall, and the dryness of the atmosphere consequent upon the great distance of the oceans. The accompanying map of this mountain neighborhood will be sufficient proof to any geologist of the previous existence of glaciers there, and exhibits, also, the timber line, or height to which the forest rises.

The glacial evidences have, however, been obscured by subsequent dynamic action—frost force—the exposure to frost and heat having broken the cliff edges and shivered the rocks till moraines are covered and valleys filled with sharp angular fragments of stone. Nothing but glacial power could have grooved and cut the deep valleys through the mountains; nothing but frost could have made the crags as rugged and sharp as they now appear.

Again, Green Lake, three miles from Georgetown and some 10,000 feet above the sea, is said to have neither inlet nor outlet, and seems to be a veritable glacial pool. Singular to relate, it is called a "good place for trouting," though how the trout got there no one seems to know or care; and it is a favorite resort of the pleasure-seekers at Georgetown, who in sail or row boat pass merry hours on its crystal surface.

MALTA.



STRADA REALE.

"But not in silence pass Calypso's isles,
The sister tenants of the middle deep;
There for the weary yet a haven smiles,
Though the fair goddess long hath ceased to weep.
—*Childe Harold, Canto II.*

THE great commercial and strategic advantages derived from its central position, commanding all the chief avenues of traffic and communication between Europe and the Levantine ports, the excellence of its harbor (one of the most commodious and easily approached in the Mediterranean), the strength of its position, and the elaborate nature of its artificial defenses, all combine to give to the island of Malta an importance in the political and mercantile affairs of the nations inhabiting the south of Europe far in advance of that which would seem to be its due, were we to take into consideration solely its size and the number of its population. In all ages it has been considered as the key to the Mediterranean, and its possession was the surest guarantee for the sovereignty of the seas. Its walls stemmed successfully the hitherto irresistible tide of Ottoman invasion, to which even Rhodes, long deemed impregnable, and heroically defended, had to bow. In fact, in modern times it has never been taken save by famine or treason; and despite the advances the last few years have made in the art of human destruction, an unprejudiced observer, scanning the seemingly endless ditches, galleries, scarps and counter-