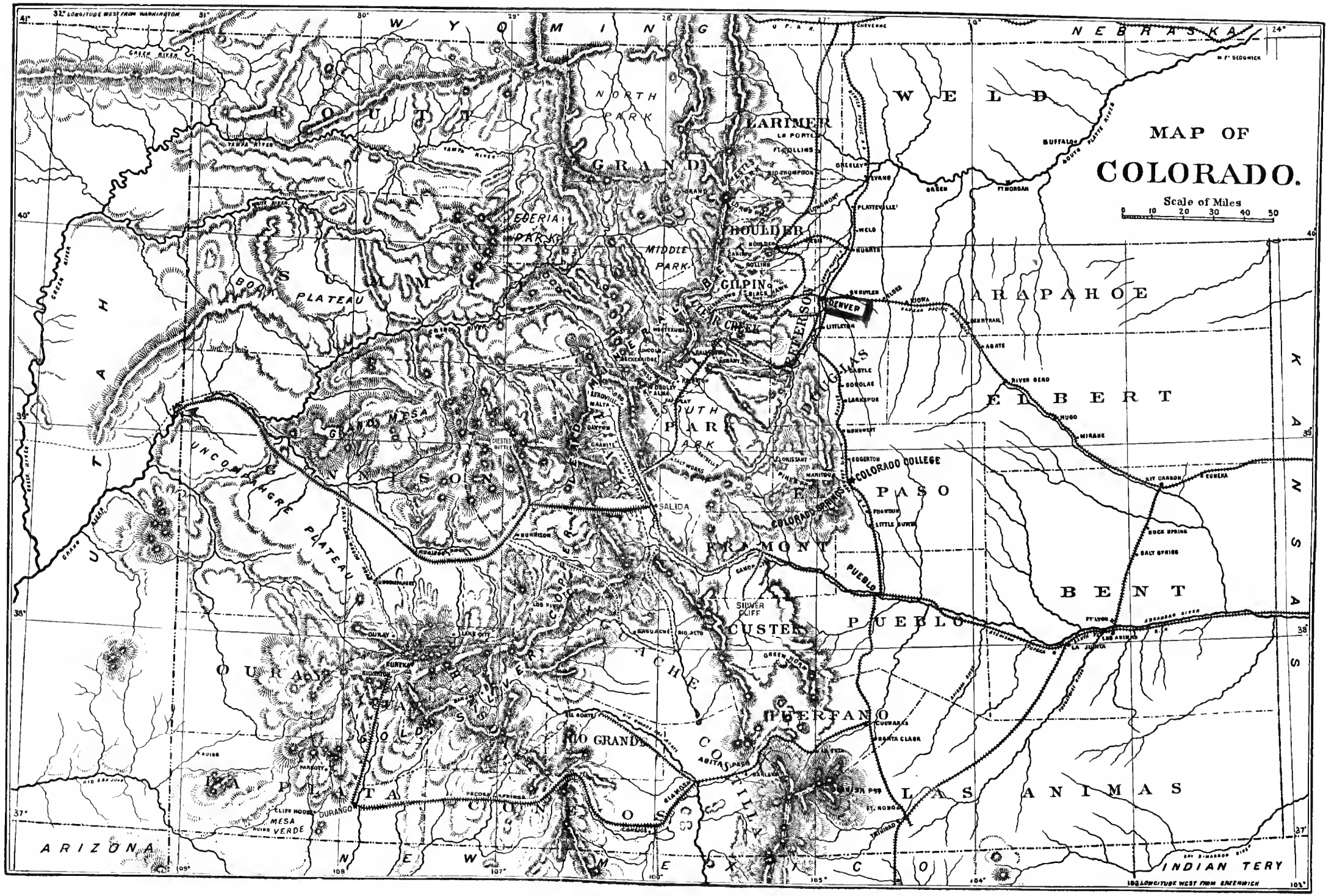
COLORADO AND HOMES IN

THE NEW WEST


MAP OF
COLORADO.
Scale of Miles
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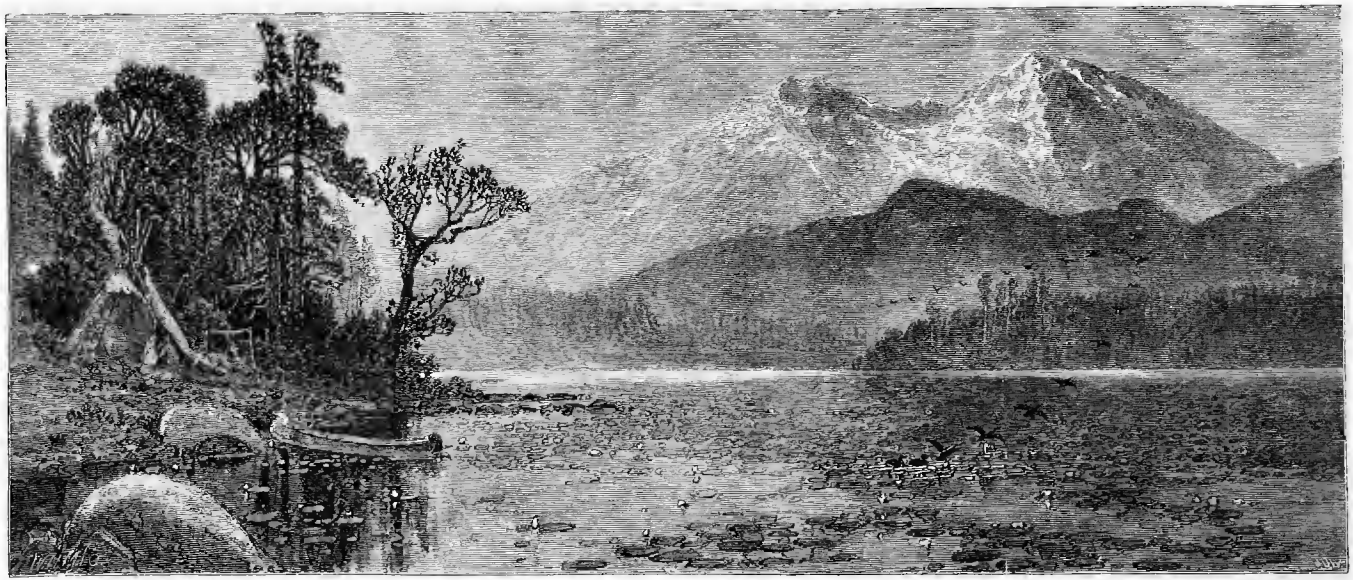
WYOMING
NEBRASKA
KANSAS
UTAH
ARIZONA
NEW MEXICO
INDIAN TERY
ROUTT
JACKSON
GRAND
LARIMER
WELD
BOULDER
GILPIN
CLEAR CREEK
JEFFERSON
DENVER
ARAPAHOE
ELBERT
DOUGLAS
LINCOLN
EAGLE
PARK
SUMMIT
PITKIN
GUNNISON
SALIDA
CHAFFEE
EL PASO
COLORADO COLLEGE
FREMONT
CUSTER
PUEBLO
BENT
HUERFANO
LAS ANIMAS
OURAY
SAN JUAN
LA PLATA
RIO GRANDE
COSTILLA
SAGUACHE
MESA VERDE
DURANGO
NORTH PARK
MIDDLE PARK
SOUTH PARK
GRAND MESA
UNCOMPAHGRE PLATEAU
BOOK CLIFFS PLATEAU
COLORADO SPRINGS
PUEBLO
DENVER

MAP OF COLORADO.

COLORADO:

AND

HOMES IN THE NEW WEST.



LONG'S PEAK, FROM LILY POND.

COLORADO

AND

HOMES IN THE NEW WEST.

By E. P. TENNEY,

PRESIDENT OF COLORADO COLLEGE.

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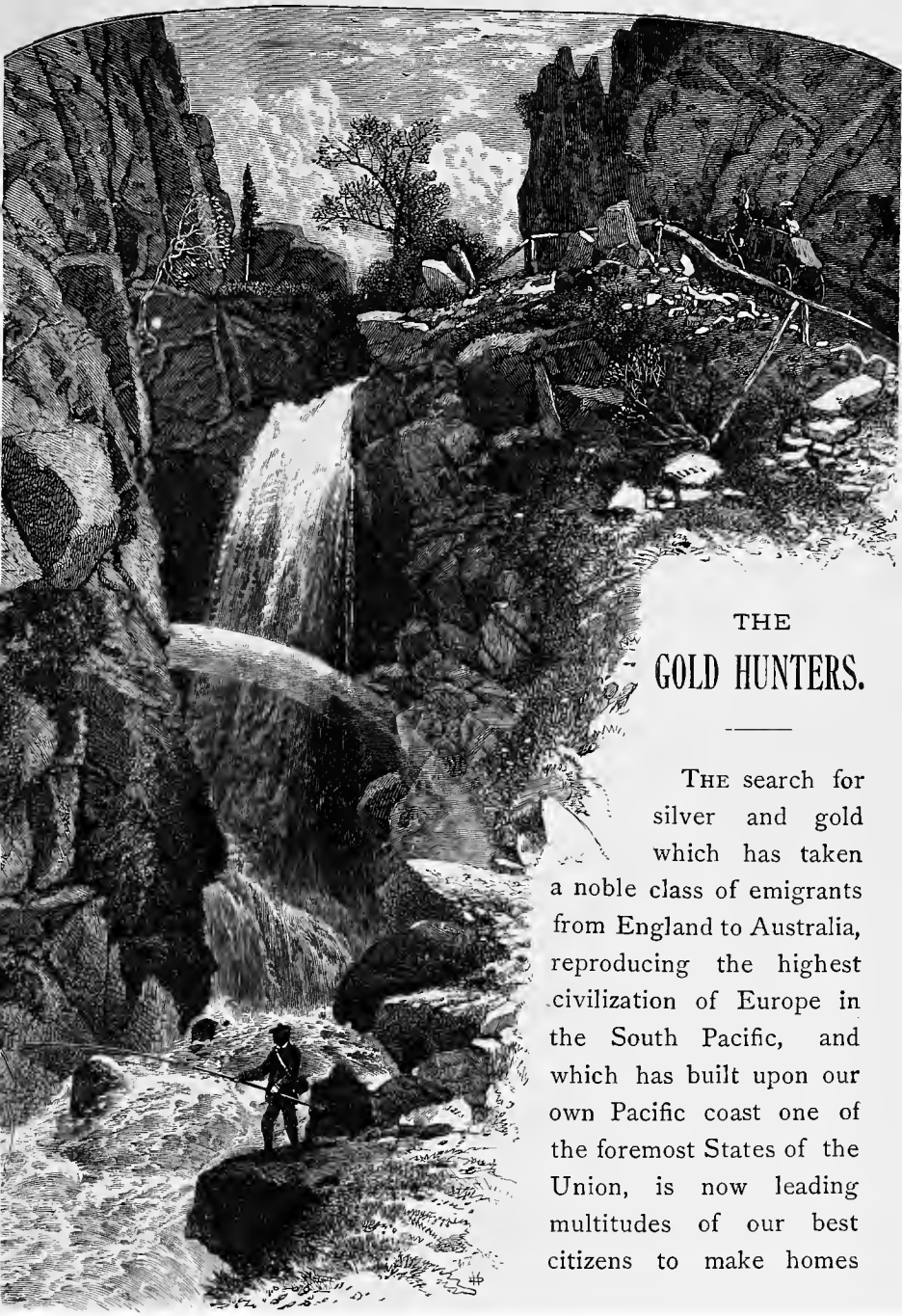


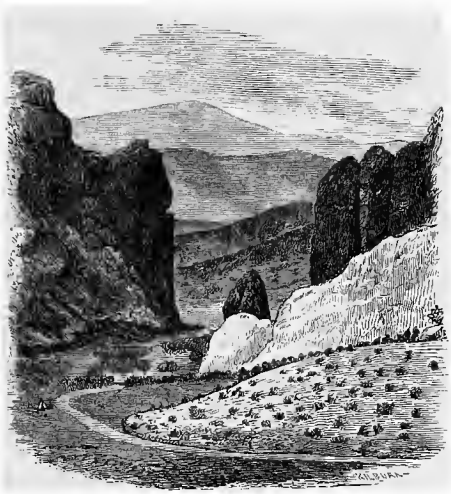
RAINBOW FALLS, UTE PASS.

THE GOLD HUNTERS.

THE search for silver and gold which has taken a noble class of emigrants from England to Australia, reproducing the highest civilization of Europe in the South Pacific, and which has built upon our own Pacific coast one of the foremost States of the Union, is now leading multitudes of our best citizens to make homes

for themselves upon the Rocky Mountain plateau. This passion for mining is the instrument of Providence in transferring populations to new seats of empire. Albeit the resources of Colorado, and of other portions of the New West, will sustain so vast a population that these regions would in any event be soon peopled by the ordinary laws of emigration, the process is quickened by the most astonishing discoveries of precious metal.

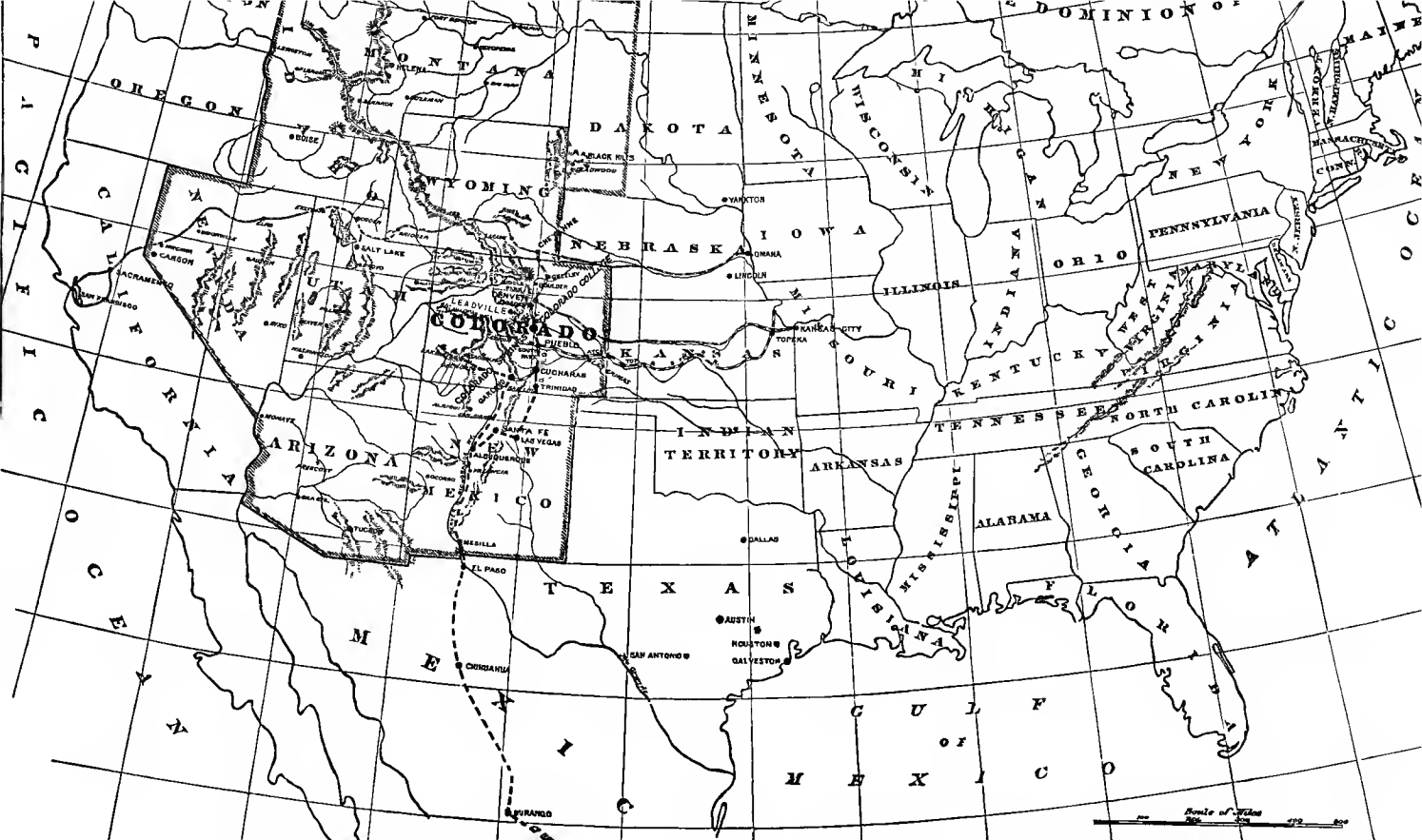
If men once imagine that they can shovel up loose silver and gold as they would sand from a cellar, they will go far to test fortune. And many of them — even if they are disappointed in mining — will make for themselves happy homes in mountain valleys or upon sunny plains. When men rushed to California, vast numbers who hoped to gather gold in heaps found themselves too poor to get out of the country, and too much fascinated with its climate and resources to wish to go, they remained to become the founders of a State. There are other employments than mining which prove remunerative; and the development of the rich and varied resources of the New West will furnish homes for unnumbered millions



GATEWAY OF THE GARDEN OF THE GODS.

THE NEW WEST.

BETWEEN the valley of the Mississippi — the Old West — and the Pacific slope lies the New West, a mountain plateau from three to six thousand feet high, upon which rise the Rocky Mountains. Take Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Idaho and Montana; then add a minute fragment of fifty thousand square miles from western Dakota, comprising the Black Hills region, and you have the NEW WEST, — one third part of the United States, — as large as all that portion of country east of the Mississippi. Colorado is equal in size to Switzerland, New England, New Jersey, Delaware and Maryland. Maps of Pennsylvania and New York would need to add Maryland and Rhode Island, to cover Colorado. Ohio could lie down twice within the boundaries of the Centennial State, and then leave room enough for West Virginia and Connecticut. Kansas and Iowa together are not its match in square miles. Colorado


DOMINION OF
MONTANA
OREGON
DAKOTA
WYOMING
NEBRASKA
IOWA
MINNESOTA
WISCONSIN
MICHIGAN
NEW YORK
PENNSYLVANIA
OHIO
ILLINOIS
INDIANA
KENTUCKY
WEST VIRGINIA
VIRGINIA
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
ALABAMA
MISSISSIPPI
LOUISIANA
FLORIDA
ARKANSAS
MISSOURI
KANSAS
INDIAN TERRITORY
TEXAS
COLORADO
UTAH
ARIZONA
NEW MEXICO
CALIFORNIA
NEVADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF of MEXICO
BOISE
BLACK HILLS
YANKTON
SALT LAKE
OMAHA
LINCOLN
CHEYENNE
DENVER
COLORADO CITY
LEADVILLE
PUEBLO
KANSAS CITY
TOPEKA
CUCHARAS
TRINIDAD
SANTA FE
LAS VEGAS
ALBUQUERQUE
MESILLA
EL PASO
DALLAS
AUSTIN
HOUSTON
GALVESTON
SAN ANTONIO
CHIHUAHUA
MONTEREY
SACRAMENTO
CARSON
Scale of Miles

has almost as many acres as Old England and New. Men team goods from Colorado Springs through Ute Pass, following a longer road than that from Boston to Philadelphia, and yet they do not go out of their own State.

The topography of the New West may be in general described thus: —

The valley of the Mississippi extends four hundred and fifty miles west of the river; we then cross the elevated buffalo plains, seven hundred miles long and three hundred miles in width; then the Rocky Mountains, — in parallel ranges from twelve thousand to fourteen thousand feet high, inclosing parks, at an elevation of eight or nine thousand feet, — three hundred and fifty miles wide; then a width of seven hundred miles to the Sierra Nevada. The Great American Desert is upon the western verge of the last described belt. It is from seventy-five to two hundred and fifty miles wide. No east and west line can cross arable land all the way from the Rocky Mountains to the Sierra.[1]

Men who forecast the future of America will be interested in a statement of those elements of wealth which indicate the capacity of this mountain plateau to sustain population.

Aside from Idaho, — no small portion of which is, like Oregon, admirably adapted to sustain a large agricultural population, — the New West resembles California in its general characteristics.

[1] *Vide* Wheeler's *Preliminary Report on Nevada, etc.*

GRAZING.

ONE of the prime industries, when it is fully developed, will be grazing. In the Northern portion of this region it is necessary to make some provision for winter — even so far south as Colorado Springs; but beef-cattle and sheep graze all the year round, without cut-feed or shelter, in southern Colorado, New Mexico and Arizona. Montana, Idaho and Wyoming, find it needful to feed sheep only from five to fifteen days in winter, their cattle needing little more care than herds of buffalo. Utah and Arizona, which have so long sustained vast herds of deer and antelope, will soon be covered with domestic cattle. In any portion of the great plains wherever there is grass enough for pasturage, there may be found a water supply; either from natural springs, by digging wells, or by forming reservoirs for the occasional rainfall. The perennial grasses of the plains take deep root, and find sufficient moisture; olive-green grass covers the plains in early summer, and the stalks remain green near their roots all through the heated term, while their tops dry into hay of so good quality that horses will leave the bottom lands to feed upon it. These stalks of sweet bunch grass are from six to twelve inches in height; and they stand stiffly amid winter frosts, and are never broken down by excessive rain or snow.

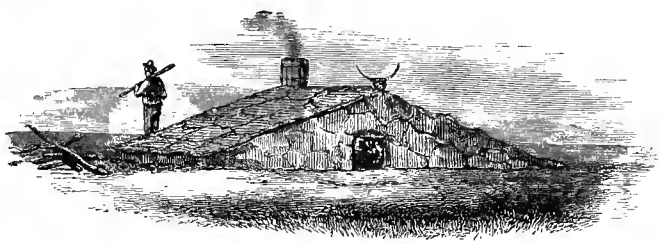
Stock and dairy-men who have had many years' experience in the valley of the Mississippi, and also on the great plains,

1. BUFFALO GRASS. 2. GRAMA GRASS.

(Half Natural Size.)

prefer these plains of the New West. There are, probably, seven hundred and fifty thousand cattle in Colorado, and one million six hundred and fifty thousand sheep. There are in the neighborhood of Colorado Springs, in El Paso County, three hundred thousand sheep and thirty-five thousand horses. Not less than two thousand persons in the State are engaged in herding. It is worth while to ride a thousand miles to see one of the most unique sights in America,

"a round-up" of the cattle-men: — a perfect pandemonium of circling riders, yelling like wild Indians, amid crying calves, bawling cows, fighting steers and bucking bronchos. "Half an acre of hat, a couple of revolvers and a bowie-knife, and a pair of circular-saw spurs" — this is your cowboy of the Southwest. Whether he is swaggering, with strange oaths, upon a leisure day about the door of some dug-out whiskey cellar, or swinging his lasso from his swift saddle, or asleep in his blanket under the summer or winter constellations, this herder is a singular citizen of our Republic.



A CITY OF THE PLAINS.

But there is money in beef. Are not ten million of American and European capital now invested in Colorado cattle? The profit averages from twenty-five to fifty per cent., when the business is conducted intelligently. The cattle shipments and the wool clip already amount to more than one-third of the bullion product, as it stood before recent discoveries. In the future, when the slopes of both oceans are crowded, and the valley of the Mississippi is a garden, the great herding-ground of the continent will be on the plains of our New West. The present value of the hay-crop and pasturage of the United States — including dairy products, wool, and the increase of live stock — is nine hundred and seventy-three million dollars, which exceeds in

value all the cotton, corn, wheat, and other farm products of the country.[1] Is not the dairy product alone more than three hundred million? Will not the broad pastures of the New West, which have fed the buffaloes for ages, some day contribute largely to the national wealth?

KANSAS GRASSES.

[1] Stewart's *Irrigation*, p. 18.

FARMING.

AGRICULTURAL operations in the New West promise to be very profitable. Portions of Colorado and New Mexico, to the amount of four million acres, are watered by rains; and the same is true of no small areas, here and there, in the mountains or near them, throughout the New West. But, in the main, irrigation is necessary, and the farms are planted on the borders of mountain streams fed by melting snow. The absence of a greensward upon the general face of the country is at once missed by the Eastern eye; but a practical farmer soon learns that there is everyway an advantage if he can water his crops when he chooses. The crops are not injured by rain or its withholding. Drought spoils one-fourth of the crops of the world. Farming carried on by irrigation is much more profitable than in the ordinary process, and the land is kept in good heart by it through centuries.[1] Chem-

[1] See Stewart's valuable work on irrigation, which is a standard authority. A foot of water is needed over the whole soil while the crops are growing. Three-fourths of our rain-fall runs off or comes at the wrong time of year for crops. The English derive more advantage from less rain-fall than we have, because it comes a little at a time during the season when it is most needed. American farmers, East and West, raise less per acre than they would by partial irrigation. The average crop all over the country might be largely increased by the systematic distribution of water from streams. Market gardening often suffers for want of water at a critical time. "Growing plants contain from seventy to ninety-five per cent. of water. . . . . The solid portion of the plant consists of matters which enter into it only while in solution in water. . . . . No water, whether it be in the state of liquid or vapor, can enter into any other part of a plant than its roots. . . . . The summer rain-fall in our climate is rarely, if ever, adequate to the requirements of what would be a maximum crop, consistent

ical analysis of the soil of the New West shows that it is of a remarkably good quality, needing only the touch of water to produce the best crops in the country, notably of wheat. The wheat crop of the United States averages twelve bushels to the acre, — California twenty, Colorado twenty-eight. It will, on this account, support a large population in proportion to the surface cultivated. In estimating the agricultural resources of this region, the area of farming land may be, in respect to ability to support population, doubled, or nearly so, on account of the advantages of a good soil under irrigation. It will also support a larger population than the same land East, since it can be used mainly to raise vegetable food for man. In the Eastern States a farmer must set apart acres to raise hay and cattle, to keep the rest of his farm in good condition; and in the valley of the Mississippi hay must be raised to keep cattle through the winter: in general, neither of these necessities exists in the New West. The whole area of farm lands can be used for man's garden or granary. This consideration alone would be equal to adding, perhaps, one-third to the amount of arable land in the New West. While, therefore, that which can be irrigated is little compared with the whole surface, it is practically enough to support a vast population. It is estimated that Colorado and New Mexico have agricultural resources to maintain ten million inhabitants. Professor Hayden's Atlas of Colorado,

with the probabilities of the soil." [Stewart, page 9.] Water, when used in irrigation, "brings within reach of the plants a largely increased amount of nutriment. Water is the universal solvent. No water in its natural condition is pure. The water of springs and streams holds in solution or suspension a quantity of mineral and gaseous matters that possess high fertilizing value." [Page 18.] Irrigation has been used on the same soil two hundred years in New Mexico, without other fertilizing properties than that brought by the water.

The British government has recently expended seventy million dollars in irrigating works in India.

recently issued, shows a much greater area of farm land than has been supposed to exist. Western and northwestern mountain valleys will prove very attractive. General Adams states that the Bear River bottom can support fifty thousand people.

Farming in Colorado is at this time a decided success. There will be always a good market for garden and field produce among the mining and trading people, on account of the limited area suitable for cultivation and the distance from competition. The farm lands will, therefore, have a comparatively dense population at some future time. The rich Arkansas valley and the banks of rivers fed by the mountains, now comparatively desolate, will resound with the voices of children; and happy homes will be scattered along the borders of all streams.

Did not Daniel Webster once say in the United States Senate that the soil of California was fit only to raise copperheads and rattlesnakes? Did not the first settlers of Massachusetts Bay think the country west of Newton ill adapted to support population? Did not the publicists of England, two hundred years ago, believe that the capacity of Great Britain to sustain population had been well tested?

"The arable land and pasture," says Macaulay, "were not supposed, by the best political arithmeticians of that age, to amount to much more than half the area of the kingdom. The remainder was believed to consist of moor, forest and fen. These computations are strongly confirmed by the road-books and maps of the seventeenth century. From those books and maps it is clear that many routes which now pass through an endless succession of orchards, hay-fields and bean-fields, then ran through nothing but heath, swamp and warren. In the drawings of English landscapes made in

that age for the Grand Duke Cosmo, scarce a hedgerow is to be seen, and numerous tracts, now rich with cultivation, appear as bare as Salisbury Plain. At Enfield, hardly out of sight of the smoke of the capitol, was a region of five and twenty miles in circumference which contained only three houses, and scarcely any inclosed fields. Deer, as free as in an American forest, wandered there by thousands. * * *

"The red deer were then as common in Gloucestershire and Hampshire as they now are among the Grampian Hills. On one occasion Queen Anne, on her way to Portsmouth, saw a herd of no less than five hundred. The wild bull with his white mane was still to be found wandering in a few of the southern forests. The badger made his dark and tortuous hole on the side of every hill where the copse-wood grew thick. The wild-cats were frequently heard by night wailing around the lodges of the rangers of Whittlebury and Needwood. The yellow-breasted marten was still pursued in Cranbourne Chase for his fur, reputed only inferior to that of sable. Fen eagles, measuring more than nine feet between the extremities of the wings, preyed on fish along the coast of Norfolk. On all the downs, from the British Channel to Yorkshire, huge bustards strayed, in troops of fifty or sixty, and were often hunted with greyhounds. The marshes of Cambridgeshire and Lincolnshire were covered, during some months of every year, by immense clouds of cranes. * * * The number of inclosure acts passed since King George the Second came to the throne exceeds four thousand. The area inclosed under the authority of those acts exceeds, on a moderate calculation, ten thousand square miles. How many square miles which formerly lay waste have, during the same period, been fenced and carefully tilled by the proprietors, without any application to the legislature, can only be

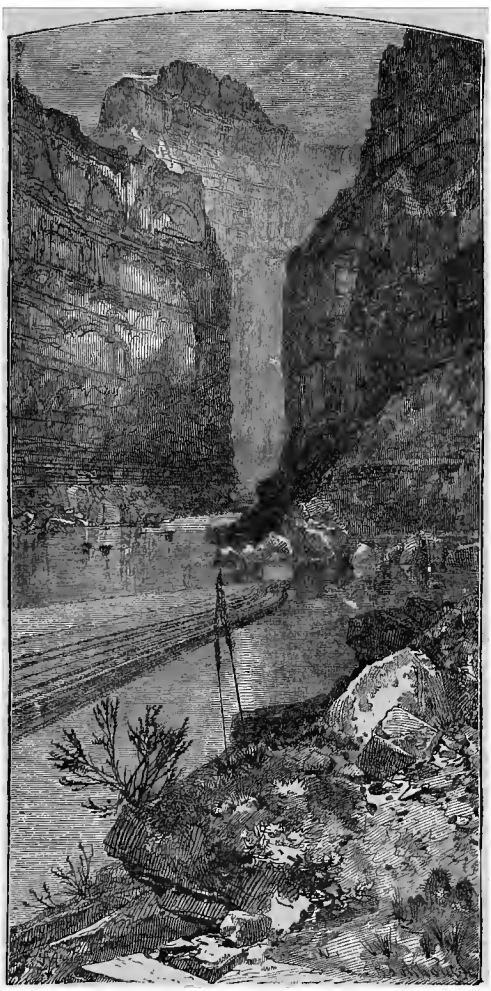
conjectured. But it seems highly probable that a fourth part of England has been, in the course of little more than a century, turned from a wild into a garden."

The future historian of America will say, with some truth, that there were men of much intelligence in this age who did not suppose Colorado and the New West capable of sustaining a very large population, and that they did not think it important to pay much attention to the development of a well-ordered society in new regions. Wyoming has an agricultural area as large as Massachusetts and Connecticut; timber land more extended than Michigan, and a grazing field larger than Kentucky.[1] Montana is wonderfully rich in farm lands, timber and pasture, as well as in gold. New Mexico will raise food for as many people as New England. Arizona, now at last fairly rid of the avenging angel, the Apache, will soon make known her agricultural resources, which are sufficient to support a large population.

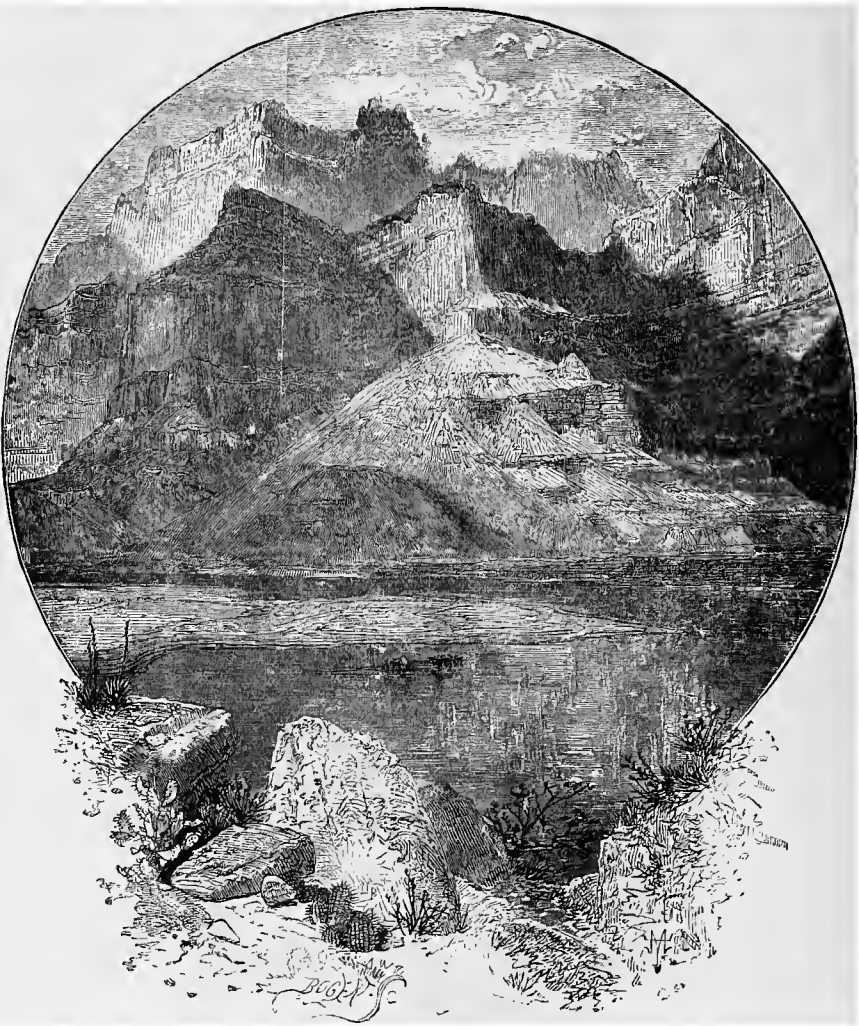
While there are immense areas of bad lands and sections which no man ought to look upon, in various parts of the New West, yet, often, close beside the desolate regions, as in the San Francisco Mountain country, not fifty miles from the cañon of the Colorado River of the West, one finds large tracts which offer the most delightful homes in the world, — well watered with springs and streams, heavily timbered with gigantic pines, a black rich soil of decomposed lava, producing without irrigation the heaviest crops of grain and potatoes, and the most nutritious grasses winter and summer. Here it is possible to plant homes in little grassy parks or mountain meadows amid the timber, with horizon walls of ancient volcanic peaks, like Mount Agassiz, towering to great height, with only a light crown of snow so late as Christmas;

[1] Strahorn's *Wyoming*, p. 21.

homes in a most invigorating atmosphere, which will be established, at no distant day, by the thrifty Anglo-Saxon race, able to make a home anywhere, and eager to find out a place of promise for the next generations. To these children of the New West, the broad intervals of the Connecticut,



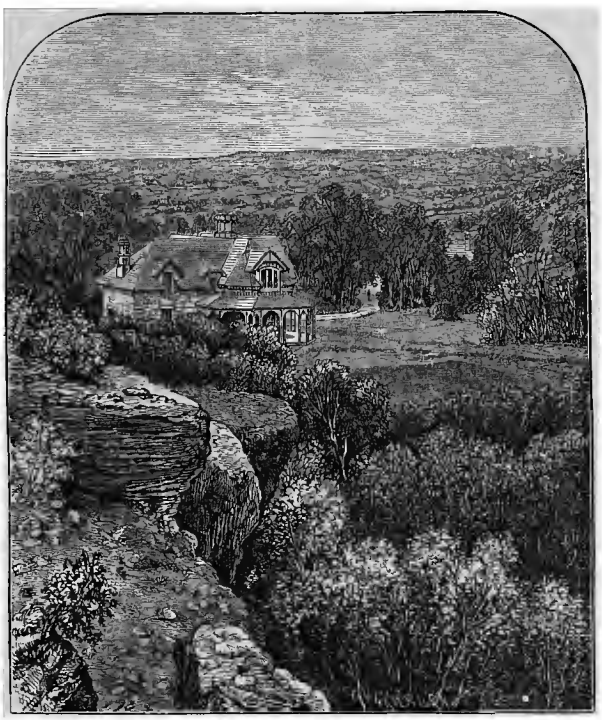
MARBLE CAÑON.



VIEW AT MOUTH OF THE LITTLE COLORADO.

the rich lands of the Mohawk, and even the valley of the Kaw, will seem distant and far toward the sunrising; but as the ages roll by, it will be seen that our English-speaking race has planted the highest culture of the world upon the banks

of rivers now unknown in the central regions of the continent. The wild gorges of the Colorado River of the West will be frequented by pleasure-seekers, and the strange scenery of this most unique portion of the planet will become familiar to the eyes of travelers from distant lands, as to those born and bred in those very regions.



AN ENGLISH COTTAGE, NEAR COLORADO SPRINGS.

There is an admirable article in *Fraser's Magazine* for November, 1878, written in the January previous, by an English farmer whose home is upon the Divide not far from Colorado Springs. He is a true Englishman, fond of hunting and wild life as well as the farm, prophesying that

"crowds of Englishmen with small incomes, pensions, military and naval half-pay officers, will turn to this country of pure air and mountain scenery, where they can live like kings and bishops on one hundred pounds a year, in high health and spirits, shoot and fish after the manner of Isaac Walton, or stalk moose and deer, or go into the wilderness to win public money for wolves' heads like a shekari, and have no fear for the condition of their children, bent on building fresh homes on the western slopes of the Colorado mountains."

CORN IN THE KAW VALLEY, KAN.

It is a wonder that the twelve square miles of the Divide, which require no irrigation, and the nearly forty thousand acres of arable land near Colorado Springs, for twelve miles up and down the Fountain and Monument, are not already crowded closely by a farming population, with good society, the school, the church, the daily post, and a growing market near at hand. Of two hundred thousand acres under cultivation in Utah, those lands are most valuable which are covered with heavy crops near Salt Lake City, comprising few acres easily managed. The neighborhood of any thrifty

town is attractive to those who will do well in tilling the soil.

But this is not the country for men with absolutely no capital; neither is Kansas or Nebraska; but in those favored States it probably requires less capital to obtain a large area of land, although the market may not be so favorable as in Colorado. The market depends on location. The neighborhood of growing towns or of rich mines, offers good location. With only one-eighth of Kansas now under cultivation, and already a population of nearly a million, the capacity of the State is little tested. Nebraska is certainly one of the best farming countries in the world, and probably more healthy than eastern Kansas, with its harvest time so hot as to require night-work. The statisticians upon the slopes of the Rocky Mountains sit down coolly with pencil and paper, and figure out the number of persons who will certainly become invalids in the States watered by the Mississippi, and that river of mud, Missouri; and who will certainly move to the upland farms, the pastures, the mines, or the pleasant towns of the New West. Colorado does not need to-day more land under ditch, but more men to fence and farm and raise market produce. A few miners may become very rich, but the average farmer will do better than the average miner. A return to farming, as an employment, on the part of multitudes of men will adjust social disturbances, and make easy the hard times. If five or ten acres of land, worth from fifty to a hundred dollars an acre, be not enough, it may be enough to begin with, if well located; and no location is so good as the immediate neighborhood of growing towns, and a rapidly increasing population of non-producers of farm products.

NEAR MANITOU MINERAL SPRINGS.

TIMBER.

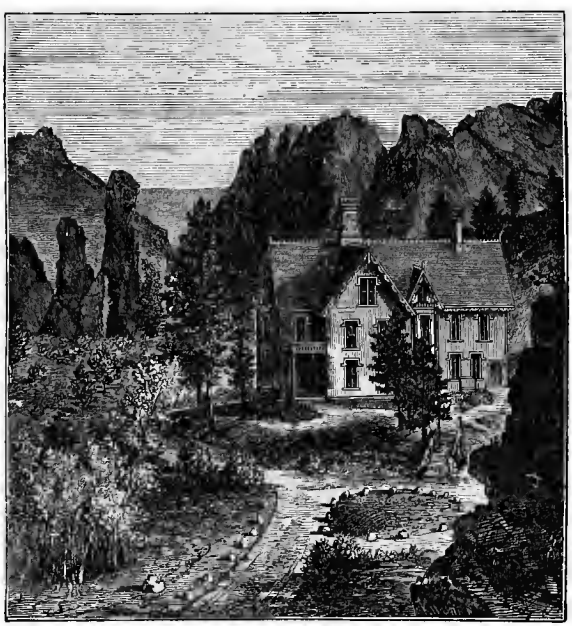
A COUNTRY is naked without trees. Of the whole Rocky Mountain plateau, probably not more than one-fifth or one-fourth of the country is timbered.[1] These forests have been fearfully wasted by Indian fires, kindled to drive game. "The amount of timber used for economic purposes, will be more than replaced by the natural growth."[2] That the region, as a whole, has timber enough for the use of the country, is indicated by Hayden's map of Colorado forests.

[1] Powell's *Arid Lands of the U. S.*, p. 23.

[2] Ibid, p. 24.

There are five million acres of woodland in New Mexico. No such variety of growth, however, is seen as one finds in the East. The river-bottoms are lined with scrub-oak, box-elder and cotton-wood. We find the ash, the piñon pine, the mesquit — the best of fuel. The evergreens — fir, hemlock and pine — cover the mountains.[1] Experiments show that the trees and fruits of the latitude of Colorado can be grown there. Fruit culture is already becoming an important industry.

[1] The memorial to Congress, adopted by the Constitutional Convention of Colorado, in relation to the forests of the State, is a very valuable document. Page 202 of Hough's *Report on Forestry*.

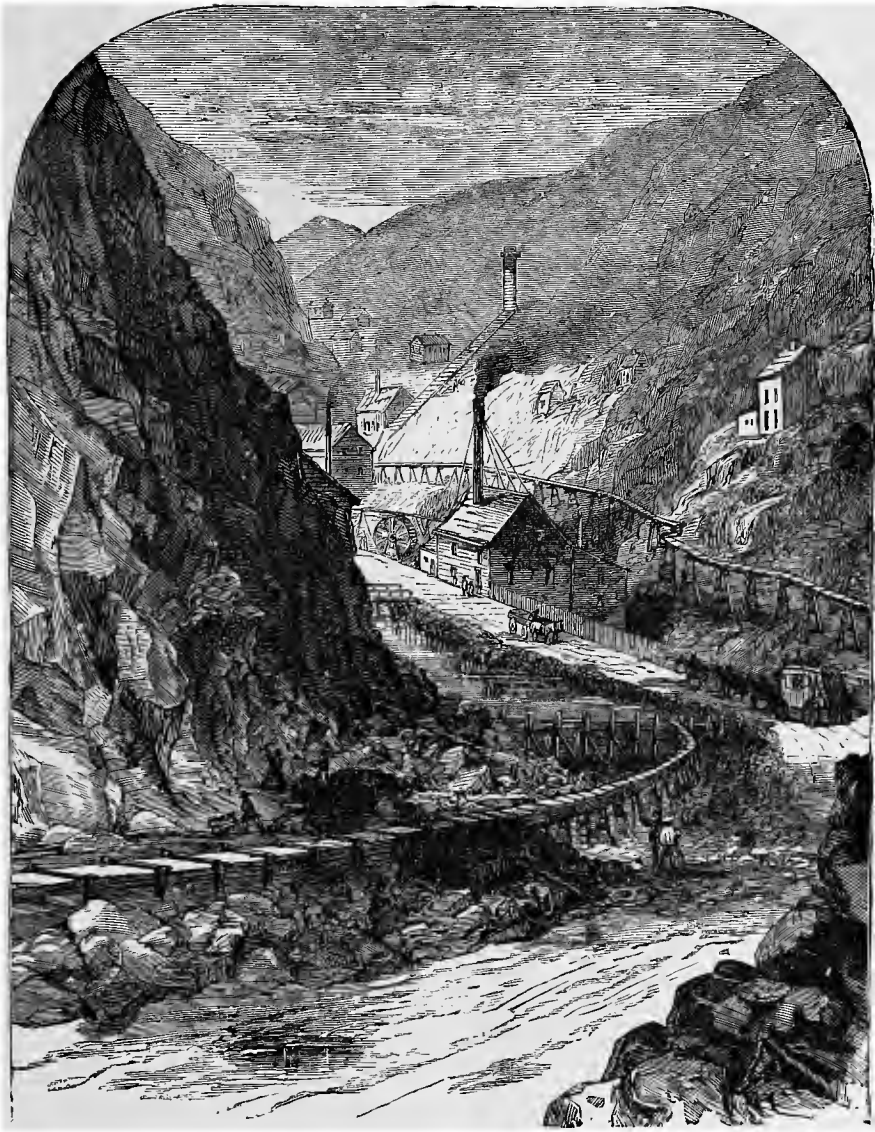


GLEN EYRIE.

MINING.

NEW SPAIN — comprising California, Utah, southern Colorado, New Mexico, Arizona and northern Mexico — has produced, since the discovery of America, more than one-third of the precious metals of the world. The reöpening of the old mines, near Santa Fé, is likely to be followed by a general search for the sources which yielded so largely in the early Spanish occupation. When Arizona is developed, her mines will surprise the world. It is a fact not easily forgotten, that in this district a single specimen of pure silver was once found of a hundred and sixty pounds weight. Montana has washed or picked a hundred million dollars in gold. The mines of Colorado, even before the recent discoveries in Leadville, yielded more than those of California in 1870. The history of California and Australia is now repeating itself in the New West, and an immense population will search for wealth hidden in the mountains. The finding of Aladdin's lamp in Leadville marks a new era in the mining world. Midas was poor when compared with the owners of these mines, whose fame has gone out to the ends of the earth.

The average man succeeds in mining as well as in the ordinary commercial business of the country, in which, however, the failures are more than ninety per cent. Sixteen million in gold have been taken from four mines in Gilpin County, and the stream is as reliable as the flow of the Hudson. But of more than a hundred and twenty gold companies operating within a mile and a half of these mines, the greater part have not been successful. The Georgetown



GULCH MINING.

district yields some sixty tons of silver in a year. There is no hour of day or night, year after year, when the sound of the pick or the sound of the blast does not echo among the mountains. But the wealth is not evenly distributed. The average prospector is poor. The multitude is not likely soon to be rich. Men work for years without earning more than their salt. Many of the successful, by a turn of the wheel, lose their property in new investments.

Was it not said that the Spaniards, when they went to Chili, fancied the water flowing through gold veins more delicate in flavor and more wholesome than that of common springs? There are not many miners in the New West who can confirm the tradition as to the taste of the water; but they can never rest searching the metallic veins, in spite of water. Whether or not they are successful in gold and silver mining, there is much satisfaction in contemplating the variety of mineral wealth in the New West.

Inexhaustible store of excellent iron ore is found in southern Colorado and northern New Mexico. Near the iron is the best coal west of Pennsylvania. For coking, it is pronounced by experts to be equal to the Connellsville coal. Furnaces and rolling-mills will abound in this region in the future. That this industry will be developed rapidly, and that to a great extent, is certain, since there is no coal for four hundred miles east, no good coal in Mexico, Nevada or California. The coal is now sent to Nevada for smelting. A vast number of people will some day find employment in picking to pieces and manufacturing that iron mountain which now rises more than ten thousand feet high, near inexhaustible beds of coal, in Colfax County, New Mexico. The Arizona coal will play no mean part in the civilization of the future.

When it comes, however, to the question of permanent homes, it is likely that those who are most successful in mining industries will, whenever it is practicable, seek to plant their families in some pleasant town outside the mountains, rather than amid these rugged camps of the hills. "Let thine eyes look right on, and let thine eyelids look straight before thee, ponder the path of thy feet,"—is an appropriate golden text for children of mining districts, where the whole country is full of prospect holes. The zigzagging paths up and down brown bare rocky hillsides, amid piles of ore and tumbling cabins, lead to picturesque homes, many of which are very homelike; and the children born under the bright sunshine nine or ten thousand feet above the sea, are keen-eyed as mountain eagles, and vigorous as the wild creatures which made their homes in such places before the advent of man. But in many camps the work is light in winter, on account of heavy snows, and the men seek permanent homes elsewhere. Such communities, therefore, as Greeley, Longmont, Boulder, Denver, Colorado Springs and Pueblo, have a large population of the families of those who are engaged in mining.

STATE UNIVERSITY, BOULDER.

GRAY'S PEAK.

THE CLIMATE.

WHEN the question comes up about establishing homes in a new country various considerations are to be taken into account. There are many who believe that no one need have a more home-like region than the neighborhood of the

rugged New England coast, in constant sight of the sparkling waters, and within sound of the unceasing beat of the billows of the Atlantic. They love, too, the culture of our older commonwealths. Others cleave to the sunny South, with homes embowered by roses, in an atmosphere laden with the odor of orange blossoms, amid growing cotton, and in sight of the rice fields, and the warm waves of a southern sea. Others are most at home upon green prairies, burdened by corn and alive with young cattle. The blue waters of the northern lakes attract some to their shores; and others love to dwell upon the banks of great rivers flowing through golden grain fields and the most fertile gardens of the world. But with multitudes it is a consideration of health.

"The empire of climate," says Montesquieu, "is the most powerful of all empires." West of the valley of the Mississippi the land rises, sloping like a wide roof toward the Rocky ridgepole of the continent; so that this part of the country is too high and dry for malarial diseases, asthma, bronchitis, or consumption. Consumption may be prevented by moving to Colorado; those who go with quick consumption fixed upon them find that the disease is accelerated by the rarity of the atmosphere; but chronic consumption is cured by the climate. Colorado soil and air are so dry that an axe left out of doors will not rust, if it be covered from snow and rain. Meat will dry up before it will spoil. There is no dew-fall. Save in the mountains and in their near neighborhood, there is very little snow and a general absence of rain. Warm currents from the South Pacific touch the mountains, modifying the air. I have seen men plowing in February eight thousand feet above the sea near Central. In the vicinity of Colorado Springs sheep graze all winter, six thousand feet above the sea, in the latitude of

Washington. Parties have indulged in picnics out of doors upon a given day each week for ten weeks of December, January, and February. In the winter months of '78, and the March following, there was only one unpleasant Sunday. In March there were twenty-four "picnic" days. A weather record of two years at Colorado Springs gives,—in one year three hundred and twenty-two fair and clear days, and forty-four cloudy; the year following, three hundred and twelve fair and clear, and fifty-three cloudy. Colorado College is now one of the government stations for meteorological observations. The daily record by Professor Loud indicates conditions of climate, which will attract invalids to this spot.

The storms are short. During four hundred days in a recent year at Rosita, in the wonderful Wet Mountain valley, there were not more than twenty-four hours in succession in which the sun did not shine. A Denver record gives no day in one year, in which, during some part of the day, the sun could not be located in the sky. A table of six years shows an average of one hundred and forty-seven clear days, and one hundred and fifty-four fair; clear and fair three hundred and one days for each six years. One woman, who had visited many climes, and who declared that during ten months of the year she preferred the climate of Colorado to that of heaven itself,—had not journeyed in Paradise.

As for me, I will speak the truth about the climate, though I die for it. It is not in the least celestial. Dante would have added new horrors to the infernal regions, if he had been familiar with Colorado sand-storms. The weather is too hot in summer and too cold in winter, save in certain portions of the mountains where it is cool in summer and warm in winter. The lowest record of the thermometer averaged, for

the six years, twenty below zero; and the highest, during six years, averaged ninety-nine. The winter nights are always very cold, and the days usually warm between ten o'clock and four.

Some thirty-five years ago the winter was so severe that vast numbers of buffaloes perished by the depth of snow near Colorado Springs. The mercury has sometimes touched thirty and even thirty-six below zero at Denver, and in the mountain towns. The cold snowy winter of '78–79, was however less damaging to stock than was anticipated. And invalids probably suffered as little as they would have done during the same winter elsewhere. South Carolina and Florida and the Southern States experienced unprecedented cold. The Mississippi valley was colder than for twenty years previous. And the average temperature in England was lower than for a score of years.

As to the heat, it is well known that there are sometimes waves of heat sweeping over the whole country; and when my friend recorded ninety-eight degrees in the shade in Colorado Springs in the summer of '78, there were one hundred and forty-five deaths by sun-stroke, and two thousand so prostrated by heat as to require medical attendance, in St. Louis within seven days. Wisconsin and Iowa were smitten in city and country; Chicago, New York, and Boston were in furnace heat. The dry air of Colorado renders the heat more bearable, and the shade is usually a shield from hot rays, and the summer nights are so cool as to be cold before morning. "I hate Colorado when it is hot," says the same energetic person who says, "I hate Colorado when there is snow on the ground." There are from sixty to ninety days in every year in which every sane person will hate the climate; it being just such weather as prevails in the valley of the

Mississippi and upon the Atlantic coast half the time. Do not disagreeable winds including sand-storms, frequently visit Santa Barbara? Are there not "northers" at San Antonio, in which the mercury falls forty degrees in forty minutes; coming and going no one can tell when? Are there no wretched days at Aiken, and upon the Florida coast? Southern Europe either faints in winter under hot winds from the south, or freezes under cold winds from the mountains of the North. The average man living in Colorado finds the climate vastly more to his mind than that in the country he came from; and if he came from some famous sanitarium, he left behind him many causes of complaint. Albeit he may soon find the new conditions ill-suited to him.

One of the worst things I know about Colorado is that there is so much "exceptional" weather. It is a mountain climate subject to changes. Do not all well-bred physicians claim that invalids can keep out of doors the entire year except, say, four days in a month? If, now, to state it strongly, an invalid can in a bad season get out of doors only five days in a week instead of six, it is a bad climate. But what shall we say of Missouri, Iowa, Illinois, Ohio, and regions where the roads are impassable for mud during some months every year? What of the raw atmosphere of the Eastern coast, where clouds, snow, rain, wind, sharp and severe changes, kill out-right thousands of semi-invalids every year?

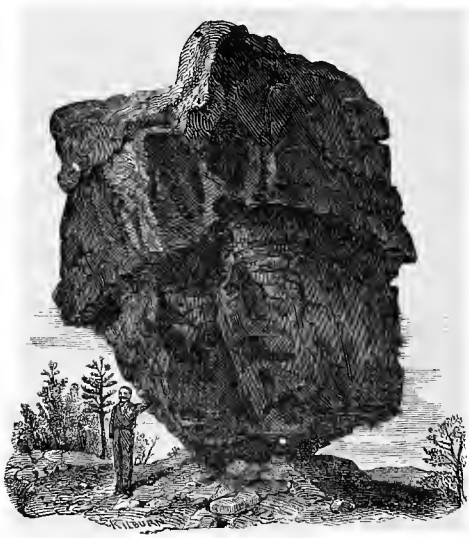
One-third of the population of the plains in Colorado are reconstructed invalids. When compared with other portions of the United States, the whole New West is a sanitarium. The northern portion is comparatively mild in winter, the forty-sixth degree in Montana being as warm as Philadelphia, on the forty-first; and the southern portion relatively cool

in summer, Santa Fé, at seven thousand feet above the sea, being attractive in August. Lieut. Col Dodge, whose life has been spent upon the great plateau, says in his admirable book upon the Plains, that in spite of hail and sand-storms, the summer and autumn weather of the high plains is as near perfect as it is possible to imagine.

Damp nights and incipient consumption are needless. Those who live upon the Atlantic sea-board in a climate that is killing them by inches, can get out of it upon any Tuesday afternoon and find themselves upon Saturday in a dry and sunny country. And as to the question of bread to eat, as well as air to breathe, any "head of the house" who is not made irresolute by illness or chained down by the rim of the horizon, can within any week satisfy himself upon that point, and then move his household within a month.

"I do not believe that there is a well woman in Illinois," said a friend, who knew too well the diseases incident to life in a State which is a hot-house in summer and a mire of mud in winter. Multitudes of people in the valley of the Mississippi are slowly dying within two days' ride of perfect health. Invalids die in Colorado because they seek the remedy too late. That portion of Colorado south of the Divide is more favorable for winter residence than north of it. Denver affords the comforts and conveniences of an Eastern city; and the winter climate is paradise when compared with New England or Iowa. But in the great storms which rarely occur, Colorado Springs has little snow when regions to the east and north are heavily drifted. Denver can sometimes boast of sleigh-riding when there is no snow to speak of in Colorado Springs. There is always less snow-fall in the southern portion of the State, and the changes of weather are less severe. New Mexico will be still better, when the

country is fitted to receive invalids. Families with the seeds of early death in them will do well to fly for refuge to these central mountain regions of America. The invalids of the United States comprise not a small part of the population; and many of those who have property will, as they become acquainted with the facts, move into one of the beautiful towns at the eastern base of the Rocky Mountains.



BALANCE ROCK, NEAR COLORADO SPRINGS.

HIGH SCHOOL, GREELEY.

EMIGRATION.

THE population of the New West is, probably, at this time, not far from eight hundred thousand,—

> "The first low wash of waves, where soon
> Shall roll the human sea."

The laws which govern the westward movement of population are now well understood. Between 1860 and 1870 a population of three million moved into Illinois, Iowa, Wisconsin, Minnesota, Nebraska, Missouri and Kansas. From these very States during the last decade a large emigration has been moving to the newer West. The Commissioner of the Land Office reports that six hundred thousand people took up their residence in the new parts of the West and Southwest in 1878; and that a population of two and a half million have taken up homes in the West and South during the latter half of the present decade. This stream of emigration has begun to pour into that third part of our continent now sparsely peopled; and the resources of the New

West will be rapidly developed within the years next before us. Men are now living who remember when central New York and Northern Pennsylvania was "the West;" and there are those now living who will see Colorado and the Rocky Mountain regions with a comparatively dense population. Emigration will soon occupy by hundreds of thousands, and then by millions, the eastern border of the New West. Not many years can pass before the territories will become States.

It is not, however, needful to ask whether this third part of the United States will be largely peopled within ten, twenty, fifty, or a hundred years. These periods are brief in the upbuilding of States, as in the life of the human race. We need not ask whether or not our statisticians are correct, who reckon on a population of a hundred million in the year 1900; or whether there will be two hundred million at the bi-centennial. Nor need we examine the grounds of the statement in the new edition of the British Encyclopædia, that, if the natural resources of America were fully developed, it would sustain a population of thirty-six hundred million, and that it is not improbable that this number may people America within three or four centuries. We need not ask how soon Colorado, New Mexico, Arizona, Utah, Nevada, Idaho, Montana, and Wyoming will number ten million, twenty, or forty, since it is only a question of time when these regions will be practically filled with a grazing, farming, mining, manufacturing population,—a New West, less densely crowded than the Atlantic seaboard, or the Pacific shore, or the swarming valley of the Mississippi, yet supporting no small share of the American people.

It is enough for the purpose of this paper to state that there is now a population of more than half a million in Colorado, New Mexico, and Utah; and that emigrants are now

pouring into almost every part of the New West every year; and that the most practical business men in the country, who are conversant with the movements of population in America, are taking most positive action with reference to the immediate occupancy of Colorado and New Mexico, and the developments of a growing trade in this new Western country. It is noteworthy that the Eastern newspapers are beginning to issue editions in Spanish, and that systematic efforts are made to introduce trade into Spanish America. In a single year, in which Mexico imported twenty-nine million dollars worth of cotton stuffs, the United States furnished little more than one-tenth. In 1877 the imports of the United States from Mexico amounted to nearly fourteen and one-half million of dollars; in that year we sold to Mexico goods amounting to only four and one-half million. Is it not time for the railway king to unite the Republics? Important railways have been begun, looking toward the Southwest, upon the ground that the region to be passed through is already a very remunerative one for traffic, and that it will be soon occupied by a more dense and more prosperous population. The results are fully justifying the confidence of those who have engaged in the work.

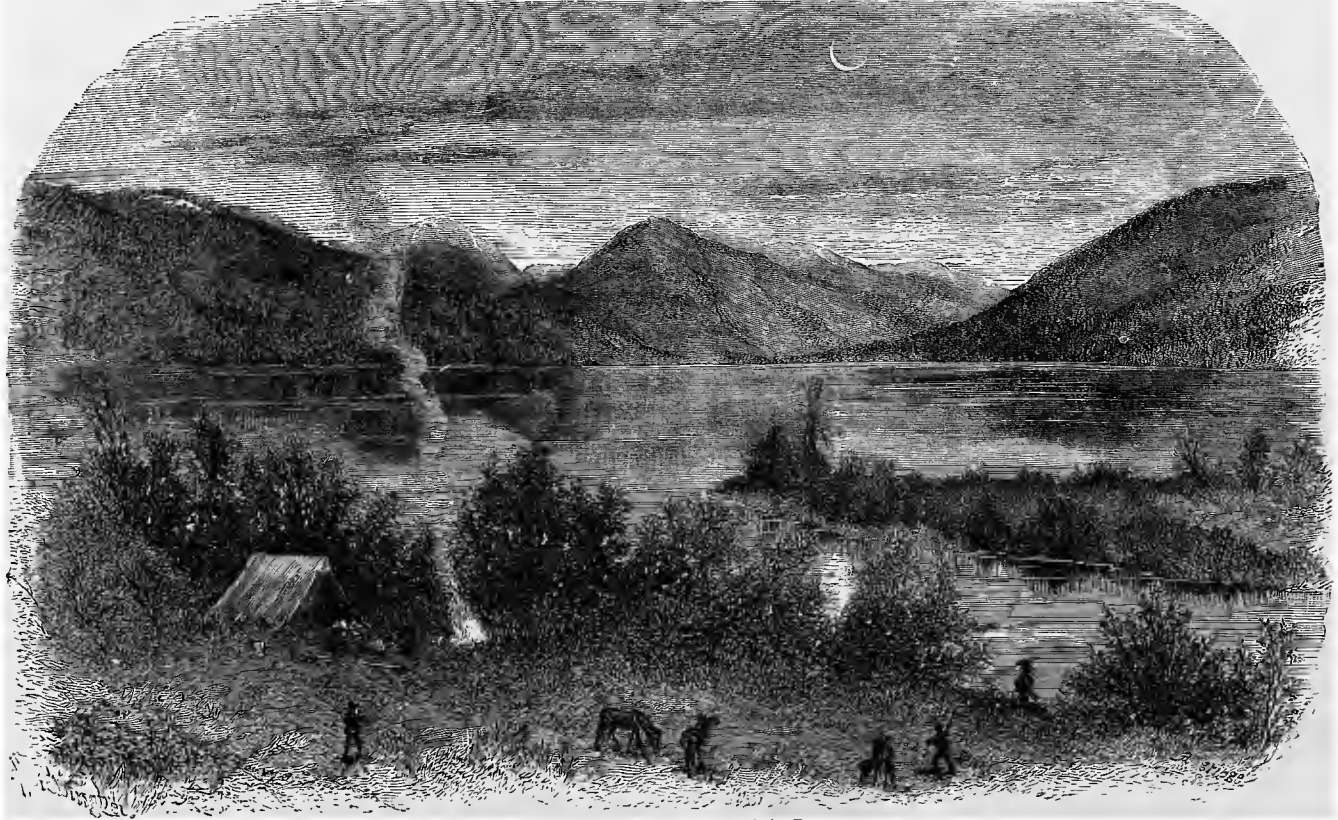
HIGH SCHOOL, DENVER.

HOMES.

UNDER the shadows of The Sierra Madre are already growing up some of the most home-like and attractive towns in America. As an illustration, I will speak somewhat fully in respect to the community with which I am best acquainted. Colorado Springs has a population of six or seven thousand people, upon a spot where antelopes were feeding nine years ago, and where the Indians were taking scalps only a little before that. It stands upon a table land, gently inclining to the south. The soil is a coarse mold, through which the summer showers or melting snows easily filter, leaving dry walks and roads. The town has twenty-five miles of trees, upon streets a hundred feet wide, or avenues of one hundred and forty. Four rows of trees upon one street extend two miles. A school-building costing twenty thousand dollars, and comfortable houses of worship, indicate the character of the people. This colony and the one at Grecley, are the only ones in the State where liquor selling is forbidden in every deed of land, and in the policy of the local government. A test case, recently carried to the United States Supreme

Court, establishes the Right of the Colony Company to seize any estate upon which liquor is sold. The cost of living is not materially different from that in similar communities in older portions of the country. Water for domestic purposes has been introduced, at an expense of eighty thousand dollars, from the melting snows at the foot of Pike's Peak. It is clear as crystal. Every flower-garden or green lawn can have a fountain with jet forty feet high. The irrigating ditches run between every broad walk and every roomy street, swift as mountain torrents, or sluggish as meadow brooks.

Near the town are farm lands well situated but not yet so fully occupied as to supply the wants of the growing town. It cannot, however, be advised that those who are doing well elsewhere should for light reasons move far to new countries; and none should move without sufficient means of subsistence to keep them for some months until occupation is found. The opportunities for earning a livelihood are abundant in a new region, but time is needful to develop these opportunities. One should never land in Colorado with so shallow a pocket as to be put to distress if he does not find immediate employment. But a faithful, energetic, economical, persevering man cannot fail to do well in the agricultural or grazing districts in the neighborhood of some growing town, if he takes time and has means to wait. These towns are near the base of the mountains, from Cheyenne to Trinidad. Fort Collins, Greeley, Longmont, and Boulder offer good homes; and the agricultural interests are more fully developed in the northern portion of the State. Denver, the commercial center of the State, is well watered and shaded, with comely houses amid grass plots and flower gardens. There are scores of hamlets near the base of the mountains both north and south of the Divide which are very attractive.



TWIN LAKES, NEAR LEADVILLE.

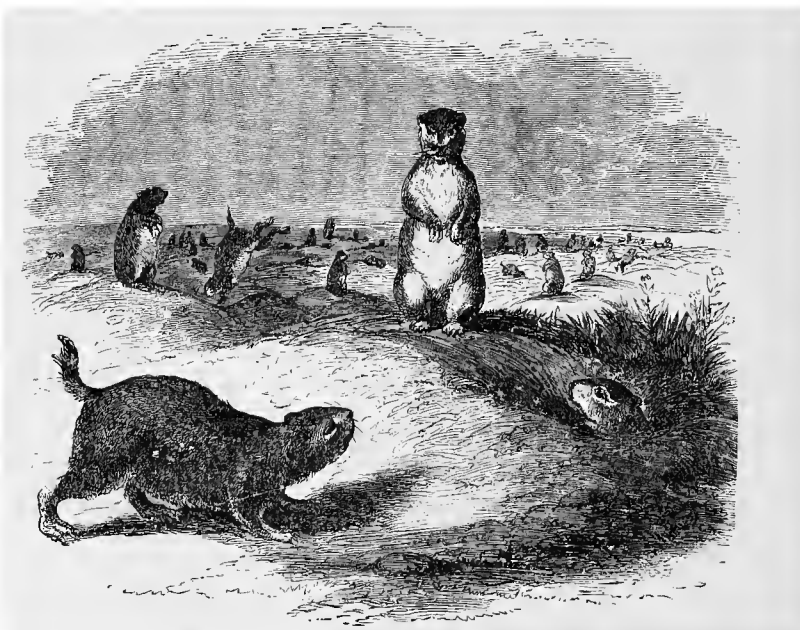
THE SCENERY.

I OUGHT not to speak of personal likes and dislikes in Colorado. But if I were questioned sharply, I should admit once for all that I am out of all conceit with the Rocky Mountains for being dry, and distant from the sea-shore. If the ocean boundary could stand now where it did during certain past ages, I should feel quite content with the arm of the ocean touching the foot-hills. A residence upon the high grounds eastward would have permitted one to look across blue fields of lupine to the blue waters and the snow-clad mountains. This presence of the atmosphere of the sea would effectually break up the long drought in Colorado, which would be better, to my thinking. I confess to a strong liking for mud, rain, storms, fog, and wind from the sea. But the characteristic scenery of the Rocky Mountain plateau has certain compensations.

Morning by morning, if I go upon my housetop, I look out upon the limitless plains; or I ride far up the shoulder of Cheyenne Mountain, and get a wide vision of this silent sea stretching to the eastern horizon. The plains are not flat, but undulating like broad and shallow basins, extending for hundreds of miles. When in the bottom of one hollow you cannot see over the rim, which may be half a mile or a mile distant. In the winter time after a snow-storm, the snow lies longest upon the southern sides of these basins; and the face of the plains seen from a height, is like that of the

ocean when marked with white-caps. This peculiar configuration is modified by the courses of the larger streams, along whose banks the country is often level as a floor, and flanked each side by bluffs. There are also many dry creek-beds, or chasms cut by sudden tempests.

If I sometimes make excursions over these vast treeless areas, I am impressed with their solitude, as if I were in a little boat alone very far from shore. The most faithful pony, in crossing a belt blackened by prairie fires, will feel the intense solitude so sharply as to refuse to eat his grain, save in a little ravine made by an old water-way. There can be nothing more desolate than the view from a slightly rising ground, where the eye, searching the whole horizon, sees nothing save a plain withered by fire, without tree, shrub,



DOGTOWN.

grass, or living thing; not a bird in the sky, and the summer sun burning with furnace heat.

The scene is changed to the grotesque, if, upon my homeward way, I come upon what appears to be a field of unnumbered potato hills, thoroughly alive with projecting noses and disappearing tails, as if a minute tribe of woodchucks were struggling into the world, or the inhabitants were turning their squirrel tails to the sun. But the prairie dog is not so interesting as the jack-rabbit in the sage-brush. This desert shrub, with gray-tinted leaves, grows to a height of from three to five feet, and the strangely-twisted stalks are often four or five inches in diameter. It is good fuel. There is also a small white sage, of use for winter grazing. In some districts these bushes are alive with jack-rabbits, as if springing out of the soil, and as suddenly disappearing. Sometimes we see the antelope. Within a few months they have been feeding within a mile of my house.

The most delightful feature of the plains in summer is the multitude of wild flowers, the desert blooming with beauty. Indeed, the mountains, as well as the plains, are often carpeted with flowers so that a mountain side is seen to be blue at considerable distance. Upon the streets and parks of Colorado Springs, and the banks of the Monument, we find the scarlet cypress, and gorgeous sun-flowers, the tiger-lily, the prairie pink, the blue-bell, the wild rose, the white-fringed spirea, the cactus (pale pink or scarlet), the sweet columbine, heliotrope, blue gentian, clematis, larkspur, buttercups, daisies, violets, primroses, poppies, verbenas, wild geraniums and morning-glories. Mountain slopes unsightly with fallen timber and rough boulders are fairly ablaze with cypress.

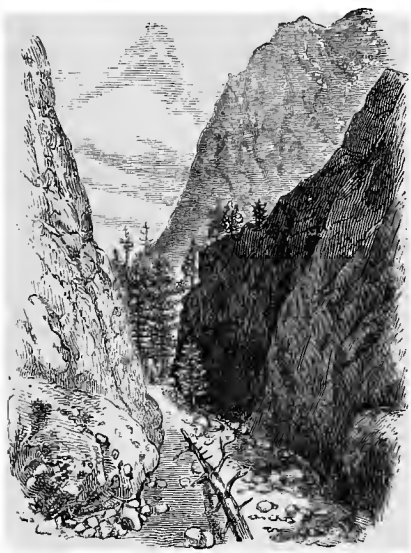
The unsurpassed wonders of Glen Eyrie, Queen's Cañon, the Garden of the Gods, Manitou Mineral Springs, William's Cañon, Ute Pass, the Falls of the Fountain, and Cheyenne Cañon — all within five miles of my home — attract tourists from all the world. Any one of these famous resorts would make the fortune of a watering-place in the East. Professor Hayden says that he never saw so wonderful a combination of grand scenery in the neighborhood of any other medical springs.[1] These springs, with secret sources in the Metamorphic Rocks, "resemble those of Ems and Teplitz, and excel those of Spa."[2]

IN THE GARDEN OF THE GODS.

If I look out from my house-top in the early morning, I see in the northwest, the vermilion rocks of the Garden of the Gods lifting their heads above the mesa. My friend Lewis N. Tappan has told me that it was in August of 1859 that a company of six or eight, including himself and Cable and Beach, surveyed the town site of Colorado City. Cable

[1] Preliminary Field Report, p. 45.
[2] Wheeler's Survey, Vol. iii., p. 619.

was the first to explore among the towering vermilion rocks; and he returned, saying that it was fit for a garden of the gods. This was the first naming. That two old negroes, Jupiter and Juno, early had a garden upon the stream near the gateway, led a later visitant to bestow the same name upon this locality.



CHEYENNE CAÑON.

Bear Cañon, Crystal Park, Red Cañon, Blair Athol, Monument Park, and Austin's Glen are near at hand. Manitou Park — the famous "Cradle of Peace," and the marvelous petrified forest, are not beyond easy driving. Bijou Basin, and the wonderful mountain views seen from almost any part of the Divide, offer still another attraction within a half-day journey.

What is a Cañon? If you are wise, you will first inquire, What is a burro? The burro looks very much like an over-

grown jack-rabbit, rough-coated, half-starved, of meek and disconsolate look. You may see him courageously bobbing along the road, swinging his great ears as if at perfect peace, and plying his small mouse-colored legs with such vigor that he can easily carry three hundred weight. If you are thoughtful to save your breath in rough mountain paths, and not too thoughtful of your dignity, you will mount the burro, draw up your legs, let your feet dangle instead of dragging upon the ground, and then I will show you a cañon. It is neither of the cañons I have named, but a cañon.

Crossing and recrossing a wild stream we enter amid fir trees between walls of rock from three hundred to eight or ten hundred feet high, and five or four or two hundred feet apart, or narrowing to twenty; the walls are often perpendicular, and rugged with towers, cones, or domes of rock. Sometimes the sky is a mere ribbon of blue, or again we are in a deep amphitheatre of naked rock. Often, however, the evergreens have obtained a foothold in the crevices, and the cedar and the spruce stand amid fantastic rock figures. Immense trees are growing upon the banks of the brook; which is making music in strange harmony with the sound of the wind, harping upon pinnacles of rock or singing among the pines. We hear the cry of the young eagles mingling with the roar of the torrent. Our further progress is perhaps barred by a precipice, over which the water is falling some hundreds of feet. Some of these rifts in the Colorado mountains are penetrated by the railway, winding under walls two thousand feet high. These places by daylight are often sufficiently uncanny, and weird beyond expression by moonlight. When, as it sometimes happens, there are mineral springs, cold or hot, bubbling or steaming, between these massive walls, we cannot wonder that the Indians used

to hang votive offerings upon the trees near by, or to cast them into the mysterious waters.

Morning by morning, with the first light of the day, I turn my eyes to the immense masses of rock whose white crests rise against the western sky. I live upon the edge of a sea

of mountains, uptossed in wildest confusion for the space of three hundred miles westward. The mountain area within the limits of Colorado alone is as large as New England; and its base is as high as the top of Mount Washington. The White Hills set down in one of the Colorado parks would make no great addition to the scenery. Mount Washington and his compeers would be lost and very likely unnamed amid a crowd of more than two hundred peaks rising from four to six thousand feet above the plain; and they would be overshadowed by nearly a score of mountains two thousand feet higher than the crown of New England. Mount Washington, if in Colorado, would be counted as one in this crowded range. Within the limits of this one State there are twelve hundred miles in length of mountains, in the main range and the spurs of the main range, averaging

six thousand feet above the plateau upon which they stand. Switzerland, so far as relates to size, could easily be put into a pocket of Colorado. One of the Rocky Mountain parks would easily conceal within its high granite walls one of the New England States. The ravines of the Rocky Mountains are commonly sharper than the most precipitous slopes of Mount Washington.

LA VETA PASS.

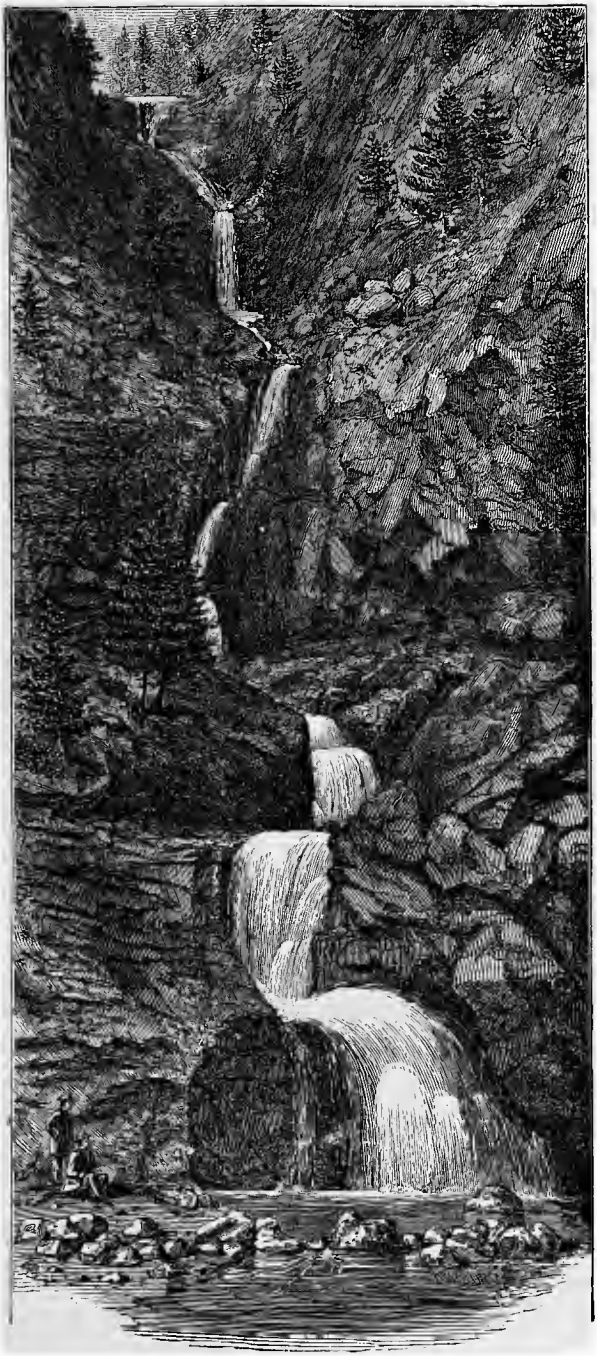
Standing day by day against the western sky is this uplifted picture of grand mountain side and summits constantly varying under magic play of light and shade. The rocky spires and changing shadows of Cheyenne Mountain,

seen four miles to the southwest of the town, gives constant delight to every eye. Pike's Peak rises not far off, and smaller mountains plant their feet within a mile or two of the town. In winter the violet tints of early morning change to golden at sunrise, and then the great range shines like pure silver in the sun. Pink is followed by gray and by white in rapid succession at night-fall. And the sunshine upon the western slope of the mountains is reflected in the atmosphere in a white light along the whole line of the saw-toothed horizon after sunset. Sometimes under a hot winter sun, we see a delicate veil of rainbow coloring upon the sky, caused by the rapid evaporation of snow upon the mountains; or the bow is painted by a light fall of snowy sleet upon the hills.

In the heated summer I take great delight in the nearness of the mountains, so close at hand that one can easily see the details of shadowing rock or cool ravines. I can see mountain walls rising each side of deep valleys, so standing that they can easily echo to each other in a thunder-storm. I need not go far from my home to walk or ride into quiet glens with flowing fountains, rocky streams, a comparatively abundant foliage and flowers, with mountain walls and massive peaks rising on every side. In this respect my home is more favored than are those towns which are too close under the hills to admit of fair prospect, or which are too distant for easy approach. I have sometimes fancied that on a summer morning at Denver even the distant mountains themselves look hot, shimmering in the broiling sun.

I can well imagine, however, the delight with which one hails the first view of the mountains if crossing the great plains, when — a hundred and fifty miles away — the blue peaks can hardly be distinguished from the sky. The long land journey prepares one to imagine that perfect repose can

be found under the shadow of snow-clad peaks. And when one comes so near the dark foot-hills as to see their table and castle-rocks and quaint shapes; and when he enters the deep ravines, climbs to the shoulders of the lower mountains, and gazes on the snowy range near at hand,— he is likely, if a novice in mountaineering, to feel no disappointment in his first acquaintance with these gigantic ridges. If, however, he has seen the ice-clad peaks of Europe, he will find that the dryness of the Rocky Mountain atmosphere has deprived him of the masses of snow and ice which are the glory of the Alps, and he soon learns that the peaks are more easily traversed than the needle-pointed mountains of Switzerland. With only one-fourth of the Alpine rainfall, our Colorado parks must be content with lakes smaller and less frequent than those that shine at the feet of the highest crests in Europe. But no one can ever become so familiar with the finest scenery of the world as to be without enthusiasm in entering the rocky ravines of our American Alps, in following the water-courses between precipitous walls, in threading the forest paths, in wandering over the bare summits, and in standing upon the brink of sharp precipices of two or three thousand feet, and gazing over the immense breadth of mountain masses brought to view, their pines, their parks, their heads of rivers. The storm-clouds of any great mountain range must always arouse the beholder; the strange echoing from peak to peak, and the swift movements of the rain, can leave no beholder indifferent. The varied phenomena of mountain districts in summer and winter, the growth and the decay of foliage, the new-fallen snow, the tonic atmosphere, the strange effects under sun and shade, will for the time so delight the true mountaineer that he will not querulously deprive himself of the highest enjoyment of to-day in



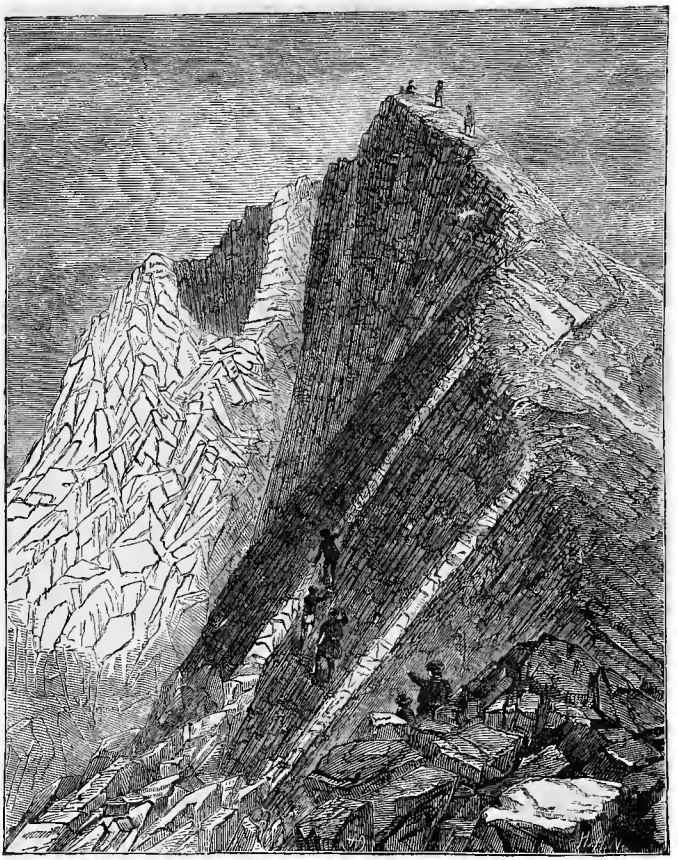
CHEYENNE FALLS, NEAR COLORADO SPRINGS.

disadvantageously comparing the Rocky Mountain plateau, its peaks and parks, with the Andes or the Himalaya.

For myself, wander where I will, I can never forget those wildest, strangest experiences in which, for a moment, I have seen things unlawful to utter, glimpses of glory in our third heavens — the tops of our mountains. If, standing upon the edge of a precipice, you see the valley below filled with clouds, and the sun suddenly appearing, and you behold, projected upon the clouds, a complete circle of the rainbow, you are likely to remember it; so long, at least, as you remember the brilliant canvas of any earthly painter, which you have seen adorning ancient church or gallery in a far-off land. He who will watch from a common house-top on dreary plains, the summer tints following daybreak, as they touch and retouch the mountain picture in the west, can have at daily command mornings out of paradise.

I cannot urge any one to live in Colorado, or even to visit it. Whoever crosses the silent and solitary plains from the eastward will feel disappointed that he has come at last into that half of the United States where there is no greensward without irrigation. The country will look more naked and desolate — save in late May or early June — than he could easily have believed possible. And the dust or the hail, or petty inconveniences of travel in the inn or the market, will prove more vexatious than one had anticipated. And the mountains themselves will be at fault — perhaps not so lofty at first sight as one had dreamed. Those who have good homes, and are doing well in business, need not restlessly wander into new regions. And those whose very rest-days must be spent in the lap of luxury do wisely not to travel too far to find new means of annoyance. But if there is any pressure of business, if one must seek the opportu-

nities of a new country; or if it is absolutely clear that the Rocky Mountain plateau is the best place for a particular patient fleeing from disease; or if, for any wise reason, one seeks a home, or even long vacation days, in Colorado, he may be glad that in the land of his exile he finds all those things most needful for a permanent home,—abundant resources for doing business, a wholesome climate, and picturesque surroundings. Perennial pastures in which cattle thrive with little more care than the fish in the sea; a rich soil producing abundant crops under the touch of water; the most wonderful mines of precious metal the world has seen; a climate dry and sufficiently equable, with—most commonly—warm days and very cold nights in winter, and cool nights in summer; home-like towns, with school and church, pleasant gardens and pure fountains; and mountain scenery sufficiently attractive to draw almost the entire population of towns into tent-life in summer,— these are some of the considerations weighed by those who seek new homes in Colorado, and which go far toward making them content in their new home, and which make them cling to it and eagerly return to it. We miss the varied foliage and the carpet of green which covers the moist half of the continent, and we miss the surging of the ocean; but, living not for grass or leaves or spray, we are content with the work in hand, and lead lives of thankfulness as we see the means for abundant bread for our children, and as we look upon the natural means of health by which we are surrounded, and as we lift up our eyes to the everlasting hills.



SUMMIT OF ITALIAN MOUNTAIN IN THE GUNNISON DISTRICT.

Hieght, 13,255 feet.

SCIENTIFIC EDUCATION.

LOOKING out from my house-top I see, within five miles circuit, geological formations which represent each of the grand periods of our world's history. The granite of Cheyenne Mountain and Ute Pass illustrates Azoic time. The Paleozoic ages are represented in the Silurian beds of Glen

Eyrie, Cheyenne Cañon and Williams' Cañon, where they rest upon the granite, and in the lower and upper Carboniferous belts north of Manitou, Glen Eyrie being in the northeast corner of the belt. McFerran's coal-beds contain fossil plants. In Mesozoic time, the Triassic formation appears in the Garden of the Gods, the belt running north; a parallel Jurassic belt is found at short distance east of it; the Cretaceous formation underlies Colorado Springs town site, and fossils are abundant. Certain Tertiary hills toward Monument Park, and Austin's Bluffs upon the east, illustrate Cenozoic time. It is only thirty miles to volcanic rock upon the north. Professor Hayden states that there is here "an area of about ten miles square that contains more material of geological interest than any other area of equal extent that I have seen in the West."[1]

The Rocky Mountain system is composed of a series of ranges extending from six hundred to a thousand miles east and west. The ranges are of two kinds; the one granite (granitoid) in nucleus, and the other basaltic. The eastern portion is granitoid; and the cones of the Sierra are volcanic.[2] "It seems probable that a portion of the Rocky Mountain range was outlined at an early period; that it has grown, as it were, through successive ages up to the present time."[3] The several ranges comprising the Rocky Mountain system occur upon former lines of weakness in the earth's coast, along which at varying intervals there were elevations and depressions; the disturbing force being propagated from the east or east of northeast.[4] "The Rocky Mountain system

[1] Preliminary Field Report, p 4

[2] Hayden's Annual Reports, 1–3 in one vol., p. 125.

[3] Hayden's Eighth Annual Report, p. 40.

[4] Wheeler's Survey, Vol. iii; Geology, pp. 498–99.

is the result of four especially marked upheavals: the first at the close of the Carboniferous, the second at the close of the Trias, the third at the close of the Cretaceous, and the fourth during the Tertiary. Of these, the first and third were the most general in their effects."[1]

The ranges parallel to the main ranges are lower, descending like steps. The trend of the mountain ranges is northwest and southeast, so that passing along the eastern flanks from north to south, the minor ranges or foot-hills run out one after the other in the plain; sometimes several of these ridges run out at once, forming a notch or depression several miles westward toward the main range, together with side rifts or water-courses in the mountains north and south. These localities give unusual facilities for studying the geological structure in detail.[2] The most remarkable example of this westward depression into the heart of the mountain range occurs at Colorado Springs.[3] This depression, extending around the northeast side of Pike's Peak, was filled with water during the Silurian age, although the ridge north of the Peak was then high enough to keep the water from crossing westward. The elevation of the ridges centering in Pike's Peak, at the close of the Carboniferous period, emptied the bay and left the shore line nearer what is now the plain.[4] At a subsequent time, the Fountain Creek so deepened the bed of the ancient bay as to give still better facilities for studying the formations in their consecutive relations. "There is an unusual development of the Triassic or red group, and below it from a thousand to fifteen hundred feet of reddish and gray sand-stone quartzites with intercolated beds of clay of varied

[1] Wheeler's Survey, Vol. iii; Geology, p. 561.

[2] Hayden's Annual Reports, 1–3 in one vol., p. 126.

[3] Ibid.

[4] Hayden Seventh Annual Report, p. 204.

GEOLOGICAL AND TOPOGRAPHICAL MAP

OF

COLORADO SPRINGS AND VICINITY.

I. ..... The area east of this line, is Lignitic.

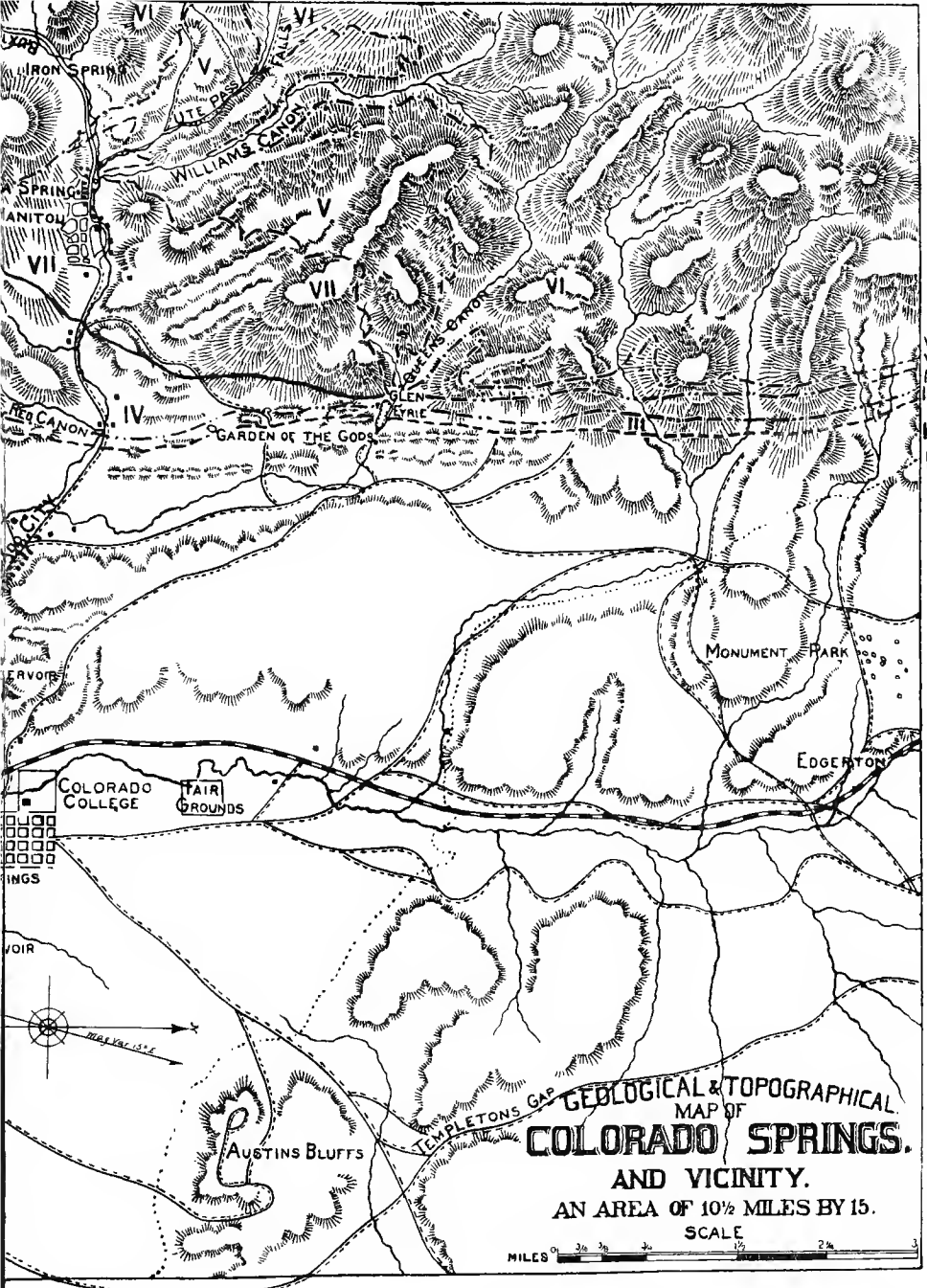
II. ---------- The area betweeo the dot line and the dash line, is Cretaceous.

III. — — · · — — The area between the dash line and the line indicated by two dashes and two dots, is Jurassic.

GEOLOGI

IV. — — · · — — } The area bet
— — · · — — } two dots,

V. — · — · — · The area between
and the dot an



CAL KEY

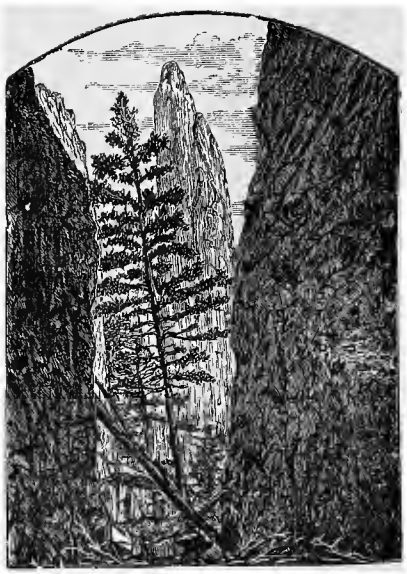
ween the two lines of two dashes and
is Triassic.

the west line of two dashes and two dots
d dash line, is Silurian.

VI. — — · — · — The area west of the dot and dash line, is Granite.

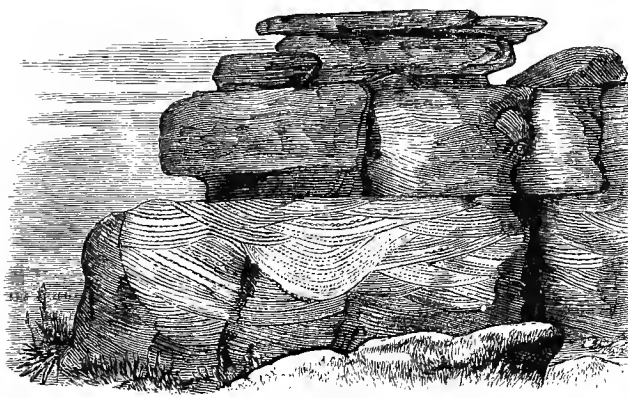
VII. ———— The area included by the continuous line, is Carboniferous.

✠ Coal outcrops.



GLEN EYRIE.

thickness, probably Carboniferous, and below this a group of limestones more or less impure resting unconformably on the Metamorphic rocks containing well-defined Silurian fossils." "The opportunity for special studies is as complete as could be desired."[1] "Nearly all the elements of geological study revealed in the Rocky Mountains are shown on a unique scale in this locality."[2]



CROSS BEDDING LIGNITIC SANDSTONE, NEAR COLORADO SPRINGS.

After the elevation of the Silurian beds at the close of the Carboniferous, a shallow sea still covered the valley of the Fountain and the Garden of the Gods. The red sandstone was probably derived from the wash of the red porphyritic granite along the foot-hills toward Denver.[3] The Front Range during the supposed Triassic period, formed a vast shore-line, and the sediments of the red beds were deposited on the base against the sides of the granite range.[4] These

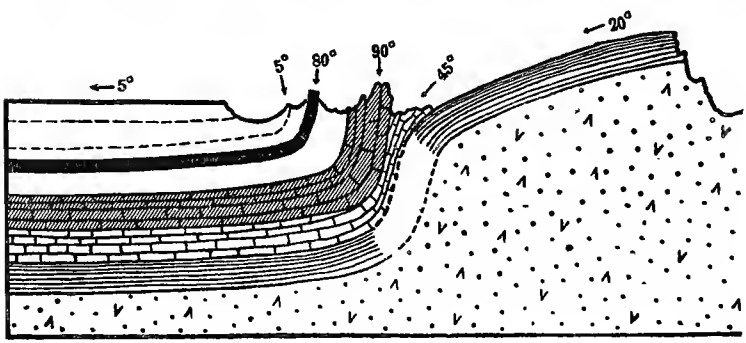
[1] Hayden's Seventh Annual Report, p. 34

[2] Hayden, Annual Reports, 1–3 in one vol., p. 126.

[3] Hayden's Seventh Annual Report, p. 205.

[4] Hayden's Eighth Annual Report, p. 43, 44.

sandstones were probably deposited in horizontal layers, and afterwards elevated by the further upheaval of the ridges centering in Pike's Peak.[1] "The elevation of the great Front or Colorado range carried up the sedimentary formation which originally rested on its sides or summit, and the uplift seems to have been nearly or quite vertical."[2] This "great uplift of mountain ranges, though imperceptibly slow, was a unit in action" in changing the position of the sedimentary rocks.[3] "The elevatory force seems to have acted vertically, bending the overlying sedimentary strata like metallic



IDEAL SECTION,

Showing the manner in which the greet diversity of surface dip is probably produced. Surface Sect on near Glen Eyrie, Colo.[4]

sheets, so that within a few yards of the nearly vertical beds the same are horizontal or nearly so. This explains the abruptness with which the mountains seem to rise out of the plains."[5] The continuous vertical strata in the Garden of the Gods have been partially worn away by the action of the water and weather, leaving isolated massive monuments.[6]

[1] Hayden's Eighth Annual Report, p. 43. [2] Ibid, p 40. [3] Ibid, p. 43.

[4] This is copied from a cut in Hayden's survey. I wish to acknowledge my great obligation to the courtesy of Dr. HAYDEN and Major POWELL in providing me copies of several cuts for this work. [5] Hayden's Eighth Annual Report, p. 43.

[6] Ibid, p. 43.

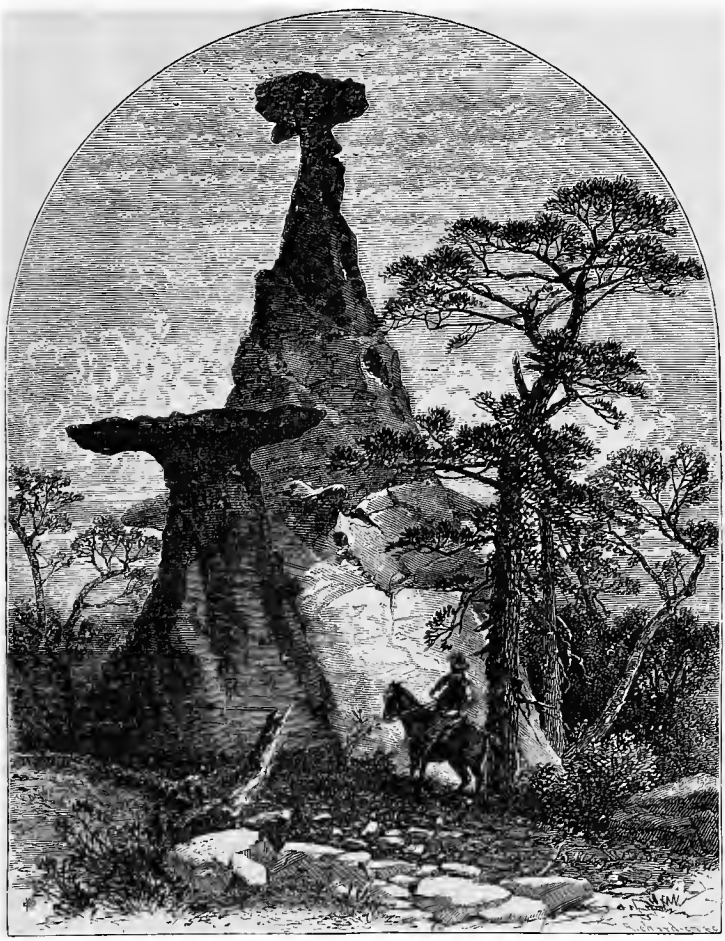
WILLIAMS' CAÑON, NEAR COLORADO SPRINGS.

The study of stratified geology can probably be carried on to better advantage in this than in any other locality in America. Williams' Cañon is an open book in which a geological class can learn more in one hour, than by some days of study in a region less favored. One may follow the cañon two or three miles through a narrow gorge with walls rising from three hundred to five hundred feet on either side. "At the entrance to the cañon the red beds rest on a yellow-gray limestone which passes down into an arenaceous limestone with a reddish tinge containing well-marked Silurian fossils. The inclination of all the beds is thirty-five degrees, and the mass runs high upon the mountain side, resting uncomformably on the coarse feldspathic granite. The lowest beds of sedimentary rocks are rather coarse sandstones, and conglomerate made up of water-worn quartz pebbles, with very irregular laminæ of deposition, the whole reminding one of the Potsdam group. About two miles up the cañon the Silurian beds, inclining southeast eight to ten degrees, rest on the feldspathic granites, which are most distinctly stratified, the strata inclining about north thirty-five degrees."[1] "There is considerable variety in the aggregate of beds here, which may be regarded as Silurian, and we may conclude that the Potsdam group is quite well represented, and that it is quite possible that some of the higher divisions occur. These rocks require a still more careful study."[2]

Monument Park is a place of much interest. "It lies south of West Monument Creek, and is an elliptical basin, about two miles in length from east to west, and three-quarters of a mile in width north and south. It extends from Monument Creek westward, where it is bounded by

[1] Hayden's Survey, Seventh Annual Report, p. 35. [2] Ibid.

the ridge of sandstone which forms the main hog-back. The columns and monuments are found in two ridges that run lengthwise through the Park. These monuments are from twelve to twenty-five feet in height, and are composed of sandstones of the Monument Creek group. The lower third



MONUMENT PARK, NEAR COLORADO SPRINGS.

of the exposed rock is fine-grained, containing argillaceous layers, and also carbonaceous shales. Above, the sandstone is very coarse, becoming almost conglomeritic. It is from the breaking down of these layers that the local drift, found along the edge of mountains, is derived.[1] The capping of the monuments is a dark ferruginous sandstone conglomerate, very hard, the sand and pebbles being cemented by iron. This layer is about twelve inches thick, and being so much harder than the underlying sandstone, has been more successful in withstanding the eroding influences; and in some places it extends continuously over a number of the columns."[2]

Evidence of glacial action is found in this same region, near Colorado Springs. The marks are not only discovered along the eastern sides of the mountains northward, but south and southeast of the town there was in the glacial period a sheet of ice covering a large extent of country.[3]

When a tropical sea was breaking upon the crags of the foothills, palms were growing upon the shore. My neighbor picked up a fossil palm leaf three feet long, a little north of the town. Upon one of the ridges near the Garden of the Gods, Professor Kerr found Saurian remains within three miles of his class-room. It is not difficult to find petrified stumps or logs in position near the town. The agate fields and the jasper are within easy walk. A sapphire of great value was found upon the bottom lands near my house. Within a day's ride there are petrified stumps sixteen feet in diameter; they were twenty-five feet high before the stone-choppers attacked them. Near by there is an extensive bed of

[1] The *mesa* west of Colorado Springs is composed of this drift.

[2] Hayden's Seventh Annual Report, p. 200.

[3] Wheeler's Survey, Vol. iii., Geology, p. 428.

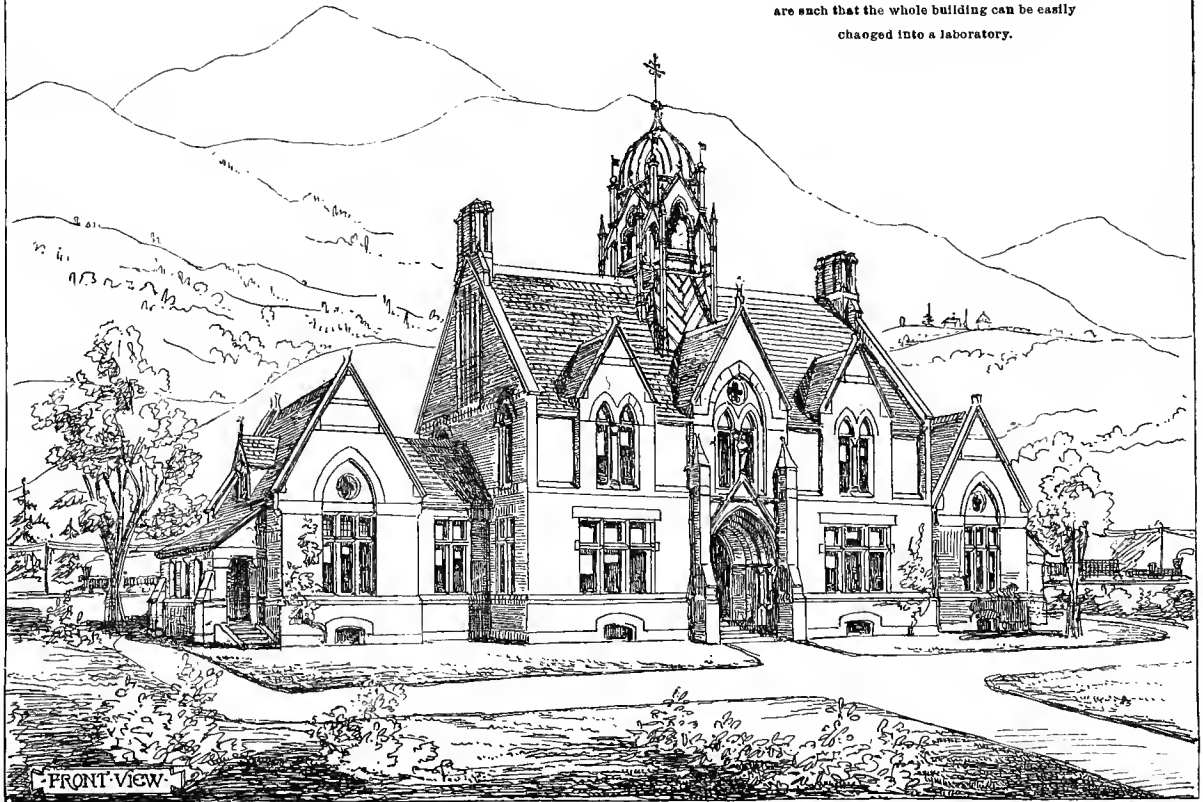
fossil insects, centipedes, bees, butterflies, and a vast variety of flying and creeping things in stone. The microscope shows the feathery scales of the butterfly still unruffled, forty thousand to the square inch. The Tertiary strata of the Rocky Mountain plateau are richer in fossil insects than any other region in the world.

The great plains and mountain districts of Western America offer to-day the most attractive resort in the world to the student of geology. Colorado College, whose beautiful building of pink volcanic limestone rises upon the banks of the Monument near my house, is surrounded by the most remarkable formations on the continent. There is no better location for one who wishes to pursue out-of-door studies in geology.

The important discoveries of new fossils upon the Rocky Mountain plateau have attracted great attention in Europe. Unknown species of animals and plants are so abundant, that Professor Cope has obtained from the ancient sea and lake deposits of western Kansas, Colorado, Wyoming, and Idaho, nearly three hundred and fifty species of vertebrate animals, of which he has made known to science for the first time more than two hundred species. One summer yielded to him one hundred new species. Incredible numbers of fossils — monkey, snake, lizard, tiger, turtle, rhinoceros — indicate a great harvest, if trained men are put into the field. Birds with teeth and strange creatures excite the surprise of scientific men. Kansas has yielded thirty species of saurians within a few years; all Europe, sixteen in a century. The researches of Professor Marsh have made a new era in paleontology. When the New West is as systematically explored as Europe, which has been overrun with such minuteness by competent geologists, the results

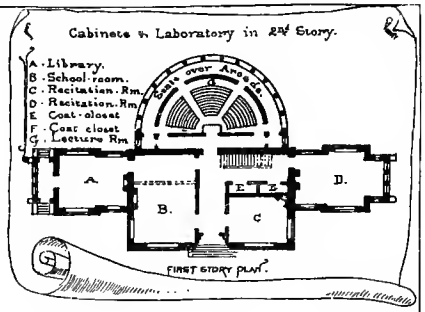
COLORADO COLLEGE BUILDING.

The central block is completed. The internal arrangements are such that the whole building can be easily chaoged into a laboratory.



FRONT VIEW.

WEST SIDE OF THE COLLEGE BUILDING.



BACK VIEW

will prove a most important contribution to the scientific knowledge of the world.

"There are many districts," says Major Powell, "in which the 'country rock' is composed of incoherent sands and

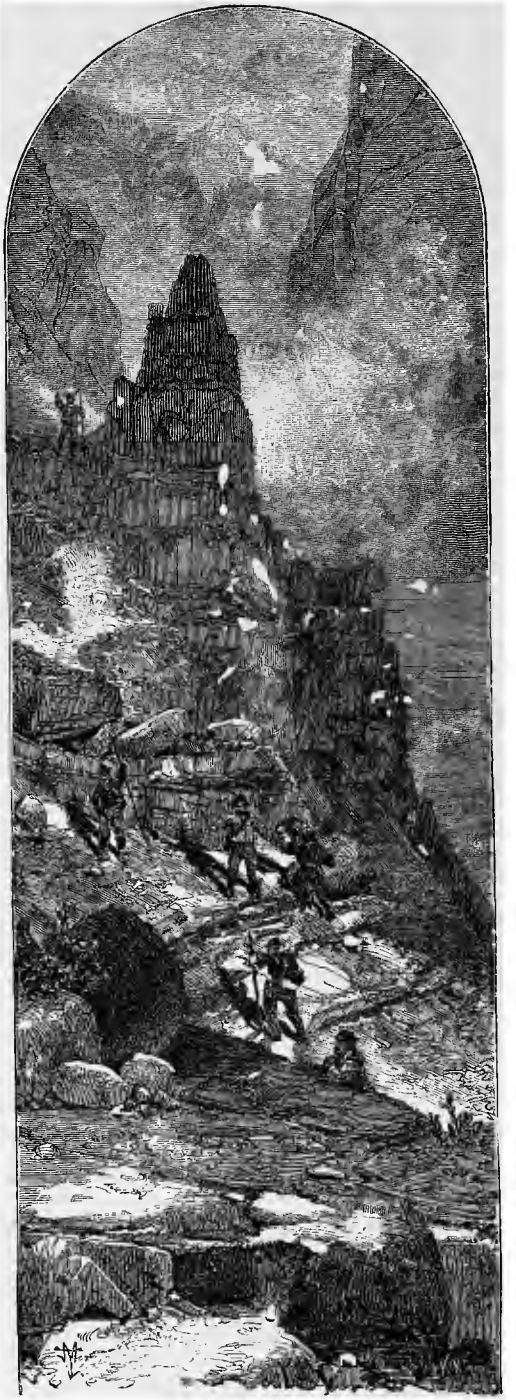
RHODA'S ARCH.
Sawatch Range, South River, near Antelope Park.

clays; sometimes sediments of ancient Tertiary lakes; elsewhere sediments of more ancient Cretaceous seas. In these districts perennial or intermittent streams have carved deep

waterways, and the steep hills are ever washed naked by fierce and infrequent storms, as the incoherent rocks are unable to withstand the beating of the rain. These are known as the bad lands of the Rocky Mountain region."[1] These are regions most favorable to the discovery of new fossils. "In other areas the streams have carved labyrinths of deep gorges, and the waters flow at great depths below the general surface. The lands between the streams are beset with towering cliffs, and the landscape is an expanse of naked rock. These are the alcove lands and cañon lands of the Rocky Mountain region."[2] Through such a region is cut the deep gorge of the Colorado River of the West. When this river becomes familiar to the eye and to the hammer of science, and all the treasures of this wild West are made known, there will be fewer imperfections in the geological records. "Still other districts have been the theater of late volcanic activity, and broad sheets of naked lava are found; cinder cones are frequent, and scoria and ashes are scattered over the land. These are the lava-beds of the Rocky Mountain region. In yet other districts, low broken mountains are found with rugged spurs and craggy crests. Grasses and chaparral grow among the rocks, but such mountains are of little value for pasturage purposes."[3] We have then here a world in making. The early processes are evident, and regions waste for other useful purpose are of surpassing interest to the geological student.

And it is in this very region, that astronomical observations can be conducted under peculiarly favorable conditions. The most eminent astronomers are of the opinion

[1] Arid Land Report, p. 20. [2] Ibid. [3] Ibid.



CLIMBING THE GRAND CAÑON OF THE COLORADO.

that our knowledge of the heavenly bodies would be vastly increased by planting one of the best telescopes in the world upon some mountain plateau, in a clear atmosphere, and where the sky is free from clouds the greater portion of the year. It seemed at one time as if the project to establish an observatory upon the Sierra Nevada was likely to meet this want; but Mr. Lick's gift will now enrich the University of California upon the coast. Colorado Springs is six thousand feet above the sea, and it is easy to find in the neighborhood a higher altitude, if it be desirable, where the conditions of climate are most favorable. It is well known that the usefulness of some of the best astronomical apparatus in the world is greatly limited by location upon the coast.

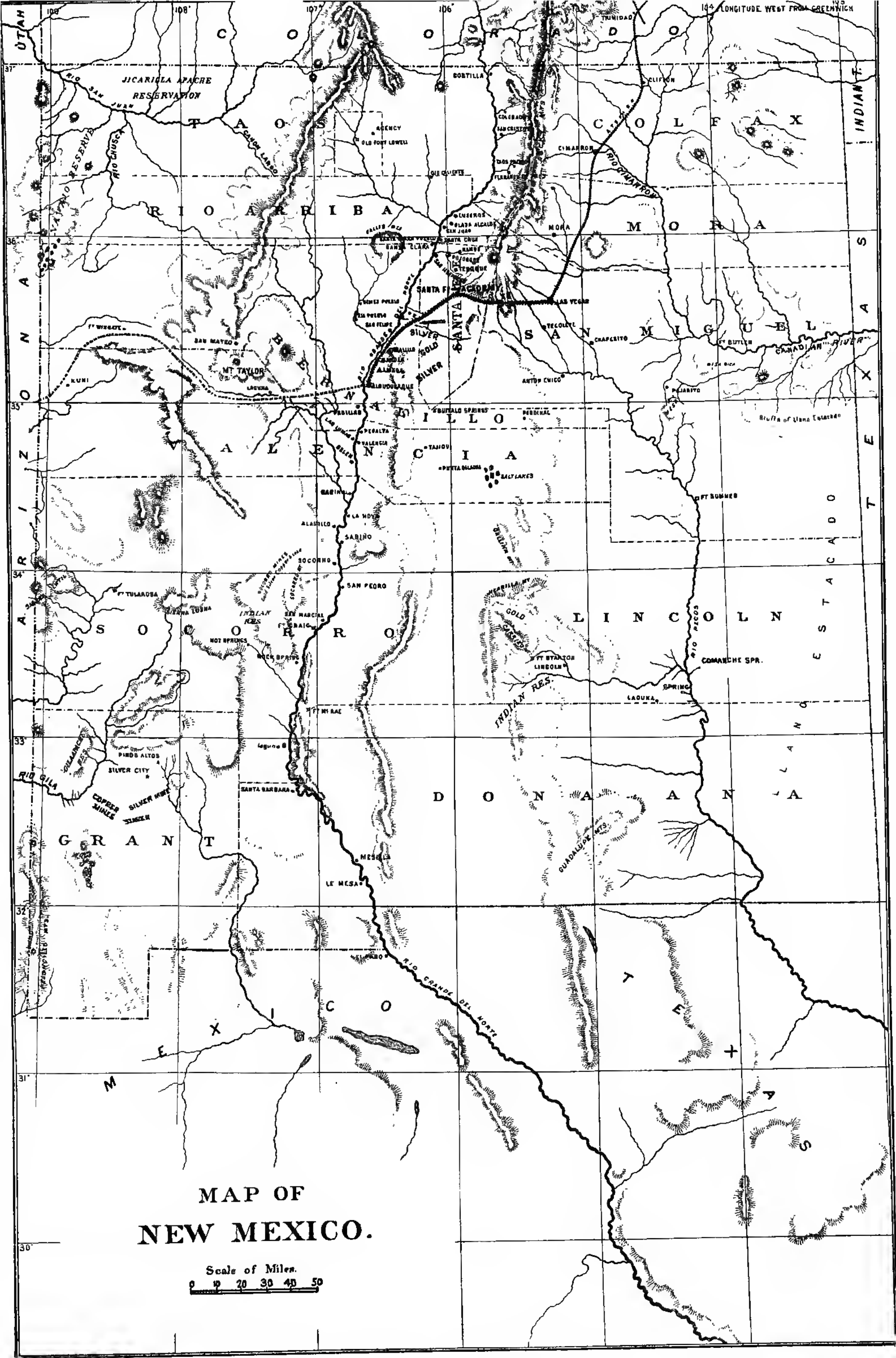
In respect to the unrivaled facilities for scientific education in this remarkable region, men of foresight and ample means are furnishing the instrumentalities needed, so that the homes in the New West may not lack the best culture of the world. It would be indeed strange, if it were a matter of choice that the young people should be half educated, ill-proportioned, narrow, and self-conceited, in a country where the development of the resources so largely depends upon the highest attainable scientific skill, and where the means are so abundant for securing the best scientific schools of the world. Men of native refinement and liberal culture, who gather wealth from the mines of the New West, will be swift to aid instruction in Natural Science.

"Most earnestly I believe," says a writer whose eyes are never weary in beholding the forms of these mountains, and whose fame is known to all literature, "that there is to be born of these plains and mountains, all along the great

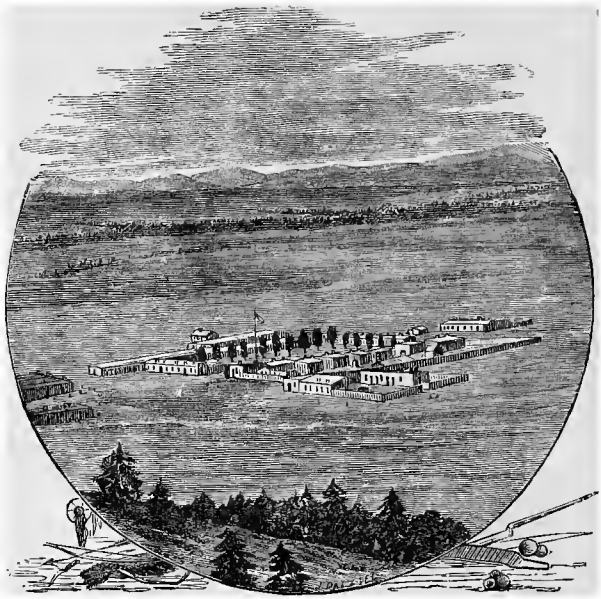
central plateaus of our continent, the very best life, physical and mental, of the coming centuries." In the first four years of the decade now closing, thirty-three million dollars were given by private donors to the higher education in the United States. The annual gifts are from four to eleven millions. "All things considered," says President Eliot, "there is no form of endowment for the benefit of mankind more permanent, more secure from abuse, or surer to do good, than the endowment of public teaching in a well-organized institution of learning."

A handful of poor students gathered at first in a barn at Old Cambridge; and there sprang up the University, which has flourished century after century: lines of kings have reigned a little while and given place to others, but the line of scholars, earnestly searching for truth and nobly contending for it, has not failed, nor will until the brine of the British seas ceases to be salt.

When, then, we seek homes in new regions, it is of the first interest that the founders of the New West are profoundly in earnest to build the school and the college. A wholesome climate, innumerable herds, exhaustless mineral resources, can never furnish homes for the American people unless there are built upon the slopes of the Sierra Madre educational institutions which will make their vivifying influence felt throughout no small portion of the central regions of America; as "the Mother Mountains" give rise to mighty rivers,—the Athabasca, the Columbia, the Father of Waters, the Colorado of the West, the Amazon and La Plata.



MAP OF NEW MEXICO.

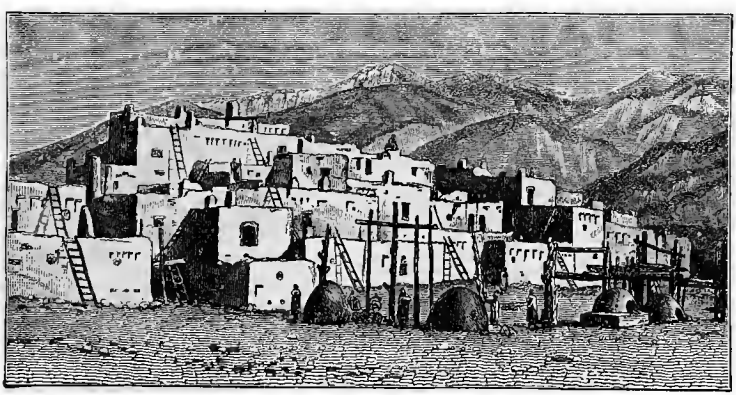


FORT GARLAND.

NEW SPAIN.

THAT part of the State of Colorado south of the Arkansas River, and New Mexico, Arizona, Utah, and California, were formerly parts of Spanish America, under the name of New Spain. Of the population of Mexico, to-day, one million are of Spanish descent, three millions of Indian descent, and four millions of a mixed race, Spanish and Indians, commonly called greasers. This is about the same proportion which obtains in New Mexico. We have thirty thousand of these people in southern Colorado; we have nearly a hundred thousand of them in New Mexico. Besides this

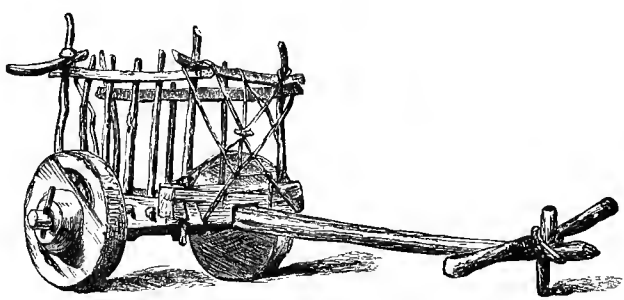
population, we have in New Mexico nearly ten thousand Pueblo Indians. They dwell in strange houses, — building up first one story, perhaps twelve feet high without any door or window, and climbing up by a ladder; then there is a little platform, and then there is another story built up some ten feet high with doors and windows in this second story; then they climb up still another story and descend into the rooms below by trap-doors in the floor of the roof; and in this way they build up perhaps five stories, — the top fifty feet from the ground. One of these blocks will contain two hundred



TAOS PUEBLO.

and fifty persons. There are two of these buildings at Taos. They have been built some three hundred years or more. Nearly ten thousand people in New Mexico are living in this style of house. Little children are at play upon the tops of these stair-like homes; and the dogs, even, become skilled in climbing the ladders. The house-keeping arrangements are of so primitive a sort that the ladies have very little to do, except to sit out upon the roof in the sun and converse together. The people are very industrious in their farming operations, raising good crops.

Religiously, they are fetish and fire worshipers; having the pleasant habit of rising early in the morning and going out to look for the sunrise, hoping that some morning Montezuma will come from the East; and then they will go forth to a little bridge over the water-course at sunset, and look for the going down of the light, and observe certain forms of adoration. In connection with these singular buildings which I have described, there are underground rooms. You may go down a little orifice, which is very much like the mouth of a jug, and, having once descended below ground, come into a little circular room some twenty feet in diameter. The air is made to pass through it by underground passages. These are their places of secret worship

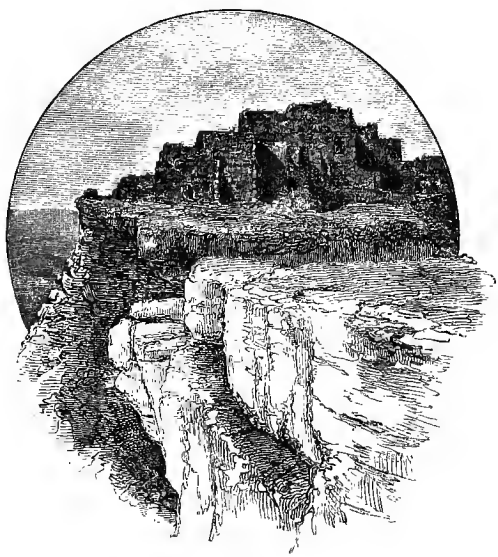


NEW MEXICAN CART.

and sacred dancing; and it is in evidence that in some *pueblos* there is still maintained in one of these secret places the holy fire, which has not been out for three hundred years. They have been taught that the fire must never go out till Montezuma re-appears from the East. They have their own priesthood. But this worship does not at all hinder their being good Catholics; and they have a Catholic church, and the papal priest goes frequently to collect their money and hear confessions. There are churches in New Mexico, in which

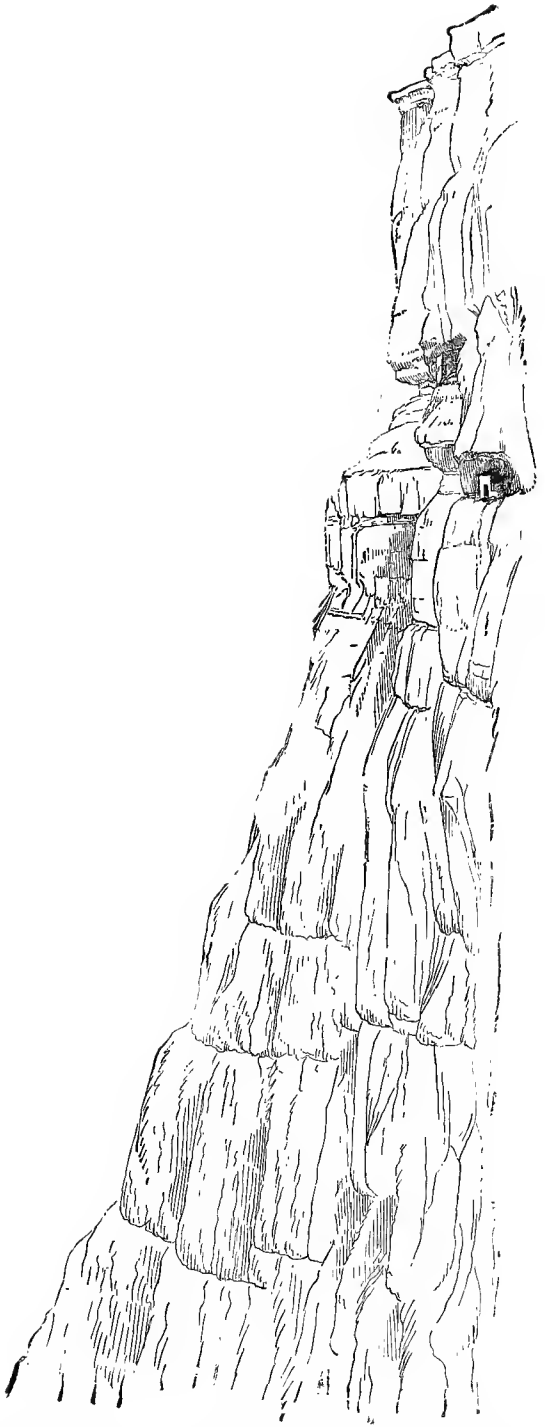
there are the symbols of the Catholic worship, and also upon the walls the image of the rainbow, or the sun, and various symbols which have been used from very ancient times by these Pueblos in worship,—the very walls themselves witnessing to the mixing of Pagan and Catholic service.

Some of these unique Pueblo dwellings are built upon cliffs three hundred feet high, like that at Acoma; and they can be approached only by clambering up on the *debris* of fallen



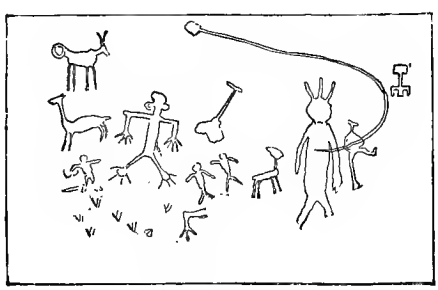
ACOMA.

rocks, and then by steps cut out of the living rock, and then, perhaps, climbing immense timbers placed near the top, the throwing down of which would entirely cut off all access to the dwellings above. There are in southwestern Colorado, considerable areas of the ruins of houses formerly occupied by these people. Some of them are perched upon the walls of precipitous cañons eight hundred feet above the roaring



CLIFF-HOUSES, RIO MANCOS, COLORADO, 700 FEET ABOVE THE RIVER.

waters, set like swallows' nests in a little cavity in the rocks. And there are steps cut in the side of the living rock by which to ascend to them. These houses were probably built from three to five hundred years ago at a time when these peaceable, quiet Indians, who originated in the far south of this Continent or South America, were very much disturbed by the incursions of the northern red Indians. The mounds of the Rio Mancos are overgrown with piñon-pine and cedar. "There is scarcely a square mile in the six thousand examined," in the San Juan region, chiefly in southwestern



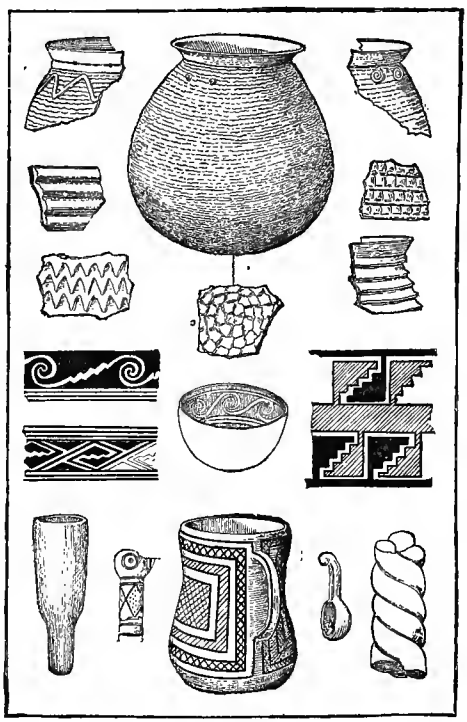
INDIAN PICTURE WRITING.

Colorado, says Hayden's Survey,[1] "that would not furnish evidence of occupation by a race totally distinct from the nomadic savages who hold it now, and in every way superior to them."

If the cliff dwellings of Colorado are not so celebrated as the remains of Petra in the East, they are, at least, more accessible to the American public. These remains of primeval races in America are discovered throughout a great extent of country,—in Colorado, New Mexico, Arizona, Utah and Nevada. Painted and glazed pottery, stone implements,

[1] Report of W. H. Holmes.

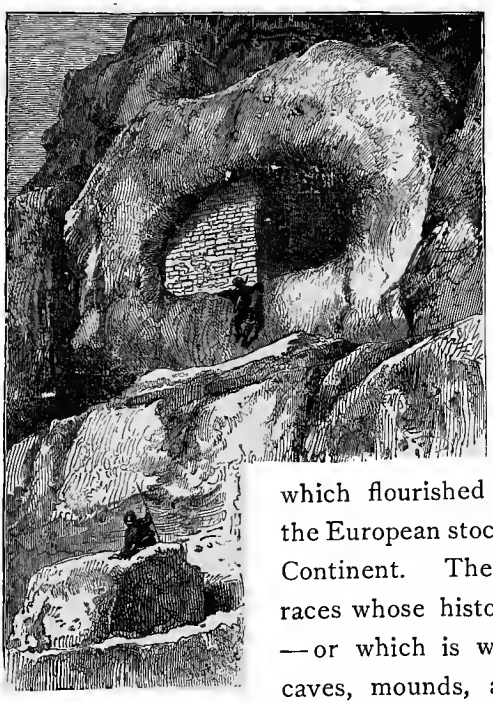
fragments of matting, tied bundles of sticks,— tied up centuries since,— pictures cut upon walls, and other relics of a departed people, excite the interest of the explorer. The models of cave dwellings, low land settlements, and cliff-houses of the San Juan, which have been presented by the United States Government to the South Kensington Museum, have attracted attention in Europe.

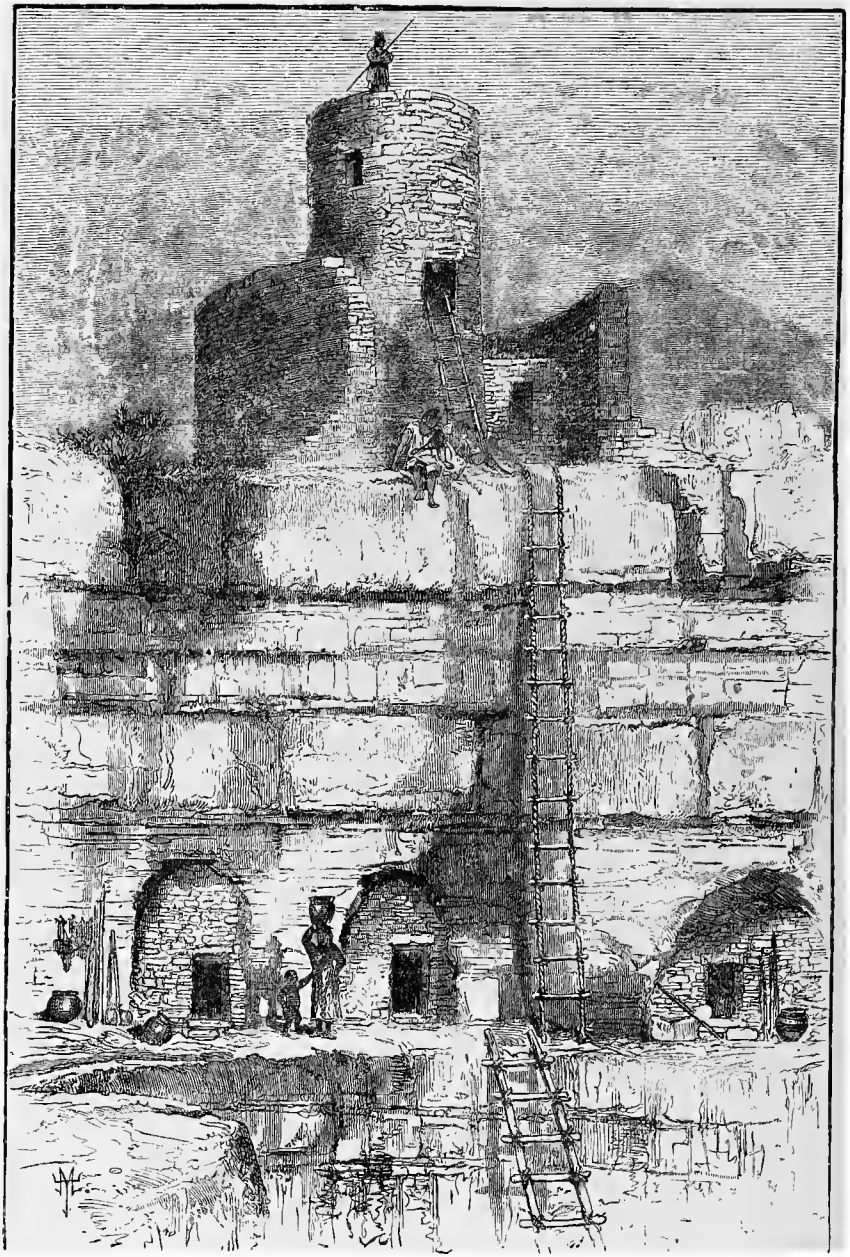


PUEBLO POTTERY.

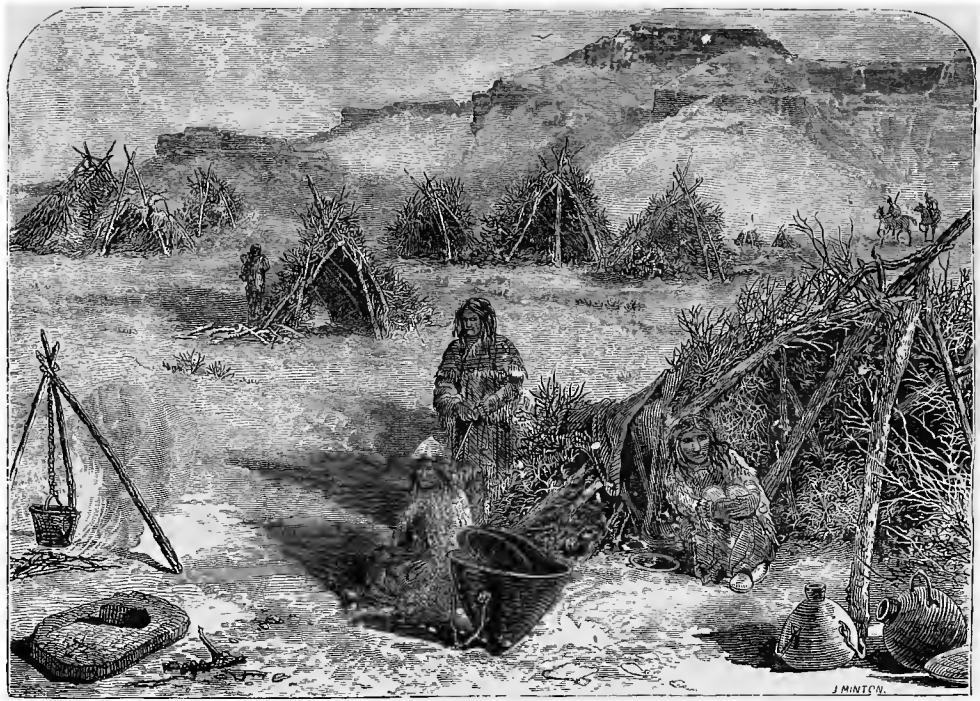
Twelve centuries since, the country southward from Colorado to the Isthmus was peopled by the Toltecs. They were, according to Humboldt, in the tenth century more civilized than the nations of northeastern Europe. But their

palaces fell into the hands of the Chichemecs, who soon yielded to the Aztecs, advancing from the north. The culture of these people at the time of the Spanish conquest is recorded in the pages of Prescott. It is well known that one of the first things the Romanists did, on arriving in the country, was to gather and burn the historical records of the natives, extending over eight centuries. It remains, therefore, to train enthusiastic laborers, who will enter this new field in the ancient land of the Toltecs and Aztecs, and there attempt to read in ruins the record destroyed by the barbaric priests of a former age. Careful research will meet rich reward. There are Indians to-day in the New West, who represent in fair measure the semi-civilization, superstitions, and religious faith, of those who possessed the land before the wild and savage tribes of recent years; races which flourished and perished before the European stock was planted on this Continent. The condition of those races whose history is yet unwritten, — or which is written only in cliffs, caves, mounds, and lake-beds, — will invite the attention of thoughtful students in the New West, which comprises in its area the most ancient relics of man in America.

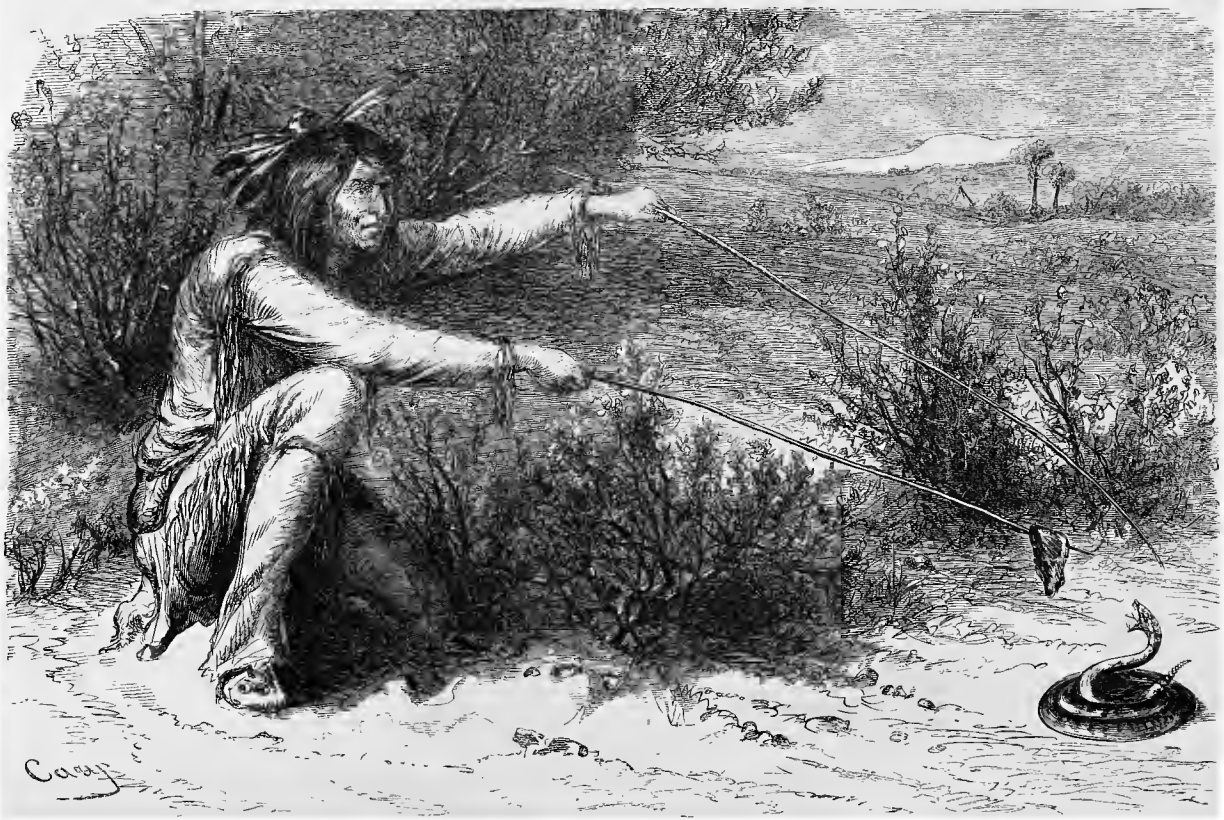




ANCIENT INDIAN TOWER AND CLIFF-HOUSES, RESTORED.

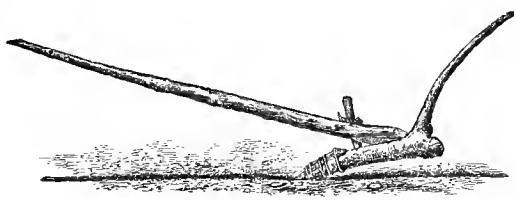


MODERN INDIANS AT HOME.

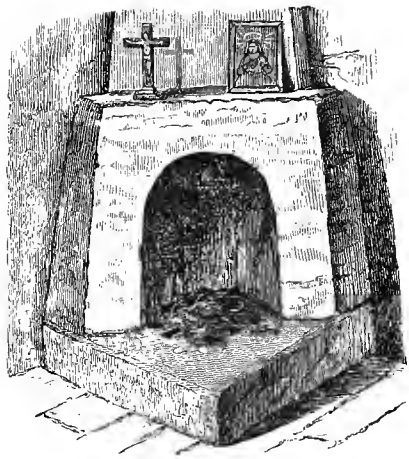


PROCURING POISON.

The seven thousand Navajo Indians in New Mexico are a very interesting people; they are the finest Indians upon the Continent. In respect to the mechanic arts they stand much higher in the scale of civilization than other tribes; and they are much interested in grazing industries, having immense flocks of sheep. It has been observed by thoughtful students of history, that barbaric populations have risen in the scale of manhood through pastoral life. Those who have given most attention to solving the problem of Indian civilization, have had great success in conducting industrial education among the Indians, especially when they have sought to develop in their wards the desire to accumulate cattle. Multitudes of that race which has roamed the great plains and herded ponies for centuries, will eventually become the herders of the New West. The increase of the Indian population of the country, and the capacity of the race for civilization, indicate that Providence has a future for them; an honorable future — if even-handed justice, the school and the church, have a hand in their training.



NEW MEXICAN PLOW.



ADOBE FIRE-PLACE.

OLD SPAIN IN NEW SPAIN.

I SPEAK of these Indian races in order that it may be more easily understood that nearly the entire native population of New Mexico is Indian — practically so. Seven-eighths, as I have explained before, are descended from the southern American Indians, or they are of mixed race,— only one-eighth being of Spanish descent. These are the persons who to-day are plowing the ground with crooked sticks, and threshing their grain by driving goats over it; having the customs observed many centuries since, and which now obtain in some of the oldest and least cultivated of the nations of the world. The majority of these people were slaves, peons, till the emancipation proclamation of Mr. Lincoln. This being so, it is easily seen how it is that they should have been kept in the lowest grade of civilization. They have been systematically neglected by the so-called Christian civilization under which

they have been living for three hundred years. At the time New Mexico was received into the United States as a Territory there was only one school in the country; and there had never been more than one in all the historic time before. Some eighteen years ago, the question was brought before the Legislature of New Mexico whether they would have a school law and establish public schools; they almost unanimously voted that they would not: and when the question was put to popular vote there were only thirty-seven votes in favor of it and five thousand against it.

At the present day, if a person visiting this portion of New Spain, were to go to a community of a thousand persons and inquire about the school taught there last winter, — they are only held about two months in the winter time, — he would find it attended by about twenty boys. The girls do not go to school. In these schools there is sometimes a teacher who cannot read or write; being appointed on account of his political influence. The children are poor. Occasionally fragments of newspapers are brought in for reading-books. In the average Hebrew store in the country no text-book is found above the Spanish primer of the lowest grade we use in our schools. The common text-book is the Jesuit catechism in Spanish. In more than half of these schools there is no English taught. The American population is very small, probably — at present — not more than one-fifth of the whole population.

There are private papal schools at Taos, Mora, Las Vegas, Santa Fé, Bernalillo, Las Cruces and Albuquerque.

It is easy to see, that, in a community so constituted, those who have it in mind to manipulate a population in opposition to our laws and Government, can find a very good foothold.

When Edward Everett Hale was in Rome, just before Garibaldi entered the city, he bought a little newspaper, hardly fourteen inches square; there was not one word of news in it in regard to Garibaldi, but it was two-thirds filled with an article upon New Mexico. The Jesuits at that time, preparing to rise and forsake the sacred city, were securing persons to plant a colony in New Mexico, so that a considerable number of these people, born in the worst cities of Southern Europe and educated in Spain, gathered in a company and planted themselves in New Mexico, establising themselves at two points, Las Vegas and Albuquerque. They have been systematically introducing their priests; wherever one is displaced they introduce a Jesuit priest as his successor. They established a newspaper, as well printed as *The Nation*, and in form much like it. They set out to obtain political control of the Territory. Two years ago they had a majority in the Legislature, and passed a law, giving the Jesuits peculiar immunities and privileges for carrying on educational work. This law was vetoed by the Governor; and passed over his veto, as soon as he left the room. The head of the Jesuits, with his official robes on, sat by the side of the Speaker, and urged the passage of the bill. It was annulled by Congress, the law being in violation of the Constitution of the United States. These men have now taken the strongest possible ground against public schools. They have sent an official notice to the press of New Mexico, warning them to beware of advocating public schools. They have picked up the worst cases of scandal in the United States, during the last twenty-five years, and have retailed it out to the Spanish population, stating that this is what they may expect in New Mexico if they introduce the public school system. In every way, the ignorant Mexican population is warned not to have anything

to do with this terrible public school system. The common exhortation is,—"Be Mexicans! Be Mexicans!" It is commonly said,—"This is a Catholic country;" and no Protestant ideas can have any foothold. So successful have been the efforts of these men who thrive under our liberties in order the better to destroy them, that they prevented the passage of a good school law by the legislature of 1880.

They have at the season of the year when our Saviour's Passion is celebrated, an order of men who, in the most horrible manner, celebrate those sad scenes which occurred in Judea in ancient times. The men seize upon stocks of cactus, which grow four or five feet high, covered with sharp thorns, and use them for lashing their naked bodies. They crown themselves with sharp thorns, they bear crosses of heavy timber, and in sad procession go forth to a place where one of their number is to be fastened to the cross as if for crucifixion. There is hardly a year goes by in which there are not some persons who die under this strange ordeal. These are the scenes which take place every spring-time in southern Colorado and throughout a large part of New Mexico.

In the *Atlantic Monthly* for June, 1877, "H. H." gives some account of these people:—

"There still exists among the Roman Catholic Mexicans of southern Colorado, an order like the old order of the Flagellants. Every spring, in Easter week, several of the young men belonging to this order inflict on themselves dreadful tortures in public. The congregations to which they belong gather about them, follow them from house to house, and spot to spot, and kneel down around them, singing and praying and continually exciting their frenzy to a higher pitch. Sometimes they have also drums and fifes,

adding a melancholy and discordant music to the harrowing spectacle. The priests ostensibly disapprove of these proceedings, and never appear in public with the Penitentes. But the impression among outsiders is very strong that they do secretly countenance and stimulate them, thinking that the excitement tends to strengthen the hold of the church on the people's minds. It is incredible that such superstitions can still be alive and in force in our country. Some of the tortures these poor creatures undergo are almost too terrible to tell. One of the most common is to make in the small of the back an arrow-shaped incision; then fastening into each end of a long scarf the prickly cactus stems, they scourge themselves with them, throwing the scarf ends first over one shoulder then over the other, each time hitting the bleeding wound. The leaves of the yucca or 'soap-weed' are pounded into a pulp and made into a sort of sponge, acrid and inflaming; a man carries this along in a pail of water, and every now and then wets the wound with it, to increase the pain and the flowing of the blood. Almost naked, lashing themselves in this way they run wildly over the plains. Their blood drops on the ground at every step. A fanatical ecstasy possesses them; they seem to feel no fatigue; for three days and two nights they have been known to keep it up without rest.

"Others bind the thick lobes of the prickly pear under their arms and on the soles of their feet, and run for miles, swinging their arms and stamping their feet violently on the ground. To one who knows what suffering there is from even one of these tiny little spines imbedded in the flesh, it seems past belief that a man could voluntarily endure such pain.

"Others lie on the thresholds of the churches, and every

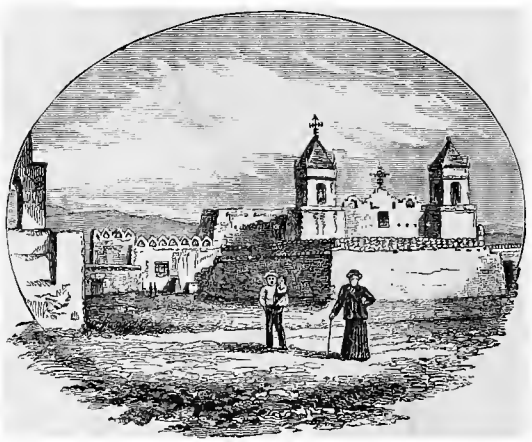
person who enters the church is asked to step with his full weight on their bodies. Others carry about heavy wooden crosses (eight or ten feet long), so heavy that a man can hardly lift them. Some crawl on their hands and knees, dragging the cross. Crowds of women accompany them, singing and shouting. When the penitent throws himself on the ground, they lay the cross on his breast and fall on their knees around him and pray; then they rise up, place the cross on his back again, and take up the dreadful journey. Now and then the band will enter a house and eat a little food, which in all good Catholic houses is kept ready for them. After a short rest the leader gives a signal, and they set out again.

"Last spring, in the eighteen hundred and seventy-sixth year of our merciful Lord, four of these young men died from the effects of their tortures. One of them, after running for three days under the cactus scourge, lay all Easter night naked upon the threshold of a church. Easter morning he was found there dead."

Yet, some years since, a bill to admit New Mexico as a State passed the United States Senate by a political bargain; it was thwarted by the opposing party in the House. It is only a question of opportunity when New Mexico as it is, when Utah as it is, may be received into the Union. There is, however, in New Mexico a German Catholic element opposed to the Jesuits; and there are many young Catholics who stand openly for public schools. The better class of citizens in New Mexico oppose the admission of the Territory as a State until a good school law is enacted.

When, therefore, we seek for good homes in the New West, we are little attracted to this foreign fragment of our republic, albeit New Mexico is, in respect to its natural

resources, well fitted to sustain a large population. Those men, however, who have entered this region with enlightened ideas concerning public education, and who seek to plant an open Bible in the Territory, will soon be reinforced by sturdy emigrants of Eastern training, who will make short work with ancient systems of error and misrule.



CHURCH AT SANTA CRUZ.

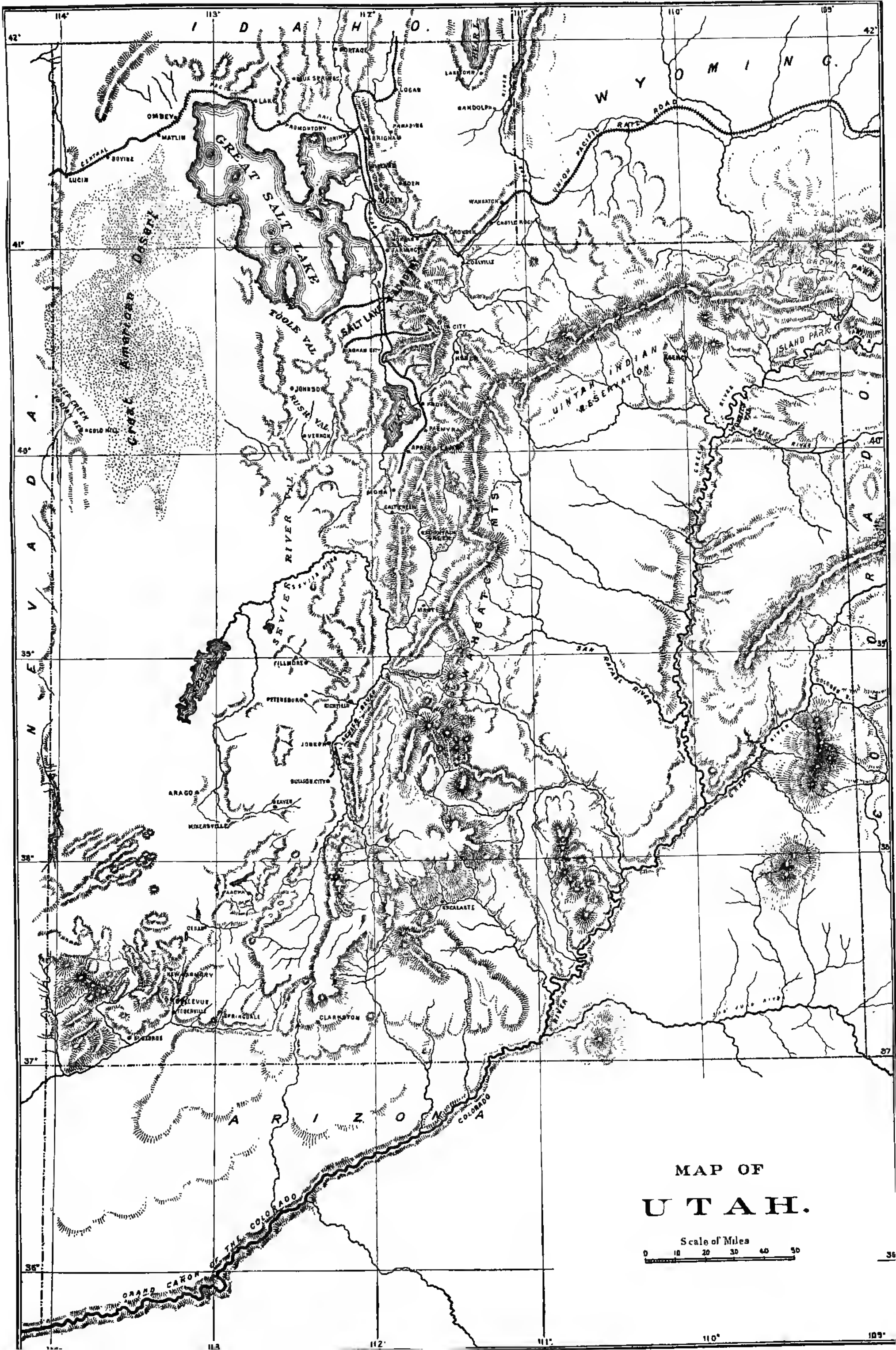
MAP OF ARIZONA.

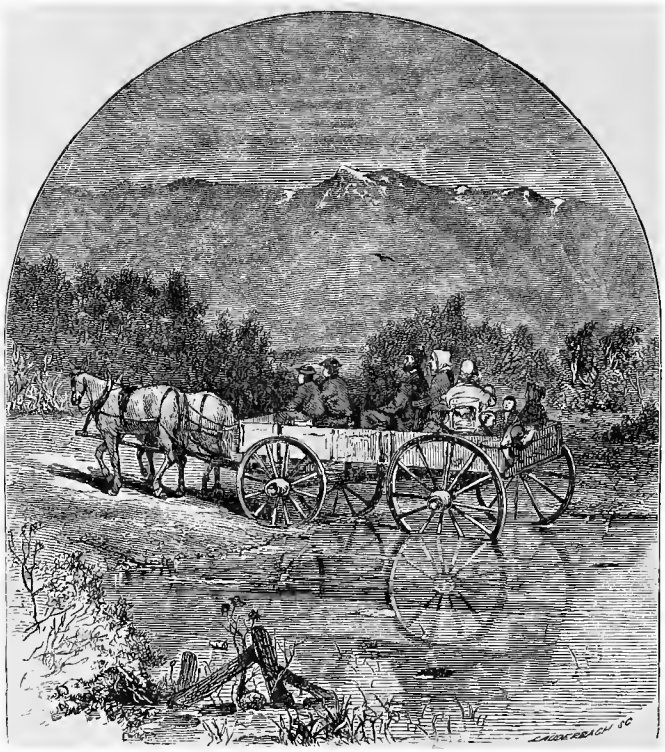
TERRITORIAL officers and law-makers of Arizona have laid the foundations of one of the best public-school systems in the New West; and as their mountains of silver are now echoing to the whistle of locomotives, and two Pacific railways are pushing their lines across the Territory, it will not be strange if Arizona becomes a State before her next neighbor upon the East.

UTAH
NEVADA
NEW MEXICO
ARIZONA
MOHAVE
YAVAPAI
Old Fort
Gold
Colorado River
North Side Mts
Yampais Village
Colorado Cañon
Head of Navigation
Hot Spring
Gold
Forest Lagoons
Sierra del Carrizo
Gold
Sierra de Tune Cha
Navajo Indians
R. del Chelly
Navajo Indians
Moquis Pueblos
Zuñi Indians
Colorado Chiquito or Little Colorado Riv
Cataract Cr
Park Cr
Cedar Cr
Craybe Gardens
Tegua Town
Hualpec
Shapoulahwee
White Rock Spr
Limestone Spr
Painted Desert
Red L
Aquarius Mts
Music Mt
Snow Spr
Mt Kendrick
Hualpais Spr
Bill Williams Mt
Mt San Francisco
Cactus Pass
Mt Sitgreaves
Cedar Forest
Picacho Mt
Aspen Spr
Leroux Spr
Cascade
Spring
Colorado Chiquito
Blue Peaks
Gold
Gold
Willow Spr
Carrizo Spr
Cosina Indians
La Xara
Rapids
Eldorado
Mt Davis
Painted Cañon
Cottonwood Valley
Bitter Spr
Mineral Park
Sacramento
Big Sandy
White Cliff Cr
Mohave City
Ft Mohave
Indian Village
McClellan Mine
Mohave Valley
Mt Hope
Juniper Spr
Aztec Pass
Partridge
Valley de Chino
Tonto Indians
Agua Fria Rancho
San Francisco Spr
Atlantic & Pacific
Forest
Laguna
Ojos
Salt Spr
Proposed
Big Dry Fk
Jacobs Well
Navajo Spr
Rio Pueblo
Chocolate Pool
Zuni R
Colorado Chiquito
Chevelons Cr
Bouches Cr
Whipples Crossing
Meadow Cr
Rapids
Yampais Inds
Bill Williams
Santa Maria Cr
Chimuehueva valley
Aubrey City
Bill Williams
Inscription Spr
New Mines
Mine Valley
PRESCOTT
Yavapai
Ft Whipple
Montezuma Well
Clear Cr
Settlement
Big Bug
Camp Lewis
East Fk
Fossil Cr
Weaver
Turkey Creek

This Map is from HODGE'S ARIZONA, Published by Houghton & Osgood, Boston.

STAGING IN ARIZONA.


MAP OF
UTAH.
Scale of Miles
0 10 20 30 40 50
I D A H O.
W Y O M I N G.
N E V A D A.
A R I Z O N A
GREAT SALT LAKE
Great American Desert
UNION PACIFIC RAIL ROAD
CENTRAL
SALT LAKE
TOOLE VAL
RUSH VAL
SEVIER RIVER
SEVIER VAL
SEVIER L.
WAHSATCH MTS
UINTAH INDIAN RESERVATION
SAN RAFAEL RIVER
GREEN RIVER
WHITE RIVER
BROWNS PARK
ISLAND PARK
GRAND CAÑON OF THE COLORADO
COLORADO
LUCIN
MATLIN
KELTON
CORINNE
BRIGHAM
OGDEN
LOGAN
PORTAGE
RANDOLPH
WAHSATCH
CASTLE ROCK
COALVILLE
PROVO
FILLMORE
PETERSBURG
BEAVER
MINERSVILLE
CEDAR
ST GEORGE
ESCALANTE
CLARKSTON
NEW HARMONY
SPRINGDALE
42°
41°
40°
39°
38°
37°
36°
114°
113°
112°
111°
110°
109°



MORMON FAMILY.

UTAH.

If, however, we now turn northward, we are again shut out of the privilege of planting the American home, the free school and the church, by organized Mormonism, resting like a blight upon an area three times as large as New England.

Many persons have wondered that the Mormon system did not break down utterly, at the death of Brigham Young. There are few who know how thoroughly organized is this system. The Jesuits are not better organized than the Mormons.

Mormonism is, at bottom, a carefully organized land speculation. One-thirteenth part of Utah can be irrigated. If you go north into Idaho, or south into Arizona, or into southwestern Colorado, the Mormon leaders are everywhere spying out the most fertile valleys; and then they send agents abroad to bring over emigrants from Europe. Some of the shrewdest men in Utah — who are not prejudiced by any special religious feeling in regard to the Mormon system, and who have not been so thwarted in schemes of personal ambition that they have become prejudiced witnesses — state in regard to the Mormon system that it is at bottom a grand scheme for land speculation. The elders of the Mormons are most of them Eastern men, able to manipulate the whole Territory according to their own minds. They keep between three and four hundred land agents in Europe every year. These men go into the hamlets and cities of northern Europe, with lists of the names of persons who have settled in certain localities in Utah. They go into a little village and say, —

"Here is Mr. Jones or Smith, who was once your neighbor. He is now in Utah, and has forty acres of land; if you will go there we will give you forty acres."

After describing the climate and the soil and the advantages of emigration, it is said to them that in order to avail themselves of these precious privileges they must be baptized as Mormons. It is a better system of religion than these poor peasants have had at home; it is a step upward when they are baptized as Mormons. They come into this country, and receive their land under the United States Homestead Law, and they suppose the Mormon church gives it to them. These are very ignorant and degraded people; and they at once come into a higher state of civilization, and

have more material comforts than they had in their country or city life in northern Europe.

The whole Mormon system is fastened together by secret oaths. It is historically true that the founders of the Mormon system were acquainted more or less with the secret organizations that have existed from time immemorial in our older civilization, and they determined to adopt this ancient method, and adapt it to their own uses, in establishing a religious system. The Mormons are baptized, but they are not brought into full connection with the church till they have been through the mysteries of the Endowment House. There are three degrees of oaths. Kneeling at the secret altar they vow to observe the Mormon laws in preference to the laws of the United States if the two come in conflict. They swear to stand by each other. In secret they nourish the purpose to keep out Gentile influences from the country. The polygamous marriages are always celebrated at these secret-society meetings. As there are temples built for different secret societies in the East, this Mormon Secret Society is building immense temples for the performance of their rites; not less than three of which are costing each more than a million of money. The walls of these temples are nine feet thick, and they will endure as long as the Pyramids; and the system itself will endure as long as the Pyramids, unless the people of this country are thoroughly aroused to the necessity for establishing education and a higher style of spiritual life, and put forth their utmost energies for the breaking down of the Mormon system by national legislation. One-fifth part of the membership of the Mormon Church are church officers. It is as if every Protestant Church of a hundred members should have twenty church officers. They are some Apostles, some Bishops, some Rulers of Seventies,

some Elders; they are so graded that the head of the Mormon church can through these officers reach every Mormon in any part of the country. And then they have the most admirable system of church discipline.

The tithing system in Utah does not go to enrich the priesthood in any direct way. The Bishops receive no pay for preaching; they are those shrewd men who understand how to get corner lots and understand how to form rings for making public improvements. The money for building the temples, and building the ditches of the great irrigating system, is raised by the tithing system. The administration of these works is in the hands of church officers, who through this method enrich themselves. Now, having control of the church, having control of the water throughout the whole country, if there is the humblest Mormon in the most remote valley among the mountains who rebels in any way against the church, they *take the water away from him.* It is a perfect whipper-in. The man is left without help, and all his farming operations must cease if he in the least rebels against the church. When a Presbyterian minister a year ago last summer moved from a community where there were both Gentiles and Mormons among whom he had been working, and went into a community where they were all Mormons in order that he might labor among them, the two men who hauled his goods were Mormons. One of them was disciplined for doing this; he confessed and was received back into the church; the other man was excommunicated. And the minister found that in this new settlement no one would sell him food, and he had to go back to the place he came from to get food for his family.

Among these people there is very little demand for any high spirituality in the services of the church. The leaders

of the community are engrossed in affairs; and they are not the kind of men who will elevate these low populations pouring in from the lowest grade of society in northern Europe.

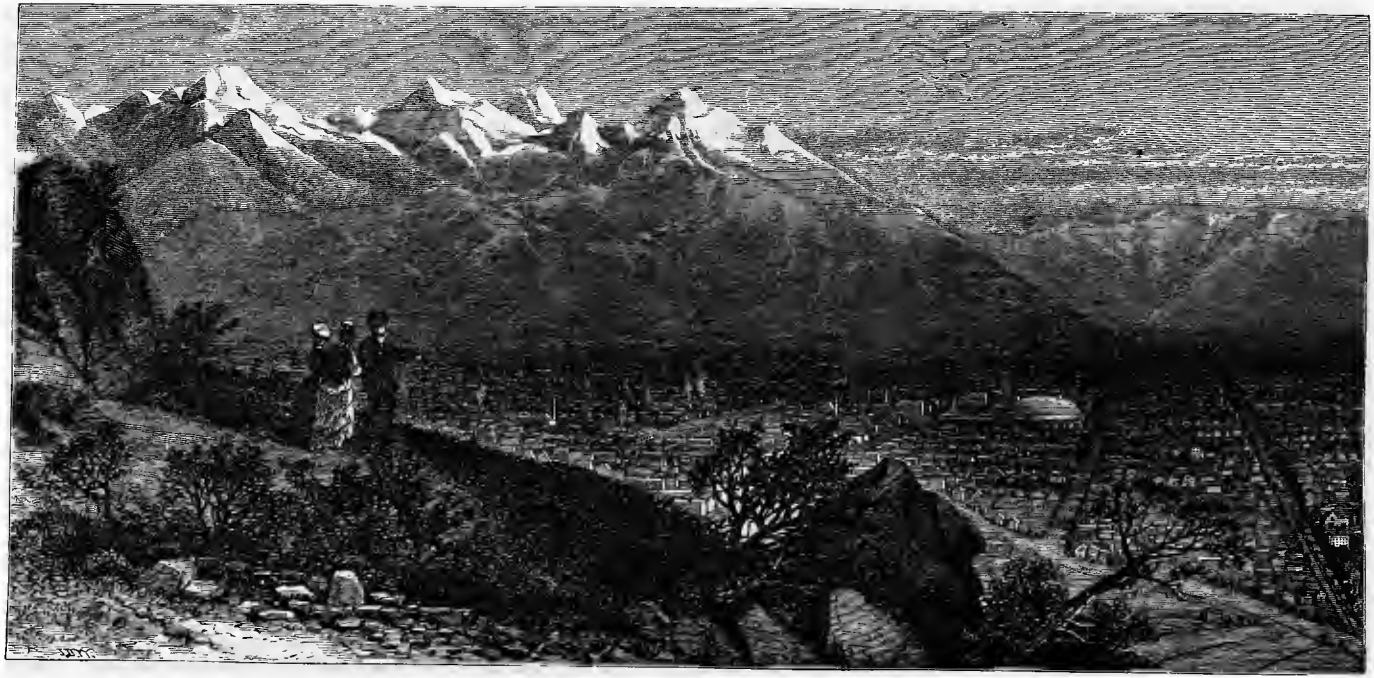
The gentleman who has said more in defense of the Mormon system than any other Gentile, not defending it, but seeing more ground for toleration than any one else, has said that — by observation extending through many years — not more than one sermon out of ten has any reference in it at all to religion. There are meeting-houses in every ward of Salt Lake City. It is only in the summer-time that they meet in the great Tabernacle; in the winter they meet in these meeting-houses. Here, and throughout the country, the Bishops gather the people together and talk with them on Sunday about their farming operations. Dr. Sheldon Jackson, who attended one of their gatherings a little while since, states that the sermon was on the advantage of having blooded stock. The sisters as well as the brethren were invited to subscribe for the purchase of the new stock before the service was closed.

These people do not demand any high grade of education. There is a local law by which a certain amount of money is furnished for schooling, but it is so little that the schooling is pieced out by the payment of tuition, so that there is hardly a free school in Utah; and these schools are under the control of the church officers. These schools are held in their meeting-houses; they are properly parochial schools; they give a little instruction in the rudiments of education, and they propagate the doctrines of the Mormon faith, — teaching that God has a bodily form, that Jesus practiced polygamy, that polygamy is essential if one will have rank in heaven, teaching the doctrine of celestial marriage, by which persons here upon the earth may be married on behalf of dead friends or

eminent statesmen, in order that they may have the felicities of heaven. It is said that the spirit of George Washington could not get to heaven if he did not have another wife, and so these Mormons have been patriotically — and repeatedly — married in behalf of George Washington.

MARRIED IN BEHALF OF GEORGE WASHINGTON.

It may be very easily imagined that, in such a state of society, there are some intelligent men who come from over the water who are much disturbed on account of the state of things they find. Especially under Brigham Young's administration, a great many broke away from their religious tenets and the hold of the church, on account of the abuses of the system. And then there are multitudes who desire better schooling for their children. The Gentile population—of perhaps twenty thousand—has established private schools to some extent, and the contrast is very readily seen by Mormon parents. At this time it is supposed that about one-third of



SALT LAKE CITY.

the Mormon population of Utah hang somewhat loosely to the system. There are perhaps one hundred and twenty thousand Mormons in Utah and neighboring territories.

The method by which one-third of the Mormons can be most easily torn away from the system is by introducing good schools. From what has been said in regard to the organization of the church, their power of discipline, their occupation of every fertile valley, holding the whole Territory under foot, it is seen that it will be very difficult to introduce a Gentile element there which can improve matters. It is almost impossible to introduce farmers or men in other industries unless they are approved by the Mormon leaders. On account of lack of present material to work upon, it will be very difficult to promote the Gospel by the ordinary means of public preaching. The true method is to promote education and to get hold of the children, and such parents as desire better schooling. This method has been adopted to some extent, and carried on very successfully during some years.

We look to such institutions as Salt Lake Academy to help solve the Mormon problem, as we look to the Christian academies in Santa Fé and Albuquerque to become fountains of fire in dark New Mexico.

Salt Lake City is one of the most beautiful places in the world. The Territory will some day be filled with the pleasant homes of an enlightened Christian People.

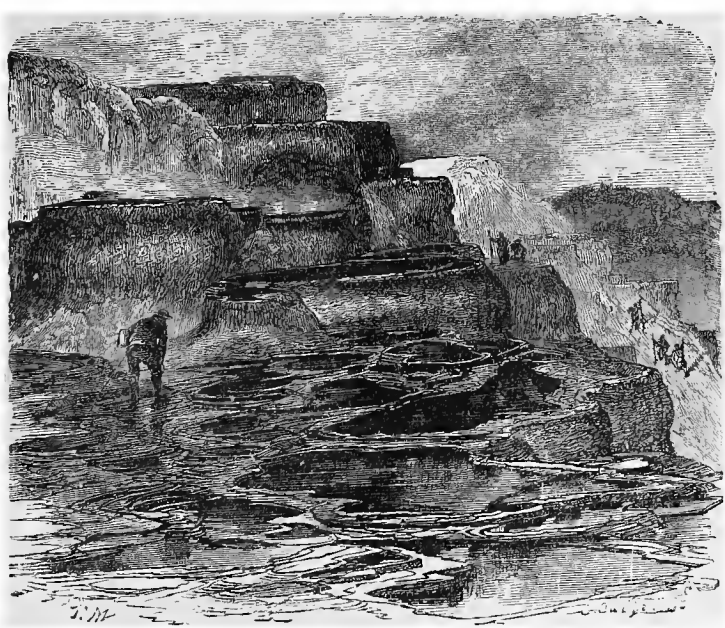
BLACK ROCK.

IDAHO, MONTANA, THE BLACK HILLS AND WYOMING.

THE vast area north of Utah and Colorado holds out to-day the strongest inducements to settlers. The peculiar characteristics of the New West, which are mentioned in the first part of this work, are nowhere more attractive than in the northern portion.

Some parts of the country are indeed suffering very much for want of good training-schools for teachers; but Montana raises more money for schools than most of the States in the Union, in proportion to her population, standing the seventh upon the list.

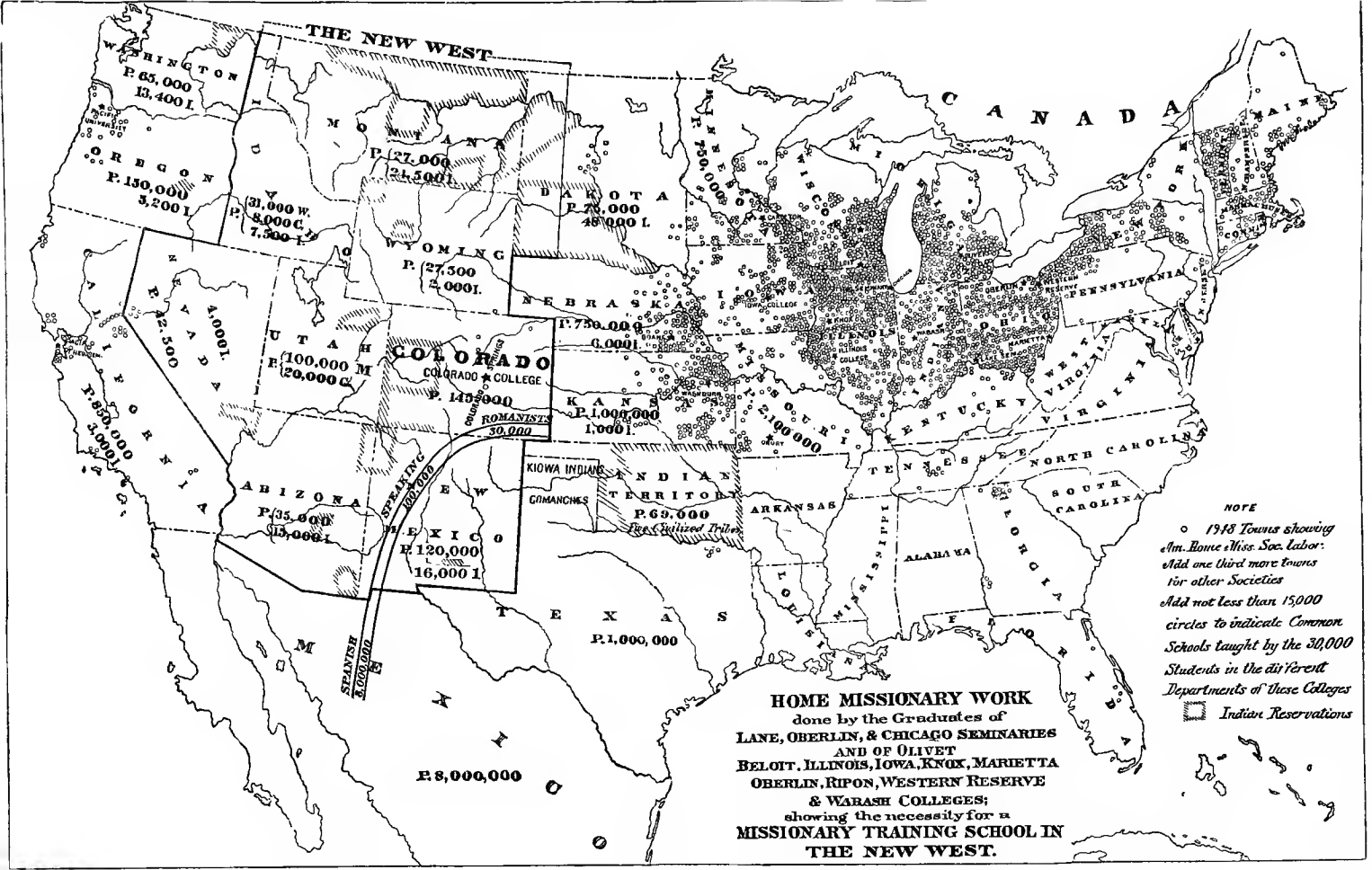
It would be a vast advantage to all the Territories if the counsel of the United States Commissioner of Education were heeded in the appointment by the national Government of Territorial Commissioners of Education, as other officers are appointed. This would be effective in bringing order out of confusion in Utah and New Mexico, and would be so helpful in the development of the best public school system in all new regions as to make them at an early date attractive



IN YELLOWSTONE PARK

to those who are seeking homes in the New West. It is a remark of De Tocqueville that good homes are at the foundation of all national prosperity. To establish good homes we need the school and the church.

BUTTES AT GREEN RIVER.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