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INTERESTING ITEMS



REGARDING

NEW MEXICO:

ITS

AGRICULTURAL, PASTORAL



AND

MINERAL RESOURCES,

PEOPLE, CLIMATE, SOIL, SCENERY, Etc.

By W. F. M. ARNY, Acting Governor of New Mexico.

SANTA FE, N. M.
MANDERFIELD & TUCKER, Printers.
1873.



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No. 477

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William Friedrich Mutton

By W. F. M. ARNY, Acting Governor of New Mexico.

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1881-1881

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MINERAL RESOURCES

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DEDICATION.

To THADDEUS HYATT, Esq.,
66 Gloucester Gardens, Hyde Park,
London, England,

Our co-worker in the cause of human freedom in Kansas, who in 1856, 1861-62 liberally contributed of his means for the freedom, colonization, and development of the resources of that State, and who on his departure from Kansas said—

“Remember me not as an individual,
But as the incarnation of a principle;
For man is ephemeral,
But principles are eternal.”

The following pages are respectfully dedicated, by his old friend, who remembers him as an individual as well as the incarnation of a principle, and who subscribes himself as ever, in the cause of humanity,

Truly your friend,
W. F. M. ARNY.

DECLARATION

THE STATE OF NEW YORK

IN SENATE

JANUARY 18, 1888

REPORT OF THE COMMISSIONERS OF THE LAND OFFICE
IN ANSWER TO A RESOLUTION PASSED BY THE SENATE
MAY 15, 1887

ALBANY: PUBLISHED BY THE
UNIVERSITY OF THE STATE OF NEW YORK
1888

THE STATE OF NEW YORK
COMMISSIONERS OF THE LAND OFFICE

ALBANY: PUBLISHED BY THE
UNIVERSITY OF THE STATE OF NEW YORK
1888

THE
PHYSICAL, GEOGRAPHICAL
AND
MINERAL WEALTH
OF
NEW MEXICO.

The resources of the Rocky Mountains, especially that portion which is included within the limits of New Mexico and Arizona, being scarcely known or appreciated, I propose to give a description of it as to its properties and the natural laws which must eventually give it position and character among the divisions of the United States, believing that the vast extent of territory, and the immense mineral wealth which it contains, will ere long justify its more full exploration, and the formation of a state in the Union.

This country is not a Garden of Eden. On the contrary, the superficial observer would place his ideas of desolation, within its limits; yet, if he examines closely, he will find an oasis amid the desert, and elements of wealth such as it is the fortune of few countries to possess.

Its evils—That it is arid, rainless; presenting contrasts to the American, come he from what part he may.

Its good—Pastoral resources, unlimited as space; mineral wealth, as vast as man's comprehension can span; its valleys limited, but fertile; its climate equals Italy; it is truly the depository of wealth, and the country for health.

I propose to give, as briefly as possible, the light shades and the dark shades, its advantages and disadvantages, its sterile sands and glittering gems. I ask none to adopt as truth what I say without close examination, and I trust that some may be induced to judge and investigate by personal inspection, from philanthropic as well as pecuniary motives, and be convinced as I have been.

Within this portion of the Territories of the United States were the cradles of that race of whom the Montezumas were kings, and in these mountains and valleys are ruins of the Montezumas. Upon the mountains and by the streams, in some places, their population, as the ruins would indicate, were tens of thousands, and their temples are yet standing where, not many years ago, burned "the eternal fires." The Montezumas were the most civilized of all the Indians, they were evidently advanced in many arts and sciences; had a complete system of government, and their kings had absolute sway over an empire whose extent was great, and much of which, since it has been acquired by the United States, remains unexplored, and whose population amounted to hundreds of thousands. They were an industrious people, adepts in the cultivation of the soil, (by irrigation, as the remains of their ditches show,) in mining, and in the manufacture of woolen goods, in which latter industry some of the Indians of the country excel. They built houses and temples; they were a great nation of miners; the empire was and remains a rich extent of precious metals;

and indications are found of their working of mines on the streams and in the mountains.

The Montezumas came from the North and traveled southward until the Spaniards found the center of that great empire in Mexico. The Spaniard journeyed northward conquering on the pathway of the Montezumas, and stopped in their march where the Montezumas began.

The blood of the Montezumas is to-day three-fifths of the blood of Mexico; but the iron heel of the Spaniard has obliterated nearly all points of their original character, save here and there among some Indian tribes a blending will be found of Roman Catholic and Indian customs. However, there are yet many who expect the return of Montezuma as the Jews await the advent of Christ, and believe, when he comes to be their king, they will be united, rich, powerful, and will regain their prestige and empire.

CHARACTER OF THE COUNTRY.

There is a general similarity of character throughout this whole extent of country, a similarity of climate and resources, its surface being much broken and traversed by chains of mountains, whose general direction is north and south, while intervening are large scopes or areas of table lands divided by occasional large and many small valleys of great fertility; the valleys having a mean elevation of about four thousand feet above the sea, and the highest mountains about nine thousand feet.

WATER COURSES.

This country is drained by the water of the Rio Grande, Chama, Navajoe river, the Pecos, Red river, the Mimbres, the San Juan river, and its tributaries, which empty into the Colorado river, and the Gulf of California; and numbers of smaller mountain streams.

RAILWAYS.

The Sierra Madre or Rocky Mountains and its spurs, or branching chains, are in this Territory broken, and contain a multiplicity of feasible passes, admitting at many points good wagon roads from the Atlantic to the Pacific slopes, and over the intervening minor divides.

There are a number of railroad enterprises whose announced or possible objects are the construction of railroads to and through New Mexico. The railroads now being constructed or which are projected, whose routes are known to be to and transversing the territory, are 1st, the Atlantic and Pacific; 2nd, Texas Pacific; 3rd, Denver and Rio Grande; 4th, New Mexico and Gulf. A road also whose route, after leaving its present destination is not known, if in fact it has been determined upon by the gentlemen in charge of the enterprise, is the "Atchison, Topeka and Santa Fé Railroad," now being rapidly pushed up to the Arkansas valley to a probable point of junction with the extension or branch of the Kansas Pacific in the vicinity of Fort Lyon in Colorado.

The intentions and objects of the Kansas Pacific Railway Company as to the construction of any road towards our border after the completion of the extension of Fort Lyons are not known, except so far as the organization of a corporation called the Arkansas Valley and Cimarron Railway Company is concerned.

This company we understand proposes to connect with the Atchison, Topeka and Santa Fé road, starting somewhere in the valley of the Arkansas river; the line bears in a southwesterly direction to the Cimarron Pass, near the head of El Rio Cimarron Seco, which anglicized, is Dry Cimarron River. This section of the route, while of comparatively small value for farming purposes, is nevertheless not without considerable value, by reason of its

great advantages as a grazing district. As evidence of this, for a number of years past almost countless herds have been kept in this district, winter and summer, with the best of success.

Leaving this section of country and continuing southwestward, the line crosses the Dry Cimarron, in a beautiful valley, much of which is already settled in anticipation of the time when the advent of the locomotive will place them in closer communication with the outside world. Thence continuing the same course it passes for a few miles through the most magnificent scenery that one could imagine.

From Cupulin mountain passing west, the line begins to descend by Tenaja Arroya, a small stream, to the Canadian Valley, and thence direct across a beautiful plain, well watered by the Canadian, Vermejo, Ponil and Cimarron rivers, to the town of Cimarron, which, for the present, is the terminus of the located line. The last thirty miles of the line passes through the property of The Maxwell Land Grant and Railway Company. More than ten years ago I was well informed as to this grant, and traveled frequently all over it, and knew it then to be a good pastoral region. Since then the mineral and agricultural resources have been to some extent developed.

The enterprise of the proprietors in aiding largely to construct the road will be rewarded soon, by seeing their lands converted from a pasturing ground to well tilled and productive farms. Although the location surveys have as yet made no progress west of Cimarron, a series of reconnoissances and instrumental examinations were made during the past summer by Mr. Morley, the chief engineer of the company, extending westward through the Spanish range to the Valley of the Rio Grande. These examinations while demonstrating that no less than three avail-

able passes were in existence within fifty miles of Cimarron, that one, the Taos pass was eminently practical. To reach this pass a line with comparatively light work and easy grades is found running directly from Cimarron up the Valley and Cañon of the Cimarron River to the Moreno Valley, thence keeping up the valley to the summit, across and down Taos creek to the city of Taos, making a distance from Cimarron to Taos of only about fifty miles, and by far the cheapest and best crossing of the mountains between Albuquerque, Santa Fé and the Black Hills, and at the same time passing the entire distance through a country that will afford an immense local traffic. Not only this, but reaching the Rio Grande Valley, it at once opens up the immense area of agricultural, mineral and pastoral country to the westward. Another route is proposed from Cimarron, via Las Vegas, and enterprising town, the county city of San Miguel County, and thence to the Rio Grande by way of Anton Chico, or the Galisteo creek.

A railway constructed from the Arkansas river, connecting with the Atchison, Topeka and Santa Fé road, and also with the Kansas Pacific, and running from the Colorado line through Mora county and thence due west into Rio Arriba county to the Rio Grande, and down that river to Santa Fé thence to Albuquerque making a junction with the Atlantic and Pacific railroad, and then down the Rio Grande parallel with the river to El Paso, Mexico, and connecting with the 32d parallel road; in Southern New Mexico. This is a superior route to connect Denver, and Santa Fé with the east, and to construct railways to the Pacific and the Gulf of Mexico, because the mountain elevations of the country admit of their being built at the least possible expense, because it traverses a country exceedingly rich in minerals which would,

immediately upon their being built, make them self-supporting; and principally because the route presents no solitary obstacle throughout the mountain portion of the country in preventing its operation with the same facility in winter as in summer. The construction of a road on this route would benefit the Government in bringing the public domain through which it would pass into market, in the settlement of the Indian troubles in Colorado, New Mexico and Arizona, and the opening of mineral, agricultural and pastoral lands, on which thousands of families could obtain happy homes, all of which would save and produce more annually than the whole cost of the road.

ACEQUIAS, CANALS—DITCHES.

Irrigation.—The Rio Grande is the Nile of America, having a most striking resemblance to this great African river. It is 1,800 miles in length, and of almost equal volume from the source to the mouth. It has two branches and passes hundred of miles without receiving a tributary. It is fed almost entirely from the Rocky Mountains. An annual rise occurs from the melting of the snows each spring. Like the Nile, it is the sole reliance of the farmer. The natives have made to each town and the adjoining lands canals for irrigation. These are often twenty or thirty miles in length, affording also, considerable mill power. The waters of the Rio Grande, like the Nile, are exceedingly turbid, containing a large proportion of sediment—probably, at high water, one fifth of the bulk of the water. Each irrigation is, consequently, a coat of manure to the soil; and cultivation by this process, instead of impoverishing the soil, enriches it. The natives never use other manure. In El Paso valley the Spaniards found a tribe of Indians cultivating the soil 265 years ago, and it has been continually ever since, yet the soil is of undiminished fertility.

The report of the Commissioner of the General Land Office for the year 1868 says :

The lands in the valleys of the rivers are very fertile, and can be successfully cultivated, though the cultivation is carried on by means of irrigation. Although considerable labor and expense are at first incurred in making the canals and ditches, the crops are more certain than when entire dependence is placed upon the fall of rain for the amount of moisture required, and the lands, enriched by the detritus made up of decayed vegetation and rich mould from the mountains distributed by the running water, never wears out. Lands in the vicinity of Santa Fé have been under annual cultivation for more than two hundred years, and still produce excellent crops, without ever having been enriched or restored by other means.

Aid by the Government in the construction of canals and ditches would bring under cultivation hundreds of thousands of acres of land which is now unsurveyed and not cultivated, which would make happy homes for thousands who are now living homeless and in poverty.

PUBLIC LANDS.

Of the area of the public lands in New Mexico unsurveyed, and of course unoffered and undisposed of, about one-tenth is susceptible of cultivation, and is capable of sustaining an extremely large pastoral, agricultural and mining population, as the actual amount of arable land in the valleys is very fertile, and where properly cultivated, will produce good crops. The table-lands and plains are inexhaustible in pasturage, and in the mountains are treasures of vast stores of mineral wealth. It embraces a country much of which is scarcely known, which has been but partially explored, and, as far as metals are concerned, to the slightest degree.

Through the courtesy of United States Surveyor General James K. Proudfit, I have been furnished with a copy of his annual report for 1872, in advance of its publication, from which I quote the following, viz :

The area of 121,201 square miles in New Mexico embraces in acres, 77,568,640.00.

Of which military reserves surveyed,	189,493.44
Indian reserves surveyed,	1,302,960.00
Confirmed <i>private grants</i> surveyed,	3,860,582.73
Mining claims surveyed,	51.87
Townships subdivided,	3,248,463.00
	<hr/>
	8,601,551.13

Leaving acres, unsurveyed, 68,967,088.87

A considerable portion of the lands of New Mexico are held by private parties and I now proceed to mention them under the caption of

PRIVATE LAND CLAIMS IN NEW MEXICO.

Soon after the Spanish arms in the sixteenth century penetrated and occupied New Mexico as one of the ultramarine possessions of the crown of Spain, the governors and captain general of the province then pertaining to the vice royalty of New Mexico, were authorized to make concessions of land to the settlers. Afterwards they were made to individuals for distinguished loyalty to the crown and important services to the state in the Indian wars then harrassing the people and impeding the development and progress of the country, and still subsequently these concessions were made in numerous instances to the descendants of those persons who had thus manifested their loyalty and contributed their services. During the Spanish regime in New Mexico as elsewhere in the Mexican vice-royalty, it was always the declared policy of the sovereign "that the public domain should be populated and

utilized" through the medium of grants of land to his subjects, as individuals or as communities. Afterwards when the Mexican republic succeeded to the sovereignty of the soil, it was the declared policy of that government to "encourage agriculture" by making to its citizens and communities liberal donations of the national domain for cultivation and stock raising and also for mining purposes. It is said by those who ought to know, that there are very few, if any, spurious grants in the Territory—certainly very few compared with the number brought to light in California. Some of these grants of land are now held by our citizens, other grants by large and flourishing communities, and others have been purchased by capitalists and wealthy companies with a view to their settlement and application to agricultural, stock growing and mining uses.

Now that predatory incursions of the wild Indians have under the policy of the present national administration become less frequent and serious, and now that the advent of railroads is foreseen in the near future, settlers are beginning to search out and locate homesteads on the public domain beyond the frontier under the government of the United States, and on private grants by purchase. My space will allow me to mention only a few of the principal landed estates of this Territory, and I will mention only a portion of those denominated *Mexican Grants*, and in doing so it is but just and proper, that I should say that I am indebted for much valuable information on this subject to the courtesy of David J. Miller, Esq., chief clerk and translator of the U. S. Surveyor General's office, which was furnished from data in that office, and also my thanks are due to Sam'l Ellison, Esq. clerk of the county court of Santa Fé county, for information furnished to me from his extensive knowledge of this special subject.

Near the 36th parallel is the *Cieneguilla Grant* containing an area of about 80,000 acres of land; it lies in the county of Taos, and is not yet recognized and confirmed by Congress; but as it is a community grant, and as the claim has been established as valid and genuine by testimony before the surveyor general, and approved by him, it will no doubt be confirmed by Congress, where it is now pending.

In Rio Arriba county there are numerous grants, some of which have been acted upon by the government, and some of which yet await action. The principal are the *Encinas grant* containing about 25,000 acres, *The Chama* and *The Chamita* grants, area unknown; all upon the Chama river and watered by several smaller streams. Upon that river also lies *The Abiquiú*, *The Cañon de Chama*, and *The Tierra Amarilla*, all extensive and valuable bodies of land, and each containing many settlers. There is also the large *Sebastian Martin Grant*, upon the Rio del Norte, and various others besides the Indian Pueblos.

In the county of Santa Fé, there are also numerous grants of which I have space to mention only the Bishop Lamy estate, known as *Our Lady of Light*, and held in trust for the Roman Catholic Church. It is a surveyed grant and contains about 16,500 acres of land.

The San Cristobal grant or *Eaton's Ranch*, upon Galisteo creek, twenty-seven miles south of Santa Fé, containing about 28,000 acres of agricultural and grazing land.

The Gotera Grant, owned by Nasario Gonzales, on the Galisteo creek, containing about 3,000 acres of agricultural and some grazing lands.

The Vicente Duran de Armijo Grant, adjoining the Indian Pueblo of Nambé, on both sides of the stream of that name, and now claimed by Gaspar Ortiz.

In Santa Ana county there is *The Valles Grandes float*

owned by Don Tomas C. de Baca, containing about 100,000 acres. This tract bears abundant and superior timber, and contains excellent pasturage and is celebrated for the excellent trout fishing it affords, and for its wild game.

The Cañon de San Diego Grant, North east of the Indian village of Jemez, and embracing the well known Jemez hot springs claimed by the Hon. Francisco Perea and others, is a valuable tract of land watered by the Jemez river. In Bernalillo county is the town of Albuquerque and its ranches, which is located on the Rio Grande and contains some of the best and most productive agricultural lands in New Mexico.

There is also *the Bernalillo property*, a community grant owned by José Leandro Perea and others,—this is a good fruit region. In this county there are also other grants of character and value.

Colfax county, contains a fine body of land—the three towns of Elizabeth City, Cimarron City, and Rayado, are in this county—it is a good agricultural county and its pastoral resources are considerable. Its mineral resources have been partially developed, and resulted in the building of a fine town in the Moreno Valley. The Beaubien and Miranda grant owned by *The Maxwell Land Grant & Railway Company*, and *The Rayado Estate* owned by our enterprising citizen, Hon. Jesus G. Abreu, are located in this county,

In Valencia county, the principal is the community grant to the people of Belen. The tract contains about 150,000 acres, and has been surveyed.

In Mora county, I will mention the *John Scolly or Junta grant*, now owned by William Kroenig, Samuel B. Watrous, Tipton and others, being a body of excellent and valuable land, much of it now well improved, situated in the vicinity of Fort Union.

The Mora grant, a community grant northwest of the La Junta estate. This tract contains a large flourishing agricultural, stock growing and commercial community, has been surveyed and contains more than 800,000 acres of land.

“The United States Land and Improvement company” own *The Baca Location No. 4* in San Luis, Valley Colorado; and the Armendaris grants on the Rio Grande del Norte, in Socorro county, New Mexico, which have been surveyed; and are described by the surveyor, as follows:

ARMENDARIS GRANT NO. 33—GENERAL DESCRIPTION.

This Land Grant* owing to the location of its boundary calls, is very irregular in shape, being long and narrow—its length being some 50 miles in a generally north and south direction, and its width about an average of 12 miles, mainly in an east and west direction. To give any detailed description of such an extent of country would occupy too much space for insertion here. One longest side is mainly bounded by the Rio Grande River, and the opposite one lies in the hills near the foot of the Rocky Mountains, the Grant thus having the best possible shape for containing the greatest amount of river-bottom land, with sufficient upland for pasture for the settlers. Its general location may be said to be down in the immense basin, which lies between two Ranges of the Rocky Mountains, through which the Rio Grande flows.

The climate on this tract is one of the finest in the world, being mild and equable all the year round and not subject to storms or tempests of any kind, the ranges of the White San Andres and Oscuro Mountains shutting it in and protecting it from all changes and winds from

*The area of grant is 297,325.298 acres.

the east with its immense open plains, and the Magdalena, San Mateo, and Mimbres Mountains prevent any north-westerly or sudden changes from reaching it in force from the West.

It is considered and has been proven that this portion of New Mexico is the most salubrious and health-giving in climate in America for invalids of all classes, but especially for those afflicted with consumption or other pulmonary complaints, the published ratio of death of invalids being only 3 per cent as against $4\frac{1}{2}$ per cent in Florida, the next most favorable locality, according to the statistics in this regard. The survey of this Grant was made in the month of November, and during the entire time the surveyor was engaged in this and the adjoining survey (being the whole of that month) he did not experience any cold or otherwise disagreeable weather, nor a single hour during any day that the sun did not shine. The thermometrical observations at Fort McRae and Craig, show a monthly and yearly mean approaching that of the Madeira Islands.

The most rich and nutritious grasses abound in every direction, there not being an acre of the Grant, mountain or valley where fine grass is not found, and the several species of the Grama grass are especially abundant. This grass is self-curing and furnishes, winter and summer, a perfectly sure, reliable and simple food for all varieties, and any quantity of live stock. Almost any part of the Grant may be said to be a hay meadow, from which at any time when needed boundless stores of hay may be cut for such animals as have to be confined at home for domestic use. As already referred to in the field notes the surveyor saw, in the Southern portion of the grant, Mexicans cutting hay with the sickle which they hauled to Fort McRae, a distance of from 3 to 9

miles (as they moved their camp) and delivered to the United States Quartermaster for a contract price of \$8 50 per ton. A better comment on the facilities of this grant for stock-raising could not be made.

The Rio Grande Valley, which forms one of the boundaries of this grant for almost its entire length, deserves special notice. The River is one of the principal rivers of America, and is of course the largest and most important in the Territory. Its soil is a rich sandy loam of the finest quality, producing all varieties of grains, vegetables and fruits. The vegetables grown here are of remarkable size, some of the most common varieties being beets of all kinds, including those beets adapted to sugar making, onions averaging 2 lbs each from the field, cabbages, of which one was seen at the Sutler store at Fort Craig weighing 64 lbs. Parsnips, turnips, carrots, Irish potatoes, sweet potatoes, pumpkins, squashes, beans, pear, watermelons and nutmeg melons of a size and sweetness rarely excelled; some of the *Rancheros* having raised them of 50 lbs weight. In fact, all kinds of vegetables grown in the United States are found here of sizes analogous to those of California. Apples, pears, peaches, figs and other fruits, also flourish on this tract, the apricot especially being of an unusual size and fine flavor.

The most valuable feature, however, of this valley is its capacity and adaptability for raising the Spanish grape (some vineyards of which are found on the tract) which must make the river the Rhine of America, with some day, an immense wine producing community. The wine as at present made by the natives is sweet and red with great body, and is of the nature of the sacrificial wine used in the churches.

Cotton also can be grown here, of a good staple, and it is not subject to frost.

The water power is, of course, inexhaustible and at hand without cost. Mill sites are plenty where mills and factories for grinding grain, manufacturing fabrics from the wool of the countless sheep which even now roam over the tract and from the cotton which can be raised, for milling the gold, silver, lead and copper ores which abound in the mountains in and adjacent to the grant, or for any other purpose, can easily and profitably be erected and supported.

The average width of the Rio Grande bottom is from 1 to 2 miles, but if it should at any time become necessary to have more land under cultivation than that of the bottoms, the second bottoms or benches are also composed of first rate soil, and of these about 150,000 acres can easily and cheaply be put under cultivation by simply taking out an acequia or irrigating ditch high enough up to water them. A project for doing this at a point higher up on the river is said to be already on foot. It is certainly easy, simple and feasible, and will, no doubt, soon be done.

The Ojo del Muerto and site of the U. S. Military post of Fort McRae in the southern portion of the grant is also an important point, being the main pass from the east to the west, lying between the Caballo and Fray Cristobal Mountains, and must some day become one of the greatest thoroughfares in southern New Mexico.

A fine gravel bottom ford, with permanent banks, is also found here on the river, which for 10 miles in a direct line runs through this portion of the Grant.

The famous hot springs del Caballo, or Ojos Calientes, form one of the most remarkable as well as interesting, and valuable features of the grant. They are situated about $5\frac{1}{2}$ miles southwest from Fort McRae near the Rio Grande. They burst out from the foot of a Mesa, form

some large natural bathing pools, and discharge into the river about $\frac{1}{2}$ to $\frac{3}{4}$ of a mile distant. They have a temperature of about 136° Fahrenheit, and contain soda, lime, magnesia, and many other chemical ingredients (a full analysis never having been published) which have brought them in great repute for curing rheumatism and all serofulous and cutaneous diseases.

The south east portion of the grant lying up on the Jornada del Muerto, is a pasture of great extent and inexhaustible as regards fertility. It is dry at present, (though covered with fine grass) but water can be easily obtained by digging, as has been demonstrated by Jack Martin who has obtained a fine well of excellent water about 9 miles south of the south boundary of the grant.

Near the Analla Spring on the eastern side of the grant is an immense bed of gypsum about 10 miles in diameter, where the natives and the government have been getting considerable supplies for many years. This will be of great value when railroad communication is established.

Mines of lead and silver abound, also iron, and from the Mal Pais to the San Pascual Mountain there is a considerable deposit of bituminous coal of good quality, which has been opened and worked for several years near its northern extremity, and the coal hauled to the Forts for blacksmithing and fuel purposes.

Timber on the grant is plenty, both for present and future use. Live oak, cedar of two varieties. Pine of 3 or 4 kinds; piñon, maple, pecan and walnut with considerable hackberry, mezquit, manzanilla and tornillo, were found on the lines. They were using walnut and pecan for firewood at Fort McRae at the time the surveyor passed.

Mines of gold have not yet been discovered on this grant, but as they have been found in the adjacent White

and Jicarilla Mountains, it is almost certain that a prospecting tour and geological survey will discover them, as well as many other valuable mineral deposits.

Building stone and limestone are found in various localities on the grant within convenient distance of the river.

A species of the maguey plant grows in the Caballo Mountains in the southern part of the grant, from which a sweet wholesome and palatable food as well as drink is made by the Mexicans and Indians, and large piles of the refuse from such reduction were found in several places. The food is called "Pulque" and the liquor "Mescal."

For crossing the Rio Grande there is a good ferry established at Fort Craig, and fine natural roads for communication to and fro are open in every direction.

There is one town (Parage,) of about 800 persons, on the grant, and various squatters are beginning to dot the valley with their intruding ranchos, now that safety from the wild Indians is experienced.

The principal mountains on this grant are the Fray Cristobal and San Pascual. The Fray Cristobal is a remarkable mountain, from the fact of its receiving its name and really resembling, in a remarkable manner, (when seen from a distance, the profile of a human face (that of a friar) and body, reposing on its back with face towards the zenith. It is about thirteen miles long with a general north and south trend, and from base to base some eight to ten miles wide. Its sides are sloping on the east and precipitous on the west. In it are also found silver mines which have been worked years ago by parties unknown.

The San Pascual is of minor importance though it is said to contain some good lead mines, as well as valuable limestone and marble quarries.

In the San Andres Mountains adjoining the east bound-

dary are some copper mines, as appears from data in the U. S. Surveyor General's Office—value or state of development unknown.

In fine the productions of the temperate zone, bordering on the tropic are here intensified and increased by protecting mountains, while the general climate is almost perfect, the result of a fortunate combination of latitude and altitude above the sea.

This grant is considered one of the most desirable spots in the United States awaiting a population, where a good living can be made with less labor and better average health than elsewhere, while the situation, fertility and extent of the grant will sustain within its boundaries a population of half a million inhabitants.

ARMENDARIS GRANT NO. 34—GENERAL DESCRIPTION.

This Private Land Claim* has something of a triangular form, and is nearly twice as long from north to south as wide from east to west in its widest part which is at the north. Having the Rio Grande del Norte for the entire length of its eastern side and forming its eastern boundary and the ranges of the Magdalena and San Mateo Mountains on the entire western boundary with their numerous waters and shelters while the extensive plain between is covered winter and summer with the finest natural grasses and the bottoms of the Rio Grande averaging from one to two miles in width for the entire length of the grant with soil of superior quality and productiveness.— This property or domain may be said to have been superlatively well selected by the ancient Spanish owners as a stockraising, agricultural and manufacturing estate, since it appears to possess in a remarkable degree every requi-

*Contains 119,932.98 acres.

site for these branches of profitable home industry. I found that about one-thirtieth part of the land on the river is now or has been under cultivation, producing all grains, fruits and vegetables in great profusion and of extraordinary size; also a grape of fine quality from which a superior wine is made of the nature and flavor of Burgundy.

The range of the Cañas Verales Hills situated in the northern portion of the grant, possesses a considerable number of good permanent springs of water and running streams, some of which are the Cañas Verales, the Coyote, the Chupadero, the Chupadero Chiquito, the Nogales, (Walnut Creek,) the Torreón, the Cienega, the Ranjel, and various others mentioned by the guides as lying in the interior of the grant and not seen by me.

Walnut, cedar, cottonwood, pecan, live oak, piñon, hackberry, and pine timber abound in these hills and will furnish for the future all the timber and firewood needed by the settlers over the entire grant. These hills also contain limestone and building stone in abundance; and coal also it is said has been found in them but never developed owing to the fine coal fields over on the opposite side of the river.

The Magdalena Mountains, on the north west corner, contain great quantities of fine pine timber of large size.

Corn, watermelons still green, walnuts, pumpkins, squashes, onions and potatoes were all found at the Cañas Verales on a small piece of land under cultivation there. The water of the Torreón is slightly warm. The climate here at this season is perfect, I not having experienced during the whole month of my stay in these parts a single cloudy or unpleasant day. It is mild and agreeable and two crops per annum can be and are raised from the same ground in the bottoms of the Río Grande.

The Rio Grande river along here is a large stream lined with fine bottoms and successively large groves of cottonwood timber. It is crossed by ferry at the military post though it is fordable in places at favorable seasons. Its banks are low and irrigating ditches are easily and cheaply taken out.

One town of about four hundred inhabitant is on the grant and a few farms. Many irrigating ditches have been taken out and are still running. Two flouring mills were seen and the water power is inexhaustable and could be cheaply brought in.

The grass on the grant is mostly of the grama species which is excellent and is self curing for winter making a fine range for all classes of stock. Mexicans were seen by me near the line, cutting hay with the sickle which they delivered at Fort Craig some nine or twelve miles distant at \$8 50 per ton.

In the range of the Cañas Verales Hills towards their southern extremity are several old shafts of silver and lead mines, worked in former times by parties unknown, the ore from which promises well. There is also a silver lode discovered lately by a party of Americans in the southwest part of the grant but its value is unknown. In the valleys and cañons coming down from the mountains, gold washings have been found but not so far in paying quantities when near the water.

An immense bed of gypsum lies between the Rio Grande and the Cañas Verales Spring in the southern portion of the grant which out-crops in many places.

The proportion of good agricultural land to that suitable for grazing, and timber seems to be perfect in this grant and it is capable of sustaining a very large manufacturing and farming population.

Lincoln County contains an acre of rich and very productive land susceptible of high cultivation and capable of sustaining a large population.

In San Miguel County is the town of Las Vegas with its surrounding ranches, a flourishing town on the mail route from the States, with an enterprising population; the second city in the Territory. In this county is also located landed property owned by *The Consolidated Land, Cattle Raising and Wool Growing Company*. They possess two grants which are described by the Surveyor's as follows:

BACA LOCATION NO. 2

has an area of about 50,000 acres. The whole of this tract of land with the exception of the northwest portion is a beautiful fertile plain, well adapted for grazing purposes. That portion immediately on the Rio Colorado and tributaries, very rich and susceptible of cultivation. Cottonwood timber on streams in abundance.

(Signed.) THOMAS MEANS,
Deputy Surveyor.

GENERAL DESCRIPTION OF THE PABLO MONTOYA GRANT*—TAKEN FROM THE FIELD NOTES.

GENERAL FEATURES.

There are no mountains unless the Trinchera Range which only reaches an elevation of some 1500 feet above the surrounding country, can be so called on this grant, but its extent is agreeably diversified by open plains of small extent and a great number of mesas or table-lands of moderate size and of an almost uniform height of 600 to 800 feet, of which the Mesa Rica (rich table-land)

*This grant has an area of 655,468.07 acres.

partly lying within the grant in the west is the largest. Rocky cañons which in some cases fill the space between these mesas, but generally benches or high valleys of from 20 chains to 3 miles in width lie between them.

The northeast portion abounds in cañons, rincons and other natural places for sheltering stock.

Nutritious grasses of the grama and buffalo classes mixed with some other varieties abound in all directions and in all the bottom lands of Red River and Las Conchas, the "sacaton" a grass growing 6 feet high also abounds.

NATURAL PRODUCTIONS.

The natural productions of the prairies, mesas and valleys (apart from the natural grasses which are the most valuable) are the same as those found in most other portions of the Territory not mountainous, viz: wild flax, wild oats, Indian potatoes, wild onions, strawberries, mescal, wild currant, china berries, wild grapes of a variety attaining a considerable size and various other of the fruit of the cactus amongst which is especially noted the "Gucia" or "Datula" or Indian banana, which is found in great abundance in some places.

LAND.

There is more or less of irrigable land lying in the bottoms of Red River, but the greater portion of the cultivable land of the grant lies too high to be watered from the river, rendering it necessary to procure artesian water if the plains or high valleys are intended to be made productive for agriculture. Where the land has been cultivated in the valleys the soil has proven itself to be of the most superior quality. On the prairies it seem to be 2nd rate.

MINERALS.

The prevailing rock is red and white sandstone in near-

ly horizontal strata which in alternate layers in the sides of the mesas and isolated hills presents from a distance the appearance of ribbons; hence it is thought the Spanish name of the "Rincon de la Cinta" or "Corner of the Ribbon" a point on the north boundary named in the grant.

Scoria, tufa, or volcanic rock was noticed in some localities as also limestone in considerable quantities. So far as observed the rocks present no fossil index or evidence of mineral deposits except "yeso" a species of gypsum used for whitewash, of which a good and extensive mine is found in the "Mesa Huerfana."

Some evidence of a deposit of iron was found on the northern boundary near the crossing of Red River.

TIMBER.

Red River is scantily fringed with cottonwood trees, a few reaching a diameter of 2 to 3 feet and large groves of small ones which are yearly destroyed by fires which the tall grass in the bottoms furnishes with extra fierceness and vigor. China trees also abound in the Valley of Red River. This is a very hard and serviceable wood though the trees are not generally more than 3 to 8 inches in diameter. Box elder also grows to a diameter of 10 inches in the bottoms.

Near Mule Spring is some excellent pine timber of moderate thickness, and one or two good sites for saw mills were noticed. Piñon trees which bear a very nutritious and oily nut, and cedar trees with unusually large berries abound in every portion of the grant, and together with the numerous groves of scrubby oak bushes scattered through them, (producing a small sweet acorn in considerable quantities) furnish a fine food for the game. Oak of a diameter reaching 8 inches and hackberry (called "Manzanita" by natives) of 12 inches dia-

meter are sometimes found in small quantities. Fire wood is plenty. Timber for building purposes scarce, but the place of the latter is abundantly supplied by the natural quarries of hard sandstone which occur in every direction and which give a building stone of admirable quality for durability and ease of working.

WATER.

The Red River or Canadian Fork of the Arkansas runs through this grant from N. W. to S. E. It is from thirty to forty yards wide, a brisk permanent stream of water which is always, muddy, except at extremely low water, a good deal of which discoloring is due in summer to the mining in the Moreno valley some 300 miles above. The banks are generally steep and difficult of ascent and generally consist of rock on one side with a small bottom of low land on the other. This river fills once or twice a year but is not subject to extensive or damaging floods. Within the limits of the grant the other water courses such as Mecate del Oso, Cañon Vigil; Arroyo Mesteño, Arroyo Alamosito, Arroyo Zorra, Arroyo de las Majoneras, Arroyo de Antonio Hilario, Cañada Atarque, Right Fork of Arroyo Los Carros, Arroyo Los Trozas, Arroyo Trinchera, and Arroyo de la Cinta, are generally dry with the exception of periodical freshets, but have permanent water standing in them in holes at irregular distances. To the above arroyos, the Arroyo Trementina, Cañon de la Mula (left fork) and Rio de las Conchas are exceptions, all containing good running water except the first, the water in which is very highly charged with alkali salts, but is much relished by cattle. Some half a dozen springs of good water are known to exist near the banks

of Red River, and as many more near the bottoms of the different mesas on each side.

GAME.

Red River and adjacent permanent streams abound in cat-fish. Black and white tailed deer, antelope, bears, wolves, coyotes, turkeys, prairie dogs and California lions, with two or three species of lynx or wild cats are found in all parts of the grant. And last winter and spring buffalo were seen in considerable quantities and many of them killed by hunters and the adjacent settlers!

This grant in its present state cannot be excelled as a stock raising country, and was very appropriately selected by the company who own it, for the object they have in view, as it is well adapted to cattle, sheep &c., and would sustain hundreds of thousands of cattle and millions of sheep, and furnish happy homes for several thousand families.

Surveyor General James K. Proudfit, a short time since visited the foregoing described grants, and in his supplemental report to the Hon. Commissioner of the General Land Office, dated Nov. 26th, 1872, he says:

“I have travelled to Fort Bascom on the Canadian river near the Texan frontier, a round trip of about 350 miles, and to Fort Craig down the valley of the Rio Grande, another journey of about the same extent. I made these trips mainly that I might learn something of the characteristics of the district and its people from personal observation. Including the route from the Territorial boundary near Trinidad, Colorado, to this city my travels in the district amount to above 1000 miles.

I am satisfied that this Territory deserves better and more liberal treatment than it has ever received; it appears to be misrepresented, and generally friendless and for-

lorn, but it has immense latent resources. I believe it has more gold, silver and copper than Colorado or Nevada, and there are also vast quantities of iron, lead, coal and other minerals, together with plenty of good timber. It has a most salubrious, mild and equable climate, and cannot be excelled for grazing purposes. All its fine valleys and almost endless plains are feeding grounds, covered the year through with nutritious native grasses, and stock does not require to be housed at any time, the winters are so mild and stormless. Fruit, especially grapes, together with vegetables and grain, flourishes in all the valleys and wherever the land can be irrigated."

INDIANS.

It has often become patent to every person who is at all acquainted with this Territory, that the greatest retarding influence to the development of this vast and rich section of our country, has arisen from the hostility of the Indians who, heretofore claimed the right to roam over a large portion of it. This, however, I am glad to say is being corrected by the wise policy of the government by which the Indians are being placed on reservations, where it is proposed "to civilize, christianize, and make them self-sustaining," and thus open for settlement and development large tracts of very valuable public and other lands, which are held by grants.

PUEBLO INDIANS.

Within the limits of New Mexico there are 19 pueblos (towns) entirely occupied by Indians who are civilized so far as to maintain themselves. The population of these towns number, as per census 1,239 families, and 7,648 persons, of which number there are 2,084 under eighteen

years of age. Their grants or reserves contain, in all, 434,864.15 acres. In regard to the time of the settlement of these Indians, there is extant a royal decree in Spain of the Emperor Charles V, dated at Cigales, March 21, 1551, containing the statement that, by an order of the Emperor, given in 1546, the prelates of New Spain convened for the purpose, had resolved that the Indians should be brought to settle, (reduced to pueblos,) and that they should not live divided and separated by mountains and hills, etc. Phillip II. in consequence of the intention of the Emperor Charles, published a statute on the founding of settlements. Dr. M. Steck, who took great interest in the Pueblo Indians says: "It was the royal decree designed to protect the Pueblo Indians, and to provide for the settlement of others at that time not living in towns."

The question as to whether the Pueblo Indians were found living in towns or thus settled by the early conquerors is clearly settled by Cabeza de Baca and Coronades, who are the earliest authority upon the history of this country. They found these Indians living in towns, many of which were described by them as cities. At the time of the first revolution against Spanish rule by these Indians, some of their towns were destroyed. Some of these were rebuilt upon new sites. These were the only towns whose settlements were made after the date of the conquest. From Castanada's description in 1540 they were found living in towns, and in prosperous condition; and so far as the decree in question relates to them, the object was to protect their rights from encroachment and imposition.

Previous to 1583 these Indians rebelled against the Spanish Government, and drove from the country the priests of the Roman Catholic Church, and we have

an account in Spanish of an expedition by Espejo in that year, in which a portion of the country was again conquered and the Indians compelled to work in the mines.

In 1680 the Pueblo Indians rebelled for the second time against the Spaniards. "They had been whipped and scourged because they would not bow and worship the unknown God of the Spaniard, and, being compelled to dig the precious metals from the bowels of the earth to satisfy the avarice of their tyrants, they thirsted for vengeance. "They drove the Spaniards and priests from their country, and again established their own government and religious worship."

On the 5th of November, 1681, Governor Oterman unfurled his banner and marched with an army to conquer New Mexico, in which he failed.

In 1692 the Spaniards succeeded in reconquering New Mexico, and again took Santa Fé. I have in my office three documents in Spanish which would make over a hundred pages of printed matter, dated 1693 and 1694, which gives a full account of the conquest of Santa Fé by the Spaniards, and its reconquest by the Indians.

W. W. H. Davis, A. M., in his work entitled "The Conquest of Mexico, says: "With the fall of that city the pueblos in the vicinity, twelve in number, made submission, and were visited and taken possession of in the name of the King of Spain. As was the custom in those days with Spanish conquerors all over the world, as soon as the Pueblos had been brought to military subjection they were delivered over to the pious zeal of the priests for the purpose of being reduced to spiritual obedience."

From that period to the present great zeal has been manifested by the Roman Catholic Church in New Mexico, to induce these Indians to adopt the rites and cere-

monies of that church, but Mr. John Ward, says: (See his report in the report of the Commissioner of Indian Affairs for 1864.)

“The Pueblos are all nominally Roman Catholics, and, as far as can be discerned, appear to be sincere and earnestly devoted to the rites of that church. Each town has its church edifice, which is held in high respect. The people esteem and obey their priests. They generally marry, baptize, and bury according to the rules of that sect. The holy days are generally attended to. Each has its patron saint, whose name the pueblo bears, (with few exceptions,) and whose anniversary is never neglected. On that day a great feast takes place, and after the ceremonies pertaining to the church are over, which occupy the first part of the day, amusements of all kinds are universally resorted to; such as foot-racing, horse-racing, cock-fighting, gambling, dancing, eating and drinking, with the usual accompaniments. On such occasions liberality is an especial virtue, and no pains are spared to make everybody welcome. Some of the Pueblos are noted for these feasts, and great numbers from distant parts of the country flock thither to enjoy the amusements and share their hospitalities.” He also says:

“Independent of the foregoing, however, there is every reason to believe that the Pueblos still adhere to their native belief and ancient rites. That most of them have faith in Montezuma is beyond a doubt, but in what light it is difficult to say, as they seldom or never speak of him, and avoid conversations on the subject. Like other people, they do not like to be questioned on subjects which they believe to concern no one but themselves.” It is stated by some that the Montezuma of the Pueblo Indians is not the Montezuma of the conquest, but an agent of the Spanish govern-

ment, chosen to protect the rights and interests of the Pueblos. Be this as it may, one thing is certain: that this view of the subject differs entirely from that of the Indians. They believe to this day that Montezuma originated in New Mexico, and some go so far as to designate his birth-place. In this they differ, however, some affirming that he was born at the old pueblo of Pecos, and others that his birth-place was an old pueblo located near Ojo Caliente, the ruins of which are still to be seen. It is supposed that Montezuma was not the original name of this demigod, but one bestowed on him after he had proved the divinity of his mission. A document is now extant purporting to be copied from one of the legends at the capitol of Mexico, in which it is stated that Montezuma was born in "Teguayo," one of the ancient pueblos of New Mexico, in the year 1538. This account makes him out more of a prophet than anything else. He foretold events that actually came to pass, and it is related of him that he performed many wonderful things." From all I have been able to learn I am fully convinced that the Montezuma who was held in such reverence by the pueblo Indians of New Mexico and Arizona, was a descendant of the Montezumas, (Kings of Mexico,) and who was looked upon both as a king and priest, subordinate only to "the Great Spirit," whom they believe to be represented by "the Sun, the great orb of day, and the representative of light and heat." Hence they kept burning upon their altars in their *estufas* (places of worship) fire, the earthly representative of that light and heat imparted by the sun, and I have reason to believe that to this day these edifices are used for this purpose.

During the past few years, I have visited most of the pueblos (Indian towns) now extant, and also the ruins of others which have been abandoned. Lieutenant Thomas

V. Keams, Mr. W. Pell, and my son William E. Arny in 1870, visited west of the Rio Grande, the ruins of some of these towns now totally uninhabited, but which indicate that in former years they were occupied by a large, industrious population, who, in intelligence, must have been far in advance of the present Indians of that country. The most interesting of these abandoned pueblos that I have seen is the "*Pecos Pueblo*," located twenty-five miles east of Santa Fé. The ruins indicate that in former days this pueblo was in the possession of a numerous and powerful race of people.

Mr. Davis, in his work, "*Conquest of Mexico*," in writing of "*the Pecos Pueblo*," says: "Many curious cases are related of the superstitions customs of the Pueblos, among which is the following told of the Pecos Indians: 'It is said that Montezuma kindled a sacred fire in the 'Estufa' of that pueblo, and commanded that it should be kept burning until he came back to deliver them from the Spaniards. He was expected to appear with the rising sun, and every morning the Indians ascended to the tops of the houses and strained their eyes looking to the east for the appearance of their deliverer and king. The task of watching the sacred fire was assigned to the warriors, who served by turns for a period of two days and two nights without eating or drinking, and some say that they remained upon duty until death or exhaustion relieved them. The remains of those who died from the effects of watching are said to have been carried to the den of a great serpent, which appears to have lived upon such delicacies. The tradition that the sacred fire was kept burning until the village was abandoned, is generally believed by both Indians and Mexicans, but their deliverer never came and when the fire went out, from what cause is not known, the survivors of

the Pecos found new homes west of the Rio Grande.”

During the period that I was acting governor of New Mexico in 1863, I was visited at Santa Fé on several occasions by a venerable Pueblo Indian who, from the data he gave me, was supposed to be about ninety years of age. He was a *Pecos Pueblo Indian*, at that time living west of the Rio Grande. He corroborated (from tradition) the statements made in the extract from the “Conquest of Mexico” except that his version was that twelve virgin daughters of the head men of the town were selected annually, whose duty it was to keep the fire burning—that the virgins fell asleep, and the fire went out—that these virgins were degraded by the Indians, and the town deserted, believing as they did, that the loss of the fire indicated the displeasure of Montezuma, so far as that pueblo was concerned. He condescended to inform me that all the Pueblos now in secret perform rites and ceremonies, looking still for the return of Montezuma. This is corroborated by the much lamented General Kit Carson, who is the only person I know of, who has been permitted to enter their *ESTUFAS*, and witnessed on one occasion their worship, which was a dance in the *estufa* around the “altar of fire.” Last summer I visited some of the Pueblos at the time of their great feasts, but was not permitted to enter the *estufa*. The outside worship was a blending of the Roman Catholic ceremonies with some of their own heathen rites, the principal of which was “THE CACAINA,” a dance, at which time they make offerings of flour, corn and other articles. On the occasion of their great feasts I noticed that in the morning at sunrise they were on the house tops with their faces turned towards the rising sun.

Each village contains an *estufa*, partially built under ground, and so inclosed that it cannot be entered without

the consent of those in charge. It is constructed of "adobes" (sun-dried brick,) and the entrance is from the roof to which they ascend by a ladder. The towns are built of the same material, and there is evidence in documents on file in the office of the Secretary of the Territory that some of the buildings were erected nearly two hundred years ago. Many of the houses are from two to five stories in height, and are entered by ladders reaching to the roof, from whence admission is effected by a kind of a trap-door to the interior—this mode of entrance was evidently adopted for defence and protection from hostile Indians.

Each town has a separate organized government of its own, but all are nearly the same, as most of them adhere to ancient customs and laws. The officers consist of a governor, lieutenant governor, Cacique war captain and his lieutenant, a constable, and a superintendent of (asceques) ditches for irrigation. The governor, and I believe, other officers, are elected annually. The cacique holds his office for life.

It cannot be denied that these Indians are deserving of the fostering care of the Government. For more than two hundred years it is known that they have maintained themselves and sought to live in peace with all mankind, and that, owing to the cupidity and avarice of those who claimed to be more civilized, they are to-day in no better condition than they were at the time of the discovery and conquest of Mexico.

It has been considered a difficult problem what is the proper disposition to be made of these Pueblo Indians? The proper question is, what shall be done with them? They are in the midst of and surrounded by our population, without any authority to mingle in our political affairs. These people have never received aid from the

Government, they have always been self-sustaining, and are a living evidence that Indians can sustain themselves, in spite of oppression and frequent raids against them. They, however, must necessarily have, and are entitled to, the same protection that is afforded to the most favored. It is a well known fact that they own portions of the richest valley lands in the Territory, and that unless they are protected by the Government from land sharks, they will in a few years become dependent—paupers—and it is inevitable that they must be slaves (dependents) or equals.

The voluntary efforts they have made for the protection of our frontier citizens against the savage Indians, their manifest willingness to sustain the Government of the United States, and their constantly expressed desire to make available all the means in their power for the improvement of their moral and political condition demand that the United States Government should do something for them so as to qualify them for citizenship. This can only be done by a system of industrial education, which can be established and carried out at a comparatively small expense to the Government, and which would finally be of incalculable benefit to our citizens, to the Indians, and a great economy to the Government.

Were Congress to appropriate twenty thousand dollars for the first year, and ten thousand dollars per annum for four succeeding years, to be expended under the direction of the Secretary of the Interior in the establishment of an industrial normal school, with a woolen factory, and a nursery in which to rear all kinds of fruit trees, and place in that school all the orphan children of the Pueblos, and some of the orphan children of the different savage tribes, there to educate and qualify them, or the most intelligent of them, as teachers, so that they can keep schools in the

pueblos and on the various reservations where the savage-Indians are placed, I am satisfied that, with an appropriation of sixty thousand dollars to be thus expended during the next five years, at the end of that period such an institution would be self-sustaining, and that, after a few years, twenty or thirty competent teachers could be supplied from the institution annually. In these schools in my opinion, no religious denominational opinions should be taught. Teach our Indians to read and write, and let them learn their religion from books and missionaries supported by the church.

The Pueblos are industrious, and produce all the necessities of life. The lands they possess are amply sufficient for their maintenance, they, therefore need only assistance in the way of education and agricultural and mechanical implements to aid them. They are in every way qualified to receive and profit by the judicious expenditure of a few thousand dollars.

They can thus be elevated and made an instrument to civilize the savage Indians and add to the material wealth of the country, and be ultimately fitted to enjoy and harmonize with the political and civil institutions of our land.

There are probably nearly thirty thousand wild Indians who roam over a large portion of the vast extent of country comprising the Territories of Colorado, New Mexico and Arizona. In 1540 the Emperor of Spain began an effort to conquer these Indians and to settle them in towns as were the Pueblos. At that period history develops the fact that there were two classes of Indians—first, those who lived in towns, and secondly, those who roamed over the country without any fixed place of abode, and history from that period to the present day shows that Spain, Mexico and the United States have all failed in their efforts to conquer by force of arms these Indians.

Three years ago these Indians were no more civilized, christianized, and settled than they were at that period, as described by Castañadas. The aggressive policy has been pursued from the day of Don Juan Oñate, in the year 1595. It is now, however, hoped that the wise Indian policy of President Grant, which is placing them on reservations will make them peaceful citizens and a blessing to themselves and this country.

The Indians and their invaders have mutually plundered each other, and each has reaped the bitter fruits of this barbarous policy, a policy which, in my opinion and experience, will ever render the lives and property of our citizens insecure. Millions of dollars have been expended in fruitless expeditions to conquer them, while one-half of which, if it had been expended in feeding, clothing, and establishing schools and treating the Indians with kindness and cultivating peace with them, on the christian plan, would have accomplished the desired object.

Colorado, New Mexico, and Arizona are pastoral countries unsurpassed in the United States for the rearing of stock, with but little expense and in great abundance; the climate the nature of the country, and abundance of nutritious grasses throughout the year fits this country peculiarly for the rearing of sheep and cattle, with no expense but that of a few herders to look after them, as they are never fed or housed at any season of the year. But unfortunately for the prosperity of the settlers, the numerous bands of Indians who heretofore roamed over this country have not until lately been collected together, nor subjected to the restraints of civilized life. Having been trained from generation to generation to steal and plunder whenever necessity required them to do so, it is not strange or wonderful that many outrages have been committed and much valuable property plundered from

The people annually, nor is it strange that the people should ask earnestly and often, "Is this never to cease, and the innocent and helpless sufferers be protected in their lives, homes, and property?"

In 1846, when General Kearney took possession of New Mexico, he promised to the people on the part of the United States protection from the depredations of these Indians. This promise was again made by the United States Government in 1848, by the treaty of Guadalupe Hidalgo. The law of reason and common sense teaches us that when the people surrender to the Government their allegiance, and in all things conform to the mandates of the supreme law, that protection of life and property is obligatory upon the Government in the fullest degree, for without it the ends of Government are not attained. It is the duty, and interest of a nation not only to make itself great and powerful, but also to make itself beloved; and the rendition of speedy justice to the injured and oppressed is the strongest and most enduring tie of affection between the people and the nation.

The past policy of the Governments of Spain, Mexico, and the United States in regard to these Indians has evidently been a wrong one. It has cost millions of dollars in military armaments and other war expenses; millions more in the loss of property by the depredations of these Indians and thousands of lives, and till lately protection has not been assured to the settlers and miners, so that this vast and rich country can have its great resources developed.

It is not necessary for me to dilate upon this subject, for when the present administration came into power this fact was recognized by it, and another method of dealing with the Indian question to a great extent was adopted, and no one can doubt that the object of the administration

with all the past history of Indian affairs before it, in assuming the policy it has done, intended to inaugurate a system of treating the Indians which to it seemed best calculated to promote the interests of these savage people, as well as protect the rights of the citizens of the country.

This policy is undoubtedly the peace policy, and is in accordance with the noble words of General Grant when informed of his nomination to the Presidency. They were—"LET US HAVE PEACE." Not peace alone among ourselves as citizens of the United States, but peace everywhere within our borders, with the red man as well as the white. Taking up the matter as to Indians in this light; as we understand the Indian policy of the Administration; it is that of benevolent humanity, and not derogatory to Christianity or the spirit of the age in which we live. To perform its engagements with the Indians as far as possible, in strict compliance with treaty stipulations where treaties have been made, to be just towards the Indians in all respects, treat them with kindness and "feed them rather than fight them," and place them in a position on reservations where they can have schools and be taught industrial pursuits, and thus make them self-sustaining, and see whether in the end such a policy will not be more conducive to the future good of both the country and the Indians.

I understand that it is not the intention of the Government to war upon *all* Indians because some of them do wrong; that it will punish individual Indians, bands, and tribes that are hostile, while there will be discrimination between the innocent and the guilty. But indiscriminate slaughter of the Indians, we believe, is not the programme of the Administration; but to extend the benevolent hand of christian charity, and thus winning them closer and closer to the acknowledgment of that great power under

which they live, and to which they must be in subjection. This being the policy of the government, it becomes necessary to obtain efficient agents, men of experience, and, if possible, married men, who will take their wives and families to the agencies with them, and who should be appointed for life or good behavior, and, if possible, men who have had long experience with, and who have the confidence of the Indians.

From a long-continued residence among, or in the immediate vicinity of the Indians of the Rocky mountains, and from a personal observation of their manners, habits and customs, acquired both in private life and during the transactions of official business as agent of the Federal Government, I feel justified in urging the views of the Indian peace commissioners, in regard to the disposition of the Navajoes, Apaches, and Utahs, of New Mexico, as also the aid necessary for the Pueblos; the establishment of an industrial normal school, as proposed for the qualification of teachers for all Indians, and, as recommended by the Friends, the establishment of "a sufficient number of industrial schools on each reservation to accomodate all the children of both sexes, who are of sufficient age to attend them, in which, besides school education some will be taught to be farmers, carpenters, blacksmiths, millers, both grinding and sawing, &c., and the girls instructed in all kinds of household duties, to sew, use the sewing machine, spin, knit, weave, &c.," will do more "to civilize, christianize, and make self-sustaining" the Indians than five times the amount of money expended in any other way.

My experience, which is confirmed by that of my old colaborer General Kit Carson has convinced me of a firm, yet just, government of these Indians, which should be consistent and unchangeable; the Indian judging only by

the effect of that which appeals to his senses, as brought directly before his observation, regards with contempt a weak and indecisive policy, as the result of hesitation and cowardice, while a capricious one his apprehension and distrust. Hence if it were decided to compel the Indian to submission by military power, the force should be adequate to the accomplishment of that end, and would require an army and involve an expense of millions of dollars to conquer the Indians of New Mexico and Arizona.

Believing, as I do, that it is cheaper and far more humane "to feed than to fight the Indians," I urge, as the correct plan, to feed them largely, generously, and there will be no trouble; this is better than to have them raiding upon settlers, destroying property, running off stock, robbing mails, scalping our miners, and preventing the development of the resources of the country. We must feed and clothe them before we can properly civilize and christianize them. And to do this they must be placed upon reservations, under the control of persons in whom they have confidence, and who have the experience and ability to direct their labor and instruction.

STOCK-RAISING IN NEW MEXICO.

For the profitable raising of horses, mules, cattle, goats and sheep, and on the most extensive scale, no portion of the world can rival this district. Its mild climate presents no rigors, while its mountain slopes, valleys, and plains are unlimited extents of pasturage. The grasses of the plains and mountain slopes are not the least of nature's wonders. The "grama" and "mezquite" varieties have a peculiar tenacity to life, and survive a succession of dry seasons, and, when apparently dead, a few showers will bring them out in full freshness; indeed,

it is said they change from a single shower. These grasses are sweet and nutritious, dry or green, and cattle thrive upon them and fatten. They cure in the dry season in the stalks, making a natural hay.

SHEEP.

About the year 1540, over three hundred and thirty years ago, a small lot of Spanish-Merino sheep were introduced into this country from Spain, and from this importation the present sheep owned by our Mexican citizens and the Pueblo and Navajo Indians, were derived. Owing to the constant "breeding in" without much change in the stock, or attempts at improvement, these sheep have degenerated and decreased in size and quality of wool yet in various respects the mutton and wool of New Mexico is better than that of the States; this arises from the fact that the climate and grasses are adapted to this class of animals, and it shows the advantage of this country over other portions of our land for the rearing of this kind of stock. At the commencement of the rebellion, I found, that in this country, sheep owners were raising their stock not for the wool, but for the meat which was of better flavor and more nutritious than the mutton of the States. The wool was allowed to go to waste and be dragged off the sheep's back while passing through the brush. I was offered the wool of whole flocks of sheep for nothing if I would shear them.

About this same time much complaint was made, in regard to the shoddy clothing furnished to the brave defenders of our glorious Union. I felt we had the means to supply the soldiers with warm and substantial clothing and good blankets, and in order to call attention to it, I procured a handsome Navajo blanket, made of the native wool of this country, and presented it to the lady of the

president's mansion, the wife of our much lamented martyred President Lincoln. I also took to the agricultural department in Washington, various samples of wool which are in the cabinet of the department sewed on cards, and which show the quality of the wool our sheep produce, without any attention to their improvement, or care in their rearing. The result of this display was a demand for our Mexican wool, which proved to be a better quality of "combing wool," than could be found in the States, and a gradual increase of the price of our wool from nothing up to twenty and thirty cents per pound.— This encouraged a number of our sheep raisers to endeavor to improve their stock, among whom was our enterprising fellow citizen, Lucien B. Maxwell, then of Cimarron. He had brought from the States good fine Merino bucks, and did all he could to improve his sheep; his attention at that time was called more to the improvement of the wool than the quality and quantity of the meat. Afterwards when Messrs. P. R. Skinner & Co. brought between forty and fifty Cotswold bucks to our Territory, Maxwell did all he could to encourage them in their enterprise believing it to be of benefit not only to his stock, but also that it would result in the improvement of all the sheep of this country.

Two years ago they commenced the trial of an experiment in crossing the full blood Cotswold buck with the native Mexican ewe. They brought from Connecticut about fifty full blood Cotswold bucks, bred from imported sheep by one of the most reliable and popular breeders of fine, pure blood sheep in the United States. Messrs. Skinner & Co. obtained about 3,000 Mexican ewes and located in the north east portion of New Mexico, in Colfax county, on Dry Cimarron. The lambs were much larger and finer than their most sanguine expectations,

and exhibit to a much greater degree, the leading and desirable characteristics of the Cotswold sheep, than was expected; some of the lambs weighed at six hours old from twelve to fifteen pounds each, and at seven days old from twenty to twenty-five pounds each; at two months old many of them are larger and heavier than their mothers, and promise so far as can now be judged an average fleece of five pounds of wool but little inferior in quality to the pure Cotswolds. The pure blooded bucks average eleven pounds of wool per fleece, and the Mexican ewes from one and a half to two pounds. The introduction of Cotswold and other varieties of long or combing wool sheep in the United States took place not very many years ago, and its progress has been comparatively slow consequently very few wool growers have learned as yet their superiority for wool and mutton. In the New England states, in New York, Pennsylvania and Ohio, it has repeatedly been demonstrated that the Cotswold with an average fleece of ten or eleven pounds crossed with the native or common ewes, with an average fleece of four pounds, produces a sheep whose fleece will average nine pounds, in quality very little inferior to the Cotswold.

Early in the seventeenth century the long-legged African or Guinea sheep were introduced into Europe by the Dutch, and distributed among the Islands near the Texel and in Gronigen and Friesland where they were crossed with the common sheep of the country producing the animal known there at the present time as the "Texel" or "Mouton Flandrin" breed of sheep. At the period of the introduction of this breed of sheep in Europe some highly exaggerated accounts of them were given says Youatt, by the writers of the time.

Corneille states that "they produced lambs twice in the year; (this is not improbable, as the sheep belong-

ing to the Navajo Indians of New Mexico do,) and usually three lambs at a time, sometimes four and five and occasionally seven at one yearling." This, continues Youatt, is quite incredible, and Corneille himself acknowledges that it was "only on their first arrival from the east that they were thus prolific, but they were, and still are justly valued for their size, beauty of form and abundant produce of long and fine wool, milk and lambs.

The Texel sheep have not been extensively introduced into the United States. American sheep breeders generally preferring to import the well-known and well-tried British breeds of mutton sheep; it has however been stated that the late Col. Jacques of the ten hills farm of Somerville, Massachusetts, imported sheep from the Netherlands in 1823, and the Massachusetts Agricultural Repository and Journal, records the importation of some sheep from the same source, by the late Col. Thomas H. Perkins, of Brooklyn, Massachusetts, in 1824. They were called the long woolled sheep of the Netherlands. It is not known whether these sheep were of the true Texel breed, nor is it probable that pure blooded animals descended from that importation are now in existence.

An importation of a small flock of Texel sheep was made by Winthrop W. Chinery, Esq., of Belmont Mass. in the spring of 1863. They were procured in Friesland near the Texel, and shipped at Rotterdam, Holland, for the port of Boston, Mass. The importation consisted of one buck and seven ewes when put on board the ship, but on their arrival at Boston, after a voyage of eighty-one days, the flock was found to have increased to seventeen animals, nine lambs having been produced on the passage affording strong corroborative evidence of the

good qualities of the ewes as nurses and also of the hardiness of the breed. The live weight of the buck of this importation in good condition was over two hundred pounds and the ewes varied in weight from one hundred and forty-five to one hundred and seventy-five pounds each. Their fleeces averaged over ten pounds each and their wool is considered by manufacturers superior either to the Cotswold or Leicester.

COTSWOLD SHEEP.

In the report of the United States Commissioner of Agriculture page 340, I find the following, which I believe of sufficient importance to our sheep raisers to transcribe here :

“The maple shade flock of Cotswold sheep imported and owned by Mr. John D. Wing of New York consists of selected animals of the best flocks of thoroughly bred sheep, many of them, being secured by Mr. Wing personally while in England, they are strictly pure without a cross, and every sheep has a reliable pedigree. Most of them were bred by William Lane of Broadfield his name standing at the head of the breeders in the Cotswold hills. * * * * *

These sheep are known for their heavy and valuable fleece, their mutton, proportions and strong constitution. The wool is very long, with bright lustre, known as combing wool in our markets, being the most desirable and highest priced of any. It averages over twelve inches in length, sometimes as long as eighteen inches, and the fleeces weigh from ten to fifteen pounds each, some bucks' fleeces as high as sixteen or eighteen pounds. Mr. Wing says his flock averages twelve pounds. They are highly valued for mutton, when fattened they grow to a very large weight, in some cases attaining three hundred and

fifty pounds. They are very hardy and capable of enduring much exposure. The sheep from this flock have carried off the highest honors, and the prize ram "golden fleece" was shown at Auburn fair of the New York state sheep breeder and wool growers association in May, 1867, when he took the first prize in the class and also the sweep-stake prize, he sheared on this occasion, nineteen pounds four and a half ounces of wool. He was purchased in England for 230 guineas, (over 1200 dollars), and claimed to be the highest priced Cotswold sheep ever sold. Professor J. R. Dodge, of the agricultural department, Washington City, very aptly says: "Profit is the golden beacon which guides the farmer's course. Like other men he is propelled by the pecuniary motive with the power of the locomotive, and to direct him in a certain course, it is only necessary to show that it will prove remunerative." I propose to quote some of his facts to show how remunerative the growing of combing wool and rearing of Cotswold sheep is.

LONG WOOL ETC.

Professor J. R. Dodge in the U. S. Agricultural report for 1866, says, those who decry long wool, should remember that long wool has been quite as rife and rapid during the past generation in those breeds, as in the pampered Merino. If a comparison be made, let it be between immense numbers, and not between isolated individuals. The sheep of this country mainly of Merino blood average fleeces of five and a half pounds; those of Great Britain mostly long and middle wools average from four to five pounds, according to Wilson, while others make a higher estimate. After allowing for extra weight of the latter, it will readily be seen that the boasted superiority of the Merino in proportion of wool to the live

weight of the animal, is more mythical than real. "Whole flocks of improved Cotswold sheep yield eight pounds each, and the tendency of recent English improvements is still to heavier weights. Large fleeces of all breeds are occasionally noted in this country as well as England, a few cases will suffice as evidence. At Auburn, New York, fair May, 10th, 1867, the Cotswold ram, "golden fleece," two years old owned by Mr. John D. Wing sheared nineteen pounds four and a half ounces, 381 days from the previous shearing. The growth of twelve months would therefore be eighteen pounds and five and a half ounces. The length of the wool was nine and a quarter inches. A ram of the same flock sheared eighteen pounds and nine ounces, fourteen inches in length. Other specimens forwarded to Dr. Randall to be used by the committee authorized by the Secretary of the Treasury for the selection of tariff samples, represent fleeces scarcely less in weight. One fleece of a ram teg thirteen months old, bred by L. Converse, Bucyrus, Ohio, length ten and three quarter inches, weighed ten and a half pounds. A fleece of a Lincoln ram two years old, owned by Hon. Samuel Campbell and R. Gibbon, New York, Mills, Oneida county, New York, weighed seventeen and three quarter pounds, another washed fleece from the same flock fifteen and three quarter pounds, last year eighteen pounds. The wool of these fleeces was ten and a half inches in length, of the kind known as luster wool, in great demand for ladies' fabrics and bringing high prices. Beautiful samples of this wool, (says Professor Dodge,) very lustrous and fine, and about eleven inches long, are now before me as I write with a note from the owners claiming eleven pounds five ounce as the average weight of their fleeces, and fifteen and three-fourths pounds, and seventeen and three-fourths pounds respectively for fleeces

of their rams ; one ram weighs three hundred pounds—ewes in good order weigh two hundred pounds. All have done well since their importation.

It is stated that 60 years ago, an English maiden (a “spinster”) spun 168,000 yards, or 95 miles of thread from a pound of wool from a Lincoln ewe. A Bradford (England) manufacturer states that a twenty pound Lincoln fleece used in an admixture with cotton in the finest “Alpaca” fabrics is sufficient for twelve pieces of 42 yards each and possibly 16 pieces of 672 yards in length, one yard wide worth at 75 cents per yard, more than \$500.

The same writer, says : “I have noticed a record of the weight of five Cotswold wethers fed for the New York market, as follows : 217, 222, 204, 223 243. Five other wethers twenty-one months old averaged 188 pounds—these weights are not extraordinary but are easily attained at an early age.”

A writer from Carrol county, Kentucky, says : “The sheep most profitable in our county are the Cotswolds and their grades. They will consume probably one-fourth more food than the fine wool sheep, but are hardy, needing no shelter, and generally live the entire winter on our blue grass pastures without other food, producing from 6 to 10 pounds of wool per sheep, and from 60 to 100 pounds of good mutton at one or two years old. I have (he says) about 50 in my flock, of the Cotswolds and grades which I have taken as sample for the above statement. They have not eaten a single pound of hay or anything but what they have gathered for themselves in the pasture, winter or summer, for the last two years. The wool is worth just as it comes from the sheep unwashed, 35 cents per pound ; the mutton is worth ten cents a pound.”

The experiments already made by Messrs. Skinner & Co. with their Cotswold sheep on Dry Cimarron show that the same results will obtain in New Mexico, and should encourage our sheep owners to procure good sheep to improve their stock and increase their wealth, and thereby benefit themselves as well as increase the wealth of our Territory.

Another reason for increased attention to long wools (combing wools) is the fact that new fabrics are introduced in great variety, especially for the various garments of ladies requiring soft or lustrous wools and are becoming daily more popular and more widely disseminated. This state of things has caused a scarcity of long wools, and gives them an advantage in price over the most popular of merino wools of this country of fifteen or twenty per cent. In England this change of place of long and short wools by which the long wool has exceeded the short wool in value as much as that formerly led all others is thus referred to:

“There is a strong pecuniary inducement to use these wools, notwithstanding their price. They contain little oil or yolk; in scouring the loss is rarely twenty-five per cent. and often less than twenty; the loss in the merino is forty per cent and upwards, according as it is improved, the fleeces of prize bucks often reaching seventy per cent. of waste. Excluding these and taking the most desirable Ohio grades, a comparison will show the superior economy of long wool to the manufacturer, pays seventy cents per pound at present prices, and loses fifty per cent. in scouring, making the clean wool one dollar and fifty cents. He buys Canada wool at eighty cents, and losses twenty per cent. leaving the cost of cleaned wool just one dollar per pound. Is it a wonder that manufacturers will use all the long wool they can when it can

make forty per cent. more cloth for the same money?" By Canada wools the manufacturer simply means Cotswolds, Leicester, Southdown, and their grades, most of which came from Canada, where few other sheep are kept. It has also been remarked that "there is a want which might be met by enlarged operations in rearing long wool flocks. The eastern markets with few exceptions are miserably supplied with large fat lambs. Nor can it be otherwise with our present flocks. Merino lambs will never satisfy the demand of enlightened eaters, six pounds is to the quarter of lean blue meat, at twelve weeks old, will never afford satisfaction to mutton consumers, when fine fat quarters of twice that weight are obtainable. Nor will it pay the sheep raiser to sell such lambs and wethers for meat when those of double value could be produced in the same at a little more expense.

It was thought that the prices of meat would decline at the close of the war, and some of our wise men in New Mexico, now say, produce sheep and wool in the ratio you propose and increase the quality and quantity of the meat, and you will reduce the price so that it will not pay to raise sheep in New Mexico, this cannot be the case for many years to come. The demand for long wool both in Europe and in this country, (for it is evident that in England the supply of combing wools is not sufficient for the demand) will make combing wools an article which will be a source of wealth to the producer for many years yet in the future.

In regard to the production of meat, an intelligent writer has said in language better than I can express it, that "it should be remembered that the war has somewhat reduced our meat supply. The war being soon over then a pastoral life will be quite too tame for soldiers, and the waste of meats cannot soon be repaired. Many

of the soldiers are machinists and artizans. Thousands of them will repair to the mines of the Rocky Mountains; and many will seek in trade and speculation in cities the excitement which they crave. Most of them are efficient consumers of meats; very few will be producers. Then our shores are swarming, and for years will swarm as never before, with foreign immigrants, hungry for meat, however poverty may have stinted their former supply. All these mouths and those of millions unborn, are to be supplied in the years of the immediate future. With what shall we feed them? Not with pork, becoming vastly dearer with the increased price of corn; not altogether with beef, while there is such a demand for wool, and just precisely the kind of wool produced by mutton sheep. We must have mutton; and sensible men with money in their pockets will pay prices that must command good mutton, and render its production highly profitable. Conditions now exist favoring adequate remuneration in this branch of husbandry that have never before been brought together in so potent a combination. There is an opportunity to achieve a fame and a success in this direction in a field as yet almost entirely new, that should engage the effort, capital and ambition of the enterprising; and there is little doubt that it will be promptly and successfully occupied by strangers if our own citizens do not avail themselves of the opportunity.

Those, therefore, who now commence with judgment and energy the production of real superior mutton and combing wools in New Mexico, will reap an abundant harvest of profit, and the earlier the start the quicker the reward, and that it will engage the attention of enterprising people and meet their just expectations there is no room for doubt.

The adaption of this country to the rearing of the vari-

ous kinds of stock, will in future years make New Mexico a country from whence large supplies of meat for food, and wools for manufacturing clothing, will be derived, and which will be a great source of wealth to our citizens, while it will furnish healthy food for the dwellers in our large cities east of the Mississippi.

The natural configuration of this vast Rocky Mountain region is not the least of the many desirable advantages it presents. It is situated many thousand feet above tide water fanned by the purest atmosphere, and supplied with innumerable salubrious streams running from the mountain springs, and furnishing pure water, one of the essential elements for the sustenance of both man and beast. This country having a high and dry range so conducive to the health of all animals, especially *sheep*, which animal, I believe, if properly reared and improved, will prove a greater source of wealth than even our untold and vast mineral deposits. The one we have *in* the earth—the means of producing the other we have *on* the earth. The succession of mountain and valley affords the most ample defence against the heat of summer as well as the bleak winds of winter; artificial protection indispensable at the north and necessary in many of the states of this Union, which is so apt to induce disease by which whole flocks and herds are sometimes lost, are rendered unnecessary in our more favored country. Our mesas and mountain gorges, and many portions of our valleys, are most prolific in a variety of herbage suitable for all classes of animals, but especiall adapted to sheep, and during winter they afford a supply of pasturage so abundant that no additional food is required. The animals can have access to a continuous supply of good food and pure water during the winter, and by a judicious management the only expense of rearing sheep and cattle in this country is the hire of herders, which is comparatively a trifle.

The constant supply of proper food by which the secretory powers are retained in full action and uninterrupted increase of meat and fat in animals, and of growth of wool on sheep, is promoted; while cases of constipation, and various diseases frequently fatal in the states by reason of sudden changes of food, are unknown here, there is scarcely a day in the year in which cattle and sheep cannot find sufficient food of a proper kind to keep their digestive organs in a healthy condition. The soil in our mountain regions is generally good, and it is by no means uncommon to find it fertile and producing grama grass even to the tops of the mountains; and although there are to be found considerable bodies of thin soil, yet even are these more disposed to the production of grass than lands of a better quality in the states. My experience for over thirty-five years in Virginia, Pennsylvania, and Illinois, Kansas and New Mexico corroborate, what is well known to all sheep raisers, that, when lands are freely pastured by sheep, their capacity for producing grass is much assisted, as by close grazing the more useless grasses, briars, ect., are subdued, and the desirable descriptions allowed to strengthen their hold; this together with the tramping of the land and the droppings of the sheep, induces a more prolific growth of good grass.

In my travels over a large expanse of country within the limits of New Mexico and the eastern borders of Arizona, I have found growing wild clover, and several varieties of grass which indicate that they can be produced in this country by cultivation. It is only a question of time and the construction of railroads when this country, in addition to its native grasses, which may be greatly increased, will have large meadows and pasture grounds of cultivated grasses, and it has been for nearly forty years a favorite theory of mine, confirmed by my practical ob-

servation, that so far as the quality and relative coarseness and fineness of wool is concerned more depends upon the character of the grass than upon any other one thing, except it may be, the constant change of the breeding animals. A stock raiser may determine by a judicious selection of his breed and the character of grass he allows them to use for food, the quality and quantity of the wool his flock of sheep will produce, and of course the quality of his wool will regulate the price he will get in the market, and determine the profit arising from the investment of his capital. This is especially so in regard to sheep, but is also to a great extent applicable to horses, cattle, goats and hogs.

CATTLE

were imported into Virginia at an earlier date than into Massachusetts, for as early as 1610 an edict was passed by the governor prohibiting the killing of any domestic animals, among which were mentioned neat cattle on penalty of death to the principal offender, burning in the hand and loss of the ears to the accessory, and twenty-four hours whipping to the concealer."

Sir Thomas Gates brought into Jamestown, in 1711 a large importation of a hundred head of Devonshire and Herefordshire. Cattle were also imported into Delaware by the Swedes, sent out by Gustavus Adolphus in 1627. The Spaniards at a very early period introduced them into the West Indies, whence they were afterward carried to the continent, and from which the wild cattle of Texas and New Mexico were derived. There is no doubt that the present cattle of New Mexico are susceptible of great improvement, and that there is a mine of wealth combined in the cattle that could be produced and the rich and abundant grama and other grasses of our mesas and val-

leys. All that is wanting is the introduction of good cattle from Europe and our Eastern States.

The "native stock" of our cattle would be much improved by the introduction for beef or the dairy of the short horn Durhams, Ayershire, Devons, Herefords, and Jersey or Channel Island cattle. The short horns are generally the greatest favorites for beef from their large size and early maturity, though not making so fine beef as the Devons or Herefords. Those of our people who wish to improve their stock of cattle would do well to procure the several volumes of the American Herd Book, and acquaint themselves with the best animals to improve our native breeds. In 1846, Lewis F. Allen of Black Rock, New York, a laborious worker, a keen, shrewd judge of stock of all kinds, published the first volume of the American Herd Book; Some years afterwards he continued it, and has published several volumes. This book, like the English Herd Book is of great labor and corresponding value. Either of them is regarded as authority, and in my opinion the American Herd Book should be owned by every breeder of cattle.

My opinion is that for beef the short horns are the best for New Mexico. The Ayershire gives the greatest flow of milk, the Jersey the richest, and the Devons make the best work cattle. No doubt the crossing of these breeds with our native, and recrossing back, in various ways, would help very much to improve our old "native stock," by adding to them one or another of these desirable qualities, we would then have better milkers, better beef cattle, and better work oxen at three years than at six and seven years now, and one animal would then be worth more than three are now. They would fatten easier and at less expense, and our work cattle would be much improved; though in many parts of the country as it be-

comes settled we find horses are to a considerable extent superseding for farm purposes the patient ox. In many parts however, oxen will continue to be used and appreciated, and will be better trained.

HORSES.

No department connected with the breeding of domestic animals in New Mexico has received so little attention as the production of first class horses. While we have all kinds of horseflesh, and some very hardy and splendid riding animals, derived from California and the wild native ponies of the country, "broncos" and "mustangs" we have scarcely any thorough bred or blood horses, and very little is known by our farmers in regard to the improvement of our horses. There is no subject upon which I cannot say probably more, than upon that of the subject which heads this article; as I see, however, that under the head of "Lost Races," a gentleman is getting up a list of the horses that have been beaten in the the various races of the country. I may be able to say something on the subject of the improvement of horses, not with reference to the subject of producing fast horses (as I do not approve of racing horses) but in regard to animals for work and use for transportation, etc., for sometime I have thought much in regard to the subject of beating horses (not in races) but as it has reference to the organization of "a society for the prevention of cruelty to animals," as many beat and abuse their horses burros and mules in New Mexico, in such a manner that it is impossible to have good serviceable animals. I thank Providence that to some extent I have been able to correct this evil in my own immediate neighborhood except with one man, and I trust ere long, he will be induced to believe that kindness to a dumb animal is far

better than a beating. He will certainly learn a lesson if he should find himself again on the roof of a house with his horse, or rolling down the side of a mountain with his horse after him. There is certainly a good field of labor in New Mexico for Mr. Bergh of New York or my good friend Fay of Massachusetts, and I know I would rejoice to see either or both of them here, they might be able to tell us of some substitute for horseflesh for the Indians of New Mexico. I will, however, give them notice in advance, that they will be compelled to ascertain what is better as food and be fortified with arguments to convince the Indians that good fat beef or mutton is better than the meat of a worn-out and abused horse or mule which the wild indians prefer.

In an article on "The horses of the United States" by Colonel Ringwalt of Downington, Pennsylvania, he says:

"The United States contains a much large number of horses than any European country. In 1860, we possessed 7,431,681. A few years ago the horses in Europe were supposed to number 22,430,000; of Africa 3,000,000: of Asia 25,000,000, and of the whole world nearly 59,000,000. So that we have more than one-eighth of the whole race. Our country has proved as genial a home for the horse as for his master. As we exceed all other nations in the number so we have gained the questionable pre-eminence of an unprecedented variety in the breeds of our horses. Emigrants from Europe naturally brought with them, at different times, the animal with which they were most familiar. The Spaniards took to the South West and to Mexico, whence they escaped into Texas, California, New Mexico, Colorado and the plains, their famous barbs, which were formerly regarded, as a superior breed, and which in their best condition are but little inferior to the Arabian. Some of the finest thorough

breeds of England are derived from this race. The wild horses of our plains occasionally excite the warm admiration of critical observers. Washington Irving, in his "Tour on the Prairie," gives frequent expression to his feelings; and as the race is now disappearing as rapidly as the buffalo, one of that writer's descriptions may be appropriately quoted: "On resuming our march we came to a little meadow surrounded by groves of elms and cottonwood trees, in the midst of which was a fine black horse grazing. Beattie (a half breed guide) who was in advance beckoned us to halt, and being mounted on a mare approached the horse gently, step by step, imitating the whining of an animal, with admirable exactness. The noble courser of the prairie gazed for a time, snuffed the air, pricked up his ears, and pranced round and round the mare in gallant style, but kept at too great a distance for Beattie to throw the lariat. He was a magnificent object, in all the pride and glory of his nature. It was admirable to see the lofty and airy carriage of his head, the freedom of every movement, the elasticity with which he trod the meadow. Finding it impossible to get within noosing distance, and seeing that the horse was receding and growing alarmed Beattie slid down from his saddle, leveled his rifle across the back of his mare, and took aim with the evident intention of creasing him. I felt a throb of anxiety for the safety of the noble animal and called out to Beattie to desist. It was too late, he pulled the trigger as I spoke. Luckily, he did not shoot with his usual accuracy, and I had the satisfaction to see the coal-black steed dash off unharmed into the forest."

In the statistics found on page forty-seven of the Agricultural report for 1869 is a table showing the number and value of the horses in the United States which shows 8,248,800 horses valued at \$671,319,461; in the

territories it is stated there are sixty thousand horses valued at \$3,600,000. This amount could be doubled in New Mexico alone in the next ten years, with care and proper attention to raising and improving the horses of our Territory.

The wild Indians of New Mexico number as follows, viz:

Navajoes,	8,500
Apaches,	4,502
Utes,	1,347
	<hr/>
Total	14,349.

Two years ago when I took the census of these Indians I found in their possession 10,908 horses, some of which were of the best quality of "native" stock. Now suppose these Indians did not eat horse flesh, and ceased to abuse their animals as they do, and were to give their attention to the improvement of the breed, what would be the result? The natural increase of these animals would give the first year about 6000, and each year thereafter an increase. Take the six thousand animals of the first years and keep them on the grama grass of our Mesas, and at four years old, if they were not rode to death before that time, and then eaten by the Indians, they would be worth at least sixty dollars each, which would make three hundred and sixty thousand dollars, and this amount would now be greatly increased by the demand for horses in consequence of the death of such numbers in the cities from the epizootic. It is very clear that the wild Indians of New Mexico could on their horses alone, (if they would deny themselves of the delicacy of horse flesh diet,) be made self sustaining. If Indians can do this, is it not much more certain that our citizens who have ranches and extent of pasture going to

waste every year, can also do it? I know men in New Mexico who have a hundred mares or more and yet they, scarcely have a horse fit to ride or work, owing to their neglect to improve the stock, and their abuse of the animals. They do not remember the injunction :

“Up hill bear him

Down hill spare him

On the level let him trot

And in the stable forget him not.”

Indian warriors frequently attach as much value to their favorite steed as the Arab to his fleetest coursers. Col. Ringwalt says : I saw a band of the Sac and Fox at Davenport, Iowa, some years ago, who, however ready to sell their inferior horses refused tempting offers for their best animals. In fixing a price one clap of the hands signified ten dollars, and when asked to designate the value of a superior horse, they would after innumerable clappings, smile and shake their heads saying “no shones” (no money) in a manner which clearly proved that they regarded him above all price. Among the tribes of the Northwest the turf is a favorite institution, and in the official description of the Indians of Washington Territory, published in the first volume of Pacific railway reports, it is stated that at certain seasons the Klikitats descend to the Yaikohtle, Chalaka, and Talik prairies, where they are met by the Yakimas who assemble with them for the purpose of gathering a late species of berry and of racing horses. The racing season is the grand annual occasion of these tribes. A horse of proved reputation is a source of wealth or ruin to his owner. On his speed he stakes his whole stud, his household goods, his clothes, and finally his wives ; and a single race doubles his fortune, or sends him forth an impoverished adventurer. The interest, however, is not confined to

the individual directly concerned; the tribe share with him, and a common pile of goods of motley description, apportioned according to their ideas of value, is put up by either party to be divided among the backers of the winner.”

Similar scenes may be witnessed amongst the Indians of New Mexico and Arizona, and the losers then become “hunters;” with a lariat they “go hunting” and return frequently with horses stolen from the settlements. If these races were forbidden by the agents and broken up, the great incentive to horse stealing would be removed, and a better class of horses among the Indians would be the result. Another source of great loss in the raising and keeping good horses among the Indians is the superstitious custom of killing all the horses belonging to a warrior when he dies; an efficient agent with patience and prudence can correct this, and I care not what tribe of Indians he has in charge he can in a few years with proper authority from the government make his Indians self-sustaining from the horses, cattle and sheep that they would raise. The Indians of the Rocky Mountains are more disposed to pastoral pursuits than to agricultural labor; they are nomadic in their habits, and all that they require is to be taught economy and induced to give up their superstitious notions.

As the eastern portion of our country becomes more densely settled; as manufacturers, mining commerce, and all other non-producing occupations and professions multiply; as the country becomes more thickly peopled; as villages draw in their houses around them and become towns; as towns expand their limits, and become cities; as cities pile their houses heavenward, and fill them with hungry occupants; as railroads are constructed and being constructed, of course, a greater de-

mand must be made on the agricultural and pastoral portions of the country, to supply them with food. Let our farmers and ranchmen prepare for this great harvest, which is gradually coming to us, by an improvement and increase of the horses, cattle, sheep and hogs, etc., in the Territory of New Mexico, so that we may supply the increased facilities by railroads for their transportation to the Eastern States.

CLIMATE.

Its mildness of climate and remarkable healthfulness has become proverbial, the dryness and purity of the atmosphere all over the Territory, and especially in the valleys have induced many invalids afflicted by Pulmonary and other diseases to test its salubrity with great benefit to them and a prolongation of their lives.

The following report of the signal officer at Santa Fe will give some idea of the pure and even temperature of the atmosphere in New Mexico.

WAR DEPARTMENT.

SIGNAL SERVICE U. S. A.

SANTA FE, January 6th 1872.

Although the science of Meteorology is comparatively new, and moreover a difficult one because of the capricious nature of the elements of which it treats yet it cannot be denied that under the present system of local and synchronical observation adopted by our government it is rapidly being developed into a perfect science with definite principles and fixed laws.

Already the mariner heeds the "cautionary signal" and rides safely in the harbor while the storm and tempest pass, and we may expect soon to see the farmer plant and reap with much greater profit because he anticipates the prolonged rain or the blighting drouth.

As many of our citizens are interested in this branch of science, we publish the following condensed report for the year ending December 31st 1872, which is the result of careful observation made with the most approved and accurate instruments.

At this station the monthly mean of Barometer (corrected for temperature and elevation) for each month was as follows: January, 29,77; February, 29,733; March, 29,735; April, 29,725; May, 29,851; June, 29,883; July, 29,925; August, 29,97; Sept; 29,91; October, 29,90; November, 29,83; December, 29,783. Mean of Barometer for the year,—29,835.

Monthly mean of Thermometer: January, 27°; February, 34°; March, 38,8°; April, 45,8°; May, 58,1°; June, 66,9°; July, 67,6°; August, 87°; September, 60°; October, 49°; November, 33°; December 32,6°; Mean of Thermometer for the year,—48,3°.

The highest observed temperature during the year was 88° and the lowest 5° below zero.

Total rainfall for each month expressed inches and hundredths: January, 34; February, 20; March, 13; April, 14; May, 45; June, 2,44; July, 2,62; August, 2,98; September, 27; October, 25; November, 01; Dec. 04. The greatest single rainfall was 1,21 inches which occurred June 4th. Total rainfall for the year—9,87 inches.

The wind has travelled 50,220 miles with the prevailing direction North.

JOHN P. CLUM.

Observer Signal Service U. S. A.

Santa Fé, N. M.

Many persons suppose that owing to the arid climate of New Mexico and the reported small rainfall, that water would be scarce. Such should remember that the reports

are generally made in reference to the valleys, and that in the mountain ranges there are during the winter generally heavy falls of snow, which supply our streams with an abundance of water by its melting during the spring and summer months; besides this, there are many springs, hot and impregnated with minerals, also cold springs, thus we are blessed with pure air and water, both essential to health; and with the Nile of America for irrigation, we have abundance of water to cultivate the valleys of Rio del Norte, Rio Grande and the tributaries of this great river.

With reference to the subject of disease I quote from a letter from Lew Kennon, M. D., of Santa Fé, the leading physician of this Territory, who has had an extensive practice in New Mexico for twenty years. He says:

* * * “It is certain that even when the lungs were irreparably diseased very much benefit has resulted. Invalids have come here with the system falling into tubercular ruin and their lives been astonishingly prolonged by the dry, bracing atmosphere.

The most amazing results, however, are produced in warding off the approaches of Phthisis, and I am sure there are but few cases which if sent here before the malady is well pronounced, would fail to be arrested. Where hardening has occurred or even considerable cavities been established, relief altogether astonishing takes place.

The lowest death rate from tubercular disease in America is in New Mexico. The census of 1860 and 1870 give 25 per cent. in New England, 14 in Minnesota, from 5 to 6 in the different southern states, and 3 per cent in New Mexico.

I have never known a case of bronchitis brought here that was not vastly improved or altogether cured; and asthma as well.

Rheumatism and diseases of the heart with or without a rheumatic origin do badly here. Valvular difficulty in that organ, is invariably made worse. But, the most astonishing effect of this climate is seen in those cases of general debility of all the functions of body and mind. That *used up* condition, the pestilent nuisance of physicians in the great cities. People come here in a sort of *débâcle*, having little hope of living and often little desire to, and the relief is so quick as to seem miraculous.

I have no doubt that when means of access to this country are better, and therefore it being better known, it will rival or supersede Florida, Madeira, Nice or Dr. Bennett's much vaunted paradise of Mentone as a sanitarium. The country is far distant from either ocean; it is utterly free from all causes of disease. The atmosphere is almost as dry as that of Egypt. The winters are so mild that there are not ten days in the whole year an invalid cannot take exercise in the open air. The summers are so cool that in midsummer one or two blankets are necessary to sleep under. The whole territory has been always astonishingly free from epidemic disease.

For weak or broken-down children there is surely nothing like it on the face of the earth. With them the law of survival of the strongest here seems not to obtain at all."

Professor Hayden in his published report for 1870, pages 204 and 205, says in reference to the climate, etc. :

"In order to understand properly the differences in climate and productions observable in the different parts of this section, it is necessary, not only to take into consideration the latitude, but also the variations in altitude, and proximity to high mountains. Beginning at the San Luis Valley, with an elevation of 7,000 feet above the level of the sea, we find when we reach Santa Fé the

Height is still 6,840 feet,* which is higher than some of the valleys further north. Keeping on the same plateau, and moving south, the elevations of the principal points are as follows: Galisteo Village, 6,165; Los Cerrillos, 5,804; Cañon Blanco, 6,320, and a little southwest of the cañon near Laguna Blanca, 6,943 feet. Moving southwest from this point toward Albuquerque, we find the elevation at San Antonio is 6,408 feet. But when we descend into the immediate valley of the Rio Grande, as far north as Peña Blanca, it is only 5,288 feet above the sea level, or 1,552 lower than at Santa Fé. At San Felipe it is 5,220; at Albuquerque, 5,026; at Isleta, 4,910; at Socorro, 4,560; at Alamosa, 4,200, and at El Paso about 3,800. Strange as it may appear, when we cross the ridge east of Santa Fé, to the headwaters of the Pecos, we find the altitude of Pecos Village but 6,360 feet—about 500 feet lower than at Santa Fé; while at Anton Chico it is only 5,372 feet, corresponding very nearly with that of the Rio Grande Valley at Peña Blanca.

I have given these particulars in regard to the elevation of this region to show that, sweeping around the southern terminus of the Rocky Mountain range, is an elevated plateau, or extended mesa, which reaching north along the inside of the basin for some distance, occupies both sides of the river, but southward recedes from it. At Peña Blanca we descend into the Rio Grande Valley proper, which continues along the southern course of the river with little interruption throughout the rest of the territory. From this point south, fruits and tenderer vegetables and plants are grown with ease, which fail no farther north than Santa Fé." &c.

—*Dr. Keannon has furnished me the following in regard to Santa Fé: "Average temperature for months of November and December, 1871, and January and February, 1872, deduced from 270 observations taken at 7 a. m., 12 m., and 7 p. m. 39°. Mean of 270 observations (Barometric) reduced to freezing point 23, 25.937 inches. Elevation 6,837.67 feet.

MINES AND MINING.

The destruction caused by the Texan invasion in 1861—62 had a most disastrous effect upon this country. The invaders consumed its substance, caused the loss of almost its entire mining capital, and much injured the agricultural interests. The Indians, seeing that the whites were at war, increased in boldness and compelled the abandonment of many mines and settlements.

Before the late war two copper mines were extensively worked, the "Santa Rita" and the "Hanover," turning out about twelve tons of copper per week, and employing jointly, about five hundred hands. Other copper mines had been opened, or were about to commence operations.

The mines in the placer mountain about thirty miles from Santa Fé, have in former years, been productive, also the "Ortiz" and "Cunningham" mines. Gold-bearing quartz, in this mountain, had been worked for a number of years before the war. When the Texans invaded New Mexico there were about forty Americans at work in these mines, and in the run of the mill for twenty four hours they obtained about \$750 worth of gold. There is also near these shafts a coal mine several feet in width, and a short distance therefrom an extensive deposit of magnetic iron. I have seen some fine specimens of gold from this mountain, which indicate its value.

The silver mines on the west of this mountain are very rich and easily worked. With proper machinery, and a little energy these mines could be made very profitable.

At Pinos Altos some 300 miners were at work in placer mining, gold quartz, and silver mining, and this new district was bidding fair to be the first in richness on the frontier; new lodes were being discovered daily. Shortly

after the war broke out the Indians combined to destroy the town of Pinos Altos. They made the assault in broad day, some 600 strong, and, having surprised the population they charged through the town, and the inhabitants owe their salvation to a mountain howitzer.

At San José a small force was engaged in quartz mining, several companies were organized to work in this district.

At the commencement of the war a placer had been discovered in the Jicarilla Mountains in Lincoln county, where some 300 miners, chiefly Mexicans, were at work and doing well. Other companies were about to commence operations on the silver-lodes of the "Organos" mountains. The Stephenson company had shipped a lot of machinery and material to work extensively the Stephenson silver mines. These reached their destination the very week hostilities commenced on the frontier.

In 1862 a large number of persons entered the San Juan region on account of the gold excitement. (This country is claimed and roamed over by the Weminutche and Capote bands of Utah Indians.) They built a town on the Rio Las Animas, which they were compelled to abandon, the houses now remaining unoccupied. Many of them returned to the settlements in a starving condition, although gold and silver was found in the mountains, and on all the streams tributary to the San Juan river. This includes the mining operation previous to the rebellion, and these were at different points in New Mexico and Arizona. Other points have been prospected, and the precious metals are known to exist in abundance throughout the whole mountain portion of this country.

The Commissioner of the General Land Office, in his report for 1868 page 54, says ;

“Valuable minerals are found in every portion of New

Mexico. In numerous localities may now be seen shafts and drifts, the work of former generations, and the only monuments left of their energy, activity and industry, while the almost daily discovery of new lodes of gold and silver-bearing quartz and auriferous placers indicate that mining operations in the future will be as productive as in the past, (as in the days of Montezuma and Cortes.)

On page 162 he says :

“New Mexico, Arizona, Nevada, and Southern California present an area of productive soil and genial climate that promises under the stimulus of railway communication to attract and support a large industrial population. Both the agricultural and mineral resources of these regions are on a magnificent scale,” etc.

A small appropriation was made by Congress for a geological survey of Colorado and New Mexico, which was made by Dr. F. V. Hayden, United States geologist, and his assistants, but which was, in consequence of the want of funds, necessarily brief and imperfect, yet in an examination of only a few days spent in New Mexico, (no portion of which was given to the west side of the Rio Grande,) he reports the following “*minerals of commercial value.*”

Iron Pyrites, Copper Pyrites—Mostly auriferous, widely distributed in veins over the flanks of the Rocky Mountains in New Mexico and in numerous lesser chains of granitic and metamorphic rocks.

Malachite, green vitriol, blue vitriol—Principally from decompositions of the above wherever the ores have been exposed to weathering. Widely distributed in veins over the flanks of the Rocky Mountains in New Mexico, and in numerous lesser chains of granitic and metamorphic rocks.

Zincblende, often argentiferous—Sandia, &c.

Galena, often argentiferous—Maxwell's near Mora.

Brittle Silver—Maxwell's, near Mora.

Fahlerz—Maxwell's near Mora.

Specular Iron Ore—Real Dolores, near Ortiz mine.

Red and Brown Hematite—Widely distributed; Old Placer, &c.

Magnetic Pyrites—New Placer.

Coal—Raton mountains, Maxwell's, Real Dolores, &c.

Cerussite—Maxwell's.

Anglesite—Maxwell's.

Native Gold—Arroyo Hondo, Moreno, Brahm Lode, New Placer, &c.

Native Silver—Maxwell's

Horn Silver—Maxwell's.

Titanic Iron Ore—Real Dolores.

Smithsonite—Sandia.

Silver Glance—Moreno, New and Old Placers.

Light and dark ruby silver—Maxwell's.

Spathic and Micacious Iron Ores—Real Dolores.

Turquoise—Cerrillos, between Santa Fé and San Lázaro mountains.

Professor Hayden says in his report, page 130 :

“The valuable ores abound almost everywhere in the granite and gneiss of the Rocky Mountains, and the economic question is not to find the material, but the capital and labor with which to work. That the country over which these investigations were made is replete with those minerals which by their decomposition are found by experience to most enrich the soil, as it is with the before-mentioned minerals of commercial value.

MINERALS.

Gold is known to exist in over fifty different localities in this country. It and silver must have been known

and extensively mined by the Aztecs, as the presence of their old ruins is said to be an almost unfailing indication of mines. The Spaniards mined gold, silver, and copper in this region, and Jesuit priests more thoroughly prospected it than it has been since. They reported at all points great riches, and the existence of all the precious metals. At the Placer Mountain the Old and New Placer, quartz lodes have been opened since the war.

At Moreno-mines, at Ute Creek, and other tributaries of the Cimarron and Red river, large deposits of gold have been discovered and worked. The Commissioner of the General Land Office, in his report of 1868, page 54, says :

There has recently been received at this office a specimen of ore, consisting of a silicious deposit of exceedingly loose texture, through which are interspersed fibers of pure gold, some of which exceed two inches in length. It is claimed that an assay (made at the Denver mint) of a specimen of this ore, in which no gold was visible to the eye, yielded at the rate of \$19,000 to the ton. The locality in which this specimen was obtained is on the headwaters of the creek, a branch of Cimarron river, and the existence of the deposit was hitherto unsuspected.

Several years ago gold was discovered at Arroyo Hondo, Taos county, and the "Arroyo Hondo Mining and Ditch Company" organized. Since then gold has been found in paying quantities at Carson's Gulch, Stewart's Gulch, Prospect Gulch, Seymour Gulch, Good-luck Gulch, Quien Sabe Gulch, and California Gulch, formerly called "Cañada de la Pluma," the King William gold lode, and the Henk gold lode.

The gold found in the gulches is shot-gold mostly. The specimens from the lodes are rich quartz, and the gold

can be distinguished with the naked eye. This whole section is evidently abounding in gold.

At Pinos Altos, quartz gold-mining received considerable attention. Thirty lodes were discovered, paying from forty to two hundred dollars per ton. The richest of these was the "Maston lode," called after two brothers.

In this district thirty lodes of gold quartz were worked, ten of silver or a combination of silver and gold, and three of copper. There has been picked up in one day in a gulch at Pinos Altos ores of gold, silver, lead, zinc, magnetic iron, and plumbago.

Gold in quartz and fine placer gold have been found on the headwaters of the Rio de Las Animas, and placer gold on nearly all the streams tributary to the San Juan river, also on the Chama river. The country watered by the San Pedro, Rio Las Animas, Rio Los Pinos, Rio La Plata, Rio Dolores, Rio Mancos, Rio Pedro, Rio Nutra, San Juan, and Navajo river, is occupied and claimed by the Wemenutche and Capote bands of Utahs, who refuse to allow any settlers or miners in their country. They permitted me to spend a month in their country in the summer of 1868. And twice since have I visited that region and explored it to a considerable extent; its scenery, pastoral, agricultural and mineral resources exceed any thing I have seen in any portion of New Mexico and from my observations I am fully satisfied that there is not a richer country for the same extent on this continent. If these Indians could be induced to go to the agency on their reservation in Colorado, northeast of the San Juan mountains, (which they refuse to do,) that country could be developed, and would sustain a large agricultural, pastoral and mining population.

Gold placer mining was quite successful before the war

near Fort Stanton, Lincoln county. It has been found in seven localities in the Sacramento mountains.

At the "San Jose Mines," in the Sierra Madre, gold quartz was extensively mined by the Spaniards, and afterwards by the Mexicans. The quartz veins here intersect each other in all directions, forming a net work of veins for one mile in width and three miles in length. The surface is dotted with shafts.

On the San Francisco river, west of the Gila, in Arizona, gold, silver, copper, and quicksilver have been found; gold prospected in the bed of the stream from one cent to one dollar per pan. In 1863 I met old Captain Walker, ("the California miner,") with a party, on the Gila river. He had explored that country, but was driven out by the Indians. He reported rich gold deposits. I obtained specimens of the gold found by his party on this stream, and which are very fine, some of which are in the cabinet of the General Land Office. This is the place where the Indians procured the gold to make the bullets which F. X. Aubury reported he found among the Indians, some of which were placed in the Smithsonian Institution, and others in the mineral cabinet of the General Land Office. Gold placers are found throughout the mountains at the head of this stream, but water is scarce.

On the Mimbres river, or, rather, in the vicinity of that stream, is an extensive placer. The Mexicans formerly worked it, carrying the dirt to the water. A canal, a few miles in length at this point, I believe, would develop an extraordinary rich gold deposit.

Silver is the prominent and most abundant mineral of these Territories, and the lodes of silver, with its many combinations, are the most numerous. I think it will be the most profitable branch of mining in the Rocky mount-

ain region. It would be too tedious to specify the different localities where silver has been found, as these localities would be numberless, including almost every mountain chain in the Territories. The principal districts known are the Placer mountains, near Santa Fé; the Ute Creek mountains, near Maxwell's; the Organ mountains near the Mesilla valley; the Arroyo Hondo mining region in Taos county; the San Juan Mountains, specially at the head waters of Rio Dolores and Rio La Plata, (silver river) which are west on the Utah Indian reservation, are extremely rich in silver. Vast deposits of "Smithsonite" are found at this point. The Organ mountains are extremely rich in silver. Over fifty mines have been discovered, the ore being generally argentiferous galena, admitting of simple reduction by smelting the, mines paying from \$40 to \$200 per ton.

The district near Mesilla valley, in the Organas mountains has a mean altitude of 4,400 feet and is intersected with ravines affording most favorable opportunities for horizontal drifts in opening the veins. There is a belt or series of veins containing six principal veins varying from two to fifteen feet in width. On the largest of these veins is the celebrated "Stephenson mine." This belt of veins crosses the Organas at or near the San Augustine pass, and both sides of the chain of mountains present similar features and equal richness.

The country bordering on the north portion of Chihuahua is a rich silver district. Just over our line are the mines of "Corralitos," the most successful mines in the State of Chihuahua. It has been mined for nearly fifty years. Its productiveness has overcome all obstacles, and it has employed annually several hundred hands.

Near the old town of El Paso tradition places the locality of one of the richest silver mines known to the

Spaniards. Its site has been lost since the expulsion of the Jesuits. It is said that the Jesuits of Northern Mexico, were the last to suffer the decree of expulsion and had sufficient notice of the edict and carefully covered up the traces of the mining. In this way the localities of many of the richest mines of New Mexico and Arizona have been lost.

West from the Mesilla valley, and the old towns of La Mesilla and Las Cruces, is located Silver City. In 1863 I visited its location, and explored the region of the Gila river; at that time there was not a house where now stands the town. Now there is a large town—many good houses—four large two story brick stores, streets wide and regular, numerous families, women and children. In May 1870 the mines were discovered here, and since that time the town has sprung up and several mills are now in operation and nearly all the houses have been built by the products of the mines, and the improvements made here, have been paid for with the silver taken from the mines in this locality. One year ago I again visited that locality, and obtained specimens from over sixty mines and lodes which are in the cabinets of the Agricultural Department, the General Land Office and the Smithsonian Institution, at Washington. One lode called “The Two Ikes,” is a curiosity, being an immense bed of slate with horizontal layers, the seams filled with silver of the class called “horn.” Between the layers of slate are sheets of this “horn silver” as thick as tissue paper. I cannot attempt to describe the various quartz lodes in this section—they are too numerous, and are of two classes, one suitable for smelting, and the other for crushing and amalgamation. There appears to be a deficiency of lead in the ore for smelting, which is not the case with the ores from the mines in Socorro county, and in the Organ moun-

ains of Doña Ana county. I have in my cabinet a specimen of considerable size sent to me by A. H. Morehead, Esq., of Doña Ana county and which contains 60 per cent. of lead and 20 per cent. of Silver, and is abundant in that mountain. I quote the following from the report of F. Stureburg, metallurgist, in reference to Grant county, New Mexico, as furnished to the Surveyor General of New Mexico and included in the report of the Commissioner of the General Land Office for the year 1871, page 153, etc :

“GRANT COUNTY, NEW MEXICO.”

“These mines, situate very near to the dividing lines between New Mexico and Arizona and New Mexico and Chihuahua, form a direct link in the great mineral belt extending from Alaska down to Central America. It may from this fact, be assumed that the mineral veins are most probably true fissure-veins; another favorable indication in this regard is to be found in the great variety of minerals found in this district, hardly any of the useful or precious metals is missing and all are represented in really marvelously rich ores.

The district proper is encompassed within a circle of about twelve miles diameter, the gold, silver, and iron mines of Pinos Altos forming the center. Of these mines I have already given a short description, which was embodied in the report of the commissioner on mines for 1870, and I shall therefore not now refer to them. Seven miles northeast thence lie the Hanover copper mines, six miles east the San José and Santa Rita copper and lead mines, and seven miles west of the Silver Flats and Chloride silver mines. Toward the north the district has not yet been explored, on account of the hostility of the Indians.

Before entering into a particular description of the several mines, I deem it necessary to offer a few remarks in regard to the geological structure and the formation of the country. The mountain range in which these mines are located consists of spurs and branches of the San Francisco and Mogollon ranges, north, both attaining the snow altitudes. These latter ranges are still *terra incognita*, the Apache Indians preventing their being thoroughly prospected; yet so much has been ascertained by stray prospecting parties that the country is extremely rich in minerals, principally gold. It was in this neighborhood where a soldier belonging to a scouting party under the command of the renowned Indian fighter, Colonel Albert H. Pfeiffer, companion of the late Kit Carson, was shot by an Indian, and when the bullet was extracted it was found to be of gold; trappers and escaped Indian prisoners also report that it is a general custom with the warriors of the Coyotero Apaches, who live in these regions, to ornament their belts with gold nuggets.

Besides gold, these ranges contain very rich copper ores. I assayed myself a carbonate of copper from San Francisco Cañon which gave \$780 per ton silver.

Northeast of these ranges lie the mountain chains in which the Corona del Pueblo mines are located. I intend visiting this district shortly, and shall give a full description thereof.

To the west of the Pinos Altos mining district lie the Ralston silver mines, and further on the Apache Pass gold mines.

To the south there is again an unexplored mountain range, very near or on the Mexican boundary line, Las Rosaritas, unquestionably rich, to judge from the float-

rock that comes from thence, but inaccessible on account of the redskins, and further south the Corralitos silver mines, at the present time profitably worked.

I draw attention to the surroundings of these mines in order to show that the district is most favorably situated and even if the indications of violent volcanic action are to be found almost through the entire district, I can only come to the conclusion that these eruptions took place long after the original formation of the metal-bearing fissure-veins.

Future experience must prove the correctness of these supposition, since until now none of these mines have been sufficiently prospected; yet not only the geographical position, but also the general character of the country rock, each point to a true mineral formation and fissure-veins.

Geology discloses a grand picture in these regions. The immense blocks of fine-grained granite, and the numerous fragments of basaltic rock, place the genesis of the country into the tertiary period; but not during that period the mineral deposits were formed, because the caps of the veins carry rock of silurian and Jura formations. Before any material changes could have taken place, and even before nature had covered the surface with its botanical ornaments to any extent, this solitary island in the antediluvial sea was again submerged, (proofs, absence of fossils in the lower strata,) but was resurrected from the slumber below the murmuring waves by the forcible and violent power of Pluto.

This second genesis could not have taken place, but at a proportionally late period, because the plutonic conglomerate breaks through and overlies the jurassic lime-rock numerous petrifications in the latter stone of shells

and mollusk and argilaceous sand are proofs of a long period of inundation.

Neptunic influence however, had no considerable share in the formation of the present country; sedimentary deposits are few to be found; the bed-rock is encountered at depth seldom exceeding 5 to 7 feet.

That the re-elevation of the continent must have been sudden and violent, is proved by the absence of the peculiar lines and streaks traced on the mountain sides of the slowly receding waves; neither are they to be found in the remarkable table rocks or pyramids, generally encountered in other parts of New Mexico, where water has had sufficient time to trace its marks: none of the horizontal table mountains, standing down in straight lines at angles of 45° ; no level plains of a thin layer of a decomposed tufa underlaid with coarse gravel; in fact, none of these unmistakable proofs of long aquatic action, such as New Mexico most particularly offers in so many instances.

Most probably at that time the mineral-bearing veins were formed, after which the country remained undisturbed for a long period, during which the decomposed rock, by the air and water, had time to be washed over the veins and so cover them; in Pinos Altos the main lead from which most of the wash-gold came has not been discovered yet on that account. During this period the continent must have continued to be elevated but slowly and imperceptibly, the same as it is rising yet this very moment: proof for such is found in the traditions of the inhabitants in regard to rivers which are now quite dry, to springs and wells having become dry, and many other signs of decrease of surface waters.

But before the country assumed its present aspect, it had to undergo another convulsion; volcanic action shat-

tered and broke up some of the veins, reduced their minerals to a fiery fluid mass, and poured the same, with lava and cinders, over the surface. Such is the case at the Hannover mine. Most of the copper is found in a metallic state, imbedded in scoria and tufa, and only traces of the former vein, carrying mostly black sulphurets, the same as the Santa Rita, have remained. The Hannover is, strictly speaking, no vein lode, but a deposit covering an area of some three square miles. The same must have happened in Lone Mountain and Chloride districts, where the rich chlorides have filled up crevasses and seams. Pinos Altos seems to have escaped this disturbance, since there are no traces to be found there of late volcanic activity. It is, strictly speaking, also a different formation, since nowhere else iron-stone appears in such heavy masses, which also accounts for the presence of gold, of which there is no trace to be found in the surrounding districts.

Silver Flat district also shows signs of volcanic disturbance, but very different from the neighboring mines. Here a ferruginous conglomerate or tufa forms the cap of all the veins, in fact covers the surface of the entire district; and as this district is nearest to Pinos Altos, it is probable that the volcanic hearth whence that cover of lava was spread was situated within the iron belt surrounding Pinos Altos.

As regards the continuity of these mines, no correct idea can be formed as yet; still, I am disposed to favor this view; but I believe but few of the actual true fissure-veins have as yet been discovered. Chloride district lies at the foot of higher mountains, which have not as yet been prospected, on account of the danger of Indians, but these, in my opinion, are the many ledges whence these deposits of rich chlorides came.

The Ralston mines, about sixty miles southwest from Silver Flat, and strictly speaking, forming quite a separate district, show also different formation and structure. Here copper carbonate tufa, and most probable sulphate copper further below, forms the matrix of the ore, and the contents in silver are small. None of these ores exceeded \$30 per ton. On the other hand, the district offer advantages over the others in the enormous masses of ore it will be able to produce, provided the veins prove themselves to be fissure-veins. Although apparently they bear all indications of permanency, still I would not vouch for it. The volcanic or possibly plutonic conglomerate in which they run is too unreliable. There is no trace of syenite or trap-rock. I consider it of vital importance for this district that one of the shafts should be sunk to about 50 or sixty feet; then only can the true character of the formation be ascertained.

After having given a general geological and geognostic outline of this mineral region, I now propose to give a detailed description of these districts—Silver Flat, Chloride, Lone Mountain and Ralston. Pinos Altos I have already described, as stated, and the Hanover, San José, and Santa Rita copper mines have been treated upon in every pamphlet or report on the mines of this country, and I particularly refer to the able and correct report of Messrs. Owens and Cox, as contained in the pamphlet published by Hon. C. P. Clever, when Delegate in Washington. That report is elaborate and entirely reliable, and I coincide with the complete persuasion, in the opinion of the gentlemen, that the Hanover is the richest mineral deposit ever discovered in New Mexico.

SILVER FLAT DISTRICT

is situate in a low foot-hill, embracing an area of about

two square miles; a great many claims are located here, but with very little judgment and practical knowledge; in most cases the ferruginous tufa, filling up crevasses and pockets, was located as a silver-bearing lode. There are, however, a few apparently good leads, although no definite opinion can be arrived at, since none of them have been sufficiently opened. I examined myself the following, viz:

Sample No. 1.—Robert E. Lee; vein not yet well defined; ore still mixed up with ferruginous cap; at the bottom of a 30-foot shaft the gray sulphurets of silver come in.

Sample No. 2.—Legal Tender; shaft 32 feet deep; goes through the cap, and shows now 3 feet of gray sulphuret.

Sample No. 3.—Turin No. 2; shaft only 10 feet deep; opened at the side of a steep hill; shows very light cap, and carries rich chlorides. I do not consider it a vein as yet.

Sample No. 4.—Giant; 10-foot shaft; light cap; tolerably well defined lead; no pure ore as yet.

These leads run all parallel, and are separated by spaces of 50 to 100 feet; direction northwest and southeast; dip nearly vertical.

Sample No. 5.—New Issue; 5-foot shaft; shows wide dead and rich ore, but cannot as yet be relied upon.

Sample No. 6.—Minnehaha; 20-foot shaft; irregular ledge, but good ore; light cap.

These two leads are cross leads, and run almost due west and east, crossing the above four leads.

Sample No. 7.—Last Chance; about a mile off the above; shaft 10-feet; wide, irregular ledge; ore of very easy reduction; chlorides.

Sample No. 8.—Ecuador; shaft five feet deep; no regular vein; probably only a crevasse filling.

Sample No. 9.—Average ore from deepest shaft, (Legal Tender,) and probably the one which will predominate in all leads in this district. I am inclined to believe that a large deposit of this kind of ore will be found underlying the largest portion of this

CHLORIDE DISTRICT.

There are also in this district located a great many claims of doubtful nature; no shaft has as yet been sunk exceeding 5 feet, and the mines are in fact not prospected yet; the character of the ore is almost the same, with the exception of the Green Mountain lead, which carries a good deal of carbonate of copper; all others, as Gran Tesorero, Hidden Treasure, Seneca, Gran Quevira, Sherman, etc., have, until now, furnished nothing but chloride; all are irregular, and in my opinion, crevasse fillings; the entire hill, embracing an area of about three square miles, is literally covered with the same ore, and 400 to 500 tons of it could easily be mined.

Sample No. 10.—Is first-class ore, two tons of which were reduced and produced at the rate of about \$160 per ton; about one-sixth part of the general ore is of this class.

Sample No. 11.—Average second and third class ore."

COPPER

has been found in almost every portion of New Mexico and Arizona. On the San Francisco river, in Reloncillos range of mountains, at the Nacimiento, in the San Juan Utah country; in the Apache regions of Arizona, and in great richness in Sierra Madre. On the spurs of the Sierra Madre, known as the copper mountains, there is a multiplicity of veins. One vein in this mountain was traced

by a mining engineer, riding over the vein on horseback for eight miles. In one place, at least, it is literally a mountain of copper, a shaft having been sunk 125 traverse of the lode, but failed in determining its width. Ten mines have been discovered, two have been worked. One of these "The Santa Rita del Cobre," the title of which is derived from the King of Spain, has been mined at intervals for over one hundred and thirty years. The other "The Hanover mine" has been very extensively worked for a few years before the war; it was opened in 1859.

In the abstract of the Census Report of 1860, page 173, New Mexico is placed second of all districts in the value of its copper yield, the yield for the year ending June 30, 1860, being 640 tons, of the value of \$415,000. This was the product of the two mines before mentioned. This copper district is surrounded by every facility for successful mining. There is a sufficiency of water, an abundance of timber—pine, oak, cedar and piñon—while to the south the plains present as fine pasturage as exists in the United States. In the same range of mountains are found many other precious and useful metals; while at a convenient distance are large and fertile valleys, which can furnish the supplies of flour and grain necessary for the operatives. The copper is of peculiar richness, the ore averaging 35 per cent. of copper, while the metal is often found pure; the veins are wide, easily worked, the ore loose and easily mined, and there is no alloy, and the reduction of the ore is a simple smelt. The copper on reaching market commanded the highest price, from the fact that it is the most malleable and ductile copper known to commerce.

In 1860 the cost of mining a pound of ore was about eight cents, cost of freight to European market ten cents profit four or five cents a pound and exchange.

Peace, that is a substantial peace with the Indians such

as President Grant is now inaugurating would probably reduce the cost of mining a pound of ore to five cents, and a railroad to the Missouri river and the eastern cities would reduce freight to Europe to seven cents, leaving an extraordinary margin of profit.

The Hanover and Santa Rita mines at the commencement of the rebellion were yielding several tons of copper per week, and employed about five hundred hands. At the commencement of the war the rebels obtained some 300,000 pounds of copper from the mines, which was at Port Lavaca awaiting shipment or in transitu. They established two cannon foundries with capacity, it is said, of two pieces per week. They confiscated that which belonged to the owners, who were loyal to the Union, and paid twenty-seven cents per pound for the portion which belonged to friends of the Confederate Government.

The abandonment of the Federal posts on the frontiers led to the most immediate abandonment of the copper mines. The Indians murdered many of the employes, the machinery was stolen or destroyed, and most complete devastation effected.

Iron Ore has been found in various forms in gulches of the eastern slopes of the Sierra Madre, at the Placer mountains, Raton Range, Pinos Altos, San Jose, and the copper mines.

Lead is found in almost every combination. A remarkable vein is found at the foot of the Sierra de los Cobres, three feet wide, of nearly pure lead. The Indians have for a long time obtained their supplies of lead from this vein, smelting it in the vicinity. The ore contains a small portion of silver. A similar vein of lead, about five feet in width, is located west of the Utah reservation, on the

Rio Dolores. These Indians believe it to be silver, but I am satisfied that it is almost pure lead.

Salt occurs in many places in New Mexico and Arizona, often mixed with alkali—and also pure in lakes. One vein is in the neighborhood of Fort Stanton. The evaporation in the salt lakes makes an annual deposit of salt several inches in thickness, coarse, strong, and of the best quality. It has often been taken to the city of Chihuahua for sale, as the salt of that State is inferior, being mixed with alkali. The principal lakes are in the valley between the Organos and Sacramento mountains; one lake on the Texas line, and the best one sixty miles northward.

Coal has been found in various parts of the Territory and in considerable quantities and of good quality. As to quality, &c., see report of Professor F. V. Hayden, United States Geologist, page 123.

MINERALS AND MINES.

Minerals of any kind occurring along the lines of railroads must obviously attract more attention and possess a greater relative value, than those found at a greater distance from the lines of through traffic. It is a noteworthy fact, that a number of the richest mineral districts of New Mexico are situated upon the most practicable routes for the main lines of railways that are rapidly approaching this Territory. This is particularly the case with the Pyramid Range District, situated in the southwestern portion of New Mexico, on the line of the Texas Pacific Railroad, and with that rich storehouse of various classes of minerals embraced by Los Cerillos, the valley of the Galisteo, the Old and New Placer mountains and the Sandia mountains.

The Pyramid Range District received a fearful blow

soon after, its discovery from the attempt made by California speculator to rush thousands of feet of lodes upon the markét, which were entirely unexplored and to which they had no title whatever. However, enough has been done in this district to prove beyond a doubt the existence of mines of great richness and extent. With the railroad passing immediately by these mines, it is safe to say that there are few if any places in the world where larger returns can be derived upon the capital necessary to their proper working.

The second region spoken of above lies in the counties of Santa Fé and Bernalillo and is traversed by the line of the Atlantic and Pacific railroad as located.

The description of the following mines situated in Los Cerrillos, at a distance of from one to three miles from the railroad line, I take from Professor Raymonds report for 1870. The investigations were made by Professor Bruckner, a metallurgist and mining engineer of wide repute.

“SANTA ROSA, discovered forty years ago by Alvarado, is situated in a small valley surrounded by hills. The inclined shaft 50 feet deep, but mostly caved in. The lode is six feet wide, strikes north 23° East and dips 80° northwest. The walls are granite and encase argentiferous galena, zincblend, iron and copper, pyrites in a gangue of hard quartz.”

Since the above report this mine has been reopened by a vertical shaft, and the ore is being reduced in a furnace situated upon the Galisteo. The bullion thus far produced has averaged \$165.50 per ton in silver.

Miná Rueleña.—The lode consists of two layers on the surface, one of which is three feet, the other one foot wide. It crosses the stratification of the country rock, (granite) strikes north 15° east, and dips 80° southwest. The ore

consists of galena, zincblende, iron and copper pyrites, and the products of decomposition of these ores, all in a gangue of quartz and partly decomposed feldspar. The inclined shaft on this vein is 120 feet deep.

Mina del Tiro is situate on the east side of the Cerrillos in the Cañada de las Minas. An incline 150 feet and a vertical shaft 100 feet deep, connect with extensive mon-tones (drifts) of over 300 feet in length and with many chambers. All are filled with water. The remains of an old canoe which was used for crossing water in the mine, are still there. These excavations were made by the Jesuits,* probably before 1680, and the expense has been estimated at \$100,000. Silver ore is visible in large quantities. It consists of the same minerals as described in the above named mines, but zinc-blende is so predominant that the ore was found refractory in smelting. The proper way to work it would be by chloridizing, roasting and amalgamation. Salt for this purpose can be had in large quantities at the salt lakes south of Santa Fé.

Many other mines and silver lodes were visited, but the former were too much caved in, the latter too little opened to admit of anything like reliable description. It may be mentioned, however, in this connection, that an assay of a specimen of very coarse galena from the last mentioned veins gave a result of 76 per cent. of lead, and \$42 75 silver per ton.

Professor Raymond, in speaking of this locality says: "The Cerrillos, 17 miles southwest of Santa Fé, contain many silver bearing lodes, which have never been described, although they are well worth it. They are situate on an old Spanish grant belonging to the Baca y Delgado family.† The Cerrillos are a series of low undulating

—*This by history should be the Franciscan Friars and not the Jesuits.

—†This grant has since been surveyed as public lands and sold by government to citizens who are now working the mines.

hills, about six miles long and three miles wide, and consist mostly of granite rocks; a few of them of volcanic origin. From a cone made up of basaltic lava near Martin's ranch, a splendid view of the Old and New Placer Mountains in the southeast, the Bernalillo in the southwest, Santa Fé in the north, and Jemez Range in the west, is spread before the visitor, &c."

Professor Raymond says of the Socorro county mines :

"The *Madalena* Mountains are situate about thirty miles west of Socorro, a town on the Rio Grande del Norte, and one hundred and forty three south of Santa Fé. Three years ago a California miner found a very rich piece of silver ore in these mountains, and subsequent prospecting expeditions resulted in the discovery of many lodes, most of them small, but rich in copper and silver. A specimen yielded, by assay, \$100 00 silver per ton ; others are reported to have assayed as high as \$500.

The *Santa Juliana* lode is said to be a very large galena lode, which carries \$9 per ton in silver. Most of the veins have been but very imperfectly opened, as will be seen from the following description of the region :

The *Madalena* Mountain range rises abruptly from the plains to a height of over 2,000 feet. It extends about forty miles in a north and south direction, and is on the average three or four miles wide. The principal rocks constituting it are limestones and metamorphosed sandstones. The mineral-bearing veins are found on the summit and along the western slope of the range, the greatest number being located on its northern end. Some of the cañons along the sides of the mountain contain placer gold, but the quantity is insufficient for profitable working.

The *Washington* lode is located at the summit of the range near its northern end, and forms the crest for a

considerable distance. It strikes northwest and southeast, and dips about 35° to the southwest. It is large and well defined and carries copper, lead, silver and gold ores. The first named is predominant. The openings, so far, are inconsiderable, the deepest shaft being less than 30 feet.

The *Chavez*, south of the Washington, on the summit of the range, has nearly the same strike and dip, and appears to be its extension. It is a contact vein between the limestone and sandstone, and carries the same ores as the Washington; the lead ores, however, predominate.

The *Santa Juliana*, at the base of the western slope of the mountain, has the same strike and dip as the Chavez. It is a very large vein, from 10 to 20 feet wide, and has been traced on the surface for a very long distance. It contains, principally, carbonates of lead; besides this, copper, silver, gold. The gangue is impregnated throughout with mineral, and the vein is undoubtedly capable of producing extraordinarily large amounts of ore when properly opened. Good pine timber and plenty of water are close at hand on every side and the adjacent plains are covered with a luxuriant growth of gramma grass.

The *Hubbell* is located in a small range of low, grassy hills, about seven miles northwest of the Santa Juliana. It strikes northwest and southeast, and stands nearly vertical. The vein is small, but its very straight course can be traced on the surface for a long distance. The ores seem to be formed by the decomposition of fahlerz, and consist of carbonates of copper, chloride of silver, &c. They are very rich."

The occurrence of anthracite coal in workable beds in the western Territories near the gold and silver districts

is of such great importance that a short description of the *anthracite mines* between the Old Placer mountains and the Cerillos, occurring as they do, in connection with carbonate of iron and hematite, and having numerous veins of rich magnetic iron ore, within a few miles of them, cannot fail to command the attention of the intelligent reader. The out-croppings of coal in the district referred to were first exposed in the center of the little branches that run into the Galisteo. The first one is about four miles south of the Galisteo. The following section of the strata was taken ascending :

1. Laminated clay, with thin seams of sand passing up into carbonaceous clay as a floor for coal.
2. Anthracite 5 to 6 feet.
3. Drab clay, indurated, 15 to 29 feet.
4. Ferruginous sandstone, passing up into a light grayish sandstone 30 to 50 feet.

The mine is opened by a tunnel 90 feet in length ; the dip is 15° to the east ; this coal contains 88 per cent. of fixed carbon. In another locality the coal is opened by three tunnels, two twenty-five feet long and one forty feet long, and has a thickness of four feet of anthracite. The coal from this mine contains 87.5 per cent. of fixed carbon, and when burning shows only the short blue flame of carbonic oxide. This coal has been in use in driving the engine of the New Mexico Mining Company's stamp mill. A hundred pounds brought to Santa Fé was used by Mr. Bruckner in his assaying furnace, in order to test the heating power practically. He found that a white heat was reached in a very short time, and that this heat lasted about three times as long as that produced by an equal weight of charcoal. As the material does not coke in the least, it is evident from this test that it is perfectly adapted to use in blast furnaces, though it will require a

higher pressure of blast on account of its density, than charcoal or coke. As far as its application for all practical purposes is concerned, it is undoubtedly fully equal to Pennsylvania anthracite and really the best fuel discovered so far in the West.

Between these two mines exists a bed of excellent fire-clay. It has been thoroughly tested and proved to be fully adapted as fire-proof material for furnaces.

Coal banks have been opened at a number of points to the north of the above mines and the proof is conclusive that it exists in large quantities. Between the clay and the following sandstone stratum beds of iron ore are found. Both carbonate and hematite are present. Ores of this kind, as well as veins of magnetic iron of great purity abound in this vicinity.

The existense of mines of gold and silver, of lead, zinc, copper and antimony, and of the different ores of iron in almost immediate connection with deposits of anthracite coal, and fire proof material, indicates at once the valleys of the Galisteo and Santa Fé, as points which have all the natural requirements to guarantee the erection upon a large scale of metallurgical works and machine shops for railroads, etc.

Saltpeter is very common but rarely pure. At one place near the Mexican line it is found pure near a spring where regular deposits are made upon the clay from which it is gathered in considerable quantities by the Mexicans. The State Government of Chihuahua regulates by law its collection and prohibits its exportation.

Gypsum beds are very common, and this valuable fertilizer abounds in many portions of this country. The natives never manure their lands, and the only use they make of gypsum is to burn it and use in place of lime.

Plumbago has been found in many localities.

Zinc, in the Sierra Madre, Sandia mountains, and in San Juan country.

Quicksilver, virgin and cinabar, on the San Francisco river. Old Spanish books give "the Mogollon mountains as the place cinabar is found."

MINERAL SPRINGS

and hot springs are found in almost every portion of this country. On the San Juan river, near the eastern line of the Utah reservation, is the Pagosa Springs; the main spring I measured and found it to be 160 yards in circumference, its depth I had no means of ascertaining. The water was so hot that it cooked meat in a few minutes. Similar springs are at Las Vegas, near Taos, Ojo Caliente, Jemez, near Forts. McRae and Selden; on the estate of "the United States land and improvement company," is located the famous hot spring del Caballo or Ojos Calientes, (see page 20 of this pamphlet.) In Socorro county near the town of Socorro is situated a valuable mineral spring; also near the Mimbres river and at various other points, The curative qualities of these springs have long been known, and they will not fail to become places of general resort when a railroad shall furnish facilities for reaching them.

In the country watered by the San Juan river and Colorado Chiquito, are found great quantities and of various sizes of beautiful garnets, also a stone resembling the emerald. Moss agate, and various curious and interesting petrefactions, are found west of the Rio Grande river. But in my judgment they are of but little value, and nothing that I have seen will in my opinion justify "the diamond excitement," and the expense of a search for precious stone in that region, specimens of these stones I have in my cabinet, but I do not believe them to be of much value.

Further details as to the locality of mines and mineral deposits, &c., in this Territory, would probably be tedious, while to a few it would be interesting. I therefore conclude this branch of the resources of our Rocky Mountain country, and give my attention briefly to the subject of agriculture and manufactures which is of very great interest to our people.

AGRICULTURE &C.

In the foregoing pages we have shown that the arable land of a large portion of this country is admirably adapted to agriculture and to the culture of the grape. This is especially true of the valleys of the Rio Grande. Those experienced in the cultivation of the vine represent that all the conditions of the soil—humidity and temperature—are united in these regions to produce the grape in the greatest perfection. The soil, composed of the disintegrated matter of the older rocks and volcanic ashes, is light, porous, and rich. The frosts in the winter are just sufficiently severe to destroy the insects without injuring the plant, and the rain seldom falls in the season when the plant is flowering, or when the fruit is coming into maturity, and liable to rot from exposure to humidity. As a consequence of these condition of things the fruit, when ripe, has a thin skin, scarcely any pulp, and is devoid of the musky taste usual with American grapes.

Mr. William who was sent to this country as an agent of the Interior Department to investigate the grape and procure seeds and cutting styles this country “the Eden of the Grape,” and speaks as follows of the yield in the El Paso valley, where it has been cultivated for more than one hundred years. He says: “The estimate is from two hundred and fifty to three hundred gallons of

wine to the acre, but with American skill in the management of the vineyards, and American appliances in making wine, the product must be more than doubled."

This district of country grows many varieties of fruits although no attention has been paid of scientific character. Apples, peaches, pears, quinces, and apricots produce well, and all sorts of vegetables can be cultivated.

It is equally well adapted to the culture of grain, though in this, as well as in all other branches of agriculture, no science is manifested by the natives; they are in this respect a hundred years behind age and tenaciously adhere to old customs and prejudices, and have not adopted the modern improvements. They scarcely ever fence their lands, herding their stock instead of protecting their fields; know but little about rotation of crops; plow with oxen, the yoke fastened to the horns, and a wooden plow attached of the time of Joseph. American farmers would double the yield of these rich valleys. Even under the rude culture that the natives bestow the crops are fine. The favorite variety of wheat was brought from Sonora; it is a white, plump, small grain, beardless and short stalk, weighing about sixty-eight pounds to the bushel, and makes a beautiful flour. Samples of this wheat I have in my office from various localities in New Mexico which demonstrate this to be as good a country for the production of wheat as any portion of this continent.

Corn is raised to some extent—barley, oats sorghum, and broom corn have lately been introduced, and do well.

Potatoes do not grow in the Rio Grande valley, but fine crops are raised in the mountain valleys.

Beans do well; they are to the native what the potato is to the Irish. The valley of the Rio Grande produces the finest onions, a well attended crop will often produce a pound to the onion.

The report of the commissioner of the General Land Office, page 53, for 1868, says :

Grass abounds in every portion of this territory, and even in the forests grows luxuriantly the entire year. At great altitudes this grass is in winter-time covered with snow, though not deadened to the ground, for, as soon as the snow melts, it affords excellent grazing upon the *mesas*, (table lands,) and through the valleys grows the justly celebrated gramma grass, which is cured as it stands, afford abundant food for flocks and herds throughout the winter. * * * * *

The facilities and cheapness of raising sheep and goats applies equally well to the raising of horses and cattle, and, when fully protected from Indian depredations, and convenient transportation is afforded to the markets of the east by the construction of railroads, the hills and mountains will be literally covered with flocks and herds.

Professor Hayden in his report for 1870 says :

“ WESTERN NEW MEXICO. ”

“ Although this is not embraced in the Rio Grande district, it is perhaps best to add here what few items I have obtained in regard to its agricultural capacity.

The Rio San Juan, a tributary of the Colorado of the West, although rising in the San Juan Mountains of Colorado Territory, bends south and traverses the northwest portion of New Mexico, where it receives a number of affluents. Colonel McClure and Governor Army inform me that these valleys afford a considerable breadth of very rich land, which can be irrigated, and which will produce fine crops of the cereals, vegetables, and fruits usually grown in the Middle States. As this area appears to be almost, if not entirely, unoccupied, it would present a good point for a colony.”

The foregoing extract from the report of Professor Hayden is in reference to a section of country on which to-day (Jan. 15th 1873) there is probably not a white man; it embraces an area of ninety miles long and about sixty miles wide (which includes a large extent of public land) and is claimed by insignificant bands of Weminutche and Capote Indians who number only—Capotes 365 and Wemenutches 650; total 1015, men, women and children (according to the report of the commissioner of Indian Affairs for the year 1871), and who claim nearly thirty-five millions of acres of land; these Indians are roaming off their reservation and are preventing the settlement of the government lands contiguous to it. I allude here only to the south half of the Ute reservation which is the portion south of the Uncompagne mountains, and the government lands adjoining to that reservation, all of which are claimed by these Utes. By the treaty of March 1868, the Wemenutches and Capotes are entitled to over twenty thousand acres of land for each head of a family!!!!—with this they are not satisfied, but claim the government lands adjoining thereto. Let it be remembered that this is in the southwest corner of Colorado and in the northeast corner of New Mexico, and these Indians interfere with nothing east of the Rio Grande, and south of the Guinea Pass; thousands of acres of land almost a hundred miles northwest of Santa Fé, remain unoccupied and its vast agricultural, pastoral and mineral resources remain unpossessed and a benefit to no person because a few Ute Indians make claim to land that does not belong to them, and which they do not occupy.

Last spring a company was organized composed of persons from Europe and citizens of New Mexico and named "THE FRONTIER COLONIZATION COMPANY," whose benevolent object was to place upon lands in this San Juan

region several thousand poor families from Europe and the eastern States who are now homeless, and for this purpose the company proposed to purchase from the government, a portion of the land of this paradise of America, situated over a hundred miles northwest of Santa Fé, and located where the Territories of Utah, Colorado, Arizona and New Mexico corner with each other. But "the dog in the manger" policy of the Indians prevented it.

This region, the Italy of the United States, will some day be opened for settlement, it cannot be otherwise, and the Indians, unless they are compelled to remain on their reservation and induced to sell their unoccupied lands, will by the advancement of immigration be deprived of the lands they are entitled to by treaty, and receive nothing for it, they will become more impoverished than they are at present, unless the government compel them to remain on their reservation, and quit their interference with settlers on the government lands. The mines that have been discovered on the head waters of the Rio de Las Animas, on said reservation, and over ninety miles from where the Frontier Colonization company proposed to locate their colony, have been taken by miners, and claims located, and unless the government interferes to arrange for the working of those mines by purchase of the land from the Indians; the miners will insist upon holding their claims and the Indians who are now paupers with hundreds of thousands of acres of land will then be unavoidably *paupers without land*, and dependent upon the government or robbers stealing from whom they can. Without the wise intervention of the government the Indians, citizens and miners will be involved in trouble. I, however thank kind Providence, that this may only be the case with the Utes in the northwest corner of New Mexico, while all

the rest of the vast and valuable territory of New Mexico will be free from the Indians; and even this portion will, I trust, be opened by the prompt action of the government, and these Utes be compelled to remain on their own land, as may be determined by agreement, so that the land that is of no use to them may be made available by purchase and arrangements for settlement, the proceeds to be expended by the government for "the civilizing, christianizing and making self sustaining" the Indians of that region, this will be just and humane and result in opening a section of country of great extent and value, make self-sustaining the few Indians who are now a pest to the settlements in New Mexico, and an expense to the government and furnish homes to thousands of homeless families who are now living in poverty, and at the same time increase the revenues of the government.

Professor Hayden further says, page 208 of his report :

"The upper tributaries of the Puerco of the West, a branch of Flax River, are flanked by narrow belts of arable lands, but as the water of this river sinks as it descends, it cannot be relied on for irrigating purposes. But near the mountains here, as along the headwaters of the Zuñi, crops may be raised without irrigation, as the supply of rain is said to be generally sufficient for this purpose. Even around Zuñi, where an ample supply of water can be obtained from the Zuñi River, there are no acequias, the inhabitants relying on the rains to supply the necessary moisture. There is probably some peculiarity connected with the local atmospheric currents here which collects the moisture, or causes its separation and fall.— The evidences of a former quite numerous population, which have served to render this classic ground, when we consider the fact that they are unaccompanied by the remains of aqueducts, would indicate that formerly the

amount of rain was sufficient for agricultural purposes.

The Rio Mimbres runs through a beautiful valley of moderate width and fertile soil, where all the productions of the Central States can be raised, and where even those things which belong to a more southern climate can be grown without difficulty.

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The Rio Gila, near where it leaves the Territory, has some good bottom lands, but farther north, towards the Sierra Santa Rita, is pebbly and inferior. In regard to the valleys along its head-waters I know nothing.”

* * * * *

THE CANADIAN SECTION.

[See pages 211 and 12, Hayden's Report.]

‘This section, in a strictly systematic arrangement would be included in the Arkansas district, to which it really belong; but for convenience, and that the plan of my report of last year may remain unchanged, I describe it separately. It includes that part of New Mexico lying between the Raton Mountains on the north and the Pecos section, or “Llano Estacado” on the south and southwest, and contains about fourteen thousand square miles. The amount of arable land in this section, as heretofore stated, is estimated at about four hundred square miles or nine hundred thousand acres. This estimate is made on very slender data, and therefore cannot be considered as very reliable, but I am satisfied that it is not too large, and I think it is approximately correct.

The Canadian River, rising in the Raton Mountains, runs southeast for about one hundred and fifty miles, to Fort Bascom, where it turns east, and passes out of the Territory, a little north of the thirty-fifth parallel—its whole length within the limits of the Territory being about two hundred miles. Most of its tributaries of any importance in an agricultural point of view flow in from the west,

of which the following are the principal ones: Vermejo, Little Cimarron, Ocaté, Rayado, (a branch of the Ocaté) Mora, Rio Conchas, Pajarito Creek, and Tucumcari Creek.”

* * * * *

“Starting from the crest of the Raton Mountains immediately above the source of the Canadian River, after passing down through a dense forest of magnificent fir and pines, we enter a beautiful little valley covered over with a thick sward of luxuriant grass. Here a considerable amount is annually cut for hay and taken to Trinidad. But this valley soon terminates, and the little stream and road enter a rugged cañon bordered by precipitous bluffs of gray sandstone, which continue to the plains at the base of the mountain. Here a grand panoramic view spreads out towards the south; a broad, valley-like plain slopes southward as far as the vision will reach. Scarcely a tree or shrub is to be seen; all is one smooth, grassy carpet, which, on the distant gentle slopes, looks more like pale, pea-green velvet than anything else to which I can compare it. Rising up from the broad base are two or three huge basaltic tables lifting their perfectly level surfaces one hundred and fifty feet or more into the air, and all clothed in the same velvety covering, but which fails to destroy the sharp outline of circular rim. The little stream, like a silvery thread, is seen winding its tortuous course along the gently descending plain, joined now and then by a slender rill flowing down from the mountain on the west, near which are the estates of the “consolidated land cattle raising and wool growing company,” see page 25 of this pamphlet. It is a magnificent pasture ground for sheep and cattle, where thousands might be grazed and tended with but little trouble.”

MANUFACTORIES.

“There is no branch of industry that contributes more to the prosperity of a people than manufacturing. Its beneficial effects are felt throughout all the ramifications of society and fill a vacuum in the body politic that never can be filled in its absence. It furnishes the basis upon which the largest portion of the world’s commerce is founded. It populates large districts, gives life to the business of cities, whitens the seas with the sails of all nations and administers to the comfort and convenience of the world.

We in New Mexico depend entirely upon foreign markets for the purchase of all the manufactured article in use among us. Iron, nails, steel, leather, woolen fabrics, everything indeed, is bought away from home and transported over the Plains when every one of the articles named could be economically manufactured here. In the present method of furnishing our markets with these supplies millions of dollars are drained from the Territory which never return and which go into the pockets of manufacturers in the States. The elements of manufacturing success abound in New Mexico. Our iron ore is uncommonly rich, coal abundant and labor cheap. There is not one article into the fabrication of which iron enters but what could be produced as cheaply in our Territory as it can in any other part of the United States. The same may be said of leather, of which article there is also a large amount consumed annually by our people. Our forests abound with timber which yields a bark of the best quality for tanning purposes. Thousands of hides are yearly thrown away as worthless. With these inducements before them it is strange to say that the people have neglected this branch of business entirely and have depended on the States to get leather for the most ordin-

ary uses. The wool which our sheep would give for the manufacture of cloth is almost inexhaustable in quantity and could be bought for a moderate price.

Capital applied to either or all of these branches of manufacturing could not but produce large incomes to the capitalist and at the same time give an impetus to the material progress of the Territory that would be astonishing. —I am fully persuaded that the absence of establishments of the kind mentioned is not attributable to a want of enterprise on the part of our people. In this respect they do not differ materially from the inhabitants of other portions of the country. But for reasons already mentioned, their pecuniary resources have been crippled to such a degree that only small amounts of funds have been accumulated by individuals in various districts of the Territory, and it has not been possible to aggregate them in quantities sufficiently large to meet expenses which must necessarily be incurred to put costly machinery in motion.

Our wool was disposed of here a few years ago to my knowledge at from *nothing* up to 10 cents a fleece, the owners of the animals being glad to get the wool from the sheep's back without trouble to themselves; this wool was transported across the plains to the States there manufactured and probably returned here in cloth, clothing and blankets to be sold with all the costs of transportation, profits, labor etc. added.

Other illustrations could be given but enough has been said to show that in this Territory we need such a system of education to develop the manufacturing facilities which we possess. Agriculture is the natural avocation of man, when he was created and placed in "the Garden of delights" he was told to cultivate it, and so long as he did so, and violated no law of his Creator he was happy in his employment; and if he fell and the earth was ac-

curse for his sake the sentence was not against the employment, but rather an argument in its favor; since in consequence of the curse it became indispensably necessary to pursue it. The same feelings, the same nature that before the fall rejoiced in the Pomegranate and the Date, that fed upon the luxury of rewarded labor, and the rich fruits of happy industry were still vouchsafed to him, and in the exercise of them, though there were difficulties in the way, thorns and briars, still there was happiness. To satisfy the demands of our nature we must have farmers and mechanics, and to be happy in the employment they must be good farmers and mechanics. I know there is a vulgar prejudice against such callings and against labor in general, but it is truly a vulgar one; the noblest powers and the noblest men of all ages have given their suffrage in its favor. Kings and Emperors, Philosophers and Warriors, Senators and Statesmen all have paid homage to its interests, and lent their patronage, power and wisdom to push forward its progress. We have only to look back upon the history of agriculture and mechanic arts to see, that they have not only been the best, the wisest and most honorable men that in all ages have been the prime movers in its advancement but also that it has been a great aid to almost all real civilization and substantial national improvement. It would seem to be a work of supererogation to discuss as a controverted question the great importance of agricultural, pastoral and mechanical pursuits to a people like ours, and indeed, I do not feel justified on this occasion to enter into that detail of facts and argument which could be arrayed in its favor, and which would make the balance sheet show in dollars and cents the enormous net profits that a judicious system of the culture of the soil, the establishment of manufactories

and improvement of the sheep, horses and cattle of this country would annually pour into the pockets of our people and of capitalists who would invest their money in this way.

TREES ETC.,

The principal trees in the deep valleys are the *cotton-wood*—a brash tree—which will not make lumber, but is beautiful shade tree, and answers most of the requirements in building and fencing. Cattle eat the bark greedily.

Willow, of which baskets, &c., are made by the Jicarilla Apaches.

Mezquite, or *screw bean*.—This in the valleys of the Gila becomes a considerable tree; the wood has a fine grain, and resembles the black walnut. It is very durable wood makes an intense heat, more so than any with which we are acquainted. These trees emit vast quantities of a gum resembling and possessing similar qualities to the gum arabic of commerce. The Apache Indians eat the mezquite bean, grinding it upon hand-mills into flour, and the bread is very palatable. Horses fatten on the beans. On the table land (mesas) is found a peculiar variety of the mezquite. It can hardly be called a tree; it is rather a stunted, almost leafless shrub, growing in the most barren places. In summer they are covered with beans.

This mezquite has the most stupendous roots. Twelve feet square will often produce a cord of roots. They are really the fuel-beds of that district, and nature has furnished in this way thousands of tons of fuel for the smelting of minerals. The roots, both dead and green, make most excellent fire-wood—burn entirely to ashes. The climate being arid, they never rot in the ground. The dead roots are a natural charcoal, and instances have occurred where burning them in a close room has produced death.

The trees of the mountain valleys are ash, walnut, hackberry, (a variety of cherry,) and on the mountains pine, oak, and piñon.

Bear-grass Plant.—This plant is common all over the table lands. It is very useful. In Mexico gunny bags,

ropes, saddlers' and shoemakers' thread are made from the fiber. After the blockade of the late war the manufacture of ropes of this plant was commenced in Texas. *Soap-weed, (Amole.)*—This is another useful plant, and is very common. The natives prefer it to soap for washing woolen goods. It extracts all grease and restores the luster of the goods. The lather makes the best shampoo. It is also an antidote for certain poisons.

The Maguey, known as the American aloes, and called by the Northern Mexicans mezcal, is common in all portions of this district. In Lower Mexico, where this plant is cultivated, they make from it a liquor, called "pulque," and in the upper country the Mexicans make from it a brandy called "mezcal." The Indians esteem this plant a great delicacy; they cook the heart of the plant.

Hops grow wild in the mountains, and are of superior quality.

The husbandman has drawn wealth during the past years from the cultivation of our fertile vallies; those engaged in pastoral pursuits have realized large profits.—But this wealth of the soil and mountain pastures, though very abundant sinks into insignificance when contrasted with that wealth which is hidden beneath it; those vast stores of minerals which underlie a greater portion of this Territory. The most superficial investigations prove the existence of gold, silver, copper, lead, iron and coal in abundance which should elicit from Congress an appropriation to defray the expenses of a geological survey of New Mexico, which would greatly aid in revealing the untold mineral wealth of this country, and prevent the diamond and other frauds, and would aid the many citizens who are legitimately engaged in the Western portion of New Mexico in the pursuit of gold, and give full credence to the well authenticated reports from the Gila country that a new Eldorado has been opened in our midst which must give an impetus to every branch of industry and make this a great commercial thoroughfare standing as we do midway between the Atlantic and Pacific where the wealth and commerce of both

oceans shall pay tribute to our people, the advancement of this country is inevitable, with an industrious enterprising and intelligent population, who can portray the fulness and prosperity of that splendid destiny which is in reserve for New Mexico.

In considerable detail I have given the advantages, properties and resources possessed by this Territory, and represented also the disadvantages under which it labors, and have embraced the evils by which the development of the resources of this country is retarded. Yet the manifold resources, the latent and patent wealth of this country, admits of a future as bright and prosperous as any equal portion of the mountain country of the United States. Encouragement and aid by Congress in the construction of railways for transportation, ditches and canals to irrigate the millions of unproductive lands will make "the country blossom and bloom as the rose." And while it will furnish homes and subsistence to thousands of poor who are now starving in our cities and in Europe; it will bring revenue into the coffers of the government, and establish colonies and towns all over those now unoccupied millions of acres of unsurveyed and unimproved lands.

As year by year the continent is being spanned by the iron band, cheapening and facilitating our intercourse with the world; as the savage tribes become educated, civilized, christianized, and merged into our governmental organizations as citizens; as a superabundance of gold and silver from our mountains and capital from our commercial cities will be seeking investment; as the vast mineral resources of the great west are becoming understood; as emigration is ever flowing onward and westward in a ceaseless tide; as the Government of the United States is ever able and willing to extend a fortifying protection throughout its vast domain, this country will receive its proportion of these great benefits, and once investigated its claims to a most favorable consideration will wield their own argument.

W. F. M. ARNY.





