

from seventy, to one hundred varas, of virgin ground, the value of which, in an extremely rich vein, may be easily appreciated.

The country about Real del Monte abounds in forests. Several of these are included in the Grant to the Company, which likewise comprehends the farms of Guajalote, Zimbo, and Īztūlä. At the last of these it is intended to introduce the English system of husbandry, (with English grass seeds, unknown at present in Mexico,) and oats, lucern, turnips, and clover: a project which cannot fail to be highly interesting to the Agriculturists of New Spain.

These farms are situated between Real del Monte and the Hacienda of Regla, which is likewise ceded to the Company. I visited on the 25th of July this stupendous monument of the magnificence of the old Mexican miners, which may be regarded also as the best proof of the value of their mines. It is situated in a deep ravine, or Barranca, about six leagues to the South-east of Real del Monte; it not having been found possible to obtain a sufficient command of water at a less distance.

The Hacienda is composed of a vast pile of buildings constructed apparently without plan, or regularity, but comprising every thing that a mining establishment can require:—immense vaulted store-rooms, for the reception of the ores; twenty-four Arrastres, worked by horizontal water-wheels; a number of furnaces for smelting, and two covered Patios, each of about 200 feet in length, in which the

process of amalgamation was carried on. The whole is in a tolerable state of repair, with the exception of the stampers, for braying the ore, which are now in ruins. These are to be replaced by a large water-wheel now constructing by the Company, which is thirty-six feet in diameter, and is to put in motion forty-eight stamps.

The whole Hacienda is supposed to have cost nearly a million of dollars, and this I am not inclined to regard as an exaggerated estimate. In 1795 five thousand cargass of ore were received there weekly. Yet even this enormous establishment was thought insufficient for the mines, and another Hacienda, called San Antonio, was constructed at a little distance from Regla, which is likewise a splendid mass of buildings, although not comparable to Regla in size or importance. San Antonio will be entirely given up by the Company, as, even if the Mines were to produce again what they did in 1764, a more methodical system of working them would render it impossible for them to make use of it, and Regla, together. Instead of transporting the ores, as was formerly the case, *en masse*, from the Mine to the Hacienda, they will now undergo a previous preparation at Real del Monte, for which purpose a large stamping establishment is erecting there, in a central position, between the Santa Brigida and Biscaina veins.

By the use of the concentrating machine, the poorer ores, when dressed, will be worked up from

two and three Marcs, to thirty and forty Marcs per carga; and will only be sent to Regla when in a fit state to be either smelted, or amalgamated with the greatest advantage.

In addition to this stamping establishment, the Company has at Real del Monte, in the buildings attached to the Dolores shaft, a patent turning-lathe, and an apparatus for sawing, both of which are worked by a small steam-engine of twenty-horse power. They have a foundry likewise, with smiths, carpenters, coopers, fire-brick-makers, rope-makers, and men versed in every trade that can be required in order to render the establishment complete within itself; and although some difficulty has been since experienced in keeping up a proper degree of discipline amongst so numerous a train of dependants, nothing could exceed the activity, and good order, which prevailed in all the different branches at the time of my visit.

The Anglo-Mexican Company was in possession of some very inferior mines at Real del Monte, the contracts for which were taken up in England by the Directors in 1825. As they have all been since abandoned, it is unnecessary for me to say any thing respecting them, except that there was only one, (the mine of the Reunion,) of which the native miners entertained a favourable opinion. The rest were regarded as speculations, in which the Company had become involved from not making a proper distinction between the mines upon the two great veins

belonging to the Regla family at Real del Monte, and those situated upon inferior veins in the same district. The mine of La Reunion is indebted for its name, and its existence, to a very curious circumstance. In the two last shafts sunk by the old Count Regla at the extremity of his Pertinencias upon the Biscaina vein, (San Juan, and San José,) the real direction of the lode was lost; and nothing but some small veins, or threads of ore, were cut, which did not repay the cost of working.

It became afterwards a favourite theory amongst the Mexicans to suppose that the great lode had split into various ramifications at this point, and reunited again at the place where the shaft of *La Reunion* has been sunk. It has, however, been since suspected that the real direction of the Biscaina vein lies a little to the North of San Juan and San José, almost immediately below the great Pachuca road; and should this prove to be the case, the Real del Monte Company will possess a large tract of unexplored ground upon the very richest part of the vein, to which the new shaft of St. Andrew will afford an easy access.

In considering the prospects of the Real del Monte Company, a short history of the mines now in its possession may serve to elucidate the calculations with regard to their future produce, which I have given in the third Section of the preceding Book. This history has been often repeated in England since it was first made known to us by Baron Hun-

boldt, but it has become so much the fashion of late to disbelieve every statement with regard to mines, as emanating from the Stock Exchange, that it may perhaps acquire by confirmation the merit of novelty.

The Biscaina vein had been worked, almost uninterruptedly, from the middle of the sixteenth to the beginning of the eighteenth century, when the two principal mines, (El Xacal and La Biscaina,) which, in 1726, had produced 542,700 marcs of silver, (4,341,600 dollars,) were abandoned by their proprietors in consequence of the difficulty of keeping down the water with the very imperfect machinery employed in those early days. The mines were then only one hundred and twenty varas in depth, and the known richness of the ores in the lower levels induced an enterprising individual, Don José Alexandro Bustamante, to denounce them anew, and to attempt the drainage by the Adit of Moran, a part only of which he lived to complete. On his death-bed he bequeathed his hopes, and his works, to Don Pedro Tereros, a small capitalist, who had supplied him with funds to continue his operations, and who, sharing in all Bustamante's anticipations of success, immediately removed to Real del Monte, and devoted his whole remaining fortune to the prosecution of the enterprise. From the smallness of the capital invested, the work advanced but slowly, and was not completed until the year 1762; but in the twelve succeeding years Tereros drew from

his mines a clear profit of 6,000,000 of dollars, or about 1,200,000*l.* sterling. He obtained the title of Count by the munificence of his donations to the Court of Madrid; and never was title more dearly bought; for he presented Charles III. with two ships of the line, (one of 112 guns,) constructed at the Havana, of the most costly materials, entirely at his own expence; and accommodated him besides with a loan of one million of dollars, no part of which has yet been repaid. He likewise built the two great Haciendas of San Antonio and Regla, which cannot, together, have cost less than 1,200,000 dollars, (240,000*l.*); and he purchased landed property to such an extent, that even in the present depressed state of the agricultural interests of Mexico, the revenue of the present Count exceeds one hundred thousand dollars; and ought, in more favourable times, to amount to nearly two. (40,000*l.*)

From the year 1774, the produce of the Regla mines began to decrease, not because there was any change either in the quantity or the quality of the ores, but because the workings having been carried, upon some points, ninety varas below the level of the Moran Adit, the expences of the drainage, which was effected by twenty-eight Malacates, each requiring forty horses in the twenty-four hours, became so considerable as to leave little or no profit to the proprietor. In 1783 the weekly cost of extraction alone exceeded nine thousand dollars, and the works were suspended in conse-

quence. In 1794 they were re-opened, and the Mine continued in activity till 1801; when, although the produce in the seven years had amounted to six millions of dollars, the undertaking was given up, as not affording sufficient profit to compensate the risk.

Since then no attempt has been made to reach the deeper levels, the works, which have been partially carried on, having been confined to portions of the vein, which had been previously neglected. Even these were abandoned during the Revolution, when the amount of silver raised, (as has been shown,) did not exceed 200,000 dollars.

The Company now stands, with regard to Count Regla, exactly in the position in which Bustamante and Don Pedro Tereros, (the ancestor of Count Regla,) stood with regard to the original proprietors of the Biscaina vein. The value of the mines is known, and the abundance of the ores in the lower levels ascertained, but these levels have become inaccessible in consequence of a defective system of drainage; and the application of the powers of steam is now to effect what was attained, in the first instance, by the gallery of Moran. It is immaterial whether the necessity for a change of system occurs at one hundred and twenty, or at two hundred and seventy yards below the surface, provided the powers of the machinery are equal to the increasing difficulty of the task. In 1727, the enterprise was upon a comparatively small

scale, and was accomplished by the persevering efforts of an individual. In 1827, when all the vast works, to which the success of those efforts had given rise, came to be comprehended in the negotiation, it required the capital of a Company to undertake the Herculean task of putting them again into repair. This has been effected at an expence of two millions of dollars.

The money, in as far as my own means of observation have extended, has been laid out in a manner, which does credit both to England, and to the gentlemen who were charged with the direction of the Company's affairs. The only question is, therefore, whether the importance of the enterprise bears a fair proportion to that of the means employed, or, in other words, whether the former produce of the mines was such as to justify the expectations entertained by the Company of a profitable investment; knowing, as they do know, that, upon reaching a given point, they will find an abundance of ores, equal in richness to those which gave to the former proprietors of the Biscaina vein their enormous wealth.

Upon this subject the facts stated in the Fourth Book, and in the present Section, will enable my readers to form their own opinions. Mine are not changed by the delay which has occurred in the realization of Captain Vetch's expectations; and although it is undoubtedly in the power of the proprietors here, by frequent changes in the ma-

nagement, very materially to affect their own prospects of success, I am still inclined to believe that, if the system hitherto pursued be adhered to, the present year, (1828,) will place the result of the enterprise beyond all doubt.

On the 27th of July I returned from Real del Monte to the Capital, where I arrived after an absence of sixteen days. My party had been unusually numerous, Mr. Ball, Dr. Wilson, and Mr. Carrington, having all accompanied me upon this tour, which was not accomplished without a number of little vicissitudes. There was not a single person in Mexico able to give us a correct idea either of the distance, or of the route to *Zimāpān*, and it was in consequence of this want of information that we found ourselves involved, the second day, in the fatiguing journey to *Itzmīquīlpān*, which the heat and drought together rendered almost insupportable. From the Hacienda de San Pedro to the river below the town, (a distance of twelve leagues,) we did not cross a single stream of water. One of Mr. Ball's horses, (which left Mexico too fat for travelling) sickened and died in consequence; and one of mine, towards the latter part of the day, was affected by the sun in a very extraordinary manner. He became perfectly mad, and rushed with the utmost fury not only upon the persons who approached him, but upon his companions, amongst whom we tried to drive him loose before us. As a last resource we were forced to lasso him with two lassos,

and thus to drag him along between two other horses. Even in this state the utmost caution was requisite; for, in the steeper parts of the road, where the ropes were necessarily relaxed, he endeavoured to throw himself over the precipices, and in more than one instance very nearly succeeded. On reaching *Itzmīquīlpān*, he was bled almost to exhaustion, and finally recovered, although weak and unserviceable for many weeks.

It was nearly nine in the evening when we entered *Itzmīquīlpān*, in consequence of the delay which this accident occasioned; and we must have gone supperless to bed, as all the shops were closed, had we not been provided with a case of preserved meat, which furnished us with an excellent meal. There is no country in which the advantage of provisions in this shape is so frequently experienced as in Mexico. They keep for any length of time without being affected by the heat; and, as the cases are made of solid block-tin, they support the motion of the mule without injuring. When opened, a three-pound case, with an allowance of bread, a few potatoes, if they are to be procured, and charcoal enough to make the canteen kettle boil for a quarter of an hour, furnishes a supper for six or eight people; and the certainty of this is duly appreciated after a ride of fifty miles beneath a vertical sun.

It happened to be the fête of the Patron Saint of the town on the night of our arrival, and nothing

could be more curious than the appearance of the principal street, which was lighted up, in honour of the occasion, with a number of large paper lanterns, covered with the figures of Saints and Angels, most brilliantly coloured, and suspended by ropes at equal distances from each other. They were all waving gently in the wind, and the streets were crowded with people, either seated quietly before their own doors, or flocking in from the neighbouring villages; the whole population of which was attracted by the unusual sight. The temperature of Itzmiquilpan is much milder than that of Mexico, the town being situated 1,205 feet below the level of the Capital. Zimāpān, which is 1,680 feet lower than Mexico, from its extremely sheltered position, approaches more to the atmosphere of *Tierra Caliente*. The intervening ridge of mountains is nearly 9,000 feet in height.

From Zimāpān to San José del Oro, there is an ascent of 3,477 feet; and from thence to the little Hacienda of the Encarnacion, where we passed the night after visiting the Iron mines, you rise about 1,000 feet more. In the neighbourhood of Zimapan the mountains have been entirely stripped of their timber, with that wasteful and improvident spirit, which characterised the proceedings of the old Mexican miners wherever the Mining laws were not most strictly enforced. Not a tree is now to be found within seven leagues of the town, although, from its situation in the centre of the great chain of

the Sierra Madre, there can be no doubt that the site which it now occupies was formerly part of the vast forest, which commences about four leagues below San José del Oro.

When once you reach this point, nothing can be more magnificent than the scenery; woods follow woods in endless succession, and wherever there is a break in the mountains, the eye wanders over a wilderness of timber of the most luxuriant growth. With the exception of a few huts in the neighbourhood of San José, and the German amalgamation works at the Encarnacion, there is not a vestige of the hand of man throughout the whole district. The village which formerly existed near San José has disappeared, and the clearings, which afforded a subsistence to the miners, are overgrown with brushwood. Great, indeed, will be the transition, in the course a few years, if the Iron mines are brought into activity, and an European establishment formed, with all the din of restless activity, where nature now reigns in solitude and silence.

From the extreme badness of the roads between Zimapan and the Encarnacion, we did not attempt to take up beds or provisions. Mr. Spangenberg undertook to procure us a sheep upon the spot, with abundance of tortillas, and we trusted to cloaks and a buffalo's skin for a bed. The house was extremely small, and the family of the proprietor large, for it consisted of a wife and four daughters, besides two or three sons. The last were disposed

of in the stables, in order to make room for us; but I believe that not less than fourteen persons took up their quarters in the sala, stretched in a double tier upon the floor, with their feet meeting in the centre. Nothing but the extreme coldness of the air at such a height preserved us from suffocation, for the columns of mist which were driven occasionally past the house, rendered it impossible to leave either door or windows open. It was curious to observe the rapidity with which these clouds came sweeping down from the higher ridges, enveloping us suddenly in a cold, chilling vapour, accompanied by a strong current of air, and to feel the contrast between the temperature of the region subject to their influence, and the glowing sky of Zimāpān, which opened upon us after about three hours of an almost precipitous descent.

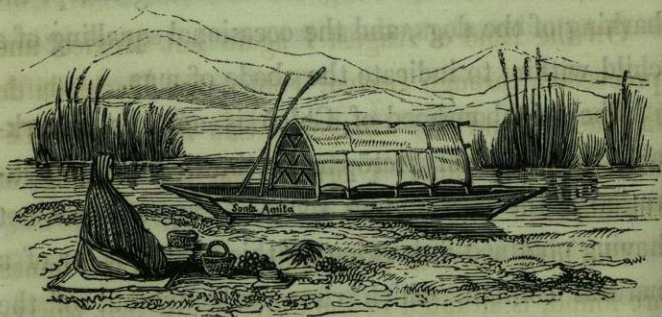
Between Zimāpān and Actōpān there is little worthy of remark, with the exception of a dangerous pass which terminates the ascent from the village of Yolo to the Valley of Actopan, the level of which is 320 feet below that of the Capital. At the very summit of the hill which leads to this valley, there is a sheet of smooth and solid rock, which it is impossible to avoid, from the precipitous nature of the road, and which, with shod horses, is almost impassable. We dismounted, and took every precaution in order to assist ours in crossing it; but notwithstanding this, three of them were very seriously injured in the attempt.

On reaching the Table-land beyond this ridge, the singular mountain called Los Organos de Actopan, is immediately in sight, and continues so for several leagues. It rises 2,426 feet above the level of the plain, and resembles the spires of a cathedral, or the twisted growth of a large species of cactus (whence the name is taken) in its appearance. This cactus runs up in columns to a great height, and is much used by the Indians for enclosures. On the road from Real del Monte to Mexico, there is one village, every house in which is so completely fenced in by it, that nothing else is visible. You pass through avenues of cactus, which constitute the streets, and as none of these habitations communicate with the road by a door in front, there is nothing except the barking of the dogs, and the occasional squalling of a child within, to indicate the abode of man.

The neighbourhood of Chicō is not less remarkable than that of Actōpān for the singular configuration of the surrounding rocks. I regret much not having obtained a drawing of this wild spot, or of a natural column, which rises suddenly out of the ground in the middle of the forest between Chico and Real del Monte, and towers up at once to the height of near 200 feet. The Barranca of Regla, too, with the beautiful waterfall a little above the Hacienda, and the row of basaltic columns which support the ledge of rock from which the stream descends, is a magnificent subject for the pencil, and one to which no drawing that I have yet seen does

justice. But I was not accompanied upon any of my first journeys by Mrs. Ward, and was consequently unable to ascertain whether her efforts would have been attended with more success.

After our return from the Interior, it was my intention to have visited Real del Monte again; but it was so late in the season before we quitted Mexico, and the vomito was already so prevalent upon the Coast, that we did not think it prudent to allow the beauties of the scenery to tempt us into a delay, the risk of which every day tended to increase.



SECTION VI.

VISIT TO THE MINES OF TEMASCALTEPEC, AN-GANGEO, TIALPUJAHUA, AND EL RANCHO DEL ORO.

ON the 22nd of August I again left Mexico, and proceeded, through Lerma, Toluca, the Hacienda de la Huerta, and the village of San Miguel, to Tē-māscāltēpēc, where I arrived on the evening of the 23rd.

The little town, in the vicinity of which the mines are found, is situated in the State of Mexico, thirty-two leagues to the South-west of the Capital, on the declivity of the Cordillera towards the Pacific, into which some of the rivers, that rise in the neighbourhood of Tē-māscāltēpēc, actually flow. The mines of this district enjoyed formerly a great reputation for the richness of their ores; (the finest specimen in the King of Spain's collection was brought from the mine of San José;) but, as the works increased in