

brought over for the purpose, who constructed a high-pressure engine planned by Don Andres del Rio. In order to obtain a sufficient command of water, a Presa, or dam, was built, at a great expence, upon the summit of a neighbouring mountain; but the plan failed, because the force of the water having been calculated during the rainy season, it was found insufficient, during the dry, to keep the engine at work for more than six hours out of the twenty-four.

Moran may be regarded as one of the most interesting points at Real del Monte. The old Adit, from which the wealth of the first Conde de Regla was derived, commences within one hundred yards of the shaft. The new Adit, the level for which is taken at the Hacienda of Sanchez, (about eight hundred yards distance,) is to be driven exactly in the same direction, and the new road to Regla passes close to the mouth of the mine.

This road is one of the enterprizes for which the Company has been blamed, and yet, without it, not a single steam-engine could have reached Real del Monte. In the time of the old Count Regla, when six hundred mules were employed daily in conveying ore from the mines to the Hacienda of Regla, which is nearly six leagues from the Real, there was no other mode of communication than a very dangerous path across the mountains. This has now been transformed into a road for wheel-carriages, which is beautifully laid down, and upon

which timber, of a size never transported before in Mexico, is brought to the mines in the waggons that were originally sent out for the conveyance of the steam-engines from the coast. Another road, equally good, and equally necessary, leads to the farms of Gūajälōtē and Zimbō, from the last of which the largest timber is principally supplied.

When, in addition to the works already enumerated, it is recollected that seven steam-engines have been transported from Veracruz to Real del Monte, the aggregate weight of which amounted to fifteen hundred tons;—that one of these (that of Moran) was already on the point of beginning to work, and that two others (those of Guädälūpē and Dōlōrēs) were in a state of great forwardness, it is impossible not to confess that the greatest praise is due to those, by whose exertions so much had been effected in the short space of two years.

Disappointed speculators may complain of the want of speedier returns; but their murmurs must be ascribed, as I have already stated, to their ignorance, in the first instance, of the nature of the enterprise in which they engaged. They know neither the hardships which have been endured, nor the difficulties which have been overcome, in their service; many of which, it is my firm conviction that it would have been impossible to surmount, but for the science and energy displayed by Captain Vetch, and Captain Colquhoun, to whom, most fortunately for the Company, the direction of this ardu-

ous enterprize was entrusted. The German Directors, two of whom accompanied me from Chico to Real del Monte, were astonished at the size of the boilers, and other pieces of machinery, which had been brought up from the coast, and confessed that they should neither have regarded the attempt as practicable, nor would have undertaken it themselves on any terms.

I was happy to find that these gentlemen, to whose opinion as miners, from what they have done themselves, I should be inclined to attach great weight, were highly gratified with all that they saw at Real del Monte, and expressed, in the warmest manner, their approbation of the system pursued there.

They were particularly struck with the plans for the new Adit, which is, indeed, a stupendous undertaking. It is to commence 800 yards below the mouth of the old Adit at Moran, and must consequently be driven 3,607 yards before it enters the Biscaina vein at the Dolores shaft. In this space it will cut a number of small veins between Sanchez, Moran, and the Santa Brigida lode, the course of which it will then follow, at 140 varas below the level of the old Adit.

As the quality of the ores was not found to be at all deteriorated in the deepest workings of the old Count Regla, who was only prevented from carrying them farther by the difficulty of keeping down the water, there is every reason to hope that, from the

time that the new Adit reaches the Santa Brigida vein, it will not only cover its own expences, but will become a most lucrative speculation. Indeed, were it not for this expectation, no Company could undertake a work, upon such a scale, in such unfavourable ground, as part of the Adit must be driven through the porphyry rock, where the expence of each vara will amount to twenty-five dollars.

It is in consideration of this circumstance that the prosecution of this enterprise has been suspended, until the mines themselves furnish the means of carrying it on, without increasing the outlay of the Adventurers, which already amounts to the whole of the capital originally subscribed. Many are of opinion, however, that had the resources of the Company been devoted to this undertaking, in the first instance, the result, at the end of the term of twenty-five years, to which their contracts entitle them to look forward, would have been more advantageous than the partial drainage which the steam-engines will more immediately effect.

This is a question which it is now unnecessary to discuss, as the opposite system has been preferred, and is likely to succeed, in which case the Adit of Sánchez, or Omítlán, may be resorted to when the goodness of the mines is demonstrated to some extent below the deepest levels which the Mexican proprietors were enabled to reach. These now extend from forty to seventy varas below the old Adit, so that the new one would render accessible

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 cargas 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 Hum-

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 Xacāl 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-