

a cousin of Mr. Escandon, both from Pachuca; Mr. Richard G—, and ourselves. These comprehended individuals born in Spain, Mexico, Peru, Italy, Poland, England, Scotland, Ireland, Wales, and Smyrna. I have only to add, that the evening was spent in great conviviality, not breaking up till midnight.

The company departed. Mr. G— and I (having to start long before daybreak), took leave of my now dear friends, Mr. and Mrs. Buchan, both so justly beloved in their present home. All I could get Mrs. Buchan to charge me with, on my return to England, was, to pay a visit to her father and mother, Mr. and Mrs. Auld. H— remained behind me, to enjoy herself for another week, and then to return with Don Manuel.

At half-past four in the morning, Mr. G— and I, accompanied by the judge of Pachuca, set off for that town, where we left him. At six we took our places in the *diligencia*; and, after a melancholy drive, I found myself once more in Mexico, at half-past two P. M.

## LETTER XII.

MR. BUCHAN'S REPORT OF REAL DEL MONTE.

[London, 14th August, 1852.]

WHAT I have re-written on Real del Monte, during the present year, led me to request my friend, Mr. Buchan, to furnish me with a report on its actual state and prospects; and, having received it, I think such of my readers as are interested in mining affairs will thank me for inserting that report here. It shews, with much clearness and ability, how mining, the great source of the riches of Mexico, may be carried out, as a safe and profitable investment, instead of being, as it too generally is, a lottery, offering alternate prosperity and loss. I give Mr. Buchan's report *verbatim et literatim*, considering it to be of too great importance to be condensed, and too clear and luminous to be in any way altered.]

*Real del Monte, April 4th, 1852.*

"My dear Sir,

"As you are about to publish some notes on your residence in this country, and tell me that your visit to Real del Monte is not omitted; perhaps a short sketch of the past history and present prospect of its mines, may not be uninteresting to you.

"Prior to the year 1749, but little is known of these mines, except that they had yielded considerable quantities of silver, from irregular and detached surface workings; and had at last become almost entirely abandoned from the impediment of water, as the excavations increased in depth.

"At the above period, Don Pedro Terreros, an enterprising merchant of Queretero, joined with an intelligent miner named Bustamante, in a general '*denuncio*' of the district; by which they obtained possession of its two principal veins, La Biscayna and La S<sup>ta</sup> Brigida, on the condition of effecting their drainage by a long horizontal gallery for the exit of the water, and known in technical language as an adit.

"For this important work, a point was chosen sufficiently down the slope of the northern descent of the valley, to insure its entering the principal mines of the Biscayna vein, at the depth of two hundred yards from the surface; but as the distance necessary to obtain this difference of level was nearly 3000 yards, the work, although commenced in 1749, was not completed until 1759.

"Bustamante did not survive to see the result of his great work; but Terreros persevered to reap the reward, for having by this adit freed the mine from water, and thus rendered its workings economical, he extracted at comparatively small cost, up to his death in 1781, the large amount of fifteen millions of dollars; having been previously ennobled by the King of Spain, under the title of Conde de Regla.

"His successor, the second Conde, continued the working of the mines, but not to equal profit with his father; who having exhausted the upper portions of the veins, rendered dry by the adit, left his son the more difficult task of contending with the water under that level.

"This drainage was effected by horse machinery, called '*malacates*,' which raising the

water in skin bags to the level of running out at the adit, was for some time sufficiently effective; but gradually as the mine became deeper, the difficulty and cost of drainage with such imperfect machinery also augmented, until, in the year 1801, the twenty-eight *malacates* then at work, occupying twelve hundred horses, with four hundred men, and costing 250,000 dollars per annum, were not found sufficient to keep down the water to 108 yards under adit, at which depth the workings on the Biscayna vein had been attained, in the mines of S<sup>ta</sup> Teresa and Guadalupe: and consequently, although these mines were then producing at the rate of 400,000 dollars per annum, the drainage was suspended, and their deeper workings abandoned to fill with water.

“After this the workings were limited to a higher level, and on the hitherto unexplored extremes of the vein; in which directions, and up to 1809, when the second Conde died, the mines of San Ramon and ‘Dios-te-Guie’ continued to yield about 300,000 dollars per annum.

“From this period, the produce of the mines gradually decreased, and the war of Independence having commenced, their working was entirely

suspended in 1819, the total produce since the death of the first Conde being 10,000,000 dollars.

“After the independence of Mexico had been recognised by Great Britain, the attention of English capitalists became directed to the mines of this country; and at the suggestion of Mr. John Taylor, a celebrated mining engineer of London, an association, known by the name of the Real del Monte Company, was formed, for restoring and draining the mines of the Regla family.

“In July, 1824, when Captain Vetch, of the Royal Engineers, and the First Commissioner of the Real del Monte Company, arrived at the mines, they were in a state of utter ruin; most of the vertical pits or shafts, which had formerly given access to their deep workings, had fallen in, leaving their former site only to be detected by the immense craters, overgrown with brush-wood at their mouths. A still more serious evil, was the destruction of the great adit, which having in many parts been carried through soft rock, requiring constant attention to support it with timber, had, during many years of neglect, gone so to ruin, that it no longer carried off the water, which consequently rose to a great height in the mines.

All the machinery in the large reduction works, formerly employed for extracting the silver from its ores, was gone, the population become very scarce, and the town nearly a ruin.

“As the chief inducement of the Company to resume the drainage of these deep mines was the advantage which they expected to derive by the substitution of steam power, applied to the modern system of pumps, for the imperfect and costly one of horse machines, raising water in skin bags,—a body of miners, engineers, and mechanics, with a number of steam engines, pumps, and other machinery, forming the cargoes of three ships of three hundred tons burthen each, arrived at Vera Cruz, in May, 1825, under the charge of Lieutenant, now Colonel Colquhoun, of the Royal Artillery, and then the Second Commissioner of the Company.

“Our experience of the climate of Vera Cruz was then but slight; and thus the worst possible season—the commencement of the rains—had been selected for the arrival of this expedition on that unhealthy coast. Another difficulty arose, for the Castle of San Juan de Ulloa being still in possession of the Spaniards, the port of Vera Cruz

was closed; and consequently while the ships anchored a few miles to the south, in the exposed roadstead of Sacrificios, the heavy machinery had to be landed, with very great risk and difficulty, on the open beach of Mocambo. Next came its transport to the interior, for which purpose the expedition had been very completely supplied with waggons and harness from the Royal Arsenal, at Woolwich; but the mules sent from the interior for draft were unbroken, and the Indians of the coast perfectly unused to their management; while the roads of deep sand rendered the movement of heavy waggons a most tedious and difficult task. The rainy season commenced, and its usual scourge, the yellow fever, soon made sad havoc with both English and Mexicans. Colquhoun, however, with the true spirit of a British officer, persevered through all difficulties, and by May, 1826, the engines had arrived at the mines.

“In the meantime, Captain Vetch had lost no time at Real del Monte, which district had been carefully surveyed; the great adit cleared and restored; many of the shafts, but particularly that of Dolores, on which it was decided to erect the first steam engine, had been repaired down to

adit; buildings, workshops, and stores were arising round the mines; many important new shafts for the future working and examination of the veins had been traced out, or commenced; and, though last not least in importance, a good carriage-road had been constructed, with much cost and great engineering skill, through the rocky ravine that intervened between the mines and reduction-works.

“ From this period the clearing and restoration of the mines progressed slowly but steadily, until, by the end of 1829, the drainage had been effected to the depth of 108 yards under adit, by two small steam engines of thirty-inch cylinders, which discharged six hundred gallons of water per minute, and whose annual cost did not exceed 30,000 dollars, being an immense saving, as compared with the large sum of 250,000 dollars, which the twenty-eight *malacates* had cost the second Conde, when, at the same depth, he abandoned the lower workings on the Biscayna vein, in 1801.

“ It, however, soon became evident, that the drainage, at the distant points of San Cayetano and Dolores, was not sufficiently effective for working downwards the richest portion of the vein, in the mine of S<sup>ta</sup> Teresa, and that a new vertical shaft,

and more powerful engine, was absolutely necessary in that neighbourhood. To meet this difficulty, Captain Tindal, R.N., who had succeeded Captain Vetch in the direction of the Company, commenced, in January, 1830, the new shaft of Terreros; but the depth to which this pit had to be carried down to reach the old workings being 380 yards, it would have required many years to sink that distance, in hard rock, by only one drift from the surface. The saving of time being a matter of the greatest moment, it was determined to drive it at the same time from five distinct points, by bringing galleries from the old workings, and at different levels, to points directly under that which had been fixed for commencing the shaft at the surface, and then both rising and sinking from them. This operation, which is one demanding the utmost skill in mine-engineering, was happily concluded in January, 1834, by the joining of the eight ends, and forming as straight and perfect a shaft as if it had been driven only from the surface. An engine of fifty-four-inch cylinder having been erected, and assisted by the smaller ones at Dolores and San Cayetano, this portion of the Biscayna vein was worked for some time with considerable

profit, and to the great depth of 470 yards from the surface, or 240 yards under adit.

“At this point, the water having so increased as again to overpower the engine, Mr. John Rule (the successor of Captain Tindal) erected a still larger one of seventy-five inches at Dolores, and removed that of Terreros to another new shaft, which had been sunk with one of the thirty-inch engines, near the old mine of Acosta. The reward of these new adventures was two bunches of rich ore: the one discovered on the S<sup>ta</sup> Brigida vein, near Acosta, and called La Luz; the other, San Enrique, on the Biscayna vein, near Dolores.

“Up to the end of 1847, however, the general result of working these mines had been decidedly unfortunate to the English adventurers; for although they had profited by the three rich bunches of ore at Terreros, Acosta, and Dolores, and had produced 10,481,475 dollars worth of silver; still the outlay on all the undertakings of the Real del Monte Company had also reached the larger amount of 15,381,633 dollars; leaving the great loss of nearly five millions of dollars, as the result of the twenty-three years they had held the mines.

“The deep workings of the mines were now

230 yards under the great adit, or 122 yards below the point in which they had been abandoned by the second Conde; and the difficulty of the drainage had so increased, both from the augmented quantity of the water, and the greater height to raise it to the point of discharge at adit, that the three powerful steam engines at Acosta and Dolores, which were discharging two thousand seven hundred gallons per minute, at a cost of 90,000 dollars per annum, could barely stem the coming water of the mine.

“To show what had been effected by English energy and enterprise, a comparison of the cost and effect of steam drainage, as compared with the plan of the country, becomes at this point interesting. As before shown, the English Company at the commencement had easily effected with two small engines, and with a cost of 30,000 dollars, what the Conde de Regla had been obliged to relinquish in 1801, with twenty-eight *malacates*, and at a cost of 250,000 dollars; but now with increased depth, and greater volume of water, three powerful pumping engines, spending 90,000 dollars, were barely able to maintain the drainage; while to replace *them* would have required at least

180 *malacates*, employing seven thousand horses, with upwards of two thousand men, and with an expenditure of not less than two millions of dollars per annum. In fact, not only from its cost, but from the number of men and shafts necessary to work so many machines, it would have been perfectly impracticable to have carried down the mine to its present depth by horse-power.

“With this increased difficulty of drainage, seeing three rich bunches of ore all worked out, and a debt of five millions of dollars still outstanding, it is not surprising that the energy and perseverance of the English adventurers, which had distinguished them since the year 1825, and through so long a period of heavy expenditure and hopes deferred, were at last exhausted.

“Towards the middle of 1848, I came here, at the request of the directors, to see what could be effected; and I certainly found affairs in a most critical state, from pending debts and liabilities, which had been incurred to a large amount, and at a heavy rate of interest, in the city of Mexico. Add to this, that the mines were producing far less than their expenditure, and that the company was involved in two very critical and costly

law-suits. Still I felt convinced, that the concern might be rendered a good one, if but a small capital could be supplied, for, at least, paying off its most urgent liabilities, and effecting some reform in its reduction-works; but the complicated interests of share and bond-holders, who represented the company, seemed to complete the natural despondency of all parties in London; and, rather than risk any farther capital, the English company was dissolved in October 1848, and I was directed by the trustees to dispose of the concern in this country.

“It was, however, no easy matter to find purchasers in the city of Mexico for mines which had fallen into such perfect discredit; and a still more difficult task to convince monied men, that an enterprise which, aided by all the energy and capital of a powerful English company, had, during the last twenty-three years, incurred a loss of five millions of dollars, and whose mines were now deep, poor, and working to the extreme extent of its powerful steam-engines, could be rendered profitable. I am, therefore, the more obliged to my friends, Don Manuel Escandon and Don Nicanor Beistegui, who, without being