

fitted up extensive Haciendas of their own. The Anglo-Mexican Company possesses eight of these Amalgamation works; the United Mexican four; and this new plan, should it be found to answer, will undoubtedly tend to discourage, for some time, the re-establishment of the independent Haciendas.

On the morning of the 13th of November, we visited the mine of Villalpändö, situated in the mountains to the East of Gūänājuatö, about four leagues from the town, upon a separate vein, totally unconnected with the Veta Madre. A number of small mines are united in the "Negotiation" of Villalpando, but the depth of the deepest levels does not exceed two hundred varas: the ores are rich in gold, and in appearance resemble those of the Rancho del Oro: picked stones have been found to contain as much as two ounces of Silver, to one pound of ore; and the Ley de Oro, or proportion of gold found combined with this Silver sometimes amounts to five hundred and fifty Grains in the marc; the value of which at the Mint is raised, in these cases, from eight and a half to thirty and thirty-five dollars. The principal proprietors of the mine are the Conde Vălenciänă, the Countess Rühl, and the Conde de Pēřez Gălvěz. The Anglo-Mexican Company, to which it belongs, was in possession of eight *Barras*, or one-third of the mine; but the whole outlay was to be repaid out of the first produce, and a fund of reserve of 150,000 dollars for future contingencies, to be set aside, before any division of

profits could take place. The drainage was conducted by four mălăcătēs, (three English and one Mexican,) and had been effected, in three months, to within twenty yards of the bottom of the shaft, at an expence of 84,000 dollars. The buildings connected with the mine had been all brought into a state of complete repair, and as the weekly produce already amounted to three hundred Cargas of ore, the prospects of the Adventurers were thought to be highly favourable. The mine was worked principally by Būscōnēs, (Searchers,) whom the hope of a rich prize, (from the value of the gold in some of the ores,) attracted in great numbers. Each man received in payment one-half of the ores which he had raised; and at the weekly sales it was curious to observe the eagerness with which all strove to attract the attention of the buyers, by putting their best stones in the most advantageous light, and sprinkling them with water, in order to show the metallic particles. The sale is conducted by the "Administrador," or principal Overseer of the mine; and as he moves from heap to heap, the "Rescadores" make their offer in a whisper, and the name of the highest bidder, with the price paid, is inserted on the list. The ores are immediately taken possession of by the Cărgădōrēs, (Porters,) by whom each Rēscătădōr is accompanied; and sent down to the Hacienda in the town, where the Buscones receive their money on the following day.

Nothing can be worse than the road to Villal-

pando: from the moment that you quit Guanajuato, all traces of its vicinity are lost, and you traverse ravines as wild as those of Zimăpān or Zītācūarō, with as little to remind you of the neighbourhood of man. There is not a tree to be seen in the whole four leagues, and many of the ascents are so steep that we were glad to be provided with animals accustomed to face them, instead of trusting to our own. Mrs. Ward was mounted on a magnificent mule, and I was provided with a horse, which Mr. Williamson had the kindness to make over to me afterwards, and which I found at once the most useful and the most dangerous creature that I almost ever possessed. I never saw it tired, but even when ridden with the utmost gentleness, it was difficult to keep it quiet, and if once put out of temper, there was no remedy but giving it up altogether for twenty-four hours.

Tuesday, Nov. 14.—We visited the mine of Sirena, in which the Anglo-Mexican Company holds ten Barras in perpetuity, and had acquired four more for twelve years, by an additional advance of 100,000 dollars. The mine had been nearly drained by Mălăcătēs in six months, and from the levels already above water at the time of my visit, ores were raised in sufficient quantities to cover the expences, and to leave a surplus of from 1,000 to 1,400 dollars weekly. Sirena lies about a league from Gūanājuātō: the road out, which has been repaired by the Company, is good; and the mine

itself, being situated in one of those hollows in which, as I have already observed, Nature seems to have deposited the great mineral riches of the district, and not having been worked hitherto to any thing like the same extent as the other mines upon the Větā Mădrē, is considered by the natives as one of great promise. The outlay upon it, (including the purchase money of ten Barras,) was, in September 1826, 255,201 dollars.

From Sirena we proceeded to the Hacienda of Păstītă, an amalgamation work entirely fitted up by the Company, with twenty-eight arrastres, and a water-wheel for the stampers, which is expected to work six months in the twelve: 42,860 dollars have been expended upon this Hacienda by the Company, but it is now held at a nominal rent of five hundred dollars per annum, until the whole outlay be repaid, so that they have, in fact, the use of it for eighty years rent free.

The Hacienda of San Āgüstīn, which we next visited, is the property of the Association, and has cost altogether 116,365 dollars. The purchase money was trifling, but a great additional outlay was occasioned by the preparations for the introduction of the Cornish system of washing and reducing ores,—the new smelting establishment, which proved so complete a failure under the superintendence of Mr. Lucas, and the Freiberg revolving-barrels, which it has not yet been found possible to apply to the immense mass of ores that are subjected to the

process of amalgamation in New Spain. *Sān Agüstīn* was the residence of all the Cornish miners, and for the credit of England it must be hoped that those who sought their fortune in Mexico are not to be regarded as a fair specimen of the population of that part of the British dominions. There were some good and useful men amongst them, who have continued in the service of the Association, and are now amongst its most efficient agents; but the generality of the Cornish have left behind them a character for ignorance, low debauchery, insubordination, and insolence, which has very materially diminished the respect which the Mexicans were inclined to entertain for the supposed superiority in intellectual acquirements of the inhabitants of the Old World. Nothing could exceed the indulgence shown by the authorities of *Guānājuātō* towards these men, six or seven of whom were often picked up in the streets drunk, and conveyed to the *Hacienda* of *San Agustin* by the very watchmen, who, if they had been natives, would have been lodged in jail; but their patience, as well as that of the mine-owners, who were compelled to pay enormous salaries, and to see their work badly done,* was nearly

* It must always be borne in mind, that although the outlay is made in the first instance by the Company, it is carried by them as a debt to the account of the Mine, and it is to be paid out of the first proceeds. It therefore becomes the interest of the owners to see that the work is properly performed; and to refuse to pass accounts whenever unnecessary expences are in-

exhausted, when the Directors in England were fortunately induced to abandon the system, and to employ natives in all the operative parts of their principal undertakings. The management alone is now European, and the persons entrusted with it having shown a proper disposition to conciliate the natives by acquiring their language, and only varying their mode of working in cases where some positive and evident advantage accrued from the change, the Mine-owners and the Company proceed towards the attainment of the common object with a mutual good understanding, and, consequently, with an increased probability of success.

There is a small steam-engine erected at *San Agüstīn*, which is intended to be used both for sawing timber, and for braying ores: it puts in motion twenty-four stampers of three hundred weight each, and has likewise been applied with very good effect to the *Freiberg* revolving barrels. It consumes one *carga* (300lbs.) of wood in the hour, which, at three reals (of eight to the dollar) per *carga*, makes a total expence of nine dollars in the twenty-four hours. Another engine of fourteen horse power had been applied to the little mine of *La Purisima*, at *Santa Rosa*; but as it was not at work during my visit to *Guanajuato*, I did not think it necessary to ride

by those entrusted with the management. For instance, machinery sent out and not used, or mining works badly executed by foreigners, who are paid for executing them better than the natives, cannot, in reason or justice, be charged against a mine.

three leagues across the mountains in order to see it.

After returning from San Āgŭstīn, I passed the whole of the afternoon at the Hacienda of Sālgādō, in which the ores of the Valenciana Mine are reduced. The Hacienda contains forty-two arrastres, or crushing-mills, and thirty-six stampers, and the works are under the direction of a young Mexican, Don Pedro Bēlāuzārān, celebrated for his skill as an amalgamator, which he appears to have inherited from his father, who was one of the most distinguished miners and "Rescatadores" of Guanajuato, before the Revolution. Under his tuition I endeavoured to acquire an idea of this complicated process, which I shall proceed to lay before my readers, never having myself found in any work a description calculated to convey all the information which I wished to obtain respecting it.

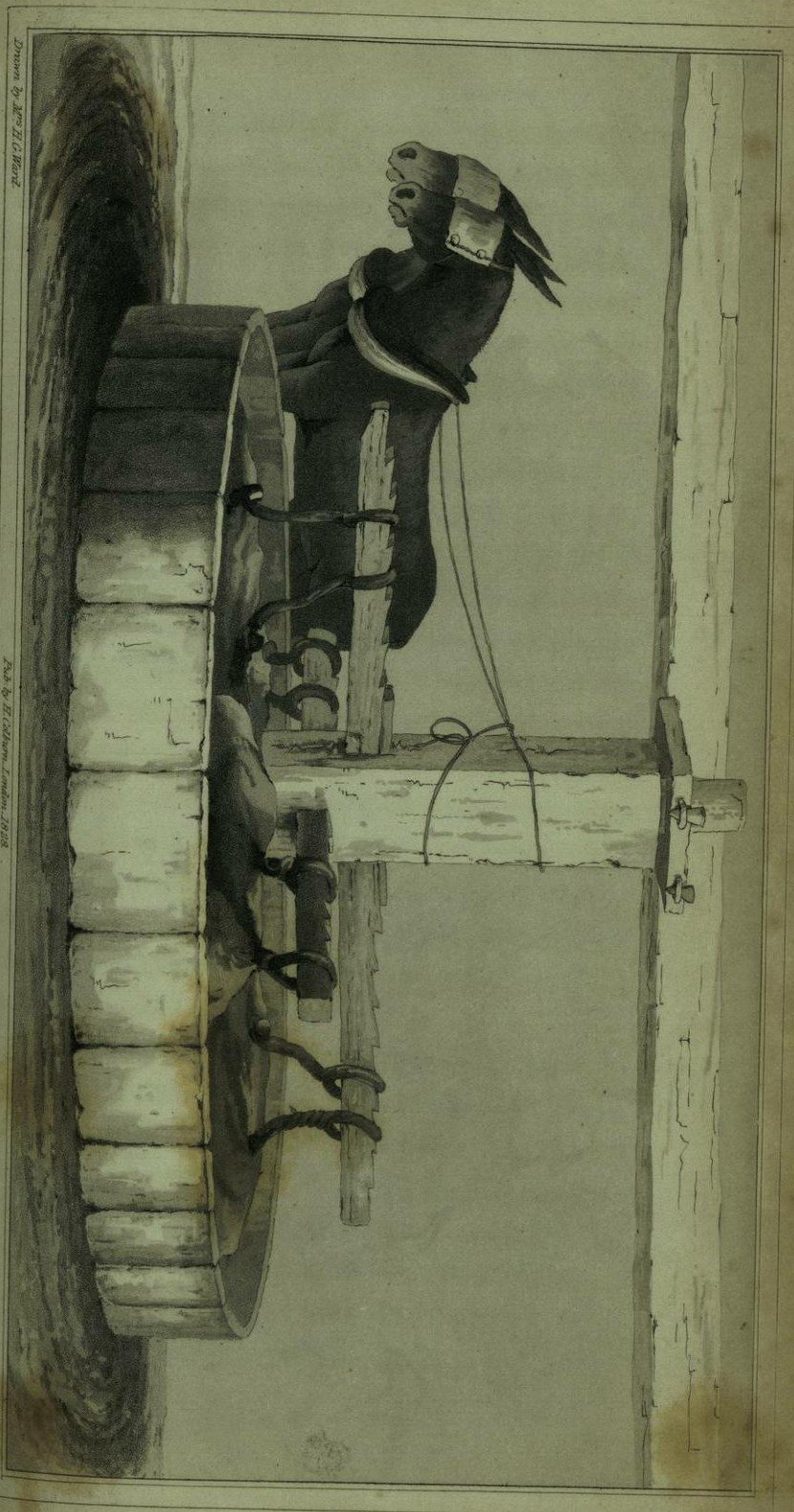
The ore, on being extracted from the mine, is placed in the hands of "Pēpēnādōrēs," men and women, who break all the larger pieces with hammers, and, after rejecting those in which no metallic particles are contained, divide the rest into three classes, called, in mining language, "Āzōguēs," and "Āpōlvillādōs," "Buenos" or "Ordinarios." The "Āzōguēs" are the inferior ores, in which the matrix contains but a thin sprinkling of silver. As this increases, it becomes "Apolvillado ordinario,"



three leagues across the mountains in order to see it.

After returning from San Agustín, I passed the whole of the afternoon at the Hacienda of Salgüedá, in which the ores of the Valenciana Mine are reduced. The Hacienda contains forty-two arrastres, or crushing-mills, and thirty-six stampers, and the works are under the direction of a young Mexican, Don Pedro Belázarán, celebrated for his skill as an amalgamator, which he appears to have inherited from his father, who was one of the most distinguished miners and "Rescatadores" of Guanajuato, before the Revolution. Under his tuition I endeavoured to acquire an idea of this complicated process, which I shall proceed to lay before my readers, never having myself found in any work a description calculated to convey all the information which I wished to obtain respecting it.

The ore, on being extracted from the mine, is placed in the hands of "Pepénadōres," men and women, who break all the larger pieces with hammers, and, after rejecting those in which no metallic particles are contained, divide the rest into three classes, called, in mining language, "Azōguēs," and "Apōlvillādōs," "Buenos" or "Ordinarios." The "Azōguēs" are the inferior ores, in which the matrix contains but a thin sprinkling of silver. As this increases, it becomes "Apolvillado ordinario,"



AN ARRASTRE, OR CRUSHING MILL.

Drawn by Mrs. H. C. Hunt

Engr. by H. Colburn, London, 1828.

and "Apolvillado bueno" when very rich. Sulphuret of silver, where it occurs but little intermixed with other substances, is designated as "Polvillos;" (probably because when reduced to "polvo," (dust,) this dust is found to be richly impregnated with silver,) and "Molonques," or "Petanques," are the names given to the masses or crystallizations of pure silver, which are not unfrequently met with. The three last are too rich to be submitted to the ordinary process of amalgamation; but the "Azogues" and "Apolvillados" are transmitted in *costales*, (miner's sack,) weighing 150lbs. each, to the Hacienda, where they are delivered to the Administrador, (overseer,) who gives a receipt for the amount. They are then submitted to the action of the Morteros, (stamps,) one of which of eight stampers, (Mazos,) is capable of reducing to powder ten cargas of ore, (each of 350lbs.) in twenty-four hours. This powder not being thought sufficiently fine for the quicksilver to act upon it with proper effect, it is transferred from the Morteros to the arrastres, (crushing-mills,) in which water is used. Each of these reduces to a fine, impalpable, metalliferous mud, six quintals of powder in twenty-four hours. At Guänäjüatō, where water-power cannot be obtained, the arrastres are worked by mules, which are kept constantly in motion at a slow pace, and are changed every six hours. The grinding-stones, as well as the sides and bottom of the mill itself,

are composed of granite, four blocks of which revolve in each arrastre, attached to cross-bars of wood. This part of the operation is thought of great importance, for it is upon the perfection of the *Molienda*, (literally, the grinding,) that the loss of quicksilver is supposed in a great measure to depend. It is performed usually in a covered shed, or "Galera," which, in a large Hacienda like Salgado, from the number of arrastres at work at the same time, is necessarily of considerable extent. From the arrastres the ore is again removed to the *Patio*, (amalgamation court,) where it is disposed in *Tortas*, the size of which varies according to the dimensions of the *Patio*, or the fancy of the Administrador, (overseer.) The number of Montones, (heaps,) contained in each *Torta*, is consequently uncertain; but the Monton of Guanajuato consists of nine Cargas, and two arrobas, or thirty-two quintals of ore; each carga containing fourteen arrobas of 25 lbs.

The Monton requires three arrobas of salt, (from Colima,) at one dollar, or nine reals the arropa. This is added to the mass three days before any other ingredient.

One arropa of ordinary Magistral, (from Tépėsälär, near Aguäs Cälüntēs,) or 7lbs. of the very best quality, (Pepena.)

Quicksilver, in the proportion of 3lbs. for every marc of silver that the ores of the Monton are supposed by the amalgamator to contain, and varying,



Drawn by M^r H. G. Ward

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J. Clark fecit

THE GALERA OF THE HACIENDA DE SALGADO.