

Description of the Villa and Mines de Potosí in the year 1603

Anonymous

Published in Biblioteca de Autores Españoles 185 (Madrid: Atlas, 1965), pp.372-85. See also the start of Hispanic Society of America ms. Atlas of Sea Charts K3 with accompanying images of Cerro Rico, amalgamation mills, city grid, and "yndios guayrando." The document reproduced in BAE and translated here is in tomo 39 of the Colección Muñoz, Biblioteca de la Real Academia de Historia, ff. 240-53. A copy with Muñoz's annotation is at the end, dated 1603, from ms. 'que tiene don Juan Antonio Enriquez, Ministro de Marina, la cual saco de un ms que posee el conde de Águila. Coteje esta con la de Enríquez, Sevilla, 8 abril 1784.' But it looks like the Hispanic Society doc was continued and ended up in the Academia de Historia's Papeles de Salazar, t. F 3, titled 'Memoria de las cosas de Potosí y grandezas del' – this one needs to be checked against it, as the BAE item does in footnotes.

Translation draft by Kris Lane, 3 Aug. 2018

The imperial villa of Potosí was founded at the base of a peak called in the native language of the Indians Potochi, and in so far as can be determined, the etymology of this name is 'great thing,' and with some difference today they call it Potosí. This villa was settled (according to the oldest and most certain accounts) on the 19th day of April, 1545, by seventy-five men who came here from the city of La Plata, and its discovery was as follows:

The founding Indians [i.e., professional smelters] arriving, who in the Indian language are called *guairadores*, who ordinarily inhabited the site of Porco, with food they brought from Cochabamba loaded on llamas, arriving at the foot of this peak, by which passed a road going to the camp of Porco, one of the llamas they brought loaded with food got loose and went high up on the hill and one of the Indians went after the llama and when he arrived where it was he saw on the surface of the ground a great quantity of *gabarros* [tumor-like masses] of very rich ore, full of *anco*, which is lead, and as this Indian, being a *guairador*, knew this ore to be so rich, he removed the food loaded on the llama and replaced it with this ore, hiding the load of food, and upon returning to the company he had left, they went on to the site of Porco, where in *guairando* the ore he had carried, he discovered it to be of great purity and value. And this Indian continuing to come to this peak could not go on without his secret being found out since he was getting so much silver from this mine he aroused the curiosity of the other Indian *guairadores* of the said camp, as much by his eating and his dress as in other things; so that eventually his companions the Indian *guairadores* where he got such ore that it contained so much profit when theirs did not, all of them *guairando* ores from the same mines. This Indian covered up for as long as he could what place he got the ore from until after six months, due to the constant questioning of a big Indian friend of his, he promised to tell him and reveal it on the condition that he kept it secret; and thus with this agreement these two Indians came together to this mountain of Potosi and went on removing ores, *guairando* them in the site of Porco until they had a falling out, and each threatened the other to reveal it all to their masters, who were in Chuquisaca, and that is what they did; and thus the first Indian, known as Guanquilla, discoverer of the mountain, gave news to his master Villaroel, native of Medina del Campo, and the second, who they called Chanquillo, to his master Quixada, and with this story they sent from the city of

Chuquisaca to see if what the Indians said was true, and discovering that their story was certain and truthful, there came the 75 men and they settled the site that today is the Villa Rica Imperial de Potosí.

It should be noted that at the beginning of the discovery of these mines there were no Indians allotted for them, but rather each Spaniard had his *yanacóna* Indians, which is to say his pages (*criados*), the same which removed the ore from the mines and later they smelted it some little open-air furnaces, and hence they were called *guairas*, which is to say 'air,' from which they took some disks of silver of somewhat low purity, and from these disks they gave their masters the daily quota they had already been assessed; and as this one who discovered the mountain gave his quota as had the others of Porco, he had a lot of silver left over, and this he spend lavishly and for that reason all the others took note.

The first vein that was worked and discovered was that which is today called Centeno, on top of which the Indian had found the masses (*gabarras*) of rich ore, which had fallen from the pointy crags (*farallones*) that the vein had formed with the smokes and vapors that the ores had emitted from themselves. They placed this name of Centeno on this vein in honor of a Capt. Centeno, who in those days, although he did not arrive with the 75 men, was general and chief justice in Chuquisaca. And so it is today, with all the works long followed on the mountain, one finds no evidence of it every having a wood, even though when they found it they found it much populated with some trees they call quinoa, and from their wood they built the first houses of this camp, and the first were the royal ones, in the same place where they are now.

There also used to be on this mountain much hunting of vicuñas, guanacos, and vizcachas, which are animals very similar to the rabbits of Castile in both fur and food, except that these differ in having a long tail. There were also deer with antlers, and now not even grass is found on the mountain, not even where you could find the roots of trees, which is what is most alarming, since all of it is a rocky mass with very little or no earth on it, spread over with the tailings from the veins, which are of live rock.

At its beginning this villa was subject to the jurisdiction of Chuquisaca, but it was exempted from it in the year 1561, on the 21st day of November, for 71,000 assayed pesos which went to serve Your Majesty, granting the said location [or villa] along with the viceroy, Conde de Nieva, don Diego López de Zúñiga y de Velasco, the commissaries Licenciado Briviesca de Muñatones and Diego de Vargas Carvajal and Ortega de Melgosa.

Although in its beginning this villa was a mining camp, it is now the second in quantity of householders and the richest city in all Peru. The site where it is based is on the side and flanks of some mountains, which is why it comes to be somewhat uneven. The streets and main area of Spanish settlement runs from east to west and north to south. Aside from the town's main commercial and trading plaza the Indians have many others, and particularly that which they call the Charcoal [market], where the Indians sell all the foods and barter ores. The fourteen established Indian parishes that surround it [the town center] do not follow the same order, as none of the houses has a single one [i.e., market], and they are small and little more than huts. Those of the Spaniards are good, according to the disposition of the land, although most are covered with straw.

The temperature and quality of this villa and its climate is extremely cold and dry, and thus not a single thing grows in it, and if anything does grow it is a few flowers that might give if one takes great care during the rainy season, which is three or four months; and if one wants to plant some vegetables, it is only with great care that the plants grow, but they never ripen.

There are a few plantings of scant importance, because all they yield is a bit of green barley, which never comes to seed, plus a few potatoes, but all of very little consideration. The birds consist of some vultures that sustain themselves on the sheep [llamas] that die while carrying the ore from the mountain down to the town, and a few birds of prey who fatten themselves on the rats, of which (374) there are many on the mountain, and especially some that have four white socks and a white underbelly; and some turtledoves with golden and white breasts; and on the mountain are found some little birds like green finches [verdoncillos]. Inside the mines there are some mosquitoes that arise from the great heat and wetness found inside them.

At the first founding of this villa the climate was so harsh that none of the said things could reproduce, so much so that pregnant women, so to as not to endanger themselves, went down to the valleys that surround this villa eight or ten leagues away, such that they and their infants by miracle escaped; and now by luck this rigorous climate has tempered, so that it is not necessary for the women to leave the villa, and the children grow up so well that there are four or six schools all full of children born in this villa.

With the climate being as has been said, the ground abounds in springs, for which reason there are many wells, in which there is a thing worthy of consideration, and that is that in the highest point of the villa they have the water very high, and in the lowest it is very deep, and in the very lowest they do not find any water, which should be the opposite, as one ordinarily sees.

The water they have is not good for drinking, although the Indians drink it, and if in some part the wells have good water, it is toward the place they call Tiopampa, which is to say 'field of sand,' which it is, and which thins the water and makes it better than the ordinary.

The water one drinks in the villa comes to it piped from a quarter league away to a fountain in the middle of the main plaza, where it is allotted to the convents, jail, and private houses. As this water is so cold all year that one cannot determine its thickness, and in the end it is known that it is neither very thin nor very healthy, being as it is thick and crude. This town site has three springs, which they call 'Water of Castile' and 'of the Flemings,' and these are on the shady [south?] side of the mountain; the other spring is on the flanks of the sunny side of the mountain, below the Berrío Vein, and it is only recently that the Spaniards learned of it, and it is the best of all. Although these three springs are good, since they are on the far side and of low volume they have not brought them [i.e., built aqueducts] to the villa.

Being as it is, as has been said, the quality of this climate cold and dry, the ordinary habitation of the houses, learned by experience, is that the lower parts are more healthy than the upper parts, due to the little humidity they have, and similarly the most healthy season in this villa is that of the rains; and the time when there are more sicknesses and indispositions in town, it is during the dry season, which, since it does not rain, they call – and it truly is – the winter time in this land;

and in it there blow some winds, usually from the west (ponientes), which since they come from the area where there are founded some towns called Tomahavis, they call them by this name. These are cold and dry, and thus are not healthy and cause sicknesses like side pains and dryness of the brain, and it is understood that during the time when these winds predominate there are quarrels and tumults in this villa; and yet, it seems that as if to temper the rigor of this season, Nature determines to send some snows that, tempering the dryness of this time with their humidity, make it more healthy.

This villa has on its south side the Cerro Rico that they call Potochi, of a most pleasing form, seeming to be made by hand, and it looks like a pile of wheat in color and shape, although when one sees it up close and walks on it, it is barren and most harsh and does not have the beauty it shows from afar; and for this reason, or because the mines they call *coya* in the language of the Indians, which means to say 'queen,' they call this mountain for its excellence 'Queen.'

This mountain has four principal veins; the first is that of Centeno, and this vein does not cross the mountain like the others, nor does it cut it, as there is another they call 'Crazy' [Loca] that breaks it up and cuts it off, not letting it carry on. The second is La Rica, which traverses the mountain from one side to another, and on the shady side they call it 'the [vein] of the Flemings.' The third is that of Mendieta, and it also cuts across the mountain. The fourth is that of Estaño [Tin], and it also passes across (375) the mountain, and on the sunny side they call it Black Vein.

Aside from these four there are other veins of some importance, such as the Vein of Onate, which by another name is called San Francisco and La Victoria; the Vein of Santo Domingo Beltran, that of San Juan de la Pedrera, the Vein of Berrío, the Vein of San Pedro y San Pablo, that of Polo, the Vein of Corpus, the Vein of the Old Men, the Vein of Las Animas, the Red Vein, the Vein of San Anton, the Vein of the Blind Men, the Hinojosa Vein, and the Vein of Rosario. And because only these are of some substance and those which at present they work and promise some duration, it is not worth naming the many others the mountain has, in part because they are branches off these others, and thus, although they work them, they are of little consideration and do not last long.

All the principal veins in this mountain, as well as the lesser ones, follow one trend, which is north to south, with some inclination toward the western part, although they find some veins that cross these, but they are few and of little importance.

This mountain has two types of ores: *pacos* and *negrillos*. The *pacos* that were worked first and were quite rich, as they were for smelting, and lasted for some time, until later, as things went deeper, the veins became poorer, such that one could not refine them by smelting; and thus they began to refine with mercury, with which, without any other aid, they removed from the ore the silver it contained, and although they lost a lot of mercury they were able to carry on refining, since the ores were still rich and yielded a quantity of silver; and as they continued the work of the mines, little by little approaching the center, so the ores became still poorer, and the loss of mercury was so great that the refiners suffered notable losses, and this town site was on the point of being abandoned, until they hit upon the invention of iron [iron filings used by refiners], which repaired this damage, such that although the ores are poor and little silver was recovered, they did not lose mercury, and thus the gain was significant although moderated, and for this

reason the work of the mines carried on, although always with fewer and poorer ores; and thus, although the iron helped prevent the loss of mercury, there was so little silver being recovered that it was of no benefit, until they hit upon the mixing of *negrillo* [and *paco*] ores [to facilitate refining], with which they began to repair this damage; such that although the *negrillo* and *paco* ores are taken from the same veins, they are of different origin and quality, and the *negrillos* are the root and fundament of the *pacos*, and they are taken to be quite rich but are of such a nature that by themselves one could not refine them, but by adding the *pacos* to them to help, there has been great improvement in beneficiation; because the *paco* ores and earths that formerly remained in the mines, as detritus, plus the encasement rock and gangue and little veins that they discover and work, which would yield six *tomines* more or less per bin of these ores of 50 quintals, adding in one or two quintals of toasted *negrillo* ore, they washed 50, 60, 70, or 80 lbs. of pella [amalgam]; such that one or two quintals of *negrillo* ore commonly increased the pella by 30 lbs.; and although this refining method continued for some time, as it was taken to be good, later they saw its small benefit and the refiners began to approach it with extreme caution, as although the *negrillo* ore had such great effect, it was so costly that it could not be continued, because as the veins where the *negrillo* was removed were so hard and deep, and most of them underwater, and after being toasted and prepared for placing in the ore washing bin, a quintal was costing them more than twelve assayed pesos, and each bin of *paco* ores was needing three quintals of *negrillo*. And seeing this, they hit upon using in place of the *negrillo* a coppery ore, as it was cheap and much more effective than the *negrillo*; such that adding three or four arrobas of coppery ore to a bin of 50 quintals of *paco*, it was more effective than three quintals of *negrillo* ore, the copper costing no more than five or six pesos corrientes a quintal; and so (376) they carried on with great improvement in this method; but, continuing on, they saw that it [too] had little benefit, and also that the fineness of the silver they took out declined considerably, and as a result they searched for many remedies to repair the decline in fineness, which was great, and among them was [the use of] lime, which although at first they used only to clean the silver and bring it up to fineness, experience showed that by adding four or six pounds of lime to a bin of 50 quintals, not only did the silver come out fine, but it made the addition of iron to the bins unnecessary; and it is taken for certain that the invention of lime [processing] has benefited the refiners of this villa more than 500,000 pesos.

It has lately been of such great consideration and effect the mixing of copper, much like mercury and iron were in their day, that it is taken for certain that if God had not rescued this villa with this aid by his own hand, this villa would be totally lost; and so that one understands that it was a rescue from heaven, one may consider that all the refining methods that have been developed in this villa have had inventors to whom this villa has given as a prize great sums of money, and this one of copper, despite being so great, has come into their hands at no cost at all, as no one knows who invented it first, and it is taken for certain that by the invention of the coppers this mountain will last many centuries, and they will come to work it all by open pit, as they are already doing; because in the Veta Rica they have begun to work on the crown of the mountain.

And thus, with the great aid of the copper ore, it appears that the royal fifths are increasing and they take out so much silver and all of perfect fineness. One could add to this another reason for the growth there is in quintos and silver, and that is that the many refiners here all retrieve and refine so many ores that they do not leave a stone on the mountain that may contain some amount of fineness; and thus they occupy many people in searching for them upon the surface of

the mountain, which they call *pallazo*, and although they are old cast-offs and tailings they may yield 10 or 12 lbs., and even as much as 20 lbs. of pella per bin of 50 quintals, all for the small price they have, being bought at two *tomines* a quintal on the mountain, which with the aid of the copper ore come to yield some 36, 40, and 45 lbs. of pella per bin.

There are two other types of refining, which are of muds and re-washings, which at one time were lost and now with the help of the *negrillo*, copper, and lime they extract much silver. The lamas are the fine earth that from washing these ores overflows from the tub, and these they recover from some little lakes made especially for this purpose, and taken from there dry, the Indians mill them by hand, and these flours being toasted, they remove from them some mercury, and later they refine them with the copper and lime, just like the other ores, and they wash the bins of 50 quintals at 18, 20, 25 lbs. of pella, such that the lamas come to have the same fineness, more or less, as the poor *paco* ores. The *relaves* are like sand that, when washing the ore, remains in the bottom of the tub, and after being dried they mill them in the stamp mills, and some they toast with the lamas and refine along with them, and with the ores.

The deepest parts of the mines were cleaned last year, in 1602, the corregidor being don Pedro de Córdoba Mexía; and the utility that has followed their cleaning has been great, because it brought about many and very good diggings in them, and before their cleaning there were none. The richest depths cleaned were in the Estaño [vein] and those of the Veta Rica and Mendieta not so much, but the cleaning of them was of much importance, because as a result, with the close attention they gave them, they discovered many small veins.

The utility that has followed from the lowering [of the royally set price] of mercury is well known by all and particularly for the growth of the royal treasury, since formerly they could not refine the ores of the quality now refined, due to their low fineness, mercury being priced at 89 assayed pesos [per quintal?]; and should Your Majesty mercifully grant it to this town site at cost, or at reduced profit, it would be of much greater gain to Your Majesty than there is today (377) in the sale of mercury, because they would then refine all the poor ores of the mountain, with which Your Majesty would have a great increase in your quintos and in the shared great utility it its benefits, and this would redound in the universal wellbeing of these kingdoms and those of Spain.

The order of the distribution of mercury is to give it to the mine and mill owners with security, and with regard to the discounts, not to do these with the publicity and liberty as was formerly done, and furthermore for the owner of mines and mills who needs a loan in order to refine his silver, and cannot find one among the merchants without great loss and damage, if he needs 20 quintals he asks for 30 and sells the ten, by which means he finances his refining work, and this dealing is commonly done among the same mine and mill owners; but the discounts they customarily did before have ceased, as a result of the decree that was issued, and thus the mine and mill owners go about more relieved, saved from the damages caused to them by the repeated discounts that were done before.

The Indians that ordinarily occupy themselves in the working of the mines, by allotment, are 4,000.

Those who are hired of their own free will, called *mingas*, are 600.

Those occupied in the cleaning of ores taken from the mines to the *canchas*, which are some buildings on the mountain where they collect ore, would be more than 400, and they are many and they make a peso a day and some of them more.

Those who occupy themselves in 'picking' [pallar], which is looking for rocks and earth and dross of loose ore on the surface of the soil, including Indian men, children, and women, who live from this, more than 1,000, and these sell what they collect by loads with a price appropriate to the ore, and it is clearly known that not one of these persons makes less than a peso a day.

The allotted Indians occupied in the mills are 600.

Those working as mingados [free hires] in the mills are 4,000, and some or another make up to 7 reales a day.

The Indian men and women who occupy themselves in refining lamas are 3,000, and they each make a peso a day.

The Indians occupied in bringing ores down [from the mines] on llamas, each llama carrying 7 or 8 arrobas to the mills, are 320.

The Indians occupied in extracting salt and bringing it to this villa for ore refining, by allotment, are 180.

Free hires occupied in bringing salt are 1,000.

The merchant Indians who occupy themselves on their own account in bringing timber for the mills and the construction of buildings on llamas are 1,000.

Those who occupy themselves in bringing firewood for the refineries and to heat the ore bins, between Indian men and women, are 1,000.

Those who occupy themselves in bringing the cocha, which is the dung of llamas, and necessary for heating the ore bins, among Indian men [and women] are 500.

In the recovery of the remaining dung, between Indian men and women, there are occupied more than 200 – for the toasting of the lamas [recovered mill flours].

The Indians who occupy themselves in making charcoal and bringing it to this villa are 1,000.

Those occupied in making candles in this villa are 200.

The Indians occupied in the carriage of the victuals of the villa, including maize from the Frontera de Tomina as well as wheat flour from Cochabamba, Pitantora, Chuquisaca, and other parts; fruits, vegetables, fresh fish from the rivers of the valleys, beef, game, hay, straw for the

horse stalls, ichu grass to sustain the llamas that normally carry ores down from the mountain, which ordinarily add up to more than 18,000, plus more than 1,500 horses ordinarily found in this town – excepting those occupied in other things, 10,000 [workers].

The Indians occupied in these various said tasks exceed 30,000 in all, although the above sums do not add up to so many, on account of this being a very moderate rendering; and they are settled permanently in their houses, women and children returning there, with another (378) 30,000 Indians in this villa occupied in diverse employments and entertainments, all those needed or forced, [living in] in fourteen parishes that there are of them [i.e., Indians] in this villa.

There are 4,000 Spanish men and 2,000 women, ascertained by the census of the priests. There are also five monasteries: Saint Dominic, St. Francis, St. Augustine, Our Lady of Mercy, and the Company of Jesus. Fourteen parishes, one of Spaniards, which is the main church, in which there are five curates: three of Spaniards and two of Blacks, which they call ‘de las piezas.’ There are two sexton-priests (sacristanes sacerdotes). And thirteen parishes pertain to Indians, nine of them served by parish priests, two by Dominicans, and two by Mercedarians, plus ordinarily there are more than 40 clerics who sustain themselves on alms.

There is a hospital in which they cure both Spaniards and Indians, and it ordinarily has some 100 sick and wounded. It has a rent of 30,000 pesos corrientes; it has its pharmacy, physician, surgeon, phlebotomist, and male nurse, plus many black and Indian servants.

There are tribunals with jurisdiction, the corregidor and his lieutenant, two alcaldes ordinarios, two of the Hermandad, a probate judge for those who die intestate, an alcalde of mines, three inspectors for the mountain, a bailiff (alguacil mayor) with 14 lieutenants, three royal judges, two executors for collection of the royal treasury, a receiving judge for sales taxes, three lesser publicans (receptores), two executors, an alcalde in charge of water, and a bailiff for the mountain.

There is a commissary for the Holy Office [of the Inquisition], a commissary for the Holy Crusade, a vicar, a bailiff for the Holy Office as well as three notaries and six familiars, and for the ecclesiastical court a district attorney, three lay district attorneys, and two notaries.

There is an accountant for mercury, plus another accountant for grains, paid monthly by the Indians, and a public defender for the Indians; there is a senior assayer of [silver] bars along with another assayer in the royal mint, which also has its own treasurer, and they coin each year 150,000 marks of silver or more [note says alternative copy says 200,000 marks].

There are four public notaries, plus one for mines and one for the royal treasury, and another for intestate estates, and more than 40 royal scribes.

There are forty lawyers, four clerks, four solicitors, three physicians, six surgeons, ten phlebotomists, and three pharmacies.

It is a town very well supplied, all by cartage, as there is an abundance all year, even an overabundance, of hens, chickens, goats, and vizcachas.

There are fruits of the land and of Castile; the grapes last 8 months and at times they bring them from Arica, which is 100 leagues away; and when there are no green fruits, there are apples brought from Cusco, which is 190 leagues away, from which they also bring a great quantity of sugar and many types of conserves; and from Lima, over 300 leagues away, they bring fragrant waters.

The many stores ordinarily stock salt fish from the sea, and despite being 100 leagues away from it, they also bring fresh fish without salt. And likewise they bring from the province of Collao, more than 130 leagues away, some fish they call *zuches* [suchi], without a grain of salt; and so that they are not damaged what they do is, after taking them from the lakes in which they grow, they put them on ice overnight, and the ice preserves them from corruption during the time it takes to reach Potosí. And despite the fact that the land is so cold, such that there is no orchard for ten leagues around, there is always a great abundance in the plaza of limes, oranges, and at times a great quantity of thistles, melons, and bananas (379) brought from over 80 leagues away.

The main church of this villa is adorned with very fine silver lamps, among which is one weighing over 400 marks, and it is so finely worked that it cost 12,000 pesos, which is to say at 30 pesos per mark.

There are in this place 80 grocer's shops, according to the account book of the publican who collects the excise, and in them there is a great deal of spending.

There are 25 stores belonging to Indians that sell hats, of which many get used up [and thus commerce is brisk], both from Castile and from Lima, and made in this place, and as the merchants of them are Indians, it is impossible to know the quantity.

There are also 700 or 800 men, more rather than less, who are idle, and whose occupation is ambling and gambling, and there are 120 women, [respectably dressed] in shawls and petticoats, who are openly known to occupy themselves in the amorous profession, and there are a great many Indian women who occupy themselves in the same business.

This town has a huge expenditure on wood, such that the amount consumed cannot be determined, as there are so many dealers in it; but so that one may get an idea of how large the expenditure is, I will say that one beam that they call an axle, which is 22 feet long and two-feet square in width, is worth 900 and even 1,000 assayed pesos; and a beam they call a mortar [for crushing ore], of the same width but ten feet long, is worth 400 assayed pesos, and a beam they call a mallet, two and a quarter yards long and one palm wide is worth 14 pesos; and an ordinary plank 10 pesos; and following from this one can imagine the great expenditure there has to be in wood for the 128 stamp-mill heads there are here; leaving aside all the houses of Spaniards with their doors, windows, and recessed cabinets of cedar, most finely finished in every way. And the ceilings of the houses are of some staves they call agaves, which although hollow inside are incorruptible, and are three or four yards long, and about the thickness of an arm, and each one is worth 4 reales.

There are six confectioners shops and six of pastries and twenty houses where they make food for many people, which for 30 pesos a month they provide food for a person which is [mostly] meat and fish.

There are more than 100 women's houses where they are occupied in laundering clothes, and it is a lucrative thing and they have much to do, as they pick up and to wash and starch a flat lace collar at 4 reales, and any fancy one at 8 reales.

The quintos alone of this villa, plus the one and a half percent of assay fees (*cobos*), are worth to Your Majesty 900,000 pesos a year, and this is mentioned for its great size, as last year, 1602, they extracted from the mountain 4,262 quintals of clean and pure silver, ascertained by the royal account books, and since then they have taken out more.

There are above 100 men on the mountain who are occupied as *mineros* [mine overseers].

Along the creek through town there are 83 stamp-mill heads, and in Tarapaya 42, and in Tabaconuño 3, which makes 128 heads in all. Each head has 7 or 8 mallets, and some 10. Each head mills between day and night [i.e., per 24 hrs.] 150 quintals of ore; and the water that powers the stamp-mills in town is rainwater recovered in nine man-made lakes; and until the year 1601 the water in these lakes lasted 6 or 7 months, and since then it has lasted almost all year, as they have added 3 lakes to the 6 already built, which makes nine lakes in all, and with the water added from the added ones there will be enough for the whole year. There are occupied (p380) in each of these mills two or three men [as overseers] and in some, more.

The mountain has a tremendous infinity of veins and each day they are discovered, the same which is measured from its crown [down] to the Guaico de Santiago, which is the best place for measuring it, and it has been found that it falls from the crown to the said Guaico 11 *cordeles* [a surveying unit], and each *cordel* measures 168 yards, which makes 1,848 yards of drop; and the same crown of the mountain has a circumference of two *cordeles* of the said 168 yards, which makes 336 yards; and its circumference was measured at its foot, measuring it from the top of Huayna Potosí, and they found 28 *cordeles* of the said 168 yards, which makes 4,704 yards, which according to the reckoning of those who understand [these things], is a league and a half; and its diameter is 1,498 yards. And upon the crown of this mountain there is placed a cross; and one could truly say that the base of this cross is worth more than a 100 million.

They make each year in this villa such an infinite amount of chicha, which is a drink the Indians imbibe, made from maize flour, that it is an almost unimaginable thing, much less to count and determine the quantity produced; and the means of figuring out the true quantity they spend on it is done in the following manner: There arrive in this villa each year 50,000 bushels of maize flour used only for making chicha, and from each bushel they figure that they make 30, 32, or 34 jugs of chicha, and that from the average bushel one gets 32 jugs, all the chicha that is made from the said 50,000 bushels of flour equals 1,600,000 jugs, and they sell each jug for 8 reales, which in assayed silver makes 1,024,000 pesos.

There are in this villa 28 houses where dough is made, all to sell, and it appears according to the account made that every day of the year they make 250 bushels of flour worth of dough, which

in a year makes 91,250 bushels; and they take from each bushel of flour a quantity of bread dough worth 18 pesos corrientes, with each loaf of one pound selling for one real, which adds up for the year to 1,642,500 pesos corrientes; and from each bushel they get 2 pesos, 2 tomines of fine bran, which makes 215,312 pesos corrientes; and for [rough] bran they get 3 reales per bushel, which makes 1,892,030 pesos corrientes, which in assayed pesos is 1,210,900.

And according to the arrival books of the receiver of wine sales taxes it seems that there enter each year and there are sold in this villa 50,000 jugs of wine, which, at 10 assayed pesos a jug, makes 500,000 pesos.

They kill each year in the slaughterhouse of this villa, according to the book of the one in charge, 4,000 head of beef cattle, which, at 7 assayed pesos each, make 28,000 pesos.

There are many people in this place with slaughterhouses for Castilian sheep, and according to what has been assessed, they go through 1,000 sheep a week, and adding that for the Lenten season, it comes each year to 50,000 sheep, which, at 2 pesos corrientes makes 100,000 pesos, or 64,000 assayed ones.

This place has an extraordinary expenditure on llamas, and it seems that the number of them that come loaded with wine, coca, and other comestibles is some 40,000; and beyond these there enter some 60,000 llamas brought by the Indians who come to do the mita for the mountain, on which they bring 40,000 bushels of food for their sustenance; and this livestock does not turn around and leave, as it is all consumed in this villa, such that all told there are 100,000 llamas, which, at 4 assayed pesos each, make 400,000.

And although it is mandated by law that the Indians not slaughter llamas, it cannot be prevented, and thus it is figured that between herd and pack llamas they kill each year in the Ranchería [Indian townships] 40,000 head or more, which at 3 assayed pesos each make 120,000 pesos.

And as for the shipments of coca that enter this villa, they sell (p381) each year 60,000 baskets, which, at 6 assayed pesos each, make 360,000 pesos.

And as sugar [el dulce] is generally agreeable to all, there are few who fail to eat it, and thus they consume each year some 6,000 arrobas or more, which, at 8 assayed pesos each makes 48,000 pesos.

And no less notable is the taste for food with hot peppers, and as a result they consume each year 14,000 baskets of it, which at 4 assayed pesos each makes 56,000 pesos.

And likewise there arrive in this villa every year 3,000 arrobas of conserves from Cusco, Chuquiabo, Chuquisaca, and other parts, which, at 10 assayed pesos each make 30,000 pesos.

And cane syrup is consumed at some 2,000 jugs a year, which, at 8 assayed pesos each make 16,000 pesos.

There arrive each year from Paria and other estancias surrounding this villa 20,000 cheeses, which at 10 assayed tomines each make 25,000 pesos.

And likewise they sell each year 25,000 little jugs of lard, which at 4 assayed pesos each make 100,000 pesos.

Of hams, bacon, loin, and pork tongue, which comes from Tarija, Paria, and other parts, they spend each year 30,000.

And according to the registry they have made of those who have stores selling jerky, it seems they consume each year 30,000 arrobas of it, which, at an assayed peso and a half each makes 45,000 pesos.

They used to sell in this villa, prior to the ash [i.e., volcanic eruption] in Arequipa (El Misti, 18 Feb. 1600), 600 quintals of raisins each year, and now they do not even manage to sell more than 200 quintals, which at 25,000 assayed pesos, make 5,000 pesos (?).

And according to the entry book it appears that they sell each year 1,000 quintals of figs, which at 12 assayed pesos each make 12,000 pesos.

There are consumed each year 6,000 arrobas of salt fish from the sea, which at 4 assayed pesos each make 24,000.

This place is so reliant on fish from the lake of Chucuito that if it were not available it would be difficult to make it through the Lenten season, as it is more accommodating to the needs of the people, and the Indians are sustained by it, and thus they spend each year on this product more than 30,000 assayed pesos.

And as the cost of fish goes together, I say they have figured that they spend each year on shad, dorados, and other fresh fish 12,000 assayed pesos.

Likewise they consume each year, as has been ascertained a thousand ways, 2,000 small jugs of olives, which at 10 assayed pesos each make 20,000 pesos.

And with the same care olive oil has been assessed, and it seems that each year they consume 2,000 jugs a year, which at 8 pesos each make 24,000 pesos.

And as vinegar is desired along with oil, it would be well to put down its consumption; and that which they have been able to ascertain is that they consume 8,000 jugs, which at 4 assayed pesos each make 32,000.

And as it is of no less consideration the expenditure on straw and hay, it would be well to put down here how each day they spend 250 assayed pesos only on hay and straw, which in the course of a year makes 91,250 pesos.

And in garden vegetables they spend every day some 60 assayed pesos, and this has been ascertained with ease, which in a year makes 21,900 pesos.

And as fruit in this area is available all year, and the bulk of it is sold in the public square, it is easily ascertained that every day they spend 300 assayed pesos on it, which in the course of a year makes 109,500 pesos.

Beyond the 40,000 bushels of foods brought in listed above under llamas, it appears they consume 50,000 bushels of whole grain maize, and this is not a lot given the infinity of Indians there are (p.382); which, without my going on at length about it, I can say with truth that they surpass 120,000 souls, and it is quite certain that there are at least another 120,000 dogs, and they consume more food than even the Indians (?) [que es mas lo que estos consumen de comida que no los indios]. They ordinarily sell each bushel of maize at 5 assayed pesos, which make 280,000 pesos.

And likewise they consume 20,000 bushels of chuño, which is – for those who do not know – a very hearty food, made of something called potatoes, a type of truffle that grows underground, and from there they take them and dry them and then give them this name, chuño; and they sell a bushel for 6 assayed pesos, which makes 120,000 pesos.

And likewise they consume 40,000 bushels of potatoes, which are the same as those mentioned above, and it is the food of the Indians, and even of some Spaniards, and they sell them for 3 assayed pesos a bushel, which makes 120,000 pesos.

And aside from these last foods the Indians have another food that also grows underground, planted by hand, which they call ocas, and are something like carrots, and it is a delicious food and is sold by the bushel, and a bushel costs 3 assayed pesos, and each year they consume 40,000 bushels, which at the said price makes 120,000 pesos.

This villa also has 24 stores selling Castilian [European] dry goods, and according to their books and other assessments that have been carefully done it appears that each year 400,000 assayed pesos worth of silver is spent in them.

And it is of such importance the linen that comes to this villa from Tucuman each year that without it the servile class of blacks and Indians would go about barely dressed; and with this, along with other things brought from Tucuman they spend some 100,000 pesos.

And it is of no less consideration, also to clothe the poor folk and servile class, the broadcloths that come from Quito, Guánuco, and Mexico, grograms and baizes from Guánuco and other parts, such that there is never a year in which they do not spend on all of these together 100,000 assayed pesos.

And they also consume each year 30,000 yards of serge, which at 6 reales [a yard] makes 14,400 assayed pesos.

Beyond the 25 stores mentioned above belonging to Indian hat makers there are 8 Spanish hat makers' stores, and having checked with these, they sell each year 14,000 hats, which at 13 pesos corrientes each makes 182,000 pesos corrientes and in assayed pesos 106,480.

Likewise it seems they consume each year 18,000 pieces of ropa de abasca [an Andean fabric], which at 7 assayed pesos a piece makes 126,000 pesos.

And as for the consumption of cumbes [another Andean fabric], it seems, according to the figure given by those who sell them, that each year 6,000 assayed pesos is spent on them.

And as it is such a necessary thing to bring down ore from the mountain in gunny sacks, along with all the foods and flour carried in them, it is clear that there should be expenditure on them, and indeed there is no year in which fewer than 100,000 gunny sacks are used, which at a peso corriente each makes 100,000, and in assayed pesos 64,000.

There are in this villa 28 shoemakers' shops, and according to what they have said, they consume each month 150 dozen goatskins (cordobanes), which yearly makes 1,880 dozen, which at 3 assayed pesos makes 54,000.

Each day, all told, there are consumed in town 60 decks of cards a day, which in the course of the year makes 21,900, which at a peso and a half corriente equals 32,850 pesos, and assayed, 21,000.

There are in this town six master farriers and among them all they go through 72 dozens of horseshoes a week, which per year makes 3,816 dozens (p.383), which at 7 assayed pesos each dozen adds up to 26,700 pesos.

There are four wax sellers' shops, and among them all they consume each year 200 quintals of wax, which at 130 assayed pesos makes 26,000.

There arrive each year from Brazil 450 black men and women, which at 250 assayed pesos each makes 92,500 pesos.

Given the fact that the discovery of lime refining occurred in this year of 1603, they do not use as much iron as they formerly did, and indeed there was not a year in which they did not consume 4,000 quintals of iron, leaving aside many crowbars and hammers that arrive already made from Lima, Castile, and other parts; and thus, from today forward, leaving aside the iron that comes worked, it will be sufficient for the things that must be fabricated 2,000 quintals of iron, which at 32 assayed pesos makes 64,000 pesos.

Ordinarily, there are 4,000 regular mita Indians working in the Cerro Rico of this villa; [and of] pallares and apires, 2,000, which together makes 6,000; of these 5,000 work with candles, and they spend on them each week 4 reales, which in the course of a year makes 132,500 pesos corrientes, which in assayed pesos makes 84,800.

Likewise they spend in the 60 stamp-mills located along the banks of the city creek [Ribera] and in Tarapaya 6 pesos in candles a week per mill, which in the course of the year makes 14,000 assayed pesos.

In addition to the above expenditure, they consume in the Indian townships [rancherías] each day 160 pesos' worth of candles, which in the course of the year makes 37,376 assayed pesos.

And in the town, between Spaniards and other people, they spend every day 150 pesos corrientes on candles, which in the course of the year makes 35,040 assayed pesos; and in all the expenditure on candles comes to be 161,216 assayed pesos.

And as said before, there are in the town 28 dough makers [bakeries], and checking with them, eight say that they consume 20 pesos' worth of firewood a day, and the other 20 spend 10 pesos, which adds up to 360 pesos corrientes a day, and in the course of the year 131,400 pesos. And in the 6 pastry shops that exist they consume 8,500 loads at a peso corriente each; and certain basins used to refine ore by adding heat also consume firewood, and in private houses they consume 10,000 loads at the said peso corriente per load, which in all is [152,000] pesos corrientes, or 115,136 assayed pesos.

They make each year 27,000 ingots [lit. 'pinecones'] of silver, and to remove the mercury from them they consume for each ingot two arrobas of charcoal, which makes 13,500 quintals; and the people to whom these ingots are handed over consume in the 'reburning' of them, for every 10 ingots, four arrobas of charcoal, which makes 2,500 quintals, and from these 27,000 ingots they make 9,500 bars, and each bar consumes an arroba of charcoal, which makes 2,375 quintals. And among the blacksmiths they consume each week 200 quintals, which in a year makes 10,600 quintals, and among the silversmiths they consume each year 630 quintals, and in the Royal Mint 800 quintals; and the guairador Indians consume 500 quintals, and the folk of the town consume 54,750 quintals, affirming this in visits to two buildings that serve as warehouses, where it is sold by the Indians, who are the lords of this commodity; such that altogether, it appears, 85,655 quintals [are consumed annually], which at 2 pesos corrientes adds up to 137,047 assayed pesos.

They bring down [from the mines] each year, according to the llama drivers, and attested by their books, 2,500,000 (p.384) quintals of ore; and the Carangas Indians, who also occupy themselves in this, bring down 200,000 quintals, for which they pay an assayed tomin to bring down each quintal from the mountain to the town, such that the said journeys add up to 337,500 pesos.

The ores from the upper sector plus another 300 quintals that are bartered each year are refined in 60,000 basins, mixed into each basin 50 quintals [of ore], and [then] in each basin 5 quintals of salt, which comes to be 300,000 quintals. And in the refining of the slimes [lamas] and other things they consume 300,000 quintals, which at 6 assayed tomines makes 247,500 assayed pesos.

For the refining of the 60,000 basins they give each one 8 rounds, which cost 4 reales each, such that each basin costs 4 pesos corrientes and all of them together 240,000, which makes 153,600 assayed pesos.

There go in the pack train to the mountain 28 [sic] llamas, and there come in each standard mita 5,000 llamas, and for the sustenance of this livestock they expend each day 400 loads of ichu grass, which costs 4 reales. And likewise they consume in the buildings and town works, and on houses all covered with it each day 200 loads, at half a peso each, which each day amounts to 300 pesos corrientes, which comes to 70,000 assayed pesos a year.

For the refining of all these ores they take out of the royal storehouse, as attested to by the royal account books, 5,750 quintals of mercury, which at 70 assayed pesos per quintal makes 402,500 pesos.

For the 60,000 refining basins already noted in this account, they heat them not only with firewood but also human excrement, and that of llamas, called ocha, and with a type of resin they call llareta (yareta), and altogether they consume 800,000 loads in the following manner: the basins consume 80,000 loads, and in the roasting of negrilla ores and firing of the slimes they consume 270,000 loads, and in making chicha they consume 100,000 loads, and in the firing of pottery and bricks and tiles and many clay instruments for the refineries they expend 200,000 loads, and for the ordinary needs of the Indian households 180,000 loads, which all add up to 800,000 loads, which at 4 reales make 400,000 pesos corrientes, or 256,000 assayed.

Of the 6,000 Indians mentioned before that work on the mountain, 5,000 work by decree and 1,000 are 'aventureros' who hire themselves out for 9 pesos each per week, which makes 52 weeks a year, and thus the cost of this Indian labor is 468,000 pesos corrientes; and the 5,000 ordinary mita Indians get two and a half pesos a week; but moderated at 2 pesos a week each according to cedula, it comes to 10,000 pesos corrientes a week, which in a year of 52 weeks makes 520,000 pesos corrientes, and altogether, in assayed pesos, adds up to 632,320.

And in the pack train of the 5,000 llamas mentioned above there are occupied 312 Indians, with 16 llamas per Indian, and each Indian receives for his work each day one peso corriente, which adds up in a year to 59,900 assayed pesos.

By way of summary and total for all the listings of required and necessary expenditures put down in this account, they spend each year in Potosi 8,862,349 assayed pesos.

(p.385) The offices that are sold in Potosi and their values:

	Pesos
The bar held by the alguacil mayor	100,000
Chief Assayer	50,000
Treasurer of the Royal Mint	50,000
Assayer of the same	30,000
Lifetime fiel ejecutor	25,000
Royal Ensign	25,000
Depositario general	24,000
Receiver of penas de camara	14,000
There are 19 offices of 'veinticuatro' [town councilman],	

and each one is worth 9,000 pesos, which makes	181,000
Town council scribe	36,000
Three public notaries at 20,000 each makes	60,000
Scribe of mines	20,000
Scribe for the deceased	8,000
4 procuradores del numero at 6,000 each makes	24,000

The sum and total value of all these offices is 647,000 assayed pesos.