

THE HISTORIC ROUTE OF THE MINING OF MERCURY IN SPANISH AMERICAN

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Introduction

A bundance of precious metals in Spanish American was a decisive factor for the development of the more important world economic activities during at least 16th, 17th, and 18th Centuries. The Viceroyalties of Peru and New Spain were the main sources of such wealth. Gold and silver were carried to the Iberian Peninsula during three centuries. As a consequence, demand for manufactured products made in France, England, Holland, Hamburg, Genoa, Belgium and even China grew in Spain. It can be said that one of the most important causes of the European economical development during that period is to be found in Peruvian-Bolivian and Mexican mines. As it was stated by Gonzalo Gomez de Cervantes “*Si los mineros se durmieran un año o más, todo el mundo haría lo mismo; así, todo el peso del mundo descansa en las espaldas y voluntades de los mineros.*”¹ (If the miners fell asleep one year or more, everybody should fell asleep too; so, all the weight of the world rests on their backs and wills).

Mining was a key activity for the prosperity of the Crown of Spain. Peninsular authorities remembered constantly this fact to colonial ones: “*También os encargo mucho que tengáis mucha cuenta con la labor y beneficio de las minas descubierta, y en procurar que se busquen y labren otras de nuevo, pues la riqueza de la tierra es el nervio principal de su conservación, y de su misma prosperidad resulta la de estos Reinos.*”² (I do also ask you to be very involved in the work and exploitation of mines already discovered, so as looking for and exploiting new ones. Land’s wealth is the axial reason to conserve it. **Its prosperity is cause of the prosperity of these Kingdoms**).

At a first moment the mining policy was orientated to take possession of the gold (there were more than 6 gold tons, fruit of Atahualpa Inca treasure in Peru). In 1540 a new period began, being the silver and mercury exploitation strongly promoted by the mean of tax profits as the

reduction of the *Quinto real* tax (a fifth of everything seized) to tenth. Exploitation of “white gold” in New Spain Viceroyalty was made in already discovered mines in the south and central regions of the country and new discovered mines in the north (Zacatecas, Guanajuato and Durango). In Peru it was continued the exploitation of the mines of Porco and begun the work in new ones like Potosí (1545), Hatunzulla, Chumbilla, Pasco, and Oruro). In Porco and Potosí it was used a metallurgical traditional technique consisting in the oxidation in furnaces named *guayras*. It was a process used in the Inca’s times. The system was fast and worked so well when dealing with rich minerals. Nevertheless, high fuel costs, the necessity to use high quantities of it (wood and *ichu*), combined with the falling quality of ores, make it uneconomic. Furthermore there was the problem of low manpower availability for exploiting and refining works. It gave as result a no positive cost-effectiveness relation. As a consequence many experimental systems were tested. The most advantageous and further the most used one was the *patio system or system of cold amalgamation*³. It was developed by Bartolome de Medina in 1554 at Pachuca. Mercury was the main component to apply this system and the one developed by Alonso Barba⁴. “These system implied a high consume of mercury. So, it can be appreciated that in the patio system, one of the most used, it was necessary 1.5 Kg. of mercury to obtain 1 Kg. Mercury was the main component of the process. It was essential for amalgamation and, by this reason, it became a key product in the whole economic system of that time”⁵. The Crown of Spain was conscious of the value of mercury to sustain all the silver process of production. By this reason, it decrees a system of monopoly both for its production and its commercialization. A Royal Letters Patent given in Valladolid, March 4, 1559 established the Royal monopoly on quicksilver. It also disposed that the mines of Almadén are the official supplier of mercury for the

³ On the process of amalgamation see Mansilla, 1992; Bargalló, 1970.

⁴ Other amalgamation system practiced and used in South America was the called *beneficio de cazo y cocimiento* discovered by Alonso Barba (1571, Peru).

⁵ Mansilla Plaza, Luis. *Almadén en América a través de las rutas del mercurio*. In *Memoria del Nuevo Mundo. Castilla-La Mancha y América en el quinto centenario*. Castile-La Mancha. University. Perea, 1992. p 91.

¹ Calvo, Tomás. *Iberoamérica: de 1570 a 1910*. Peninsula Editions, Barcelona. 1996. pp. 137.

² Chapter LXVII of the Instruction given to José Luis de Velasco, sucesor of the Marquis of Cañete as Viceroy of Peru. In Serrera, Ramón María. *Tráfico terrestre y red vial en las Indias españolas*. Lunewerg Editores S.A. Barcelona. 1992. p. 152.

mines of New Spain.

Problems related to mercury's transport from the peninsular territories to Mexico and management deficiencies in Almaden, make it necessary to look for new sources of supplying mercury in the colonies. A Royal Letter from Felipe II, dated November 14, 1562, ordered the confirmation of the discovery of mercury in Peru: "Que el visorrey haga la experiencia de y vea de qué fruto será esto y qué azogue podrá labrarse y si sobrase algo se puede remitir a Nueva España por ser muy provechoso por poderse llevar de allí con más facilidad que de aquí. Envíese al virrey una relación de la forma que acá se tiene en beneficiar el azogue."⁶ (By this disposal, the King ordered to its Viceroy to verify if it was really mercury the product discovered in Peru. If it was mercury, the King asked to study there was enough to supply to the Mexican silver mines, because it would be easier to transport mercury from Peru to New Spain than from the peninsular territories. Finally the King asked the information of the exploitation and refining system used.)

Discovery of mercury mines in Huancavelica was made by Amador de Cabrera (1564). Metallurgist Fernandez de Velasco (1571) got the successful application of the patio system in Potosi. The work of both gave place to what has been called the "happiest marriage in the world", the marriage of Huancavelica and Potosi. "From that moment, all the legendary wealth, that gave place to a silver river legend astonishing Europe, was going to get a real spring in Potosi. However, it was Huancavelica where the essential mercury was located. Without Huancavelican mercury it was impossible to process the precious metal that arouse the imagination and greed of Spain enemies"⁷

The invention on the *aludeles* furnaces was one of the most important successes for the mining history. It was a creative solution to the existing problems to obtain mercury from cinnabar. It was a result of the work developed by Lope de Saavedra Barba in 1633. He was the real discoverer of a new and successful system to process cinnabar. The system used by Saavedra Barba has been applied since its creation not just in cinnabar processing, but as a basis for many other improvements in the mining process. It consisted in a process of decomposition of cinnabar with oxygen in a big

scale. Bargallo Ardevol⁸ describes furnaces and its functionality. Furnaces were around 2,75 m. tall and had a diameter of 1.20 m. It has an internal partition in its third superior part, with vault form. Mineral was putted over it. Down of the vault it was putted the firewood. Its superior part was connected with the *aludeles* (mood recipients) by four tubes (albecas). *Aludeles* were 0,40 m. length having two perforations at its ends and connected one each other in such a way that they conform long pipes where the mercury fumes get condensed. Pipes of *aludeles* are posed in inclined plains with the form of an opened "V". Mercury condensed in the *aludeles* got out by a hole, being collected in a channel of the downer part of the inclined plains.

Lohman Villena⁹ the most important historian of the mine of Santa Barbara considers that the key element of the invention of Saavedra Barba was the condenser of mercury fumes. The system was applied in the mines of Almaden in 1646 by Juan Alonso Bustamante. Bustamante observed the functioning of that system in Huancavelica and reproduced it in Almaden.

From Almaden and Huancavelica it was extended a route which main axes connected them with the silver mines in Mexico and Peru. This route, with its land and water sections is a symbol of the economical system of that epoch. It is the **Historical route of the mining of mercury in Spanish American.**

The Historic Routes of the mercury within the Intercontinental Spanish Royal Road

1. From Almaden to New Spain.

(1) First section: Almadén-Sevilla-Cádiz:

The peninsular itinerary from Almaden to Cadiz had its starting point in the mine of Almaden¹⁰. From immemorial

⁸ Bargalló Ardévol, Modesto *La minería y la metalurgia en la América Española durante la Época Colonial*, Fondo de Cultura Económica, México D.F., 1995. p. 266 y 267.

⁹ Op. Cit. p. 323 - 324.

¹⁰ The ICOMOS Internacional Committee on Cultural Routes is currently promoting the Project "Spanish Intercontinental Royal Route". One of the main aspects being studied is referred to the Historical Mining Sites. Between Spanish Mining Sites, the author of the present article has been in charge of recording the Almaden mercury mines. It has been detailed information on its location, historical data, main mining characteristics, main historical stages, its most important heritage goods and its state of conservation. See: *Cutipé Cárdenas, Rocío. Almadén. In Encuentro Científico Internacional sobre itinerarios culturales. Identificación, Promoción e Inventario de los Itinerarios Culturales. Fortificaciones, puertos y ciudades en la estructura*

⁶ A.G.I. Patronato, 188; ramo 25; in Lohmann Villena, Guillermo. *Las minas de Huancavelica en el siglo XVI y XVII*. Pontificia Universidad Católica del Perú. Fondo Editorial. 2da. Edic., Lima, 1999. p. 18.

⁷ Lohmann Villena, Guillermo. *Las minas de Huancavelica en el siglo XVI y XVII*. Pontificia Universidad Católica del Perú. Fondo Editorial. 2da. Edic. 1999 Lima. p. 61.

times this mine had distinguished because of its famous pieces of cinnabar. Mining activities have generated associated economic and cultural processes marking the architectural and mining technology ensembles today existing in Almaden.

To prepare the material for a long trip, mercury was sacked in *baldeses*¹¹. Capacity of the *baldeses* depended of the transportation system that was used: carts or mules. Once in Seville the weight of the shipment was controlled again by a notary and then conducted to a bonded warehouse in the Real Atarazana. The reception was in charge of the *Factor of the Casa de la Contratación* (Trade House's official). Once in the warehouse, mercury was packed again, following a very precise proceeding established by the Crown. Firstly, the mercury was sacked in three *baldedes* of one quintal and a half. Secondly, the sacks were barrelled in wooden barrels nailed. Fourthly, the barrels were putted in a special wooden crate, nailed and tied with hemp ropes. Finally, the crate was wrapped with esparto and hemp, putting over it a plaque with the Royal coat of arms.

The route between Almaden and Sevilla, as indicated above, should change depending of the transportation system, if it was an urgent delivery, the time of year and the conditions of security of the routes. Carts and mule trains set out from the Cerco de Buitrones in Almaden (specifically in the Puerta de Carlos V, declared as good of cultural interest by Spanish Government). Both, carts and mules, followed the same path, crossing by Santa Eufemia, El Viso, Hinojosa del Duque, Valsequillo, Fuenteovejuna, and Granja de Torrehermosa until Azuaga, a village situated in Badajoz province. Once in Azuaga the route was divided in the following routes¹²:

- a) First carts route: Azuaga – Berlanga, Llerena, Montemolín – Monasterio Santa Olalla – El Ronquillo – Castilblanco – Alcalá del Río – Guillena – Santi Ponce – Sevilla.
- b) Second carts route: Azuaga – Guadalcanal – Malcocinado – Alanís – Constantina – Lora del Río – Alcolea – Tocina-Brenes – Alcalá del Río – Guillena – Santi Ponce – Sevilla.

de los Itinerarios Culturales. Rutas de Comercio, Control de Territorio, y Peregrinaje. (En prensa).

¹¹ These leather containers were of the best quality. They were used until the first years of 19th Century. In 1751 it was also introduced the use of bottles and in 1784 iron tins..

¹² See Matilla Tascón, A. *Historia de las Minas de Almadén*. Vol. II. Madrid. 1987. Cited by Mansilla Plaza, Luis. *Almadén en América a través de las rutas del mercurio. En Memoria del Nuevo Mundo. Castilla-La Mancha y América en el quinto centenario*. Castile-La Mancha University, 1992. p 95.

- c) Mules' route: Guadalcanal – Malcocinado – Alanís – Cazal de la Sierra – El Pedroso – Cantillana – Brenes – Sevilla.

Normally, carts departure was in april. The time employed to run the road was of 6 weeks approximately. Mules were used just in urgent situations, because of the high cost¹³ of this system. Mules take one week to arrive to Sevilla. Initially the loading was made in Seville. Later, because of the changes in the riverbed of Guadalquivir River, it was made in Cadiz.

1. Atlantic mercury route.

A Real order disposed the travel of two annual fleets to Indias. One of them¹⁴ went to Veracruz port in New Spain. The second one, called the *Flota de los galeones*¹⁵ went to Portobelo port in Tierra Firme. The system of fleets and galleons was regularly working until about the middle of 17th Century. If normal fleets were not ready, it was replaced by the Mexican *Flota de Barlovento*¹⁶ or the *Naos de aviso*¹⁷. In rare occasions, the travel was made by the *Flota del azogue*¹⁸. This system completely disappeared in 18th Century, with the liberalization of maritime traffic.

All the fleets made a similar course until the Antilles. Then of it, those ships going to New Spain continue its navigation until unloading in Veracruz. *Galleons* realized one stop in Cartagena de Indias, further unloading in Portobelo. The normal duration of the trip was of three months from Sanlúcar de Barrameda to Portobelo.

This maritime itinerary was also the way of intense cultural interchanging between not just Europe and America, but also the Orient Kingdoms. On the positive consequences of the mines exploitation for commercial activities in America, Mexican writer Gustavo P. Salcedo states: *Without mining, it should have not been possible to maintain the*

¹³ During the 18th its cost was of 18 *reales* per quintal, while the freight charge by a quintal was of 8 to 10 *reales*.

¹⁴ The fleet was protected by two galleons. Mercury was loaded by these galleons because of its better security conditions. Usually, the fleet set sail from Cadiz in May.

¹⁵ The *Flota de galeones* was composed by merchant ships and 8 military galleons. They usually set sail from Cadiz in August.

¹⁶ Very simple structure galleons, authorized to carry mercury in exceptional occasions.

¹⁷ Ships which function was to transmit the official communications between Spain and America. Of a simple structure, they were not allowed to load merchandise. However, it was usual that they carry mercury and agricultural products.

¹⁸ It was composed only by two warships, escorting a merchant one.

*interchange of our products in a mayor scale and to reach the cultural and economical development in our country. The Galeon de Manila or the Nao de la China, were the way for our commercial relations with Orient. Its culminant moment was the Fair of Acapulco. It was the most important trade fair around the world. The fleets coming from the Old Continent were constantly arriving to our coast. By this way, we keep a near contact with Europe. The Fair of Jalapa was a culminant moment in the European route.*¹⁹ Parish Tomas Gage is equally eloquent when he describes commercial movements generated by the arriving of galleons to Portobelo: “*Era digno de ver cómo los comerciantes vendían sus mercancías, no al menudeo, sino por mayor; a piezas y al peso; cómo hacían sus pagos, no en dinero o moneda, sino en barras de plata que pesaban y daban por el valor de las mercancías. Esto no duró más que quince días, durante los cuales los galeones no cargaron otra cosa que barras de plata; de suerte que puedo decir con atrevimiento y sostener que durante esos quince días no hay una feria más rica en todo el mundo que la que se hace en Porto Bello entre los comerciantes españoles de Perú, Panamá y otros lugares vecinos.*” (It was worth seeing the way that merchants sold their freights, not selling retails but wholesaling; by pieces and weigh. Currency was not money, but silver. The fair lasted no more than 15 days. All this time, galleons did not load other thing than silver ingots. I can take the risk of declaring that there is no wealthier fair in the whole world than this organized in Portobelo among Spanish merchants from Peru, Panama and other near places.)²⁰

The route to Mexico:

The main mercury's supplier for New Spain mines was Almadén. Once the fleet tied up in Veracruz officials of the port inspected its cargo and weighted the *baldeses* to avoid missing. The next step was to change old *baldeses* by new ones. Then the load was ready for being carried. The transportation rights were allotted by public auction. The route sections were: Veracruz-Antigua-Perote-Mexico's City (more or less 400 Km. of length). Once in Mexico, mercury was distributed between Mexican silver mines. *The system was generally fair, but very slow. It was the cause of serious discussions in the Junta General de Hacienda. Many days were used just to put price to the mercury or to decide the way of payment for it*²¹.

Mercury's route from Huancavelica to Potosí

Once discovered Huancavelica's mines and applied the amalgamation system in Potosi and other mines (1572), a

large scale mining development begun. Mercury and silver mines exploitation make arise many associated social and economical processes. Transportation of both minerals was characterized by rough roads, the reutilization of existing old Inca's roads, and the use of llamas as main pack animal, being the mules used just in a second place.

Land route

After 1570 mercury transport from Huancavelica (3980 m above the sea) to Potosí (4049 m. above the sea) needed to be organized. The transportation rights were allotted by public adjudication. The *Caja Real of Cuzco* (organism in charge of public accountings in Cuzco city) reports from 1573-80 indicate that the transportation costs from Huancavelica to Cuzco were of ten *pesos* by each quintal (46 kg.) of mercury. Royal officials in Cuzco received mercury and made the payment. Costs variations go in the rate of 15 *pesos* by quintal to 6 and a half *pesos* by quintal. The transportation costs from Cuzco to Potosi were of 9 *pesos*, being the complete transportation costs of about 15 *pesos* by quintal. The thesis of the route crossing by Cuzco and Oruro (Huancavelica-Cuzco-Oruro-Huancavelica) is sustained by the Chilean historian Alvaro Jara²². In opinion of Rafael Varon, the right historical route included Huancavelica-Arequipa-La Paz-Potosí. As Serrera²³ states the route by Cuzco should be the right one, because of the official information of the *Casa Real del Cuzco* above quoted.

Mixed route land-maritime-land

Aware of the necessity of counting with a faster and surer route for transporting mercury to Potosi, Viceroy Toledo designed a new route, linking land and maritime sections. The route sections were: Huancavelica-Lima-Chincha (in Peru)-Arica (today Chile)-Oruro-Potosí (Today Bolivia). Mineral was sacked in leather sacks in the *Casa Real* (Royal House) of Huancavelica. Along the first stretch (26 leagues) to San Jeronimo llamas were used as pack animals. From San Jeronimo to Chincha (9 leagues) the mineral was loaded by mules, because they were faster. The sea travel was normally made in royal galleons. However, if there was not one available it was used particular ships. Usually there were two annual maritime trips. It was necessary to distribute the weight to be loaded by the galleons. With this goal the sacks containing mercury were putted in long and reinforced wooden iron boxes.

¹⁹ Cited in Prieto, Carlos. *La minería en el Nuevo Mundo*. Revista de Occidente. Madrid, 1977. p.p. 148-149.

²⁰ Idem, p. 144.

²¹ Mansilla Plaza, Luis. 1992. p. 104.

²² Jara, Alvaro. *Estructuras de colonización y modalidades de tráfico en el Pacífico Sur Hispanoamericano*. In: “*Historia y Cultura*”. *Tres Estudios*. National Museum of History,. Lima, 1966. p.11.

²³ Serrera, Ramón María. *Tráfico terrestre y red vial en las Indias españolas*. Lunwerg Editores S.A. Barcelona. 1992. p. 158.

In the port of Arica mercury was unloaded and controlled by royal officials designed by the Viceroy. From Arica to Potosi mercury was transported by muleteers, under contract approved by the Viceroy. The total cost was estimated in 12 *pesos* by each quintal. In view of problems of corruption and smuggling, it was applied a third system, being the most successful. Contractors assumed directly the responsibility for transportation. They bought the mercury directly in Huancavelica, paying 74 *pesos* and 1 *grano ensayado* by quintal. Two thirds of this amount was paid in Huancavelica and the other one when arriving to Potosi. The first amount was used to pay the muleteers and an advance to cover the weekly payment of Indians working in the mine.

This route was described by Antonio Vásquez de Espinoza²⁴ in its chronics on the Occidental Indian territories: *...después una vez fundido y sacado el azogue lo ponen en badanas para guardarlo en los almacenes de Su Majestad y de allí lo llevan de ordinario en carneros al puerto de Chíncha (que está al Norte de Pisco 5 leguas) donde hay un almacén y factor proveído por el Real Consejo, que lo guarda en él y de allí lo embarca en navíos, hasta el puerto de San Marcos de Arica, de donde se lleva en recuas, de carneros y mulas a Potosí (...once the quicksilver is molten and extracted, it is sacked in weather sacks and stored in the royal warehouse. Normally, it is transported from there to Chíncha (5 leagues to the north of Pisco) by mutttons (llamas). In this port there is a warehouse and a factor (official) provided by the Real Consejo, (Real Council). This official is responsible to keep and load mercury in the ships that will carry it to the port of San Marcos de Arica. From there it is carried by mules and mutttons trains to Potosi).*

Mercury was also sent from Chíncha to the mines of Oruro, Berenguela, Porco, Lipeza and other ones in the high lands.²⁵

Muleteers going from San Marcos de Arica to Potosi (60 leagues length) crossed by Horuro (Oruro) or San Felipe of Austria lands, founded in 1607. The mines of San Cristobal Hill were exploited there. Oruro was an important city. It had a main church and the convents of Saint Dominic, Saint Francis, Saint Agustin, the Merced and the Society of Jesus, one hospital and two Indian parishes.²⁶

The route was intensively used in the 17th Century and more of 18th Century. Coming and going was gradually diminishing by many internal and external factors to the mining activity itself. Mines in Huancavelica were not carefully managed. They suffered roof falls, occurring the worst of the accidents in 1786. The galleries of Santa Barbara's mine collapsed and they were not reopened. Silver production in Potosi was also declining and ores lost its initial quality. Finally, when in 1776 it was created the Viceroyalty of La Plata River and the monopoly system was abolished, new ways to transport mercury from Almaden were opened. Supply of mercury from Almaden arrived in a regular way to Potosi following the route Cadiz-Montevideo-Potosi.²⁷

Researching on the Mercury's Route in Peru. Preliminary report

The present section contains the first result of our researching work on the mercury route from Huancavelica to Potosi. Even it forms part of the historical routes of mercury mining in Hispanic American, the route linking Huancavelica and Potosi has its own characteristics and values from the historic and heritage points of view.

From 2001 to the present we have been members of the equip in charge of the researching project "Routes of the Historic Mining in Spain". During this time we have identified some of the most important mines by its heritage values. One of the main mines studied has been the Mercury mine of Almaden (Spain). We have already made reference to its historical interest and values in this article and former symposiums.

The fact of studying the economical importance of mercury mining in world history was a strong motivation to focus our attention on the Peruvian mines of Santa Barbara in Huancavelica. As it has been said above the mercury extracted (about 1'115,000 quintals of mercury were extracted over the colonial era, being valued in 82 million *pesos*) from those mines was used to process silver in American mines, being the most important Potosi. Nevertheless, Peruvian mercury was also transported and applied in Mexican mines.

Focusing in Huancavelica mining history we have made a documental and bibliographical revision, which may conclusion is that the route under study is a historical fact.

²⁴ Vázquez de Espinosa, A. *Compendio y Descripción de las Indias Occidentales. Edición de Balbino Velasco Bayon*. Información y Revistas S.A. Madrid. 1992. Cap. LXXX. p. 728.

²⁵ Idem, Chapter. XLVI. p. 648 y 649.

²⁶ Ibidem, Cap. LXVI. p. 815 y 816.

²⁷ Mira Delli-Zotti, Guillermo. *Ilustración y reformismo borbónico en el Alto Perú, el Intendente Sanz y la minería de Potosí a fines del período colonial*. Complutense University of Madrid, Madrid, 1988.

Field researching work has been made applying guidelines already discussed by CIIC. As a result of this work we are in conditions to affirm that the route fulfills the **Defining elements** of a cultural route, contained in the Draft of an International Charter on Cultural Routes currently being discussed. It must be said that it is necessary to undertake a complete researching project.²⁸

The region of Huancavelica is one of the poorest Peruvian regions. During the terrorism period, Huancavelica has been one of the zones deeply affected by violence. It was and still is an isolated region, with very hard climatic conditions and very low rates of development. This historical relegation and the high levels of violence occurred between approximately years 1981 and 1995 have had as a consequence diverse social problems. One of them has been the low awareness for the conservation of cultural goods. It must be recognized that the urban development of the city of Huancavelica during the last 10 years has been chaotic. Many important monuments have been lost. Notwithstanding, the main elements conforming the cultural route are even to be found. Some of them require an urgent integral intervention. Some other monuments are in relatively good state of conservation. Social disturbance occurred during the quoted period has been cause, for example, of the abandon of the village of Santa Barbara by native people. What is clear from our point of view, is that if there is not an immediate and urgent action of the specialized sectors those testimonies of such an important period of the world history will be lost.

1. Main heritage assets in the route.

(1). The route itself: a general survey of the heritage related to its functionality.

As it has been stated above, one of the characteristic of the mercury route (as in general, of Spanish routes in the new territories) has been the reutilization of existing oldest routes. Huancavelica was not a very important place in Inca's time. Buy the said reason, the roads existing in this region were of a secondary level as it is stated by Saco (2004). This author identify the sections **Izcuchacha-Huando-Palca-Huancavelica-Santa Ana-Castrovirreyna-San Antonio de Cusicancha-Quito Arma-Huayacundo-Arma. Haytara**, as a *secondary road, transversal route or branch line of interconnection between the main longitudinal road of the coast with the one of the mountain area and vice versa*. Part of this route has been used to define the mercury transportation route.

²⁸ We must thank to Mr. Alberto Benavides de la Quintana its invaluable support to the realization of the field researching work. We must also thank to Mr. Eduardo Buse and Mr. Manuel Bryce, of the Peruvian Minister of Tourism and Mr. Isaac Perez, Regional Director of Culture of Huancavelica

As to the path followed to carry mercury, please see item I.2. above. The route we have made searching for heritage assets, is the one linking Huancavelica and Chinchá. The route followed is the current road Huancavelica-Villa de Arma-Chinchá. It is necessary to make new expeditions to study the other alternative routes above referred and to make some precision in the route itself.

It is possible to identify Inca's roads clearly defined in the route from Huancavelica to Chinchá, as it will be stated in the next description of the itinerary that we followed. It is also possible to identify sections of Spanish constructed roads, completing the physical route *as a project designed* with the specific goal of transporting mercury.

(2). The mine of Santa Barbara

The mercury mine is located 4 Km. away of Huancavelica, in Chaclatacana Mountain, that during the 18th Century was popularly known with the name of Santa Barbara. The summit of this mountain is of 4,400 m, more than 14,400 feet above sea level). Quicksilver deposits were already used by native population to get cinnabar and obtain a powder called *llimpi*, used as facial painting.

It was Amador de Cabrera the first person who registered, under the name of "Descrubridora" the mercury mine. Other Spanish miners made further registrations. *The mine was a deep mine and its galleries followed the veins of mineral at random. Trough these galleries the "apiris" (porters) carried the mineral that the miners had hewn from the faces on their backs in "capachos" made of hide. The presence of so many independent miners each with his own vein, rather than a single unit meant that there was little harmony between them as each sought only short-term gain.* (Contreras, 2000)

The entrance to the *Belen* mine has some carved stone emblems, including the Royal coat of Charles III. From the period of exploitation during the 20th Century, it can be found very interesting industrial installations, now in a deteriorate state. It is necessary to undertake its restoration.

(3). The Village of Santa Barbara.

As it was stated, violence during terrorism times has generated that native people of the Indigenous Community of Santa Barbara abandon this village. Its main heritage monument is the baroque Church of Santa Barbara (17th Century).

(4). Villa Rica de Oropesa, (Today Huancavelica city): a fundamental milestone in the Mercury's route in America.

Huancavelica is sited in the Peruvian central Andean mountains. It is the capital city of the Department and Province of Huancavelica in the inter-Andean valley of the Mantaro River. (12°47'17" S and 74° 58' 17" W). Its altitude is of 3,676 m. It is 445 km. far from Lima, (the Peruvian Capital city) by La Oroya road and 563 km. by Pisco road).

It, jointly with Santa Barbara's mine, is the starting point of Mercury's route in South America. The initial urban settlement, dating from 1559, was not a planned city, growing chaotically as a mining settlement. It was formally founded by Viceroy Toledo in 1572. Solemn foundation was verified in August 4th, 1572. Plots for the church, official representations and the City Council were disposed. It was also delimited an appropriate space for the Main Square. Other plots were allocated to about 30 neighbors. The esplanade where the city was sited is called Seccha. It is to the North slope of Chaclatacana Hill. The village was dedicated to Nuestra Señora de las Nieves (Our Lady of Snows).²⁹

Huancavelica's Cathedral construction begun in 1571. It was rebuilt in 1697. Other important churches are Saint Anne (1590), Saint Dominic (1601), Saint Francis of Assisi (17th Century), Saint Sebastian (18th Century), Saint John of God (17th Century) and San Cristobal (1770).

Antonio San Cristobal³⁰ states that, with the exception made of the Church of Saint Francis of Assisi, all have an elongated rectangular ground floor of gothic-isabelino type, that is divided in its interior part by a perpendicular arc sited in the main chapel. The nave is used by parishioners. Garcia Bryce underlines that there are two different artistic expressions, which main realization is to be found in the porticoes; the first one is classic, corresponding to the viceroyalty Renaissance. The second one is baroque, of moved forms and assuming the Solomon Column.³¹

As an important asset related to the cultural route under study, it must be cited the largehouse of Tambo Mora, a colonial house used to lodge the muleteers that make the route. Another heritage good forming part of the route is the colonial bridge of *La Ascension*, built to complete the road of mineral transporting.

²⁹ Lohmann Villena, Guillermo. Op. Cit. p. 67 y 68.

³⁰ San Cristóbal, Antonio. *Portadas en tierras de Huancavelica*. In Juan José Polo Rubio (Ed.). *La evangelización in Huancavelica*. Gorfisa, Zaragoza, 2003.

³¹ García Bryce, Antonio *Arquitectura en el Virreinato y la República*. In *Historia del Perú*, lib. Edit. Mejía Baca, IX, Lima. 1980. págs. 51-52. Cit. In San Cristóbal Sebastián, Antonio. Op. Cit.

Colonial traditions, specially marked by the mining activities, are present in popular festivities and traditions marked by the syncretism between Catholic rituals and popular ancestral religious uses. The celebration of the Holy Week, the Corpus Christiae, Whitsun, the Epiphany, and the Crosses feast are of very popular roots. Dances as the "muliza" and the "cacharpari" are closely linked with the mule trains coming and going. To its arriving, people danced following the rhythm of the mule steps. The dance, born in Huancavelica, has diffused by all the valley of Mantaro River. When the muleteers were going, it could be listened woman voices singing sad songs. The word Cacharpari means in Quechua "luggage carried on saddlebags". Other dance is called "negritos", symbolizing the presence of black people coming from Chinchá to Huancavelica. In other dance, called Tana Tana, dancers make a parody of Spanish people.

(5). Villages, hamlets and other assets: Following the road it can be found many hamlets and other heritage goods. Some of them are related to the route in a functional way.

- Lachocc: Near to this hamlet, there is a place called Tambojasa that it supposed to have been a place where the muleteers rested.
- Cachimayo. There is a *tambo* forming part of the Inca's Road. (4.332 m. above the sea; 48°69'54" E. and 85°77'88" N.)
- Niñobamba: It has also a *tambo*. This hamlet is 45 Km far from Huancavelica in the 24 Km. of the Road Villa de Arma-Chinchá (4.614 m. above the sea, 47°57'32" E. and 85°72'25" N.)
- Lomolargo landscape. As one of the many amazing landscapes and cultural landscapes in the route, Lomolargo is presented by its particular beauty. (4820 m above the sea). Following the route it can be found Andean typical stone farmyards, a traditional way of construction used by thousands of years.
- The old muleteers road passed by the gully of Tibia Stream.
- Arma's village: (3383 m. above the sea). It is 105 Km. far from Huancavelica. It was founded in May 8th, 1576 by Mariano Cuenca de Mendoza, instructed by Viceroy Toledo. It is the capital city of the Arma's district. It is a typical colonial Andean town, in a good state of conservation.
- Cotas cultural landscape: From the road, it can be seen the village of Cotas, 20 Km. far from Arma. The landscape begins to change to a Andean valley landscape. It is possible to appreciate a more intensive use of the land. The Mirasol Chapel of Cotas can be appreciated.
- Huachos: it is a Andean village, which official

foundation as a district dates from the Republican Period (1921). The altar of the Church of San Cristobal dates of the 17th Century. 10 km. far from Huachos it is the pre-Hispanic archaeological site of Tara Pukru.

- Chinchá: It was and still is an important agricultural region. Many important country states were established on it, mainly worked by slaveries. The country state of San Jose is still conserved. The port of Tambo de Mora was used to loading the mercury sent to Arica and Potosi. 11 Km. far from Chinchá it is the archeological site of Tambo de Mora. It was an important administrative pre-Hispanic center. It was part of the Inca complex of Chinchaycamac. In the North-West of Tambo de Mora is Huaca Centinela, part of the same archaeological complex.

The section of the route of the mercury under study presents many special values. One of them is that it can be qualified as a living cultural route. Native people use the old routes to travel between one and other town and to go to the main cities to sell his/her products. To rescue cultural values and to restore heritage goods in this region should mean to open a door to the development to this people. We hope that this presentation will serve to call the attention both of Peruvian authorities and world specialists and that new answers to concrete these proposals will be discussed and putted into practice.

Abstract

The first part of this article is referred to the history of the mercury mining routes in Spanish America (16th .18th. Century). The second part presents a report of the field researching work on the section linking Huancavelica and Chinchá (part of the route between Huancavelica and Potosi), made by the author.

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13. Photographs: Rocío Cutipe.

THE HISTORIC ROUTE OF THE MINING OF MERCURY IN SPANISH AMERICAN

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Fig.1 Silver and mercury mining routes in the Viceroyalty of Peru (Source: Serrera 1992)



Fig.4 Santa Barbara Church

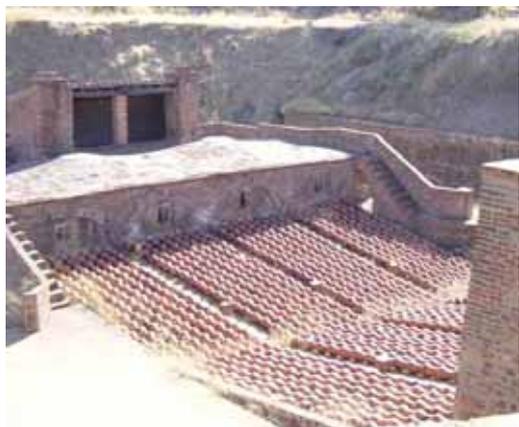


Fig.2 "Aludekses" furnaces in Almaden



Fig.5 Huancavelica Cathedral



Fig.3 Juan Esteban de Oliva. Map of the mines of Huancavelica. 1742 (Source: SEACEX, 2005)



Fig.6 Inca's road in Cachinayo

Section IV: Cultural routes: the challenges of linear settings for monuments and sites
Section IV: Gérer les routes culturelles dans leur diversité-La conservation de sites linéaires diversifiés



Fig.7 A Living cultural route

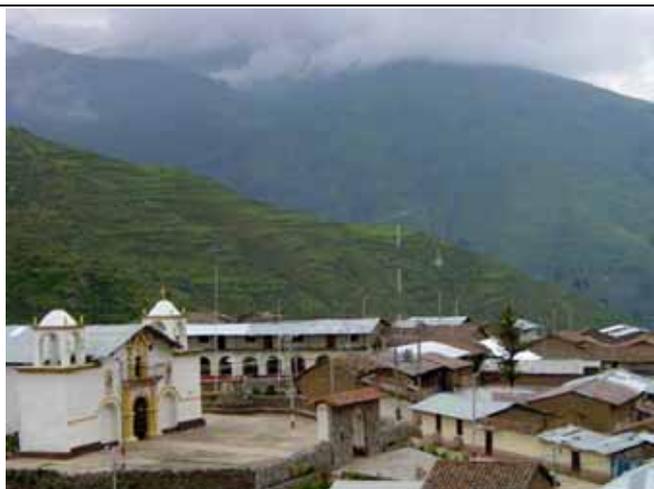


Fig.9 Arma Village



Fig.8



Fig.10 Cultural landscapes