

The journey of the vaccine against smallpox: one expedition, two oceans, three continents, and thousands of children

José Tuells* and José Luis Duro-Torrijos

Cátedra Balmis de Vacunología, Universidad de Alicante, Spain

Abstract

Spain encouraged, during the Bourbon dynasty, the formation of scientific expeditions, among which was the Royal Philanthropic Vaccine Expedition, an example of biopolitics applied by the state in order to protect health. The expedition went all over the world, using children as a reservoir to transport the vaccine fluid. Francisco Xavier Balmis established a human chain that arm-to-arm materialized the success of the mission. The characteristics and difficulties which children had to pass through and their contribution to the spread of the smallpox vaccine are analyzed. (Gac Med Mex. 2015;151:388-97)

Corresponding author: José Tuells, tuells@ua.es

KEY WORDS: Vaccine. Smallpox. Royal Philanthropic Expedition. Francisco Xavier Balmis. Vaccinifer children.

The exceptional dissemination of an idea

Smallpox crossed the 17th and 18th centuries replacing the plague as the scourge of humanity. Mortal ravage, blindness or irreversible disfiguration was the fearful track left in its wake. The 18th century brought a plausible remedy from faraway lands, beyond prayer, purgatives, fasting or bloodlettings. Inoculation of smallpox, a controverted hope that was unevenly practiced in the West, provided a dynasty of expert inoculators who confronted the disease with that remedy, as intuitive as insecure.

In Berkeley, at the County of Gloucestershire, an English surgeon practised this method using the technique popularized by the Suttons. Gifted with unique powers of observation, developed under the guardianship of J. Hunter (1728-1793), one of the most reputed surgeons of the era, E. Jenner (1749-1823) put into

practice an experiment that shook profoundly the focus on this disease. On May 14, 1796, the boy James Phipps was the first of a series of cases where he assayed an empirical model, communicated in a work edited by himself on September 1798¹. Jenner advocated inoculation with material taken from pustules of cows suffering from cowpox as a preservative for human smallpox.

The resonance of his alternative and the scientific commotion were immediate. The new technique, known as vaccine, had in barely 5 years ambassadors, diffusers and adherents in almost the entire world, in spite of also numerous detractors, critics and skeptics.

The Spanish crown, as other enlightened monarchies, maintained a mercantile-rooted belief, according to which, economical productivity of the empire was related to its demographic size. Thus, proposals were made to improve public hygiene and reduce children mortality rates, a central piece of its social policies².

Correspondence:

*José Tuells
Cátedra Balmis de Vacunología
Facultad de Ciencias de la Salud, Universidad de Alicante
Campus San Vicente de Raspeig
03080 Alicante, Spain
E-mail: tuells@ua.es

Date of reception: 10-03-2014

Date of acceptance: 26-03-2014

In this context, Carlos IV of Spain decided in an organized way to confront the problem caused by smallpox epidemics in his territories. Thus was born the project of an expedition that would be known as RPVE and that travelled around the world with the purpose of spreading it in overseas territories.

The Royal Philanthropic Vaccine Expedition started to develop in March 1803 with a frenzy race to organize it³, which culminated on November 30, when members of the expedition set sail from La Coruña port on board of the corvette *María Pita*.

In total, its protagonists were 33 people in addition to the captain and sailors who governed the ship (Table 1). The purpose of this work is focused on analyzing the role of the child as a distinctive element of the expedition, going across the vicissitudes they suffered, especially during the journey of Francisco Xavier Balmis (1753-1819).

The vaccinifer child

Prior to the RPVE, tests were made to send vaccinal material to the Americas using sealed glasses wrapped in black cloth; however, long distances and high temperatures rendered these attempts futile⁴.

Neither was viable the idea proposed by the Royal Physician J. F. Flores (1751-1814) contained in his expedition project on February 28 1803 and addressed to the Board of Royal Surgeons: “dispatch with most diligence two ships, the lightest, in order to (...) sail with some cows with true cowpox, and some boys with the arms succesively inoculated with the pus. In addition to this, a portion of selected pus is to be placed between two very carefully waxed glasses”⁵. This Guatemalan, expert on the fight against smallpox, had introduced the inoculation technique as a preventive measure in Nueva Guatemala’s capital city years before⁶. Flores’ plan, who was in Madrid in 1803, was disregarded due to its elevated cost.

Balmis’ proposal, based on the exclusive use of children to transport the fluid was ultimately adopted. It was a procedure recommended by Jenner himself⁴. Since that moment, children acquired a substantial value, which was exposed in the regulations and road-map submitted by Balmis before the Board of Surgeons⁷. Children scarified by cowpox, from whom vaccinal fluid could be obtained after 8-10 days – period after which macules are mature – were named vaccinifer children. Starting with a first child, others would be immunized, thus establishing an immunization chain that would allow for the vaccine to be transported.

Balmis recommended the recruitment of children between 5 and 8 years of age who had not suffered from smallpox, which entailed some ensurance against adults likely to have had it⁸. Therefore, special emphasis was put in conditioning the selection to “scrupulously find out, to be assured, that (the children) have not suffered yet from natural or inoculated smallpox and that also have not been vaccinated: because all these are useless”⁹. To ensure the procedure and prevent failures, two children were succesively inoculated with multiple punctures, which allowed having several vaccinal lesions on each one of them. The vaccinifer child was present in all routes and stages of the RPVE.

The Atlantic expedition

Under the care of the Foundling Home rector, the first 22 vaccinifer children left from La Coruña. They had been selected at the Hospital de la Caridad de la Coruña and the Real Hospital de Santiago foundling home (Table 1) by Balmis himself. The Royal Order of September the 1st, 1803, addressed to the governments of the provinces where the “vaccinal retinue” was to travel, highlighted the importance of this reservoir to “after succesive inoculation in the course of the navigation, the first arm-to-arm operation, which is the safest mean to preserve and transmit the real vaccinal fluid with its entire activity, can be performed upon arrival to the Indias”¹⁰. Indications were given on the good treatment they were to receive providing them with shelter, care expenses and support on behalf of the municipal treasury where they travelled.

The first Atlantic stop was Santa Cruz de Tenerife. The island became the headquarters of a successful mission that, after 27 days of stay were elapsed, greatly encouraged the expedition members. The very day of their arrival, 10 children of the best families were vaccinated¹¹. Ships with children and doctors arrived from all islands to pick up the vaccine. The General Commander of the Canary Islands, Marquis of Casa-Cagigal, asked the authorities of all islands to send to Santa Cruz children and doctors “returning the former inoculated and the latter instructed on the practice of vaccination to convey it to their fellow countrymen”¹¹. This is how it happened, for example, in Lanzarote, where “five children of the poor class were sent in order for them to return vaccinated”¹¹. The Canarian stage was the RPVE’s general rehearsal; it had extraordinary support from both civilian and military

Table 1. Members of the expedition departing from A Coruña on November 30, 1803

Category	n	Name	Observations
Director	1 st	Francisco Xavier Balmis y Berenguer	
Assistants	1 st	Josep Salvany y Lleopart	Will replace the director in his absence
	2 nd	Ramón Fernández de Ochoa*	
	3 rd	Manuel Julián Grajales	
Medical assistants	4 th	Antonio Gutiérrez y Robledo	Balmis' favourite disciple
	1 st	Francisco Pastor y Balmis	Director's nephew
	2 nd	Rafael Lozano Pérez	
Male nurses	1 st	Basilio Bolaños	
	2 nd	Ángel Crespo*	Replaced by Antonio Pastor
	3 rd	Pedro Ortega	
Female nurse	1 st	Isabel Zendeja y Gómez (Rector of the Foundling Home)	
Vaccinifer children			
n	Name	Age	Foundling from the Hospital of:
1 st	Vicente Ferrer	7 years	
2 nd	Pascual Aniceto	3 years	la Caridad, A Coruña
3 rd	Martín	3 years	la Caridad, A Coruña
4 th	Juan Francisco	9 years	Santiago de Compostela
5 th	Tomás Melitón	3 years [†]	la Caridad, A Coruña
6 th	Juan Antonio	5 years [†]	Santiago de Compostela
7 th	José Jorge Nicolás de los Dolores	3 years	la Caridad, A Coruña
8 th	Antonio Veredia	7 years	
9 th	Francisco Antonio	9 years	la Caridad, A Coruña
10 th	Clemente	6 years	la Caridad, A Coruña
11 th	Manuel María	3 years	la Caridad, A Coruña
12 th	José Manuel María	3 years	la Caridad, A Coruña
13 th	Domingo Naya	6 years	
14 th	Andrés Naya	8 years	
15 th	José	3 years	la Caridad, A Coruña
16 th	Vicente María Sale y Bellido	3 years	la Caridad, A Coruña
17 th	Cándido	7 years	la Caridad, A Coruña
18 th	Francisco Florencio	5 years	Santiago de Compostela
19 th	Gerónimo María	7 years	Santiago de Compostela
20 th	Jacinto	6 years	Santiago de Compostela
21 st	Benito Vélez [‡]		
22 nd	Ignacio José	3 years	la Caridad, A Coruña
Crew of the corvette <i>María Pita</i> , departing from La Coruña on November 30, 1803			
Charge	n	Name	
Captain and first pilot	1 st	Pedro del Barco y España	
Second pilot	1 st	Pedro Martín de LLana	
Boatswain	1 st	José Pozo	
Guardian	1 st	José Alvarado	
Carpenter	1 st	Vicente Aladao	
Cook	1 st	Gregorio García	
2 nd Cook	1 st	Francisco del Barco	
Butler	1 st	José Mosquera	

*Separated from the expedition days before setting sail.

†Died during the expedition.

‡Rector's adoptive son.

authorities and the church (the sermon by the priest Manuel Díaz from La Palma encouraging the parents to have their children vaccinated is memorable)¹¹, as well as from the people, all imbued with an enthusiasm that was missed in later stages.

The opposite scenario was produced upon arrival to the second stage, Puerto Rico, on February 9, 1804. There was disagreement with the foreign doctor F. Oller, who had imported the vaccine from the St. Thomas neighbor island with apparent success. Balmis, surprised by the initiative that preceded him, criticized it severely⁸. This situation hastened his departure on March 12, leaving without a correct number of children towards the Captaincy General of Caracas, which jeopardized the commission as a whole, since "he found himself in the highest affliction, being in a foreign coast with a single vaccinated child"⁵. Before arriving to Puerto Cabello, "they vaccinated 28 children, sons of the most prominent neighbors"¹².

In Caracas, the expedition was welcomed with great enthusiasm. Two-year old child Luis Blanco was the first of a long series of vaccinations; the first two days they already counted 64 operations, soon they reached 2,064 and when they left Caracas on May 6, they had vaccinated 12,000 people¹². By motion of the governor, Manuel Guevara y Vasconcelos (1740-1807), Balmis formed the first Vaccination Board of the American continent.

There, he received the bad news of Lorenzo Bergés' death, who had been commissioned to bring the vaccine to Santa Fe, capital city of the Viceroyalty of New Granada. Aware of the existence of a smallpox outbreak in that region, he was forced to divide the expedition in two groups: the first formed by subdirector Josep Salvany, Manuel Julián Grajales as assistant, Rafael Lozano as medical assistant, Basilio Bolaños as nurse and four children to carry the vaccine in their arms to septentrional America; and the second, lead by Balmis, formed by Antonio Gutiérrez Robredo as assistant, Francisco Pastor as medical assistant, Pedro Ortega and Antonio Pastor as male nurses, director Isabel Zandal Gómez as female nurse, together with the children originating from Galicia. On May 8, 1804, both groups drifted away and would never meet again³.

Although in this study, the steps of the group led by Balmis are followed, Salvany's extraordinary work has to be mentioned, who documented adequately his number of vaccinations, was praised by Hipólito Unánue (1755-1833) and was mentioned by Díaz de Yraola as: "Few itineraries can be chosen that, as that

followed by Salvany, bring together so many difficult circumstances and adventure. Across los Andes, abandoned or persecuted, in between shouts of joy, shipwrecks and storms, with one arm lost in los Andes, an eye mutilated in Guaduas, in the dust of his routes, he traces a heroic pathway for the benefit of mankind, of this mankind that doesn't even know what his end was"⁵.

Balmis headed to La Habana, where he verified that the vaccine had already been established by T. Romay. They travelled with a total of 27 children, 21 of them Galicians and the remaining 6 had joined the expedition in la Guayra, with the latter under the care of Balmis until there was knowledge of a returning ship. Of note, children recruited in American territory remained in the next destiny and did not join the expedition, returning to their homes. Balmis, who maintained a good relationship with Romay, proposed the creation of a Central Vaccination Board in La Habana, which was established on July 13th and was in charge of Romay himself for many years. Soon after, the expedition left the island headed to Mexico, asking to be provided with children before setting off. The lack of response on behalf of the authorities led Balmis to convince young Miguel José Romero, "*tamborcito*", from Cuba's regiment, and to buy three female slaves from Lorenzo Vidat; with them, he avoided the transmission chain of the fluid to be broken.

After their arrival to the Sisal port in Yucatán, they travelled to Mérida, where the expedition members started vaccinations, while medical assistant Francisco Pastor travelled with four children to Guatemala to immunize and create a Central Board there.

Balmis headed towards Mexico City stopping in Veracruz, where he had yet another disappointment as he realized that this city was already receiving the vaccine from Dr. García Arboleya, physician of the army accompanying Viceroy José de Yturriagaray's entourage¹⁴. Balmis, in trouble again, had to resort to 10 soldiers to keep the virus active.

Finally, they arrived to Mexico on August 8, a destiny that entailed a rather unpleasant experience due to Viceroy Yturriagaray's resistance to let them perform their work. Balmis complained that "instead of the Viceroy protecting and being grateful for the services provided by the expedition, he insists so cruelly in troubling it to the last detail"¹⁵. Nevertheless, vaccination was gradually initiated, the Galician children remained under the Viceroy's protection and Balmis developed a document on how a Vaccination Home should be organized¹².

Recruitment of children in Mexican territory

The confrontation between the director of the expedition and the Viceroy was so evident, that the latter came even to deny Balmis permission to embark towards Philippines immediately. This hindrance was used by Balmis to spread the vaccine through places that had not yet received it. Hence, they left the capital city and started administering vaccinations in Puebla de los Ángeles, Guadalajara de Indias, Zacatecas, Valladolid, San Luis de Potosí and internal provinces. The itinerary was started on September 20 in Puebla de los Ángeles and concluded with his return to México on December 30: 53 days during which he managed to recruit children that would bring the vaccine across the Pacific Ocean to the Philippine Islands. In Zacatecas, they immunized 1,076 children, and in Puebla, a city that gave them a warm welcome, they vaccinated 230 children the next day after their arrival, reached the number of 11,435 vaccinated in a few days and established a "Public Vaccination Home" and a Central Board¹⁶.

The recruitment of children was carried out with certain difficulties, since the population was aware of the improper treatment the Galician children who came with Balmis from Spain were receiving, a situation Balmis himself complained of in several occasions: "upon my arrival to this capital city (...), the Viceroy had the twenty one Galician children placed in poorhouses, mixing them up in the misery and sleaze of beggars and occupying the older ones to assist to illuminate burials. And since this fact scandalized the entire kingdom, it would have been impossible for me to bring the vaccine to the Philippines due to the lack of children, whose parents resisted to lend their children arguing that if the Viceroy had sent the *gachupines* to the poorhouse, what could they expect. In this situation, I had no other resource (...) than to inform HM and at the same time exhort the city councils, priests and kingdom deputies and His Grace the Bishop of Guadalajara to reassure the parents they could lend their children, stating on my behalf that they would see the royal promises of HM be fulfilled."¹⁷.

The Expedition initial project recommended a number of 12 to 16 children for each 25 or 30 days⁵. Since the time foreseen for the journey across the Pacific in the *De Acapulco* galleon was estimated in about two months, the number of children needed to carry the vaccine was calculated to be at least 24, which Balmis increased with two in order to have a safety margin.

The ways to recruit them were very varied. In some cities, it was in exchange for money, whereas in others, thanks to the participation of authorities and always under the protection of the Crown.

A documented example, in the city of León, shows Balmis' attitude and the intercession of local authorities: "that in the year of 1805, these provinces were visited by D. Francisco Xavier de Balmis, director of vaccines by sovereign provision (...), who requested from the priest of this parish, Dr. D. Tiburcio Camina, a child that, in spite of being poor, was well born, warranting protection from HM, on whose behalf he would receive him, I proposed a four year and six months-old son of mine named Guillermo Toledo, and putting aside my tender love for him, I entrust him with the child in allegiance of such a charitable protector"¹⁸.

The tour through the New Spanish territory vaccinating and recruiting children started after leaving Puebla towards Querétaro, where they established two itineraries: one lead by Balmis, which recruited 14 vaccinifer children after passing through Sombrerete, Fresnillo, Zacatecas, León and Querétaro; and the other, in charge of Gutiérrez Robredo, added six more children¹⁹. The total list of children grew after Gutiérrez passed through Guadalajara, thus completing a total of 26 children who would meet for the first time on January 17, 1805, in the Mexican capital city²⁰ (Table 2). In most cases, the parents were rewarded 16 pesos for lending their children¹². Balmis complained about "the distrustful nature of the natives, who appreciated more a pecuniary retribution than the big reward offered by the king of providing for the children and taking care of them later until the age of accomodating them"¹².

The commissioners arrived to the Acapulco port on January 24, 1805, together with 27 young children¹⁹. The official list refers to 26 children, which suggests that Benito Vélez, the Galician boy adopted by the rector, also travelled to the Philippines⁵. After permissions were obtained from the Viceroy, they set sail on board of the *Magallanes*, a passenger ship, under the command of corvette captain Ángel Crespo.

The age of the 26 Mexican children chosen to bring the vaccine to the Philippines ranged from 4 to 6 years except for one case, Joseph Castillo Moreno, who was 14 years old when they departed (Table 2). Balmis, in addition to selecting the children, participated in the preparation of a list of clothes and items for hygiene and rest destined to the voyage, signing it himself in Mexico City on December 30, 1804². From an analysis of the garments, an intention to provide uniformity identifying the expedition and strengthening the group's

Table 2. Vaccinifer children from the sub-expedition to Philippines. Departure fro, Acapulco on February 7 1805* and return on August 14, 1807[†]

n	Name	Age	City	Family of origin	Quality
1 st	Juan Nepomuceno Torresco	6 years/deceased	Valladolid	Known parents	Spaniard
2 nd	Juan Josef Santa María	5/8 years	Valladolid	Known parents	Spaniard
3 rd	Josef Antonio Marmolejo	5/6 years	Valladolid	Known parents	Spaniard
4 th	Josef Silverio Ortiz	5/7 years	Valladolid	Known mother	No quality/Spaniard
5 th	Laureano Reyes	6/9 years	Valladolid	Known mother	No quality/Spaniard
6 th	Josef María Lorrechaga	5/12 years	Valladolid	Unknown parents	No quality/Spaniard
7 th	Josef Agapito Yllan	5/12 years	Guadalajara	Known parents	Spaniard
8 th	Josef feliciano Gómez	6/10 years	Guadalajara	Known parents	Spaniard
9 th	Josef Lino Velázquez	5½/9 years	Guadalajara	Known parents	Spaniard
10 th	Josef Mauricio Macías	5/8 years	Guadalajara	Known parents	Mestizo
11 th	Josef Ignacio Nájera	5½/13 years	Guadalajara	Known parents	Mestizo/Indian
12 th	Josef María Úrsula	5/8 years	Querétaro	Known parents	Mestizo/Indian
13 th	Teófilo Romero	6/9 años	Zacatecas	Known parents	Spaniard
14 th	Félix Barraza	5 years/deceased	Zacatecas	Known parents	Spaniard
15 th	Josef Mariano Portillo	6/8 years	Zacatecas	Known parents	Spaniard
16 th	Martin Marques	4/7 years	Zacatecas	Known parents	Spaniard
17 th	Josef Antonio Salazar	5/8 years	Zacatecas	Known mother	Mestizo
18 th	Pedro Nolasco Mesa	5/8 years	Zacatecas	Known mother	Mestizo
19 th	Josef Castillo Moreno	14/17 years	Fresnillo	Known parents	Spaniard
20 th	Juan Amador Castañeda	6/9 years	Fresnillo	Known parents	Mestizo
21 st	Josef Felipe Osorio Moreno	6/9 years	Fresnillo	Known parents	Spaniard
22 nd	Josef Francisco	6/9 years	Fresnillo	Unknown parents	No quality/Spaniard
23 rd	Josef Catalino Rivera	6/9 years	Fresnillo	Known mother	Spaniard
24 th	Buenaventura Safiro	4/7 years	Sombrerete	Known parents	Spaniard
25 th	Josef Teodoro Olivas	5/8 years	Sombrerete	Known parents	No quality/Mestizo
26 th	Guillermo Toledo Pino	5/8 years	León	Known parents	Spaniard

Note: D. Juan Nepomuceno from Valladolid and D. Félix Barraza from Zacatecas died in the journey from Manila to Acapulco (August14, 1807).

*Díaz de Yraola, 1948, p. 169

[†]Archivo General de la Nación de México. Section: Virreinal, Epidemias. Dossier 19, Box 5881.

cohesion in order to appear as a compact and disciplined block can be deducted. It was comprised by “shoes, half boots, thread stockings, denim trousers, shirt, denim vests, scarves and pocket handkerchief, hat and gloves in order for them not to scratch the vaccine”²¹. The uniform had an embroidered badge with the inscription: I serve the Most Serene of Asturias, unique in Her Shelter”¹⁸, dedicated to the Queen, as reflected by D. Antonio Toledo when he offered his son Guillermo for

the expedition, who quotes “I had him a decent suit made, and the aforementioned Balmis, an enameled and embroidered badge with the inscription...”¹⁸.

Crossing the Pacific

The expedition arrived to Manila on April 15, 1805. The correct calculation made by Balmis to estimate the number of children required for the voyage, together

with the outstanding work of the rector taking care of them, brought about the arrival of the vaccine to the Philippine islands.

The conditions of the trip were not ideal; to the lack of autonomy and space resulting from the fact that it was a regular passenger ship, the discomfort generated by Ángel Crespo, captain of the galleon, has to be added. Balmis considered that he had deceived them and had failed to fulfill the conditions agreed on land.

In Acapulco, the captain had offered individual cabins for each member of the expedition and a "spacious and well ventilated apartment for the children, where each one had a separate cot to prevent the risk of the vaccine to be involuntarily transmitted to each other"⁵. In spite of these promises, the members of the expedition travelled in inappropriate conditions. Balmis himself narrated that the children slept piled on the floor, "very badly placed in a place of the *Santa Bárbara* full of filthiness and huge rats that terrified them, rolling and bumping between each other with the swinging"²², with this causing seven artificial vaccinations, rendering these children useless for the spread of the vaccine, at the risk of "making the mission fail, had the journey not been so short"²².

To these inconveniences, the scarcity and bad conditions of the food they received has to be added, a situation that was taken to the limit when the captain of the ship made them pay everything much higher than the rest of the passengers, which caused for Balmis himself to rebel "with the impetuosity of his nature"⁵ and demand from Crespo to return to Mexico's Treasury the money he had charged in excess.

Stay in Philippines and return to Acapulco

Already in Manila, and after directly solving with general governor Rafael Aguilar the necessary formalities to disembark, they started their immunizing work on April 18, 1805. As in previous stages, he tried to gain the complicity of both the governor and the highest ecclesiastical authority, archbishop Zuliabar. Unfortunately, the latter had little confidence in the effectiveness of the vaccine; however, the governor took the decision of having his five children vaccinated, which ended up convincing the clergyman and gave his approval to the vaccination program in the islands. Over the months of stay in Manila, and after writing a set of rules and fostering the creation of a Vaccine Board, Balmis established a plan to reach the most extension possible of the archipelago. However, troubled with health problems, he decided to return to Spain making

use of the Portuguese route from Macao to Lisbon, crossing the Indian Ocean and surrounding cape Buena Esperanza.

Knowing also that the vaccine had not yet arrived to China, he left towards Macao on September 3 with the intention to immunize in that region. He was accompanied in this new mission by his nephew Francisco Pastor and three Philippine children provided by the priest of the Santa Cruz parish, who would later return to Manila²³.

Before setting out on his trip, he left his assistant Antonio Gutiérrez Robredo in charge of "finish spreading the fluid throughout the islands"²³, leaving in his hands the direction of the conclusion of the work, as well as the return to Acapulco.

During the two years of stay, the commissioners made small expeditions to spread the vaccine. In one of them, Antonio Pastor and Pedro Ortega, together with 12 children, carried the vaccine to "stop the cruel smallpox epidemic that had taken over Nisami, Zambanga and the rest of the islands of Zebú and Mindanao"²². On March 22, 1806, they returned to Manila and reencountered with Gutiérrez Robredo, who was immunizing in the capital city. The Central Vaccine Board had been established and local physicians had taken the responsibility to perpetuate it and, therefore, they considered their commission was concluded. They had vaccinated over 20,000 people¹².

On April 19, 1807, they left again in the *Magallanes*, which "without any navigation setbacks was able to anchor in Acapulco on the afternoon of last August 14th (...). Without any symptoms of scurvy at all; and carrying 3,106 and a half bundles and the Royal Vaccine Expedition comprised by 1 overseer, 1 secretary, 1 medical assistant, 2 male nurses, 1 rector and 25 children, as well as several passengers"²⁴.

This text that closes the Philippines' journey refers a number of 25 children, a figure consistent with the "number of children brought from the Philippines who left this Kingdom to bring the vaccine to those islands, to be delivered by D. Antonio Gutiérrez, assistant of the Expedition, to D. Francisco Manuel Sánchez de Tagle, as ordered by His Excellency the Viceroy D. José de Yturriagaray"²⁵, where 24 names are mentioned together with the loss of two of them, Juan Nepomuceno Torrescano, from Valladolid, and Félix Barraza, from Zacatecas, who died during the development of the commission (Table 2). Again, the rector's son who also accompanied them was not included.

Once in Mexico, the Viceroy issued an order dated October 31, 1807, for the children to be returned to

their homes, requesting for this task to be carried out by “D. Rafael Gómez, guide of the children who transmitted the vaccinal fluid to the Philippines, delivering them to their parents together with their personal clothings”²⁶ This task was accomplished between the months of November and December, remaining their support, clothing and education in charge of the treasury until they were old enough “to be able to be accommodated according to their aptitude and circumstances”²⁶, such as the director himself had promised.

Everything appeared to be happily concluded for these vacciner children, although actually it was an end with some sequelae, as testified by the narration of a father: “D. Antonio Toledo, resident of Villa de León and father of Guillermo Toledo, who left with the expedition, and after three long years of navigation during which the decease of the Queen, to whom it was dedicated, occurred, and the war of France begun, disembarked in Acapulco and came to my possession with nineteen scars, clear proof of his progresses and achievements of the purposes he was required for”¹⁸.

The children after the expedition

The use of the child for scientific purposes was a reality throughout the 18th century, with a utilitarian sense and generalizability of the scientific method to the service and interest of the State. The RPVE was a clear example of this utilization, since the success of the mission clearly depended on the number of children, their continuous recruitment in order to maintain the arm-to-arm chain and their maintenance in perfect health conditions.

The recruitment of children was not easy; families were afraid to lose them and were not inclined to be detached from their children for an adventure full of uncertainties and with an unpredictable outcome. Balmis himself recognized that “no parent is able to give up his children to an unknown foreigner”⁵.

This reality forced for children to be recruited from orphanages or socially dismembered families⁴. It was promised that in exchange for including them among the expedition members, they would be provided with accommodation and care by the public treasury. This was reflected in ordinances coming from the metropolis: “they will be well treated, supported and educated until they have an occupation or destiny to live with, according to their class, and those who were taken with such condition, will be brought back to their home towns”²⁷. For many families this could mean a relief for

precariousness; however, the commitment to look after their future was not fulfilled.

The final destiny of the children who took part in the expedition may not have been deeply studied. Balmis’ interest on the children being well treated after fulfilling their task has to be highlighted.

In a letter to Caballero shortly before the departure of the first expedition members from Madrid, Balmis suggested the following solution: “With regard to the Spanish children at their arrival to America and once concluded their vaccination, I find it preferable bringing them back to Spain in the first Real Armada ship available, and they could be happier if the King’s mercy grants them five or six *reales* daily until they become suitable to be employed and not leaving them in America under the care of the Viceroy with their education and support provided at the expense of HM, because in addition to the cost being four times higher, they would never achieve a good education in countries with such abundance of vice and where unwary young boys get easily lost”²². The Spanish children, most of them orphans, never came back to their country as Balmis wanted and were institutionalized in Mexico City’s hospice in inappropriate conditions. Some of them, some years after the expedition concluded, made claims requesting for the fulfillment of the mentioned ordinances, as in the case of “I, D. Cándido José García, native of La Coruña, brought to this America by order of HM, as duly certified before Y.E. with justifying documents, and in the best form existing in the law, state: That HM, by Royal Order of March 17 1809, has placed me with others of my class under the protection of Y.E. to watch for us with the charity and love of a true father; and Y.E. by his Superior Decree of current June 13th with regard to mi petition to be provided with the fee of a regiment’s cadet being refused, and offering me a scholarship in any of the schools governed by the royal patronage in case a I would like to pursue the ecclesiastic career; I resort to your paternal patronage stating having decided, after deep reflection, to undertake the aforementioned career and, consequently, I beg Y.E. to have the kindness to put me in possession of said scholarship, in order to prevent as soon as possible the risk my improvements are exposed to by idleness”²⁸.

With regard to the children who came back from the Philippines, most of them had known parents or at least mother⁷, which constitutes a clear difference. The parents of these children were made promises and offered an economical compensation to give their consent. Expectations were not met and the families were

disappointed. Balmis reacted systematically against this abandonment, during and after the expedition. As an example, we quote the document he submitted on July 30, 1810, to the Mexican Royal Governmental High Court: "I was quietly living in the court, believing that orders were being obeyed, when I received complaints from town councils and priests, as well as on behalf of the parents and the children themselves, fairly reprimanding me because none of my promises was fulfilled, and that the very next day after their arrival to Mexico, the Viceroy had sent them back to their parents without giving them nothing of that that was promised. In those days, the intruder French government was ruling in Madrid, and I was forced to restrain the impetus of my aching heart and wait for a better moment to be able to represent the legitimate Spanish government, namely, the Central Board, which had moved to Sevilla, where I ran to looking for it carrying the papers of the expressed complaints.

"Once the Supreme Central Board was informed about all exposed issues, it had the kindness of sending on behalf of Our Sovereign D. Fernando VII the Royal Order to immediately bring the Galician boys out of the hospice, and everything else is stated in this Royal Order, from which I attach a copy; however, a year has elapsed since it was issued, and nothing has been obeyed; the Galician boys, some of them are still in the hospice, and those living in the Kingdom, have not enjoyed any of the things mandated by HM, as with great pain have I witnessed upon my arrival to this capital city. In this situation, I am forced to resort to Y.H. and beg from you to kindly enforce the last Royal Order of March 17 of the previous year, which is found in the secretary's office of this Supreme Government, in favor of the young boys from this Kingdom"¹⁷. The state of neglect the vaccinifer children were in was evident.

Balmis referred to the Spanish children, the Galician boys who crossed the Atlantic and were institutionalized in the poorhouse where "only four are left, and the others have been extracted by people who have taken care of their education and subsistence". He was also concerned about their whereabouts, requesting from the Royal High Court that "in order to fulfill such delicate assignment, it is essential for Y.H. to have the kindness to order the charity board of this hospice for a detailed list on the whereabouts of the extracted boys stating the treatment and education given by the subjects they are in possession of, in order to satisfy the concerns of some parents who, ignoring their whereabouts, claim them, as well as to improve their lot if

necessary, and provide them with occupation, career or destination, according to the talents they discover and advantages they offer; with the same being executed with the young men of the Kingdom, through the authorities of the districts they are found; this way, the sacred promised of HM will be fulfilled, and the fair complaints of the interested parts will be satisfied"¹⁷.

This way, he demonstrated his responsibility, showing that he was a director who was ready to protest to defend the essential members of the expedition. The nature of his demand can be well justified by his "patriotic zeal", something he was proud of, or else to remark, according to his judgement, the incompetence of Viceroy José de Yturriaga, with whom he had constant confrontations.

The order of March 17 1809 was sent to different town councils of the New Spain. Balmis mentioned it in several documents where he tried to enforce its obedience. As an example, there is a letter sent to the district council of Zacatecas on March 22, delivered personally by D. Ángel Crespo, who is introduced as secretary of the vaccine: "to have the necessary measures taken with four children existing in this city out of those who returned from the Philippines"²⁷.

In this letter, failure to comply with previous orders regarding the children used in the expedition is remembered, requesting for those who were from Galicia to be extracted from the poorhouse in Mexico City, and to be provided with an occupation, career or destination according to their talents, with this grace and protection being extensive to all children of this vicerealty who went to Philippines²⁷.

Other examples of demands are provided by children recruited in México, such as the letter written on January 28, 1809 by: "José Castillo Moreno, native of Fresnillo. I was one of those chosen by the director of that expedition D. Francisco Xavier de Balmis, with two hundred pesos being assigned as award to some, and three hundred pesos to others. Since the director proposed that those not receiving this award would be placed in some destination ordered by His Majesty (...), I abandoned my trade, trusting that with this disposition I would be able to pay for my survival, I drifted away from my venerable and old parents and proceeded to make this service for His Majesty, which I concluded with proven honesty, and having returned at the expense of a thousand misfortunes to my homeland, I have not deserved any destination to this moment, even when there are vacant positions, and this is why have headed from Fresnillo to this capital city, passing in my journey through serious sorrow, only to

be favored by the pious shadow of H.E., to whom with humble surrender I beg, by virtue of the above exposed (merit acquired at serious expense), to have the kindness to order for the position of your consent to be conferred to me, by means of which I will be able to come to my downhearted parents' and unhappy little sisters' aid, since neither they aspire to, nor have they other protection than mine"²⁸.

The odyssey of the vaccinifer children has remained diluted in history as a simple anecdote. Elevated to the category of anonymous heroes by some authors, they were actually more one example more of childhood instrumentalization for scientific purposes. However, their constant presence in documents narrating different stages of the expedition shows the recognition to their leading role in spreading the vaccine.

In the intra-history of the members of the expedition they were the subject of great care and efforts by the rector, in addition to a constant defense of their dignity and rights by Balmis. The response of the State was not up to the standard of the acquired compromises, leaving some of their biographies stigmatized by the scars of abandonment.

References

- Jenner E. An Inquiry into Causes and Effects of Variolae Vaccinae, a Disease, discovered in some of the Western Counties of England, particularly Gloucestershire, and known by the Name of Cow Pox. Londres: Sampson Low; 1798.
- Premo B. Children of the Father King: youth, authority, and legal minority in colonial Lima. Chapel Hill: University of North Carolina Press; 2005.
- Tuells J, Duro Torrijos JL. La lista de Balmis, agosto de 1803. *Vacunas*. 2011;12:111-7.
- Rusnock A. Catching Cowpox: The Early Spread of Smallpox Vaccination, 1798-1810. *Bull Hist Med*. 2009;83(1):17-36.
- Díaz de Yraola G. La Vuelta al mundo de la Expedición de la Vacuna. Prólogo de Gregorio Marañón. Sevilla: Escuela de Estudios Hispano-americanos de Sevilla; 1948.
- Few M. Circulating smallpox knowledge: Guatemala doctors, Maya Indians and designing Spain's smallpox vaccination expedition, 17480-1803. *Br J Hist Sci*. 2010;43(4):19-537.
- Castillo y Domper J. Real Expedición Filantrópica para propagar la vacuna en América y Asia (1803) y Progresos de la Vacunación en nuestra Península en los primeros años que siguieron al descubrimiento de Jenner. Madrid: Imp. Ricardo F. de Rojas; 1912.
- Mark C, Rigau Pérez JG. The world's first immunization campaign: The Spanish smallpox vaccine expedition, 1803-1813. *Bull Hist Med*. 2009;83(1):63-94.
- Ramírez Martín SM. El niño y la vacuna de la viruela rumbo a América: La Real Expedición Filantrópica de la Viruela (1803-1806). *Revista Complutense de Historia de América*. 2003;29:77-101.
- Archivo General de la Nación de México. Reales Cédulas, Exp. 64 Caja 189.
- Béthencourt A. Inoculación y vacuna antivariólica en Canarias (1760-1830). En: Morales F, ed. V Coloquio de Historia Canario-Americana (1982). Madrid: Ediciones de la Excm. Comunidad de Cabildos de Las Palmas de Gran Canaria y del Excmo. Cabildo Insular de Gran Canaria; 1985. p. 280-307.
- Fernández del Castillo F. Los viajes de D. Francisco Xavier de Balmis. Notas para la historia de la expedición vacunal de España a América y Filipinas (1803-1806). México: Ed. Galas de México; 1960.
- Tuells J, Duro Torrijos JL. Josep Salvany i Llopart: el vacunador que atravesaba tormentas. *Vacunas*. 2010;3:125-32.
- Balaguer Perigüell E, Ballester Añon R. En el nombre de los niños: la Real Expedición filantrópica de la Vacuna (1803-1806). *Monografías de la Asociación Española de Pediatría (AEP)*. 2003.
- Ramírez Martín SM. La mayor hazaña médica de la Colonia. La Real Expedición Filantrópica de la Vacuna en la Real Audiencia de Quito. Quito: Ed. Abya-Yala; 1999.
- Cortés Riveroll R. Inicio de la vacunación en la ciudad de Puebla. Veracruz: Cuaderno de trabajo n.º 30. Instituto de Investigaciones Histórico-Sociales, Universidad Veracruzana; 2008.
- Archivo General de la Nación de México. Virreinal, Epidemias. Exp. 007. Caja 3916.
- Archivo General de la Nación de México. Indiferente, Virreinal. Exp. 006. Caja 0593.
- Ramírez Ortega V, Rodríguez-Sala ML. La participación de los cirujanos novohispanos en las operaciones vacunales antes, durante y después de la "Real Expedición Filantrópica de la Vacuna". *Revista Complutense de Historia de América*. Madrid. 2009;35:187-207.
- Smith MM. The "Real Expedición Marítima de la Vacuna" in New Spain and Guatemala. *Trans Am Phil Soc (new series)*. 1974;64:3-74.
- Archivo General de la Nación de México. Protomedicato. Exp. 48, Caja 5641.
- Tuells J, Ramírez Martín SM. Balmis et Variola. Valencia: Generalitat Valenciana; 2003.
- Colvin T. The Real Expedición de la Vacuna and the Philippines, 1803-1807. En: Monnais L, Cook HJ (eds.). *Global movements, local concerns: Medicine and Health in Southeast Asia*. Singapore; 2012. p. 1-23.
- Archivo General de la Armada D. Álvaro de Bazán. Viso del Marqués. Sección: Expediciones a Indias, Legajo 43, Exp. 105.
- Archivo General de la Nación de México. Virreinal, Epidemias. Exp. 19, Caja 5881.
- Archivo General de la Nación de México. Virreinal, Epidemias. Exp. 019, Caja 5297.
- Archivo General de la Nación de México. Indiferente Virreinal. Exp. 105, Caja 5395.
- Archivo General de la Nación de México. Virreinal, Real Audiencia. Exp. 008, Caja 3652.