

II CENTENÁRIO DA INTRODUÇÃO DA VACINA CONTRA A VARÍOLA EM MACAU



Arms Around the World

The Introduction of Smallpox Vaccine into the Philippines and Macao in 1805

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Dr. Francisco Xavier Balmis paced the deck of the *Magallanes*, while its crew was busy securing the square-rigged sails and coiling ropes after the nine-week voyage from Acapulco. The galleon had entered Manila Bay on April 15, 1805 (Easter Day) and, by the morning of Monday the 16th, had dropped anchor just offshore from the *Intramuros* fortifications of Manila.

The proud and sternly erect Balmis, now nearing his 50th birthday, had come a long way from his native Alicante in Spain. He was eager to receive the official greeting party, along with the requisite permission to come ashore with his six medical staff and 26 small, excited, but very weary boys from New Spain, as Mexico was called at that time.

In preparation for their reception by Philippine Governor-General Rafael Aguilar and the eagerly anticipated ceremonies, the boys were dressed in resplendent uniforms made expressly for this royal expedition. Each uniform carried the crest of Spanish Queen Maria Luisa, confirming their status as personal representatives of King Carlos IV.

Keeping the boys under a watchful eye was Isabel Cendala, former rectoress of the orphanage in La Coruña, Spain, who had now become the first international female nurse in history. She had her hands full. Twenty-six boys aged 3 to 6 years old can be very unruly, especially when so full of excitement.

Two of the boys however, stood quietly aside, with medical practitioner Francisco Pastor and nurse Pedro Ortega giving them very close attention. Each was mildly ill, his energy subdued. For the moment, these two boys were the most valuable of all. They carried the life-saving treasure that had been transported two-thirds of the way around the world.

As Dr. Balmis paced the deck, he could not help but think about the course of events that had brought him and his expedition to the far-away shores of Asia.

KING CARLOS IV: PROBLEM AND RESPONSE

In December of 1802, King Carlos IV of Spain was presented with a problem that touched him deeply. His loyal subjects in Peru faced a sudden, fearful epidemic of smallpox. Carlos empathized. His own family had been touched by the disease.

Carlos also knew that a new and entirely safe protection against the disease was now available. In 1798, English doctor Edward Jenner had declared to the world that his discovery of injecting cowpox fluid into the arm of a child provided immunity to the often deadly or disfiguring disease of smallpox.¹ Throughout that year, the *Gazeta de Madrid* had announced in almost every issue, the arrival and successful application of the vaccine in yet another Spanish village.

Opposite: Dr. Balmis honored in a monument at the Institute of Tropical Medicine in Alabang, south of Manila. Photo by Thomas B. Colvin.

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King Carlos turned to his advisers for a proposal. How could the Crown respond to the crisis in Peru? Might the new discovery be useful?²

It was the King's court doctor, Francisco Xavier Balmis, who provided the answer—a solution of unprecedented vision and scale. The Crown should finance an expedition to transport the vaccine throughout the entire Spanish empire and to provide free vaccinations to all the children of the Realm.

Transporting the vaccine over long distances, through tropical climates was a major challenge. Balmis proposed the safest, most reliable and most efficient solution. To utilize a chain of human vaccine carriers, each carrying live, developing vaccine in his arm, until it reached maturity on the ninth day, at which time the fluid would be passed on to another carrier.

For such a plan to work, Balmis reckoned the carriers must be young boys who had never been exposed to the disease.

On the first of September 1803, King Carlos issued his unprecedented Royal Order. Under royal sponsorship, the *Real Expedición de la Vacuna* would transport the life-saving smallpox vaccine throughout the empire, even as far as the Philippines in Asia.

The expedition had three principle tasks: to vaccinate as many children as possible; to train doctors how to safely perform vaccinations and how to preserve the fluid over time; and to set up a central vaccination board in each country, to oversee the vaccination program over the coming decades.

Balmis quickly enlisted a medical staff, gathered 22 orphan boys aged four to nine years of age from the north-western province of Galicia and recruited the rectoress of the orphanage in La Coruña to provide special attention and care to the youngsters.

VOYAGE TO THE AMERICAS

The expedition departed from La Coruña on November 30, 1803, on the *Maria Pita* and proceeded to the Canary Islands, Puerto Rico and then on to Venezuela, where it divided into two groups: one heading into South America under the leadership of Dr. José Salvany, the other continuing with Dr. Balmis on to Cuba, Guatemala, New Spain and, eventually, Asia.

The Asian leg of the expedition has never been thoroughly investigated. In the 1950s, Philippine

medical historian José Bantug wrote a brief history of medicine in the Philippines during the colonial period. The Spanish language edition includes an unorganized and unsourced set of transcriptions of some of the principal documents in the archives in Seville and a subsequent academic article presents a portion of the story in narrative form.³

More recently, American researcher Ken de Bevoise has written a very thorough study on epidemic disease in colonial Philippines, including smallpox. But his focus is on the late nineteenth century when documentation became abundant, with only a brief mention of the Balmis Expedition.⁴ The general chroniclers of the expedition, from Spain, Mexico and the United States, mention the Asian leg in only a page or two, if at all.⁵

What has been previously written about the Asian portion of the expedition is based on a handful of documents in Spain and Mexico, which raises as many questions as provides answers.⁶ The central questions are:

- What happened to the expedition, and especially the children of New Spain, during the trip across the Pacific and during their stay in the Philippines?
- Why did it take nearly two and a half years before the children got back to New Spain?
- What was the impact of the expedition on Asia?

GATHERING THE BOYS

For the expedition onwards to Asia, Balmis of course needed more children.⁷

In early November 1804, Balmis set out to spread the vaccine across the highlands of New Spain and to gather his group of children. When Balmis arrived in Zacatecas, he was accorded all the honors and adulation which he had come to expect: official greeting party on the outskirts of town, triumphant procession into the town center, official endorsements by town leaders and priests, celebratory masses at the central church, complete with people singing *Tè Deum*, marching bands, and even fireworks.

More significantly, he accepted his first contingent of boys, presented to him by the Zacatecas town officials.⁸

Altogether, Balmis gathered 26 boys to serve as vaccine carriers. Only boys born after the major

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KING CHARLES IV, AND QUEEN LOUISA MARIA.
of Spain.

Published for John Bell, Southampton Street Strand, March 1804.

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VACCINE CARRIERS FROM NEW SPAIN⁹

ZACATECAS

Teofilo Romero, 6 yrs old – Spanish
 Felix Barraza, 5 yrs old – Spanish
 Jose Mariano Portillo, 5 yrs old – Spanish
 Martin Marques, 4 yrs old – Spanish
 Jose Antonio Salazar, 5 yrs old – Mestizo
 Pedro Nolasco Mesa, 5 yrs old – Mestizo

FRESNILLO & SOMBRERETE

Jose Delores Moreno, 14 yrs old – Spanish
 Jose Felipe Osorio Moreno, 6 yrs old – Spanish
 Juan Amador Castañeda, 6 yrs old – Mestizo
 Jose Francisco, 6 yrs old – Spanish orphan
 Jose Catalino Rivera, 6 yrs old – Spanish
 Buenaventura Safiro, 4 yrs old – Spanish
 Jose Teodoro Olivas, 5 yrs old – Spanish

LEON & QUERÉTARO

Guillermo Toledo y Pina, 5 yrs old – Spanish
 Jose Maria Ursula, 5 yrs old – Indian

VALLODOLID [modern-day MORELOS]

Juan Nepomuceno Torrescano, 5 yrs old – Spanish
 Juan Jose Santa Maria, 5 yrs old – Spanish orphan
 Jose Antonio Marmolejo, 5 yrs old – Spanish
 Jose Silverio Ortiz, 5 yrs old – Spanish
 Laureano Reyes, 6 yrs old – Spanish
 Jose Maria Zarcehaga, 5 yrs old – Spanish orphan

GUADALAJARA

Jose Agapito Yilan, 5 yrs old – Spanish
 Jose Feliciano Gomez, 4 yrs old – Spanish
 Jose Lino Velasquez, 5 1/2 yrs old – Spanish
 Jose Mauricio Macias, 5 yrs old – Spanish
 Ignacio Naxero, 5 1/2 yrs old – Mestizo

smallpox epidemic of 1797 would be eligible, i.e. boys aged six and younger.

By late January 1805, the expedition's mule train climbed its last mountain on the arduous road to Acapulco. They were an unusual sight. Across the backs of mules were slung saddlebags, specially made to carry one boy on either side.

Suddenly, Acapulco Bay spread out before their eyes.

THE VOYAGE TO ASIA

The Manila galleon, the *Magallanes*, set sail on February 8, carrying a lot of passengers. In fact it was overbooked.

Seventy-seven priests—Franciscan, Augustinian, Recollect and Dominican—were destined for posts in the Philippine provinces and beyond, where they would seldom see another European. Only three of them ever returned to Spain. The rest were to die in Asia. One of them was Father Manuel Blanco, who later wrote the major treatise on Philippine flora.¹⁰

Due to the fear of impending war with England, fifty-four troops were also on board, in addition to 3 wives and 16 relatives.

Left behind were 40 European criminals, who had arrived in Mexico a couple months before, bound for banishment in the Philippines.

The *Magallanes* was carrying over 390 people, counting the expedition staff and 26 children, along with the ship's 10 officers and crew of over 200.

Balmis was appalled at the arrangements which Captain Angel Crespo provided for the boys. There were no separate beds and no ventilation as requested. Instead, the boys were forced to sleep together on the floor in the powder magazine, surrounded by 5,000 pounds of gunpowder. Because of the dangerous nature of the gunpowder, no light was allowed into the room. Illumination, only when necessary, came from lamps in the corridor outside. Moreover, the powder magazine was well below deck, even below water level, to protect it from enemy cannon fire. The location might have been safe, but it was musty and down where there were numerous rats and other vermin. Also, the food served to the boys was inadequate to maintain their health.

The sleeping arrangements for the boys led to a near disaster. A night of tossing and turning unintentionally led to the spread of the vaccine to seven

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boys at once. The expedition's margin of error had suddenly vanished, and any unforeseen delays in the voyage would certainly jeopardize its success.

Fortunately, the *Magallanes* made very good time across the Pacific, arriving in Manila Bay on April 15, Easter Day.¹¹

THE PHILIPPINES – PHASE ONE

Immediately upon arrival in Manila Bay, Balmis wrote out a list of his six staff members, mentioning the 26 Mexican boys as well. The list was sent ashore to facilitate the formalities of disembarkation.¹²

Balmis paced the deck, but no greeting party arrived.

The doctor was a hard-headed, results-orientated man, not given to diplomacy. With diminishing patience, he soon wrote a direct and blunt letter to the colony's ruler, Governor-General Rafael Aguilar, demanding arrangements for immediate disembarkation, lodgings with enough space for a vaccination center, and a public announcement heralding the commencement of vaccinations on April 18.¹³

The letter went ashore, but still no greeting party came out to facilitate the landing of the expedition staff and the increasingly restless boys.

Plan of Manila, 1819, showing the Spanish enclave of *Intramuros* and the nearby *arribales*. Courtesy of Lopez Memorial Museum, Manila.



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King Carlos IV stands regally in front of Manila Cathedral, in a statue unveiled in 1824. Photo by Thomas B. Colvin.

We do not know exactly why Aguilar did not respond. As a man who insisted on ceremony and respect, perhaps he took offence at Balmis' direct and demanding tone. Or perhaps he was simply distracted by other mounting problems facing him, in particular, a lack of public funds,¹⁴ the threat of military conflict in the Philippines with the English¹⁵ and continuing raids by Muslim pirates from the South.¹⁶

Over the next few months, Balmis sent several reports back to Spain, complaining about the expedition's reception and treatment. These letters form the basis of previous accounts of the expedition's troubled experience in Asia.¹⁷

Recently uncovered documents paint a different picture, very much influenced by the turbulent events of the period.

When his letter did not stimulate the production of a welcoming party, Balmis went ashore to present his case directly to the Governor-General in his Palace.¹⁸ Aguilar immediately sent a note over to the City Council in its offices across the plaza, stating tersely that "the obligation to maintain the Director, the caretakers of the vaccine and the children who had brought it, has been approved."

The City Council immediately took action and soon after, wrote back to Aguilar, offering to take care of the expedition staff from its own funds, despite the Council's severe financial situation.¹⁹

Aguilar however, did not announce public vaccinations as Balmis had requested. The Governor-General reportedly had been cautioned by the recently arrived Archbishop Fr. Juan Zuliabar, that the vaccine might not be effective, especially after such a long voyage.

Instead, Aguilar invited Balmis to vaccinate his own five children (Cayetano, the eldest, who arrived in Manila with his parents in 1793, along with Maxiana, Maria del Ampar, Maria de los Delores and Rafael²⁰) in his private quarters on the evening of April 17, after which the Governor-General adopted a wait-and-see attitude.²¹

Balmis soon learned that there was much to do.

The Philippines did itself have problems with smallpox, but on a scale quite different from that in Europe.²²

In Europe, with its large and concentrated population, smallpox had become endemic. To become so, the disease required a population of perhaps 100,000 – 200,000 living in close proximity. Under these conditions, the disease became permanently lodged in the local population, with epidemics reappearing on a more or less regular basis. These epidemics particularly struck young children and the weakened elderly, as most adults would have gained immunity from exposure to previous epidemics.

In the Philippines, the disease had not reached this stage of development, lacking a large enough population pool. The native population, numbering at best guess about two and a half million, was quite dispersed throughout the archipelago. In fact, no more than a third of these (maybe 800,000), were within reach of the Spanish priests who had fanned out to save heathen souls. The rest were hidden away in the mountain jungles, quite far away from Spanish influence. Consequently, the native Filipinos escaped the near extinction that had devastated the Aztecs of the Mexican highlands.

Only in the area around Manila was there a concentrated population: 140,000 to 150,000 in Manila and its immediate suburbs, and maybe another 100,000 in the outlying *arribales* and villages of Cavite and Bulacan.²³

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Smallpox epidemics in the Philippines normally affected only isolated local areas, usually breaking out after being brought ashore by trading vessels from China, which had a major problem with the disease. Under such circumstances, even the adults who had built up no immunity, were susceptible to the disease. The epidemics, while less frequent and very localized, were therefore devastating in the areas affected, with everyone at risk.

The most recent outbreak of smallpox in the Philippines had been particularly deadly, suggesting worse epidemics to come. It began in 1789, in the northern provinces of Luzon, and breaking usual patterns, spread down to Manila, killing uncounted thousands of children and adults and spreading anew a fear of the disease.

During the time of Governor-General Aguilar, the disease had been kept at bay. The Governor imposed a rigorous policy of quarantine for any ships entering Manila Bay with signs of illness aboard. So far, his policy had worked, intercepting three ships from China with infected passengers and preventing the disease from coming ashore.²⁴

Well aware of this background, Aguilar was obviously gratified as he watched the vaccine mature in the arms of his own children. Suddenly, the chilly reception the expedition had received from the Governor-General changed to a warm embrace.

By May 7, Aguilar had already seen the positive results in his children, and he had also received and thoroughly read the book about the history and procedures of vaccination which Balmis had published

Ayuntamiento Building. The *Junta Central de la Vacuna* had offices and a clinic in the *Ayuntamiento*, or City Hall, of Manila from its inception in 1806 until the end of the Spanish era in 1898. Courtesy of Lopez Memorial Museum, Manila.



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duos de la Junta, el competente número de Exemplares del Reglamento Economico Politico Medico que ha presentado á este mismo Superior Gobierno Don Francisco Xavier de Balmis, reducido á los artículos siguientes.

REGLAMENTO

PARA MANTENER,

Y

PERPETUAR LA PRECIOSA VACUNA

en estas Islas.

Quando la Soberana voluntad del Rey determinó el que se formase una Expedicion que llevase a todos sus Dominios de América, é Islas Filipinas el precioso preservativo de las Viruelas; y quando su Paternal amor derramó con mano liberal y bien hechora los caudales de su Real Erario para que libertase á sus Pueblos del azote exterminador de las Viruelas; las angustias miras de S. M. se estendieron hasta las generaciones futuras; por que enbano el fluido Vacuno libertaria á quantos existen en nuestros dias si dejase expuestos á este peligro á todos aquellos desgraciados á quienes la suerte hizo venir al mundo uno, o dos años despues. Esta Real Expedicion, fué proyectada por el mejor de los Monarcas, con el doble obgeto, no solo de llevar a sus Pueblos este benéfico preservativo, si no con el de asegurar su duracion, y perpetui-

Front page of the *Reglamento* for a Junta Central de la Vacuna, or Central Vaccination Board, which Balmis submitted in mid-May 1805. Courtesy of Lopez Memorial Museum, Manila.

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back in Spain in 1803.²⁵ On that day, Aguilar sent Archbishop Zuliabar a copy of the Balmis treatise, along with an enthusiastic letter endorsing “the treatment that you may consider convenient to help those villages administered by clergymen in order to convince their inhabitants to accept the vaccination that will preserve them from the destructive and terrible plague called natural smallpox by means of a very simple method in order to defend their children from such a dreadful disease which most of the time leads victims to death and in cases of survival to remain forever full of defects.”²⁶

Already, word was spreading throughout Manila about the vaccine. Balmis himself later acknowledged that he had gained important assistance from the influential Dean of the Manila Cathedral, Francisco Díaz Duran.²⁷ The native *Indios* however, were initially very suspicious of the procedure, and often force was necessary to bring them to the vaccination sessions.²⁸ This perhaps explains why Balmis also singled out Francisco de Oyuelo (Sergeant Major of the Militia) and Captain Pedro Martínez Cavezón for praise for their assistance.²⁹

In the first days of May, Portuguese trader Pedro Huet arranged for vaccination of the crew of his ship *Esperanza*, which immediately departed for its return trip to Macao, a step that opened the door to yet another chapter in the expedition's story.³⁰

The tempo of the vaccination campaign continued to gather momentum. On May 16, Balmis formally presented Aguilar with his recommended *reglamento* for a *Junta Central de la Vacuna*, or Central Vaccination Board.³¹ His covering letter to the Governor-General clearly summarizes the far-sighted intent of the King's Royal Order. The goals of the Royal Monarch, Balmis wrote, were to ensure that the vaccine would be perpetuated in each colony, for use throughout the coming decades. The King intended to protect his subjects in every colony in the future.

The very next day, Archbishop Zuliabar himself indicated his acceptance of the vaccination program, writing to Aguilar that he had read the Balmis treatise and that he would “advise all the clergymen from my Archbishop seat to act accordingly with zeal and interest in order to make available the useful discovery and to convince their church members to use said vaccine that will free their children of the terrible and destructively spreading disease called natural smallpox.”³²

May 29 however, brought the major breakthrough for Balmis.

Governor-General Aguilar sent out an official communication to government officials throughout the country, endorsing both the vaccination procedure and the campaign. He also announced the appointment of Manila-based doctor, Bernardo Rivera, to conduct a vaccination program in areas around Manila, as well as steps to train healers throughout the country in the procedure. And finally, he announced that already within the first six weeks, at least six to seven thousand children and adults had been vaccinated in Manila and its suburbs. He declared that the intention of the program was to “eradicate this dangerous disease from the human race.”³³

That same day, Archbishop Zuliabar sent out a letter to his priests to do everything possible to encourage all parents to have their children vaccinated. After giving an unequivocal endorsement of the vaccine's effectiveness, Zuliabar issued clear instructions to his priests:

“According to the official communication sent by the Governor-General and General Captain of these islands on the seventh day of this month, all the priests and clergymen, including the foreign ones from our Archbishop seat, shall inform the church attendants, especially those who have children, on the very efficient remedy that has been discovered. They shall teach the churchgoers the easy method to prevent the disease and shall make them aware that the vaccine will not harm them in any fashion and shall instruct them to use it on those who have not suffered the disease before. This method shall be explained by the clergymen in order to establish in a perpetual fashion this remedy, hoping that the clergymen of our Archbishop, both foreigners and natives, fully commit themselves to this task and with the aim of accomplishing that purpose, the clergymen of our jurisdiction shall receive a copy of said command with acknowledgement of receipt.”³⁴

Within six short weeks, during Manila's hot and enervating tropical summer, the expedition had accomplished a great deal: official public endorsements from both government and church; acceptance in principle of the *reglamento* for a *Junta Central*; the appointment of a local doctor to take the lead in the

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Father Pedro Murillo Velarde, *Mapa delas Yslas Philipinas*, 1734. Courtesy of Lopez Memorial Museum, Manila.

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vaccination campaign; the training of additional practitioners to carry the vaccine into outlying areas; and finally, vaccination of six to seven thousand people in Manila and its immediate environs.

Despite these accomplishments, the next three months were difficult ones for Balmis. He himself was suffering badly from energy-draining dysentery and high fever. He also had several unfortunate squabbles with Aguilar; both men were offended by a mutually perceived lack of respect.³⁵

Everyone (Balmis and government officials alike) expected the expedition to wrap up its work in the Philippines by the end of June, with staff and boys boarding the galleon on its next trip back to Acapulco.³⁶

Suddenly, the difficulties plaguing the Philippines at that time, began manifesting themselves. The *Magallanes* was in no condition to sail, and because of the sinking of the galleon, *San Andres*, in 1798, there was no other ship available for the voyage. The scheduled departure of the expedition for its return trip to New Spain was postponed until the next sailing season of Spring 1806. Meanwhile, the *Magallanes* went into the Cavite shipyards for repairs.

While the children and staff of the expedition were severely disappointed, the colony's financial officials were downright alarmed. By the end of June, a steady stream of letters from various officials in charge of government funds began, complaining that the Treasury could not continue to support the Expedition, especially over a long term. To the credit of the Philippine authorities, orders were always issued to continue financial support for the expedition. One report, towards the end of the expedition's prolonged stay, indicated that donations sufficient for a full year's support came in from Philippine provinces that had already benefited from the vaccine.³⁷

With departure clearly delayed for at least several months, alternative plans for Balmis and the expedition began to take shape.

Partly because of his severe fever and dysentery health problems and partly because of conflict between Balmis and New Spain Viceroy José de Iturrigaray, Balmis decided to go on alone to Macao, where he would board a neutral ship for return to Europe. Aware that the vaccine had not yet reached Macao, he also proposed taking the vaccine with him, utilizing a few



Plan of the Bay of Manilla in the Isle of Luconia, by A. Malaspina (1754-1810). Courtesy of Lopez Memorial Museum, Manila.

boys, likely of Chinese heritage, as carriers.³⁸ In light of the Treasury's difficulties, it is remarkable that Balmis was given his entire salary in advance, along with a budget for the Filipino boys.³⁹

It was during this stressful period in Manila that Balmis sent off to Madrid the very critical report about his progress in Manila that cast a shadow over previous accounts of the expedition in Asia.⁴⁰

A truer perspective is perhaps offered by the recently discovered account of daily expenses for the expedition between its arrival and the end of September, proving that at the very least, the expedition was well fed, even down to wine for the adults and sweets for the boys.⁴¹ They also were provided with a full complement of servants.

Balmis departed Manila on September 3, 1805, on the Portuguese frigate *San Francisco*, alias *La Diligencia*,⁴² accompanied by three boys supplied to him by the curate of the Santa Cruz church, Don

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DAILY FOOD & LODGING EXPENSES – APRIL TO AUGUST 1805

Pan
Carne
Gallinas y Pollos
Leche
Menudencias de Baca
Pescados
Puerco
Leña
Huevos
Arroz
Calabaza blanca y colorada
Agua y vinagre
Ajos y cebollas secas
Tomates y cebollas frescas

GASTOS de la Casa diaria	10p 09
Alquileres de la Casa diaria	2p 28
Sueldos de los sirvientes	1p 08
TOTAL	13p 38

Azúcar
Plantanos bungulanes
Plantanos de obispo
Frutas
Un atado de cana dulce
Apio y camote
Chocolate
Pimiento
Dos atados de Exparragos
Dos candelas de a real
Dos botellas de vino Carlon
4 platos de dulce

Raymundo Roxas, a native priest.⁴³ Also on board, were five Dominican priests who had sailed with Balmis to the Philippines on the *Magallanes*.⁴⁴ The *Diligencia* carried another, rather unusual passenger: an English botanist named Kerr, who served as one of the King's gardeners and who had come to Asia to collect plant specimens. Kerr's valuable collection was secured on the ship's top deck, comprising upwards of 700 living specimens, of which more than one hundred were new to science and had never been described.⁴⁵

The voyage was frightening. Just as the *Diligencia* arrived off the coast of Macao, the ship encountered a huge typhoon. Twenty seamen were swept overboard. Botanist Kerr lost almost his entire collection of plant specimens. Balmis later reported, that he cuddled the Filipino boys in his arms to provide comfort and protection during the storm that lasted several days.

After several stormy days, Balmis and the boys finally landed in Macao to a ceremonial reception.⁴⁶ Thus opened another and totally unforeseen chapter in the expedition's story.

THE PHILIPPINES – PHASE TWO

Leadership of the expedition in the Philippines passed at this point to Dr. Antonio Gutierrez.

The authorities in Manila mounted a vigorous and broad-ranging campaign to distribute the vaccine throughout the islands.

Firstly, since the expedition staff were essentially stuck in the country until the next sailing of the *Magallanes* scheduled for April the following year, plans were made for an expedition out into the provinces, headed by practitioner Francisco Pastor and nurse Pedro Ortega. Governor Aguilar issued a detailed decree on September 24 outlining the expedition. It was to go immediately to Misamis in Mindanao and from there, onward through the Visayas islands, accompanied by 12 Filipino boys.⁴⁷

The boys to carry the vaccine, we now know, came from the Province of Tondo, which surrounded Manila. Their mothers were promised a payment of three pesos for their sons' services.⁴⁸

Misamis, on the island of Mindanao, was a very logical first stop, the furthest area to the South over

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which the Government exercised real control.⁴⁹ The expedition sailed to Misamis on a *pontin* provided by the *corregidor* of Misamis. It was a dangerous trip, undertaken during the final months of the typhoon season. Also, there were sightings in the area of fleets of Moro pirates,⁵⁰ along with the additional growing concern of British warships in Philippine waters.

On December 24, Governor-General Aguilar wrote a report to the authorities in Madrid about the progress of the expedition, indicating that the expedition to the Visayas was still ongoing, without providing any details.⁵¹

By early February, we have very recently learned, Pastor and Ortega had made their way as far north as Iloilo. Here they went their separate ways. Ortega sadly died on February 6 en route to the neighboring island of Negros. Pastor apparently remained on the island of Panay. In March, seeking to return to Manila in time to catch the April sailing of the *Magallanes*, he took the schooner *Sto. Niño* provided by the island's *alcalde*, Josef Ramon Arroyo, which carried him over to the Province of Batangas, on the main island of Luzon. He went overland to Calamba on the shores of the large lake Laguna de Bay, where he boarded a boat which carried him to Manila. He arrived in Manila on March 23, so ill, that he went straight to bed, unable to provide the expedition's assistant director, Antonio Gutierrez, with the full details of his vaccination campaign.⁵²

For some reason, Governor-General Aguilar signed an order on December 18, 1805, sending out a

second expedition southwards. Mateo Gómez León was dispatched with four boys provided by the *alcalde mayor* of Batangas to carry the vaccine to Cebu. He was to be paid 30 pesos a month, to be taken from the community chest of the province.⁵³

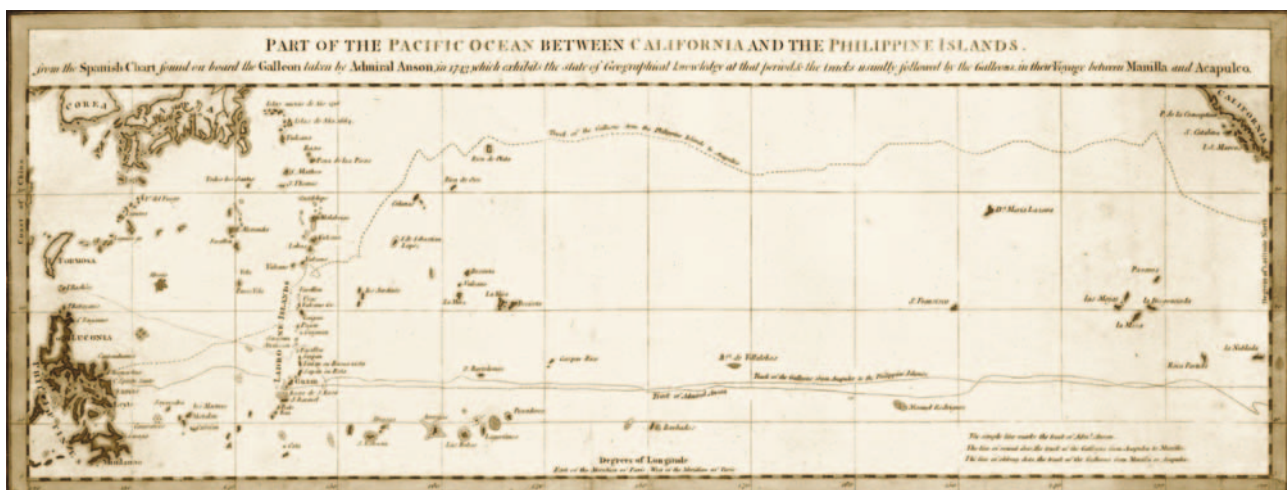
As all these efforts in the Visayas were going forward, practitioner Bernardo Riviera, who had been trained by Balmis and who had already carried out vaccination clinics in Manila and its immediate suburbs, was himself very busy. In October and November of 1805, he carried his campaign out to the provinces of Bulacan and Pampanga north of Manila. In the early months of 1806, he turned to the provinces of Laguna, Tayabas and Batangas to the south of Manila.⁵⁴

By 1807, medical practitioner Andres Gonzales was maintaining and distributing the vaccine throughout the area of Capiz on the island of Panay.⁵⁵

We do not have a count of the number of children vaccinated in the Philippines while the expedition was there. However, a report printed in Mexico in August of 1807 indicated substantial success. At least 20,000 Filipino children were vaccinated by the end of 1805, not counting results from the provincial campaign to the south. The report even claimed that rebellious native chiefs laid down their arms and made peace with Manila after the expedition into the provinces quickly put down a sudden outbreak of smallpox.⁵⁶

It appears however, that the expedition did not reach as far south as the Muslim stronghold of Sulu, even though the Sultan signed a peace agreement with

Part of the Pacific Ocean between California and the Philippines. Courtesy of Lopez Memorial Museum, Manila.



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Samuel Dunn, The East India Islands, 1774. Courtesy of Lopez Memorial Museum, Manila.

Manila in early November 1805. A British trader later reported to Sir Raffles, that there was a serious smallpox epidemic there in 1808 and that vaccination was unknown in the area.⁵⁷

THE VOYAGE HOME

Preparations for the scheduled mid-April departure of the *Magallanes* were well underway, when the British frigate, *Greyhound*, arrived in late March of 1806, off the shores of Luzon. Word quickly reached Manila, that the British were seizing Philippine inter-island vessels, taking Filipino seamen as captives and inquiring about details of the galleon's departure for New Spain. The naval postcommander in Manila immediately ordered the postponement of the galleon's departure and sent out a rapidly assembled fleet of small ships armed with cannons to pursue, unsuccessfully as

it turned out, the British warship.⁵⁸ The staff and children of the Balmis Expedition were once again disappointed by a last minute cancellation of their return voyage to New Spain.

The Napoleonic Wars of Europe were reaching all the way into Philippine waters.⁵⁹ Spanish treasure ships were once again fair game for British naval officers, whose greatest ambition was to capture such a 'prize'. In fact, the British took several major prizes in Philippine waters (a major inter-island ship in 1805, the *Principe Fernando* of the Royal Company of the Philippines in 1806 and the *Pallas* in 1807) while the Balmis Expedition was in the country, awaiting its return voyage to New Spain.⁶⁰

The expedition, with all of the 26 Mexican boys, actually did set sail on the galleon *Magallanes* in mid-June 1806, its third scheduled departure. Yet once again, the expedition staff and the children met with

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disappointment. The *Magallanes* had to return to Manila due to severe leaks.⁶¹ Governor-General Aguilar, who had been in bad health for some time, sadly died on August 7, shortly after receiving word of this unfortunate *arribada*. Sometime between the ship's departure in June and the expedition's resettlement in Manila by November, one of the expedition's children died.⁶²

There was one positive development for the expedition during this trying half year. The Central Vaccination Board, while having been approved in principle, was never implemented, as the Manila authorities waited to appoint their own programme chief after the departure of the expedition staff.

Vice-Director Gutierrez worked as head of the vaccination campaign nearly up to the very moment of his departure. On June 3, 1806, he vaccinated 25 people at the vaccination clinic at City Hall, including 11 Spanish children, 3 Mestizos, 9 Naturales, plus 3 who were not classified. He followed on June 4 with another 36, including 25 Naturales, 10 Mestizos and 1 child of Spanish parentage.⁶³

With the departure of the expedition staff in mid-June, Dr. Francisco Olivares, surgeon at the Royal Hospital, was immediately appointed to take over the responsibilities, receiving 25 pesos a month for two vaccination sessions a week and for supervising vaccine preservation.⁶⁴

By an official decree of December 20, 1806, the full Central Vaccination Board was appointed, including the Governor-General, along with top officials from the Church, religious orders and colleges. Olivares continued in his post as head of the Board. Manuel Villavicencio was appointed also as a medical practitioner, receiving 20 pesos a month. Cristoval Regidor was appointed as secretary to record vaccinations, and Juan Garcia Verdugo, a high-ranking government official, was appointed as corresponding secretary, with primary duties to correspond with outlying provinces. Furthermore, the decree directed that *Juntas Centrales* were to be set up in the capital of each province, under supervision of the *alcaldes mayores*, for the benefit of the Indios. Each province was also to be provided with a copy of the *reglamento*, prescribed by Balmis.⁶⁵

This *Junta Central* remained active during the entire course of the next century. While there were periodic lapses in administration, with subsequent

scattered outbreaks of smallpox around the islands, it did manage to conserve active vaccine over the decades.⁶⁶

Finally, the expedition looked forward to its fourth scheduled departure from the Philippines. The *Magallanes*, under Captain Juan Vernaci, sailed out of Manila Bay in mid-April 1807, almost two years to the day after the expedition's arrival in the Philippines.

This voyage, happily, was uneventful. The expedition, minus nurse Pedro Ortega and one of the boys from New Spain, finally arrived in Acapulco on August 14, 1807. Sadly, another boy, Felix Barraza from Zacatecas, died in Mexico City, while awaiting final transportation back home.⁶⁷

ONGOING CAMPAIGN
AND THE JUDGMENT OF HISTORY

Even after the expedition staff left the Philippines, the vaccination campaign continued with vigor, pressed forward by the new Governor-General, Folgueras and Dr. Olivares. In 1808, a follow-up expedition was sent out into the Province of Tondo.⁶⁸ More importantly, on August 1, 1808, an edict went out, "Wherein the Governors, *corregidores* and *alcaldes mayores* of these islands were charged to report to the Superior [Office] about the results and the propagation of the vaccine, as soon as they received this measure, [and] to proceed in taking [the vaccine] to the towns where it does not exist."⁶⁹

Madrid, despite its troubled political climate, did not lose interest in the results of the Balmis Expedition. A decree, issued in 1821, arrived in Manila requesting a full account about the status of the *Junta Central de la Vacuna* and its results. The official response from the Board's secretary, Fernando Casas, dated 16 January, 1823, is very informative:

"...knowing that [smallpox] will take advantage of the slightest negligence to ruin many generations, it is most important to preserve at any cost Jenner's precious discovery, which Your Majesty, in a fatherly and magnificent fashion, decided to communicate to this distant province during the year 1805. Ever since then, the vaccine was speedily extended in the islands in such a way that at the present time it is commonly spread in all the villages of the thirty provinces in which the territory is divided."

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The report continued with a description of the *Junta Central* and its work:

“For the prompt and skillful distribution of the vaccination fluid, a board was established in the capital city exclusively for the attention of everything related to the vaccine. Two medical professionals were in charge of the vaccination in the Chambers in City Hall. These professionals are supported by military assistants who have been properly instructed in order to practice the vaccination in the different provinces and villages of the islands in a most careful fashion.”

And perhaps most significantly, the report affirms that the vaccine itself has been maintained in a pure and virulent form:

“A thorough organization has been instituted in order to extend its use and to assure its conservation. Through such organization, it has been possible to preserve the activity and force of the vaccine. The condition, the appearance, the albumin-like look of the vaccine humor, clearly manifest that the vaccine that we possess is the legitimate and safe preservation against the smallpox.”⁷⁰

What we have just witnessed is certainly one of the most remarkable expeditions of all time. It is estimated that at least 500,000 children were vaccinated throughout the Spanish colonies during the expedition. Furthermore, tens of thousands more benefited from the vaccination boards that the expedition established and left behind.⁷¹ Philippine officials in the late 1800's even attributed the colony's major increase in population to the positive effects of the vaccine.

Perhaps the most telling assessments of the expedition came from two leading scientists of the period.

Edward Jenner, who discovered the vaccine, wrote in 1806: “I don't imagine the annals of history furnish an example of philanthropy so noble, so extensive as this.”⁷²

Some years later, German explorer and scientist Alexander Humboldt, who himself had travelled through most of the colonies visited by the Balmis Expedition, wrote that “This expedition will permanently remain as the most memorable in the annals of history.”⁷³ **RC**

NOTES

- 1 Edward Jenner, *An Inquiry Into the Causes and Effects of the Variolae Vaccinae of Cowpox*, London: privately printed, 1798.
- 2 Michael Smith, ‘The Real Expedición Marítima de la Vacuna’ in New Spain and Guatamala, *Transactions of the American Philosophical Society*, New Series, 64, Part I (1974). Smith remains the most complete account in English and the early portions of this paper rely on this source, which is available for online download via JSTOR. Other general accounts of the Balmis Expedition include: Castillo y Domper (1912); Moreno (1947); Díaz de Yraola (1948), recently translated into English in a 2003 reprinting; Fernández del Castillo (1953), with a more widely available 1985 edition; Ramirez Martin (1999) & (2002), which contain the most thorough new research into the background in Spain and the Salvany expedition into South America; Emilio Periguell and Rosa Ballester Afion (2003), available online. There are a number of scholarly articles, some available online, that investigate the expedition's experience within a single area or country. The 200th anniversary of the Expedition has spawned quite a number of websites with general coverage about Balmis and the expedition. For scholars, a discussion group has been formed, with access at www.groups.yahoo.com/groups/balmis.
- 3 José P. Bantug, *Bosquejo Histórico de la Medicina Hispano-Filipina*, Madrid: Ediciones Cultura Hispánica, 1952. An English version was published in Manila, but it lacks many of the important document transcriptions. J. P. Bantug, ‘Carlos IV y la Introducción de la Vacuna en Filipinas’, *Anuario de Estudios Americanos*, XII, 1955, pp. 75-129.

- 4 Ken de Bevoise, *Agents of Apocalypse: Epidemic Disease in the Colonial Philippines*, Manila: New Day, 2002. Originally published by Princeton University Press in 1995. Chapter 4 covers the history of smallpox in the Philippines. While briefly acknowledging good work by the Balmis Expedition, de Bevoise is very critical of the work of the *Junta Central de la Vacuna*, citing lapses in national implementation which allowed repeated outbreaks of the disease. In my view, de Bevoise may be overly harsh in his judgment, as even England experienced major outbreaks after its establishment of a national vaccination board.
- 5 See note 2.
- 6 The principal documents about the expedition in Spanish archives are held at the Archivo General de las Indias in Seville [hereafter AGI] in the thoroughly researched ‘Indif.Gen’ Leg. 1.558, which Balmis researchers commonly refer to simply as ‘1558’. My recent research into the ‘Filipinas’ section at Seville, along with other areas, has unearthed a number of documents shedding new light on the Asian portion of the expedition. Some of the findings are reported in this article. In the Archivo General de la Nación in Mexico City [commonly referred to as AGN], the principal files are in the ‘Epidemias’ section, which has also been thoroughly researched – see especially S. F. Cook, ‘Francisco Xavier Balmis and the Introduction of Vaccination to Latin America’, *Bulletin of the History of Medicine*, vols. XI & XII, Baltimore, 1943. The University of Indiana library holds the Cook collection, which contains typed transcripts of many of the essential AGN documents. Patricia Aceves,

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- a Mexican scholar of medical history, has also worked through this material and published an article, available online, with a different, rather critical interpretation of the expedition's experience in Mexico. Smith, *op. cit.*, reports this part of the expedition in detail.
- Armando González Quiñones, *Zacatecas y Filipinas: Miscelánea Anecdótica de una Lejana Historia Común*, Zacatecas: INAH-UAZ, 2002, limited printing.
- Francisco Fernández del Castillo, *Los Viajes de Don Francisco Xavier de Balmis*, 2nd edition, Mexico City: Sociedad Medica Hispano Mexicana, 1985, pp. 252-253. A ground-breaking book on the expedition by one of Mexico's leading doctors, originally published in 1960, contains transcriptions of a number of the most significant documents, including the list of boys from New Spain.
- For lists of priests, with biographies from the various orders, see Gomez Platero, OFM, *Catálogo Biográfico de los Religiosos Franciscanos de la Provincia de San Gregorio Magno de Filipinas Desde 1577 en Que Legaron los Primeros a Manila Hasta los de Nuestros Días*, Manila: Colegio de Santo Tomás, 1880, pp. 627-630; Sádaba del Carmen, O. R. S. A., *Catálogo de los Religiosos Agustinos Recoletos de la Provincia de San Nicolás de Tolentino de Filipinas Desde el Año 1606, en Que Llegó la Primera Misión a Manila, Hasta Nuestros Días*, Manila, 1906, pp. 384-387; Jorde Pérez, O. S. A., *Catálogo Bio-Bibliográfico de los Religiosos Agustinos de la Provincia del Santísimo Nombre de Jesús de las Islas Filipinas Desde Su Fundación Hasta Nuestros Días*, Manila, 1901, pp. 294-404; Eladio Niera Ocio, O. P., *Misiones Dominicanas en el Extremo Oriente*, Manila, pp. 424-451.
- Some documents refer to the arrival on April 15, others to the arrival on April 16. My interpretation is that the *Magallanes* arrived in Manila Bay on the 15th, but anchored off *Intramuros* after nightfall, with official affairs beginning on the 16th. It has been suggested that the galleon anchored at Cavite City, rather than anchoring close to the road skirting around Manila. However, I suggest that the ship anchored at Manila on this occasion (as did the Malaspina expedition a decade earlier), specifically because it was carrying passengers who were going to disembark, but no cargo. Moreover, it would have been unlikely that the day's events involving Balmis would have unfolded as they did, had communications taken place between Cavite City and Manila.
- Francisco Xavier Balmis, Philippine National Archives [hereafter PNA], Consultas 1802-06, Tomo, Exp. 21, Fol. 22, 15 Abril 1805. Passengers were not allowed to disembark without official clearance from onshore.
- Balmis to Aguilar, 16 Abril 1805, PNA, Cedularios 1803/1805-07, SDS 713, Exp. 21, ff. 93-94.
- For three years in a row, the Philippine government had not received from New Spain its annual *situado*—the Crown's subsidy to maintain its colony in the Philippines. The wider story of the expedition in the Philippines includes the efforts to acquire the *situado* via other ships sent to New Spain for this purpose. These efforts however, have not been included in this article.
- The 1802 Peace Treaty of Amiens had already collapsed, and Spain was quite reluctantly back at war with Britain. Governor-General Aguilar was alarmed that the British might once again attack Manila, as it had in 1762 and consequently much of his attention was directed to shoring up Philippine defenses and enlarging the colony's military forces – a huge drain on public funds. In fact, Aguilar wrote to Archbishop Zuliabar on April 20, noting the lack of public funds and requested a loan from the church's *Obras Pías* to pay for defense preparations against the English. See Aguilar to Zuliabar, 20 Abril 1805, Archives of the Archdiocese of Manila [hereafter AAM], Box 1.D.10, Libro de Gobierno Ecl (1767-1806), Folder 9, Libro de Oficios (Cartas), Fr. Zuliabar, documento 9.54, folio 32. This loan was provided by the church. See Aguilar to Zuliabar, 25 Mayo 1805, D.9.62, folio 36b.
- The major southern island of Mindanao was largely under the control of Muslim *datus*, who did not acknowledge Spanish sovereignty. Moro pirates frequently raided Christian villages in the central islands of the Visayas, and even the southern portions of the northern island of Luzon, enslaving an average of 500 captives a year. The tensions between the Muslim south and the Christian north continue up to this day.
- Balmis to Cavallero, 8 Agosto 1805, AGI, 'Indif. Gen', Leg 1.558, II, ff. 1-8. This document is the most comprehensive report from Balmis about his general reception in Manila. As it is written in the third person, I surmised that it was written by the expedition's official secretary, Angel Crespo. There is some confusion about this name in research literature, as the *Magallanes* captain was also named Angel Crespo.
- Ibid.*
- Metropolitana Noble Ciudad, 19 Abril 1805, PNA, Cedularios 1803/1805-07, SDS 713, Exp. 21, ff. 94-96.
- PNA, Cedularios 1799/1808, SDS-60, ff. 42-42b
- Balmis to Cavallero, 8 Agosto 1805, f. 8.
- See de Bevoise, *op. cit.*
- For contemporary detail about the state of the Philippines during this period, see Martinez de Zuñiga, *Status of the Philippines in 1800*, Manila: Filipiana Book Guild, 1973. This extensive account by Priest Zuñiga was first published in 1802; the Filipiana Book Guild issued an English translation in 1973. See also Tomás Comyn, *State of the Philippines in 1810*.
- Aguilar to Cavallero, No. 85, 20 Julio 1804, PNA, Cartas 1802-1805, SDS 97, Exp. 15, ff. 19-20. In this letter, Aguilar acknowledged receipt of the Royal Order of 1 Sept 1803, announcing the Expedition. He also described the recent history of smallpox in the Philippines.
- Balmis translated (from the French) a work completed by Moreau de la Sarthe and published it in 1803 along with his own lengthy introduction under the title *Tratado histórico y práctico de la Vacuna*.
- Aguilar to Zuliabar, 7 Mayo 1805, AAM, Documento D.9.60, Folio 34-34b, Box 1.D.10, Libro de Gobierno Ecl (1767-1806), Folder 9, Libro de Oficios (Cartas), Fr. Zuliabar.
- Balmis to Cavallero, 8 Agosto 1805, *op. cit.*
- Fernando Casas, 16 Feb 1823, Manila, AGI, Filipinas 515, #174, Vacuna.
- Balmis to Cavallero, 8 Agosto 1805, *op. cit.*
- The *Esperanza* was subsequently purchased by Manila merchants in the fall of 1805 and sent on a voyage to Acapulco, primarily to fetch the badly needed *situado*, but also to enable goods to be sold in Mexico. The ship sank in December of 1805, just a few days out of Manila. The *Esperanza* project, in association with the National Museum of the Philippines, has conducted extensive research into Spanish and Philippine archives, in its effort to find the sunken ship. I wish to thank the *Esperanza* project for sharing various archival documents from its confidential files, shedding significant light on the period. See www.esperanza-project.com.
- J. P. Bantug, 'Carlos IV y la Introducción de la Vacuna en Filipinas', *op. cit.*, pp. 105-115.
- Zuliabar to Aguilar, 17 Mayo 1805, AAM, Box 1.D.10, Libro de Gobierno Ecl (1767-1806), Folder 9, Libro de Oficios (Cartas), Fr. Zuliabar, Documento D.9.59, Folder 34.
- J. P. Bantug, 'Carlos IV y la Introducción de la Vacuna en Filipinas', *op. cit.*, pp. 117-119.
- Zuliabar, 29 Mayo 1805, AAM, Box 1.D.10, Libro de Gobierno Ecl (1767-1806), Folder 9, Libro de Oficios (Cartas), Fr. Zuliabar, File D.9.61, ff. 34b-36.
- See Smith, *op. cit.*, p. 57 for details regarding these squabbles and misunderstandings.
- This departure date is mentioned frequently in various documents in a group dealing with the maintenance expenses of the expedition.

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- This batch of documents are among the most important uncovered during recent research. PNA, Cedularios 1803/1805-07, SDS 713, Exp. 21, ff. 93-108 and 326b-329.
- 37 *Ibid.*
- 38 Smith, *op. cit.*, p. 58.
- 39 PNA, Superiores Decretos 1805-06, SDS 86, Exp. 96, ff. 93-93b, 1 Febrero 1806. Unfortunately, this document gives no further details about the boys, other than confirming payment for their services.
- 40 Balmis to Cavallero, 8 Agosto 1805, *op. cit.*
- 41 PNA, Cedularios 1803/1805-07, SDS 713, Exp. 21, ff. 93-108 and 326b-329.
- 42 A confusing deed of sale in the Philippine National Archives suggests that this ship was bought by a merchant in Manila, but that the deed of sale was dissolved. However, the document clearly identifies the name of the vessel, which in Spanish records, is usually referred to as simply *Diligencia*. PNA, Protocolo de Manila, Manuel del Castillo, Vol 41, Yr. 1803, SDS 19806, S20-21.
- 43 AAM, Box 37.A.1 [Catalogo del Eclesiastico Personal], Folder 1. This document provides a list of priests in the area of Manila in 1806. The Santa Cruz church, which was in an area largely populated by mixed-blood Mestizos and Chinese, along with military troops stationed nearby, had for years been administered by native clergy. Other clergy assigned to Santa Cruz were: D. Julian de Mendosa, Capellan de Lanseros, D. Simon Rafael, Capellan de Flecheros, D. Baltazar de Banta de Co (confessor); and D. Gabriel de Molina.
- 44 Eladio Niera Ocio, O. P., *Misiones Dominicas en el Extreme Oriente*, Manila, pp. 424-451.
- 45 Hosea Ballou Morse, *Chronicles of the East India Company Trading with China, 1635-1834*, vol. III, Oxford, 1926, p. 17.
- 46 Balmis, AGI, 'Indif. Gen', Leg. 1.558, II, ff. 2-3.
- 47 J. P. Bantug, 'Carlos IV y la Introduccion de la Vacuna en Filipinas', *op. cit.*, pp. 115-117.
- 48 Fernandez to Real Hacienda, 13 Nov. 1805, PNA, Superiores Decretos 1805-06, SDS 86, ff. 46-47b.
- 49 Zamboanga, the location of a Spanish fort on the western coast of Mindanao, was a very small, isolated enclave. It was not mentioned in Aguilar's decree of September 24, but the town was included in a list of places visited by the provincial expedition in a report following Balmis' return to Spain. However, no actual documentation has surfaced yet to support this.
- 50 Verdugo, 6 Febrero 1806, PNA, Superiores Decretos 1805-06, Exp. 96.
- 51 Aguilar to Cavallero, 24 Dec. 1805, PNA, Cartas 1802-05, Exp. 25, ff. 52-57.
- 52 Gutierrez to Aguilar, 24 Marzo 1806, Manila, PNA. See also the official response: 24 Marzo 1806, Manila, PNA, Cedularios, 1803-1806, SDS 580, Tomo, Exp. 58, pp. 88b-89.
- 53 Rafael Aguilar, 18 Dec. 1805, Cavite, PNA, Superiores Decretos 1805-06, SDS 86, Exp. 48, ff. 40b-41.
- 54 12 Feb 1806, PNA, Superiores Providencias, SDS 86, ff. 121b-123.
- 55 22 Dec 1807, Santa Ana, PNA Iloilo 1806-72, Leg. 86, vol. 2, Exp. 7, f. 34.
- 56 *Gaceta de Mexico* (Mexico), 26 Agosto 1807, p. 556.
- 57 Francis Warren, *The Sulu Zone 1768-1898: The Dynamics of External Trade, Slavery, and Ethnicity in the Transformation of a Southeast Asian Maritime State*, Manila: New Day, 1985, Second Impression 1999, pp. 247-248.
- 58 Barcaistegui to Lemus, Archivo Bazan, 9 Dec 1806, #42. The Spanish documents refer to the British frigate by the name of *La Galga*.
- 59 I have been unable to uncover any secondary sources, that explore fully, the extent of British incursions into Philippine waters during the period of the Napoleonic Wars. This subject is worthy of exploration, but is beyond the scope of this paper.
- 60 Hosea Ballou Morse, *op. cit.*
- 61 The details of this short voyage and the *arribada* to Manila are extensively reported in Barcaistegui to Lemus, 9 Dec 1806, #53, Archivo Bazan.
- 62 Folgueras, 19 Nov 1806, PNA, Cedularios 1803/1805-1807, SDS 713, Exp. 21. This document mentions the *twenty-five* children, indicating that one had died. All subsequent references to the children also report their number as being 25.
- 63 AGI, Filipinas 506, 1809, F. del Expedite Creando Sobre el Reglamento, 2 a Via, pp. 8-11b.
- 64 AGI, Filipinas 506, #9, 1809, ff. 506-509.
- 65 See AAM, Box 1.D.10, Libro de Gobierno Ecl (1767-1806), Folder 9, Libro de Oficios (Cartas), Fr. Zuliabar, *Informe* regarding establishment of *Junta Central de la Vacuna*, followed by letter from Folgueras to Zuliabar, 16 enero 1807, D.9.163 & 164, folios 81-85b. See also AGI, Filipinas 506, 1809, F. del Expedite Creando Sobre el Reglamento, 2 a Via.
- 66 De Bevoise, *op. cit.*
- 67 Quiñones, *op. cit.*
- 68 PNA, Lazareto de Mariveles/Superiores Providencias, SDS 10585, 9 Nov 1808.
- 69 PNA, Lazareto de Mariveles/Superiores Providencias, SDS 10585, 1 Agosto 1808.
- 70 Fernando Casas, *op. cit.*
- 71 Michael Smith, *op. cit.*
- 72 Edward Jenner, *Letters of Edward Jenner, and Other Documents Concerning the Early History of Vaccination*, edited by Genevieve Miller, Baltimore: Johns Hopkins University Press, 1983.
- 73 From 2003 commemorative exhibit at Domus Museum of Science, La Coruña, Spain.