

Fort Miles in Lewes. An avid Revolutionary War and Civil War re-enactor, he served as a member of the Fort Miles Historic Association and as president of the Middletown Historical Society. Production manager for Blood Sweat and Tears for 14 years, he toured all over the world with them. Mr. Jennings is survived by his wife of 17 years, Linda K. Francis Jennings; two stepchildren, Dr. Kathryn Ann Berchtold and Albert Joseph Berchtold III; and three siblings, Patrick, Susan, and Beth.

At a memorial service held at Fort Miles on April 24, the 261st Coast Artillery re-enactors and Civil War re-enactors from Fort Delaware sent him off with a rifle salute followed by the firing of a 3-inch round which dispersed Lee's ashes throughout the cantonment area of Battery 519. Mike Rogers from Delaware State Parks served as the master of ceremonies for the event, while Dr. Gary Wray, president of the Fort Miles Historical Association (FMHA), provide a heartfelt tribute. In the reception in the Fort Miles orientation building, about 200 attendees discussed Lee and viewed memorabilia from his life.

Lee was able to convince the state of the value of restoring these abandoned structures so the public could view and appreciate their role in American history. A master showman from his time in the music industry, he knew what would appeal to the general public and was able to convince other to share his vision and

donate their time to work toward those goals. The death of Lee is great loss to historic preservation. In lieu of flowers, contributions may be made to: FMHA, c/o Dr. Gary D. Wray, 120 E. Wild Rabbit Run, Lewes, DE 19958.

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## Brazil Tour, November 13-22, 2009

Christian Casartelli

*Editors Note: Christian Casartelli organized a special trip to some of the harbor defense of Brazil in November 2009. The group visited four major harbors on Brazil's southern coast, where many weapons remain in place, some still maintained by the military. What follow are Christian's summary histories of the sites they visited and a set of his photographs. Maps are courtesy of Adler Homero Fonseca de Castro.*



Santos

On November 14 the group moved from Sao Paulo to Santos, one of the largest Brazilian seaports, arriving around 11:30am. During the 1893 Fleet Rebellion, the governor of São Paulo State was concerned about the port's defenses, consisting only of the colonial forts of Santo Amaro and Augusto. New defenses were begun January 16, 1902, at the southern entrance to Santos Bay. Fortress Itaipu' was comprised of Forte Jurubatuba (First Battery) and Forte Duque de Caxias (Second Battery), both armed with 150 mm L/50 Schneider-Canet M02 guns (two guns at First Battery and four at Second) with a maximum range of nine kilometers. Fortress Itaipús landward defenses were built in 1909 and became General Gomes Carneiro Battery (75 cm Krupp guns). Today this battery is completely overgrown. Forte Duque de Caxias was begun in 1917 and Forte Jurubatuba in 1920. During the Constitutional Revolution of 1932, Forte Jurubatuba was bombed by five government Savoia-Marchetti seaplanes on September 15, the only air assault on Brazil. The



Forte Junabatura



Forte Junabatura

barracks were destroyed and never rebuilt. Finally we visited Forte Rego Barros, built during the 1930s. An underground fort that was to be armed with three casemated American guns, it was not completed. Today all the Santos fortresses are in a relatively good condition, except General Gomes Carnero Battery, which is completely overgrown. Inside Duque de Caxias Barracks a little fortress museum has been created. After six hours of exploring we drove back to our hotel in Santos. The following morning we drove to the northern entrance of Santos Bay to visit the last defensive work built in Brazil. Underground Forte Andradas,



Forte Duque de Caxias



Forte Duque de Caxias



Forte de Bertioaga



Forte Rego Barras

similar to Forte Rego Barros, was completed in 1942 but armed with four 28 cm M12 Krupp howitzers. Unfortunately we could not get permission to visit it, so we drove to Bertioga Beach. Here we visited the small Portuguese Forte de Bertioga, built in 1547 and considered the oldest Brazil fort. Rebuilt in 1710 to protect the south entrance of the channel to Santos harbor, it houses a small museum. Outside an Indian-theme park has been recently created.

### Paranaguá

After lunch we drove seven tiring hours south to Paranaguá. On Monday the 16th we drove to Pontal do Sul, where a private boat took us to Ilha do Mel. Here Forte Nossa Senhora dos Prazeres was built 1767-69. It protected the Grand Canal, the sea access to Paranaguá Bay, defending Paranaguá against buccaneers and Spaniards. Gold, wood, and, later mate were shipped from Paranaguá. The fort took part in the so-called "Paranaguá Incident", when British HMS *Cormorant* violated Brazil's sovereignty and seized three Brazilian ships in the harbor. The fort's commander shelled and damaged the frigate, forcing its withdrawal. In 1913 the fort became part of a new battery built in Morro da Baleia, armed with four 120 mm L/40 Armstrong guns, taken from the cruiser *Tamandaré*. At around 3:00 pm we sailed back to Pontal do Sul and drove to São Francisco do Sul, arriving around 7:00 pm.



Forte Nossa Senhora dos Prazeres from Morro da Baleia



70 pdr (5") Whitworth RBL, an ex-naval gun installed at Paranaguá in 1898



Forte do Morro da Baleia Incomplete galleries leading to the guns



Forte do Morro da Baleia Armstrong 4.7" L/40 model 1893 ex-naval gun

São Francisco do Sul

On the 17th we visited Forte Marechal Luz, built over the old 18th-century Portuguese São Francisco do Sul Battery. Defensive works begun in 1909 and completed in 1915 with two 120 mm L/40 and two 152 mm L/41 Armstrong guns, are still there, together with two 24 pdr guns of the old battery. A museum with a small exhibition is inside the garrison barracks.



Right Forte Marechal Luz  
Corridors leading to the gun positions



Armstrong 4.7" L/40 model 1893 ex-naval gun



Armstrong 6" L/41 model 1893 ex-naval gun

Florianopolis

In the afternoon we reached Florianopolis in time to visit Forte Santana, the 1765 Portuguese fort. On Wednesday the 18th we drove to the South of Florianopolis Island. The channel forming the South Bay's entrance passes between Araçatuba Island (occupied by Fort Nossa Senhora da Conceição) and Naufragados (Shipwrecked) Point, the location of Forte Marechal Moura, built in 1909-13 to strengthen the works at Araçatuba. Among the 12 fortifications forming the Santa Catarina Island defensive system, generally 18th-century construction, this was the one only erected in the 20th century. Its armament included three 120 mm C/40 M93 Armstrong guns. Today it is completely abandoned, reached only by a long path through the forest, along the beach, and up a hill. To make our flight to Rio de Janeiro, we took a local boat to where our minivan waited to take us to the airport.



Forte Marechal Moura: Armstrong 4.7" L/40 model 1893 ex-naval gun.



Forte Santana, currently the state Police Museum.



Forte Marechal Hermes Entrance of the fort with two US surplus Vickers-Armstrong Mk XIX 6" guns, sold to Brazil in 1939 and in use in the coastal artillery up to 1998



Fort Barracks, housing the 9th Anti-Aircraft Battery, equipped with shoulder launched Russian Igla missiles.



Central hall, with galleries leading to the individual guns. In these galleries there are rooms to store ready-use ammunition.



Armstrong 6" L/41,65 model 1898 ex-naval deck gun



Forte Marchel Hermes Gun position, showing the stairway leading to the ready-use ammunition magazine



Armstrong 6" L/41,65 model 1898 ex-naval casemate

Macaé and Angra dos Reis

Thursday the 19th, after breakfast in our Rio hotel we drove to Macaé, north of Rio. Here in 1613 the first defensive position armed with five guns was completed, Forte de Santo Antonio de Monte Frio. The fort was rebuilt in 1763-67 but disarmed in 1859, with other Rio fortifications. During the *Questão Christie* (Christie Question) a commission appointed by the Imperial Government in 1863 to check the status of Brazilian fortifications proposed improvements. After building a canal and railway between Macaé and Campos, President Peixoto decided to

improve the protection of Macaé. In 1908 the Minister of War decided to build a battery on top of Morro da Fortaleza, 500 m above sea level. Constructed 1908-10, it was armed with four 152 mm C/50TR Armstrong guns, two on Vasseur carriages from the Cruiser *Tamandaré*. The *Pavillon de Comando* (Commander Pavilion) dating to 1938, is garrisoned by the 9th AA Battery and its main entrance is adorned with two 152.4 mm (6-inch) Vickers-Armstrong guns, removed from service in 1997. In the afternoon we returned to our hotel in Rio.



Forte Ponta do Leme gun pits, with its two Armstrong guns (top). Armstrong 9.2" L/40 model 1893/1901 gun.

The following day we drove to Forte Ponta do Leme near the colonial town of Angra dos Reis. Its construction was begun in 1906 but suspended in 1913 when the project to create a naval base in Sepetiba Bay was cancelled. It was armed with two naval guns, originally 9-inch Whitworth guns but rebored in 1883 to take 9.2-inch Armstrong shells. In 1896 the main battery was replaced and the original guns were modernized by Armstrong, who lengthened them to 40 caliber. Late in the afternoon we drove back to Rio.

#### Rio de Janeiro Western Defenses

Saturday the 21st was entirely dedicated to the western defenses of Guanabara Bay's entrance. Fort Vigia, on Leme Hill, dates to 1776-77. The 1902-04 Rearmament Program proposed building three new howitzer batteries, but nothing was decided till 1913, when the president ordered a new work on that hill: Forte Duque de Caxias. Difficulties in transporting materials due to the world war delayed construction in May 1917. On October 1917, as a result of the torpedoing of a Brazilian ship,



Forte Duque de Caxias – entrance.



The modern era forts of Rio de Janeiro



Mortar pit with two Krupp 280 mm L/16 mortars model 1912, their splinter shields is 1" thick. The mast above the mortars houses the back-up depression range finder of each gun.



Back of a Krupp mortar, with shell cart and a practice (wood) shell (top) and the cartridge case in the bottom of the cart.



Observation cupola for a depression range finder .

Brazil declared war on Germany. German specialists, who were assembling the electrical system and the weapons, were relieved, returning only after the war. The fort, with its four 280 mm (11-inch) L/16 M12 Krupp howitzers in two pits excavated in the rock, was completed January 1919. On July 1922, during the



US style observation post, for azimuth instrument, built in 1943.



Rifle gallery covering the access road to the fort.

Forte Copacabana revolt, Fort Vigia was hit by two shots. On November 4, 1924, during the Lieutenants Uprisings, it opened fire against the battleship *São Paulo*, which had mutinied. During the Revolution of 1930 it intercepted the German ship *Baden*, which tried to leave the harbor without permission. The ship, ignoring radio orders to return back, received two warning shots, but did not stop until a shell shattered the main mast, forcing it to return to the harbor. During the Communist Conspiracy in November 1935, the fort remained faithful to the loyalist



Forte São João, São José Battery, built in 1863.

forces, and its garrison participated in searching the 3rd Infantry Regiment rebels, preventing their escape and reinforcement. The fort's last artillery action was on November 11, 1955, when it fired against Cruiser *Tamandaré*.

The next stop was São Sebastião do Rio de Janeiro, where in 1565 the first Portuguese settlement was founded. The fortresses of São Martinho (1565?) and São Tiago (1618) on the land side, with São Teodosio (1572) and São José (1578) on seaside, officially formed the Fortaleza de São Joao da Barra do Rio de Janeiro. This fortress, supported by Fortaleza de Santa Cruz, repulsed the French corsair Jean François Duclerc in 1710, but not the French privateer René Duguay-Trouin in 1711. Old Forte São João was replaced by a new work armed with 70 pdr (127 mm) Whitworth M1866 RMLs in 17 Haxo casemates. On top, a barbette battery received in 1875 one 150 mm BL M1874 Krupp gun directly donated to the Brazilian Emperor by Mr. Krupp and known as the "Cachorro" for its supposed resemblance to a dog. This was the first BL gun to serve in Brazil. The same year near the 1572 battery of São Teodosio a new gun position was



São José battery, entrance. This fortification was a part of the fortification program of 1863.



Forte São Teodósio, with Lage Fort in the distance.



One of the two 150 mm L/40 Krupp gun, model 1895 at Battery Marques Porto



"Cachorro" 150 mm L/26 Krupp gun, model 1874, presently out of its original position in battery São José.



Forte São Diogo, colonial fortification that defended the entrance to the São João Fortress complex.



Armstrong 11" RML model 1874 at São Theodosio fort. a ex-naval gun, of the same type used to arm the forts manned by the navy in Rio.



Casemates of São José fort, with an Whitworth 70 pdr (5") gun, model 1863.



Covered way, casemates at São José fort.

created for one 280 mm RML M72 Armstrong gun. This gun also had a nickname, "Vovô" (Grandfather), and remained the biggest gun in service until Forte Imbuhi' was built. In 1893 Forte São Joao exchanged shots with battleship *Aquidaba* (flagship of the Brazilian Navy) and cruisers *Javary* and *Trajano*. During this fight, Vovô was credited with sinking *Javary*. In the 20th century new anti-torpedo positions were built: Mallet and Marques Porto batteries equipped with 15 cm L/40 Krupp guns.

The last visit of the day was Forte Copacabana and its museum. This fort also replaced an older work: Forte Nossa Senhora de Copacabana (1776). During the 1893 Revolt it was armed, although unable to prevent the navy warships from exiting the bay. Some years later a diplomatic dispute with Argentina convinced the chief of the army to build a new fort. Preliminary work began on January 6, 1908. The fort was finally completed in 1914, the last defensive work built in the Rio de Janeiro defenses and the most modern and powerful in all South America. Its armament is two 30.5 mm guns (Barroso and Osório) in the Duque de Caxias cupola, two 190 mm guns in André Vidal cupola, and two 75 mm guns in the retractable turrets Antônio João and Antônio Franco, all built by Krupp. In 1922 its garrison together with cadets of the Army Officer School revolted and its 190 mm cupola dueled with Forte Duque de Caxias and Fortaleza Santa Cruz. When the



Top of Copacabana fort with its two gun cupolas. It is also possible to see the top of one of the two 75 mm L/25 retractile turrets of the fort.



Entrance to Copacabana fort, with steel shutters in the windows, with loop holes for rifle fire.



Krupp 190 mm L/40 gun cupola at Copacabana fort.



Observation cloche, with the main cupola of Copacabana (two 305 mm L/40 krupp guns) in the background.



Interior of the 305 mm main cupola. The stairs leads to the original command post of the turret .



Left gun of the 305 mm cupola, named after Admiral Barroso, a hero of the Brazilian navy. The right side gun is the "Osório", a hero of the Brazilian army.

navy battleships *Minas Gerais* and *São Paulo* fired on the fort, 29 soldiers refused to abandon their positions. Finally some of the officers decided to march to the government palace, but were all killed by government forces, in what is known as the "March of the Eighteen of the Fort." From October 24 - November 8, 1930, ousted President Washington Luis was imprisoned here. The fort's last shots were fired by its loyalist garrison against the cruiser *Tamandaré* in 1955.



Gate to Copacabana fort, with rifle loopholes for local defense.



Infirmary of the fort.

Rio de Janeiro Eastern Defenses Niterói

The 22nd was entirely dedicated to visiting the Eastern defenses of Guanabara Bay around Niterói. The first stop was at Fortress Barão do Rio Branco, composed of Fortes Praia da Fora, São Luís, and Pico. Forte Praia da Fora (or Rio Branco) is located in Praia de Fora. Its first building probably dates to 1711 when Battery Santo Antônio da Fora was built to prevent a beach landing. In 1816 the position was rebuilt, but the actual structure was decided after the *Questão Christie* and in 1875 it received two 115 pdr Armstrong RMLs from the navy. In 1916 to improve the land side of the entire fortress, a loopholed rifle wall was built at its gorge. An interesting gun exhibition has been created inside.

Forte Sao Luís was started in 1769-70 and in 1811 its garrison was incorporated with Fortaleza Santa Cruz. With Brazilian Independence some repairs were made but in 1831, during the Regency, it was abandoned together with several other forts and batteries. During the *Questão Christie* its artillery was strengthened and new barracks were built. After the proclamation of the Brazilian Republic it participated in the uprising against President Floriano Peixoto. The rebels took Fortaleza Santa Cruz, releasing the prisoners held there, and began shelling Forte Lage. Finally



Gate to Barão do Rio Branco fort. The decorative tower in the left originally would receive a Hotchkiss heavy machine gun for local defense.



Upper battery of Santa Cruz fortress, with 115 pdr, 7" Armstrong RMLs, model 1874.



A 115 pdr 7" Armstrong RML, model 1874 at fort Praia de Fora.



Forte Praia de Fora, 1863 gun positions..



Forte São Luís. Disarmed in 1903, latter it was used as a landward defense an barracks for Pico fort.



Forte São Luís. To the left, the barracks for soldiers of fort of Pico, built in 1912.



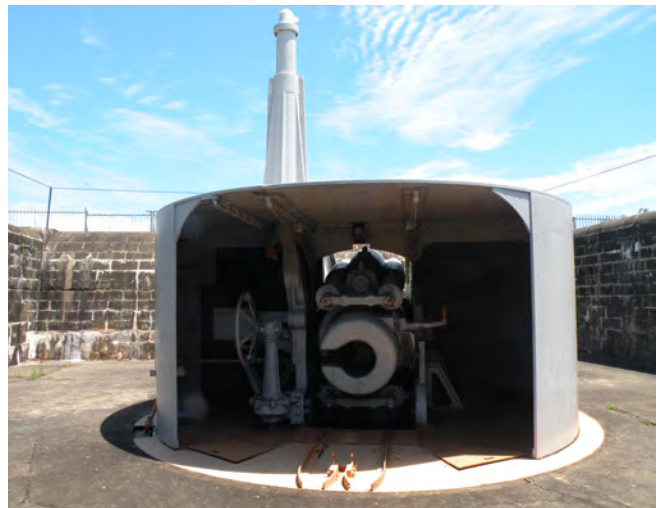
Banquettes intended for riflemen defending Pico fort accesses.

two battalions from Forte São Luis were able to retake Fortaleza Santa Cruz January 19-20, 1892. In 1913 construction was begun on Forte Pico, partially excavated in the rock, to be armed with four 280 mm Krupp M12 howitzers. The fort was completed in 1918. On July 22, 1922, it opened fire against Forte Copacabana, starting the November 24, 1930, revolution.

The place where today Fortaleza Santa Cruz stands was originally occupied in the 16th century by the French. When the



Gorge of Pico fort, the gates lead to the mortar positions.



Back of a Krupp 280 mm L/16 mortar



Cloche for the original depression range finder.

Portuguese reoccupied the location in 1567, it was renamed Nossa Senhora da Guia and became the main defensive position. During the 17th century, despite being the most heavily armed fort in the country, it was not able to prevent a French fleet from forcing the bay's entrance. During the Empire it was one of the two forts classified as "first class," but this did not stop five English ships from entering the bay with in 1860. This incident, known as the "Questão Christie," demonstrated the failure of the Brazilian defenses. From 1863 till 1870 the fort was strengthened with 41 Haxo casemates equipped with 120/150

pdr guns in the lower casemates and in barbette and 70 pdrs in the upper casemates.

The fortress also received two 115 pdrs, one 250 pdr, and one former naval 400 pdr Armstrong RML. Later it also received some



Santa Cruz fortress, showing the older, colonial side of the position.



Old secondary gate to the fortress, with a Sperry searchlight used by the anti-torpedo-boat batteries.



Whitworth 150 pdr 7" RML model 1864 ex-naval gun in Santa Cruz upper level battery.

300 pdr Whitworth guns from retired ships. The last armament received was two 7-inch Bethlehem guns placed outside the main gate. During the 1893 Rebellion the fort tried to contain the insurgent forts but it was not able to prevent the naval warships from leaving the harbor. In 1922 it fired against Forte Copacabana and its last shot was in 1955 against Cruiser *Tamandaré*.



Middle tier of casemates at Santa Cruz, with 70 pdr 5" Whitworth RMLs, model 1863 in garrison carriages.



US 90 mm Anti-aircraft gun, used by the Coast artillery as anti-torpedo boat gun in the 1950s.



US 7" L/45 gun sold as scrap metal to Brazil in 1939 and used as a railway gun, before being installed as decoration at Santa Cruz Fortress, in place of the original Krupp 150 mm model 1895 guns.

Forte Imbuhy was the last of the day and of the Brazil Tour. First work began in 1863 (*Questao Christie*) as a casemate work to complete the Santa Cruz and São João positions, but war with Paraguay stopped the work. In 1893 it was occupied by government forces. In 1895 the Committee on Coast Fortifications and Defense approved the project for a new armored fort, using the



Gorge of Imbuhy fort. The steel shutters in the windows are provided with rifle loopholes for local defense.



Partially raised retractile turret for one Krupp 75 mm L/25 local defense gun. The gun is in the rest position.

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platform of old Forte Dom Pedro II to install nickel-steel cupolas. From 1896-98 masonry works for a cupola equipped with two 280 mm L/40 Krupp guns and for two disappearing cupolas equipped with 75 mm L/25 Krupp guns were constructed. In 1901 the fort was dedicated and classified a "first-class" fort. The first Brazilian fort provided with electricity, its only action was in 1955 against Cruiser *Tamandare*.



Gruson cupola for two Krupp 280 mm L/40 guns, model 1889.



Breeches of the 280 mm guns at Imbuhy.

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