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Buenaventura Suarez

The first Creole astronomer of South America
and his beautiful sundial of San Cosme y Damian

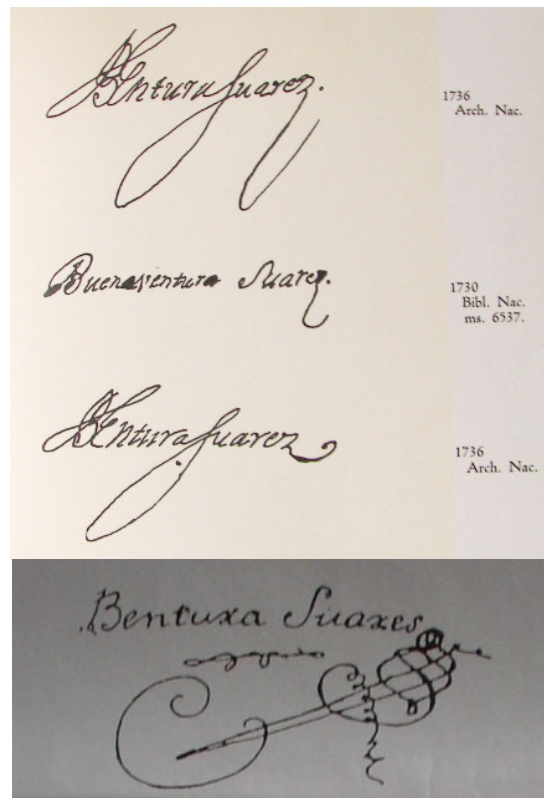


Fig. 2 a, b: Four signatures of B. S.

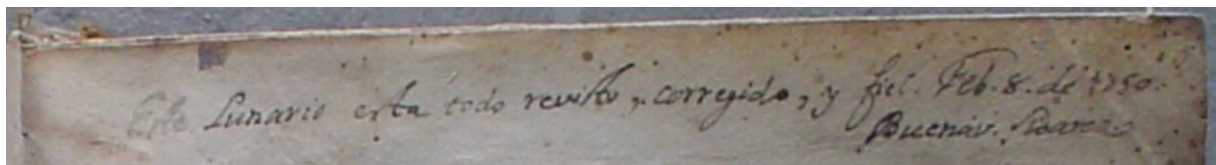


Fig. 3: A late signature of B. S. from February 8, 1750

Buenaventura Suarez! What a well sounding and beautiful name with a good meaning: Buenaventura means “**Good fortune!**” “Nomen est omen” perhaps, when his parents gave him this name. He was born in September 3rd, 1679 in *Santa Fé de la Veracruz*, nowadays belonging to Argentina. His parents were **Creole**; his father served as a lieutenant in the Spanish

conqueror's army. The young man became a Jesuit with the age of 16 in **1695**. In **1706** Suarez finished the first self built well working telescope in the southern hemisphere and did his **first astronomical observations** in the reduction of **San Cosme y Damian**.

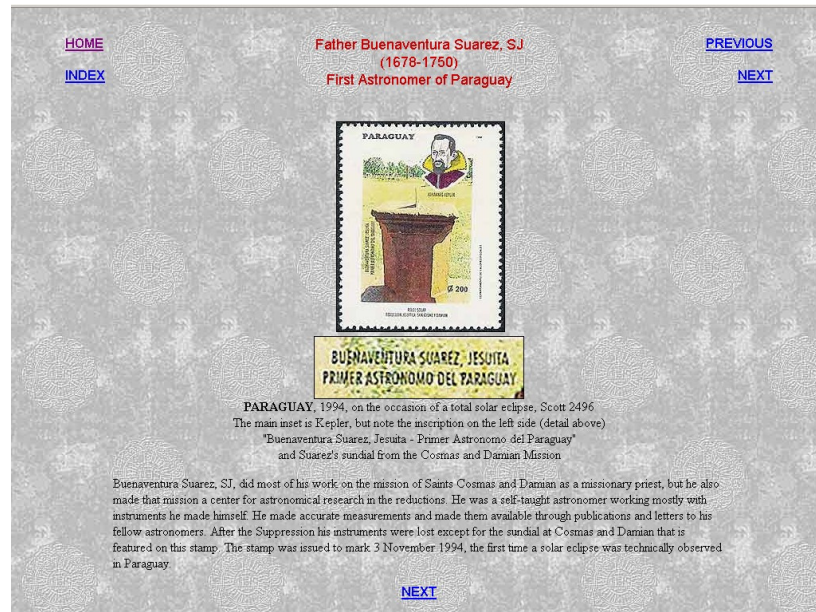


Fig. 4: Jesuit stamp-website: B. S., Scott Nr. 2496, November 3rd 1994

It had been a little stamp, which was published in a Mexican newspaper, which caught my attention and fascination from the very first moment. The Jesuits – **Societas Jesu** – what an impressive name for this group! – ...



Fig. 5: Jesuiten_Ingolstadt_Stadtmuseum

...always had been pretty clever in what we nowadays call "*Public Relations*". They call it very sophisticated "**propaganda fidei**". It is certainly one of the best

ideas to convince the post-ministries in so many countries to publish stamp motifs with Jesuit properties, priests, and works of Jesuits. Stamp collectors among you will know that Jesuit stamps are an enormously wide collection field!



Fig. 6: Stamp

Let us have a closer look at this **Paraguayan stamp of 1994**: It shows the portrait of a well known astronomer on top right: **Johannes Kepler**. And we can see a **horizontal sundial** made of stone. On the left there is a vertical inscription: **BUENAVENTURA SUAREZ, JESUITA. PRIMER ASTRONOMO DEL PARAGUAY**. And I can add: He was the **first Creole Astronomer of South America**. The word “creole” is used in different meanings in US-American and Spanish language. **Wikipedia Encyclopaedia** explains it as follows: **“Criollo** is a term that dates back to the Spanish colonial casta system of Latin America. It referred to a person born in the Spanish colonies deemed to have *limpieza de sangre* (literally, the "cleanliness of blood") in respect of an individual's purity of European (Iberian) ancestry.”

The first Astronomer in South America had been the German naturalist and astronomer, **Georg Marcgrave** 1610-1648. In **1637**, he was appointed astronomer of a company being formed to sail to the Dutch colony in **Brazil**. He arrived there in early **1638** and undertook the first zoological, botanical, and astronomical expedition in Brazil, exploring various parts of the colony to study its natural history and geography. He has written two important books. His **“Progymnastica Mathematica American”**, written in 1640-42, is said to be the first astronomical book of South America.

Marcgrave had been well equipped with a modern European telescope of his time! What a contrast to **Buenaventura's telescopes and conditions of researches!** It is reported by different sources that he had built telescopes with the help and support of the natives from **2, 20 m to 4, 60 m** of length.



Fig. 7 Horacio Tignanelli's title page

Here is the title page of **Horacio Tignanelli's** commendable children's book about Buenaventura Suarez

→ [*Demonstration with two cords*] Have a look at my two cords please, to illustrate the sizes of the smallest and longest telescope which Suarez built: Some sources even report sizes from 8 feet to 23 feet, which is from **2, 20 m to 6, 50 m**. It is said he had produced telescopes of 8, 10, 13, 14, 16, 18, 20 and 23 feet!

The lenses he produced from clear quartz-pieces which were found by the native Indians in the surrounding mountain area, **like this less clear one for example!** Please have a look at such a quartz-piece and imagine how much patient work was needed to prepare lenses with their very simple polishing stones.

→ [*Demonstration with a quartz-piece*]



Fig. 8 Horacio Tignanelli's illustration page 5

Unfortunately no image of Buenaventura Suarez has come upon us, but I was able to collect at least some personal information about him. His father, **Antonio Suarez Altamirano**, as I have mentioned in the beginning of my talk, descending from a pioneer family, was lieutenant in the Spanish conqueror's army, his mother **María Garay** was a niece of **Juan de Garay (1528-1583)**, a Spanish conqueror, who founded **Santa Fe** as well as for the second time **Buenos Aires** and who was dartsed by the Indigos. Here you can see a statue of him from Buenos Aires:



Fig. 9 Monumento de Juan de Garay

I have to mention here that the Jesuits sent highly and especially manifold educated personalities for their evangelisation- business to South America – just the contrary to those incredible soldier barbarians of the Spanish conqueror's army!

Buenaventura Suarez certainly belonged to a high society family in **Santa Fé** and was educated in a Jesuit school of his home town and in the “Jesuit high school” of Córdoba both in philosophical and natural sciences by highly educated and inspiring teachers who certainly soon saw and developed his interest in Mathematics as well as in other fields. He became a member of the Jesuit order with only 16 years, studied theology and was sacrificed as priest with 22 years in 1706 and immediately sent to the reduction of **San Cosme y Damian**. What a flash-career!

Buenaventura Suarez worked as a mission-priest in different reductions and soon started to build own **refractor telescopes**. He started his regular astronomical observations in **1706**, three years after he had arrived in **San Cosme y Damian**. He used the natural materials found in this area and amazingly managed also to cut and polish clear **quartz stones** and adjust them properly into the tubes.

He also built simple **pendulum clocks** and **quadrants**. Buenaventura Suarez gradually had been in letter-contact with astronomers in **Peru, Spain, France, Germany, Russia and China**. For me this is really an amazing fact how these

letter-contacts were organized and worked. A letter took pretty long time but even nowadays one sometimes gets the impression that letter-delivery-times take similar long as in the 17th and 18th century...

Let us study a bit the situation of this **Jesuit State!**

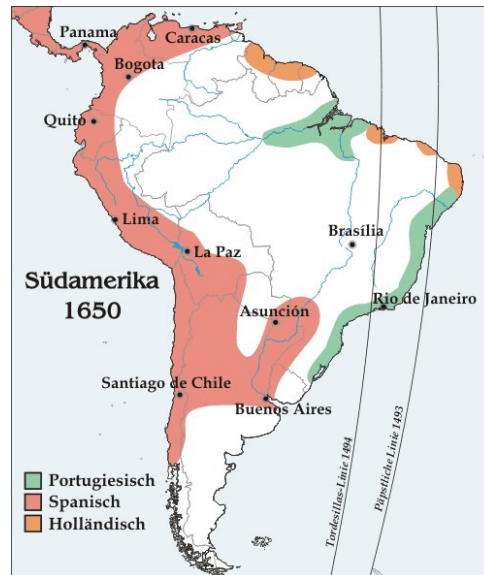


Fig. 10: This map of South America shows the situation of the influence of the different **European colonial countries** in South America in 1650.

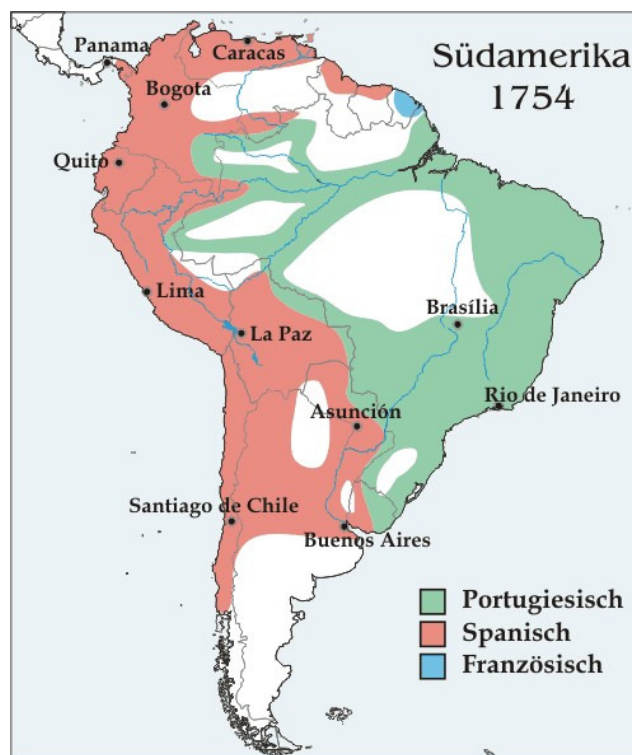


Fig. 11: ... and 104 years later in 1754.



Fig. 12: This map shows the Jesuit missions around **San Cosme y Damian** near the river **Paraná**

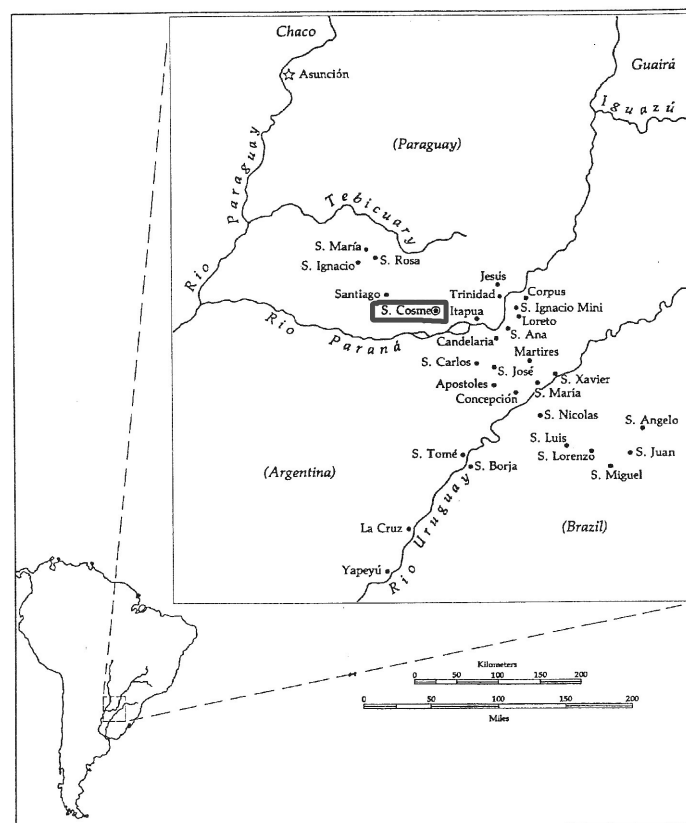


Figure 1. Jesuit towns of Paraguay, 1607-1767 (after McNaspy and Blanch, 1982:17).

Fig. 13: The former mission **San Cosme y Damian** was given up three times and re-founded at a new place on the other side of the river with the same name not far away from the previous San Cosme settlements. So the sundial, calculated for the previous location was brought and set up new in the place of the last **San Cosme settlement**, which still exists nowadays.

What did **Buenaventura Suarez** observe with his self produced instruments?

- The eclipses of the satellites of Jupiter. He observed them in a very long period of 13 years and wrote down carefully all the observed dates.
- He observed the eclipses of the sun and the moon, the beginning of the four moon phases.

Further on he carried out determinations of longitudes and geographical latitudes for San Cosme and all the 30 Jesuit reductions of this area.

He built quadrants, pendulum clocks as well as clocks. He knew very well **herbs** to be used as medicine, which became very important during the dangerous pest-epidemic, when thousands of inhabitants died.

What amazed me mostly was the fact that he was sent to about **eight different reductions with different tasks**. And probably he always carried part of his material and equipment with him and found places and servants to help him to study on wooden church towers during the nights. All together he did his observations from different reductions for **33 years**. He also used the astronomical tables of **Philippe de la Hire** – given to him probably by another Jesuit researcher in Lima.



Fig. 14: Philippe de la Hire

Suarez has published several smaller works like civil and liturgical calendars, predictions and descriptions of eclipses of sun and moon. But his main work **LUNARIO DE UN SIGLO** turned out into a remarkable success of all together **five editions**. He covered a period of 100 and a fulfilled year with it, with predictions for the years from **1740 to 1841**.

It is a great pleasure for me to be able to present some good images from the copy of the Lisbon- edition which is kept as a big treasure in the **State Library of Buenos Aires**. My dear friend **Nani Morello** had to apply three times personally at the library and fill in a lot of papers until she finally got the “researcher’s permission” to have a look at this book. But then she was shocked when she was told: **NO PHOTOS!** She asked for a personal appointment with the Library director and finally she got permission for eight photos from him...

This is the **State library of Buenos Aires** from outside...



Fig. 15

... and from inside.



Fig. 16

And here is the precious book seen from the back side



Fig. 17

... and the first page of the book:

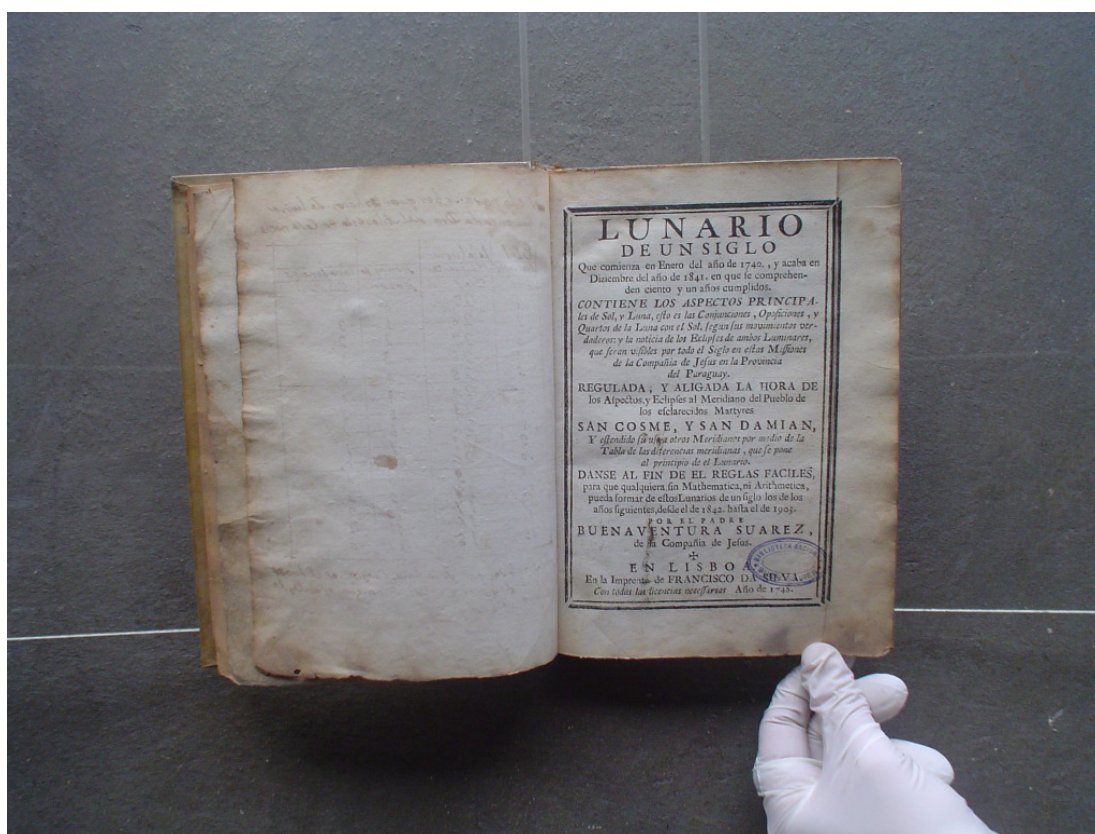


Fig. 18: Lunario de un Siglo

The book was carefully edited and also contained some illustrations. I wonder who has done them – either an artist in America or one in Europe.

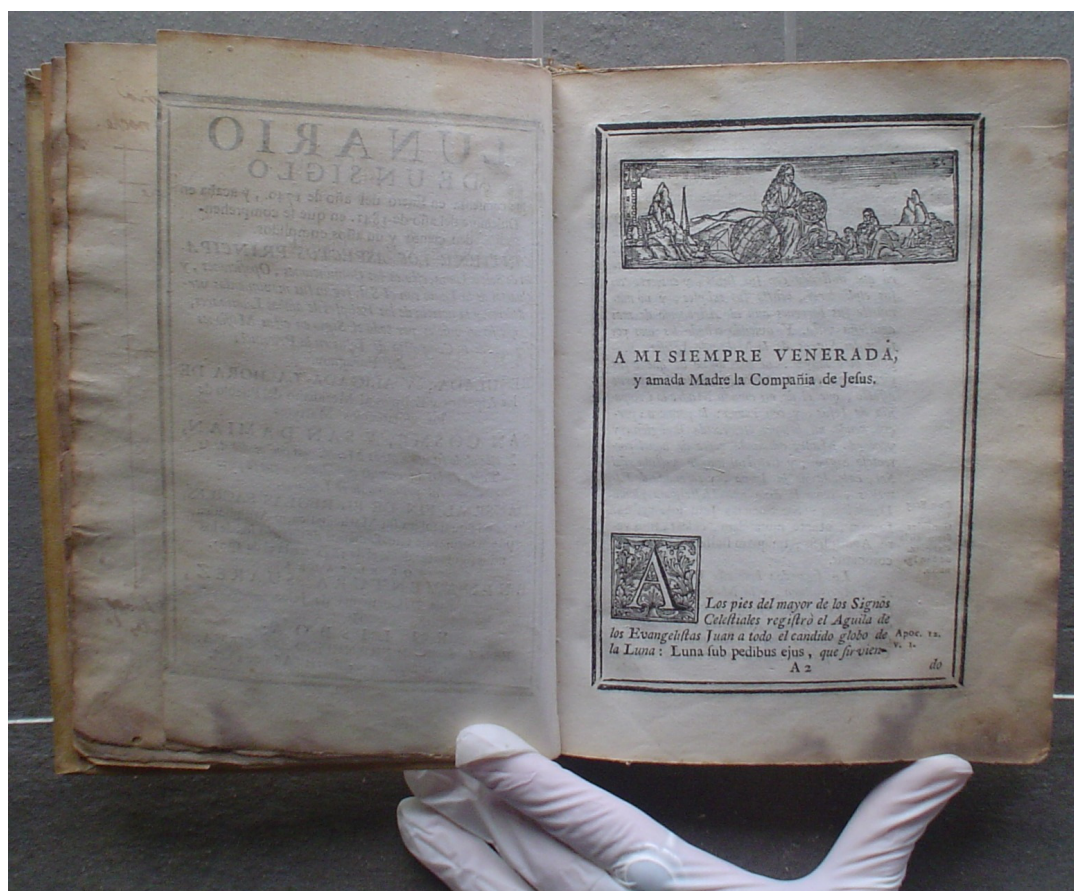


Fig. 19



Fig. 20



Fig. 21

However, the real treasure pages of this book copy are the pages, which contain carefully done corrections by **Suarez' own hand**! The library will digitalize the book in near future, but these pages with Suarez' handwriting and signature of the year 1750, the year when he died, will not be digitalized but remain the library's treasure!

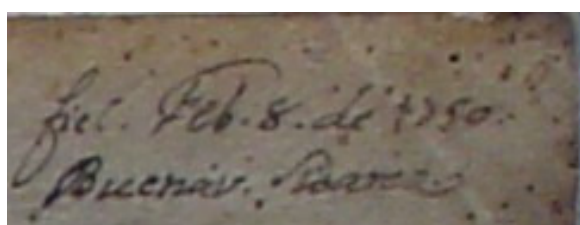
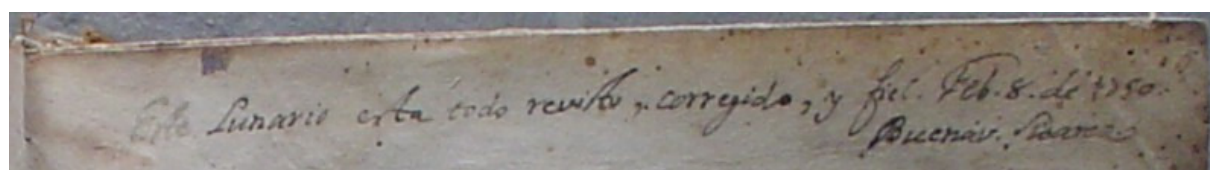


Fig. 22

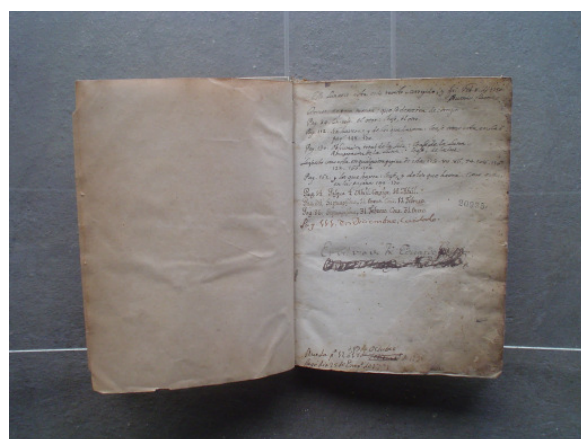


Fig. 23

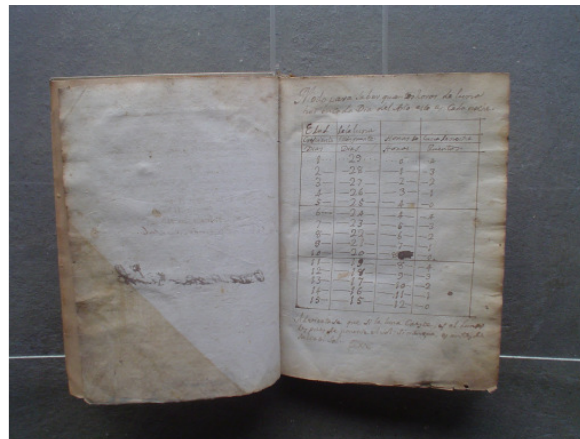


Fig. 24

He had asked his Order-officials to buy good European telescopes and clocks for him, but he had to wait many years until he received them finally. Only 5 years before he died he got **two clocks from England** as well as **two modern telescopes**. As soon as he got the new British telescopes he started his observations again and they lasted about the 5 years until he died with 72 years. So probably some of the corrections he has written down in the book copy from Buenos Aires library were done in the light of his new equipment. And he did these corrections only about half a year before he died. But the next edition in **Barcelona** contained the same mistakes as the Lisboan-edition. He certainly would have suffered if he got to know about this fact.

...

Buenaventura Suarez built a **horizontal sundial**, made of stone, which still exists nowadays!

I would like to show different images of this sundial to you, which I collected from literature and several internet- sources as well as from friendly informants from South America, who gave them to me together with the permission to show them also at my website www.ta-dip.de .

I will start with some images of the reduction of San Cosme y Damian:



Fig. 25



Fig. 26



Fig. 27



Fig. 28



Fig. 29



Fig. 30

And now pictures from the horizontal sundial:

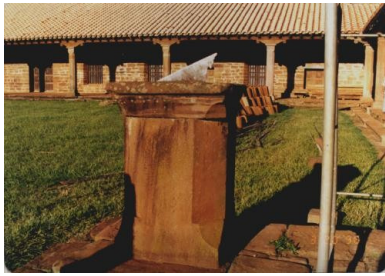


Fig. 31



Fig. 32

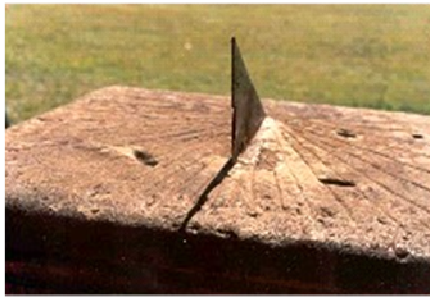


Fig. 33

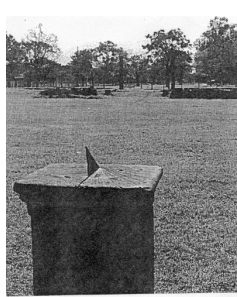


Fig. 34



Fig. 35



Fig. 36



Fig. 37



Fig. 38



Fig. 39

According to a well known sentence of the Bavarian artist, writer and film maker **Herbert Achternbusch** “**You have no chance, but take it!**” I wrote a letter to the **UNESCO- representative of Paraguay** here in Paris and asked him, whether he would have some minutes time for me to hand over a petition personally to him to save this sundial-treasure of Buenaventura Suarez in San Cosme y Damian. And I prepared three possible remarks at my manuscript:

- a) **He did not answer**
- b) He had no time to meet me
- c) He invited me to come

You may have a look at a paper-copy of my email if you like!*



Fig. 40: Carlos III de Borbón

Seven years after Buenaventura Suarez’ decease the Spanish King **Carlos III de Borbón** has expelled the Jesuits from all their possessions and settlements in America as well as in Spain. These sudden big changes might also have been the reason why all the astronomical tools of Buenaventura Suarez got lost. I was very lucky to find a really interesting document, written in German language in the book “**Der Teutsche Merkur**” from October 1788 with the title “**Jesuiten-regierung in Paraguay**”. It refers about a battle between Jesuit troops and a united Spanish-Portuguese army of September 12th in 1759. At two captive Jesuit officers they found booklets with secret letters, however with a key, transforming the text into Latin language.

Several chapters of these **31 rules** both amused and amazed me very much as they reminded me to similar promises given to the Alkaida-Muslim-fighters nowadays.

In Chapter 15 and 18, very beautiful women in heaven are promised, and to do everything with a woman if they fight brave against the enemies. In chapter 19 four beautiful women and chapter 20 many beautiful women in heaven are promised. If one reads these entire details one can imagine that the Spanish king came to the conclusion that his possessions in South America as well as in Spain were in big danger, as the Jesuits had settled as a state in the state.

Der Zeutsche Merkur.

October 1788.

I. Jesuitenregierung in Paraguay.

In einer Action, welche der Schlacht bey Paraguay, die 1759 am 12ten September zwischen der Jesuitischen und der vereinigten spanisch: portugiesischen Armee geliefert wurde, vorhergteng, wurden unter andern indianischen Gefangenen auch zwey Europäer eingebracht, die mit verzweifelter Tapferkeit gefochten hatten. Beyde waren von den übrigen Gefangenen ganz unterschieden gekleidet. Sie trugen einen rothen Husarenhabit an welchem von den Achseln zwey kleine Ermel herabhiengen. Ihr Helm war mit rothen Federn eingesaft, und beyde trugen eine große Kette von Diamanten um den Hals. Eben so reich waren ihre Pferde geschmückt. Ihre Waffen waren ein großer Säbel und eine Flinte; als man sie auskleidete, fand man einen sehr guten Brustharnisch auf ihrem Leibe, und noch außerdem eine kurze Pistole und zwey Dolche.

A 2

Die

Fig. 41: Jesuitenregierung in Paraguay

Let us have a short look on the live-spans of well known astronomers and scientist- personalities of his era: **Newton, Halley, Cassini, Leibnitz, Huigens, and Breadley** are shown at this list.

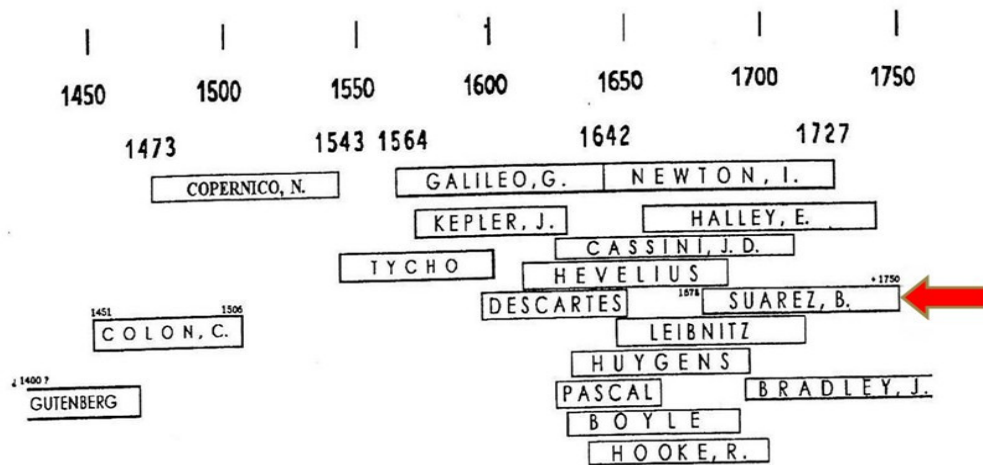


Figure 2. The life-spans of Fr. Suárez and other astronomers and scientists, 1450-1750.
Detail from a poster presented at IAU Colloquium 162, London, 1996

Fig. 42 Life-spans of B. Suarez and other...

I have composed my talk about **Buenaventura Suarez** for all senses: Seeing, hearing, feeling ... Yes, I know! You are still waiting for smelling and tasting!! As Buenaventura Suarez did successful research about **chocolate production**, I thought it might be an idea to end my talk with sweet chocolate...And as I live in Bremen with chocolate from Bremen! As French people are still known to be suspicious about what is coming from Germany I chose a product from a French sounding producer – even he came from Belgium to Bremen in 1890: **Hachez!** Please try his brown leaves, which are produced successfully since 1923 in Bremen! And while you eat the chocolate, please think of **Buenaventura Suarez and his beautiful sundial!**

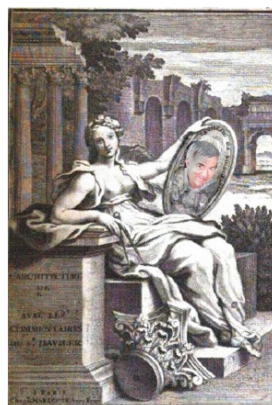


Fig. 43 Reinhold Kriegler framed and admired by a sitting beauty...



Fig. 44: F I N – taken from the book “**Lunario de un siglo**”

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