



Figure 20.1: *Repsold meridian circle (La Plata Astronomical Observatory)*

20. La Plata Astronomical Observatory

Juan Carlos Forte and Sofia A. Cora (La Plata, Argentina)

Abstract

La Plata, the current capital city of the province of Buenos Aires, was founded on 19th November 1882 by governor Dardo Rocha, and built on a very innovative design giving emphasis to the quality of the public space, official and educational buildings. The Astronomical Observatory was one of the first inhabitants of the main park of the city; its construction started in 1883 including two telescopes that ranked among the largest in the southern hemisphere at that time and also several instruments devoted to positional astronomy (e. g. a meridian circle and a zenith telescope). A dedicated effort has been invested during the last 15 years in order to recover some of the original instrumentation (kept in a small museum) as well as the distinctive architectural values. In 1905, the Observatory, the School of Agriculture and the Museum of Natural Sciences (one of the most important museums in South America) became part of the backbone of La Plata National University, an institution with a strong and distinctive profile in exact and natural sciences. The First School for Astronomy and Related Sciences had been harboured by the Observatory since 1935, and became the current Faculty of Astronomical and Geophysical Sciences in 1983. This last institution carries PhDs programs and also a number of teaching activities at different levels. These activities are the roots of a strong connection of the Observatory with the city.

20.1 Astronomical Observatory as one of the Founding Institutions of La Plata National University

La Plata National University (Universidad Nacional de La Plata) was created in 1905 by Joaquín V. González, who was Minister of Justice and National Public Education at that time. The *Astronomical Observatory* together with the Natural Sciences Museum and the Veterinary and Agronomy Faculty became the pillars of the National University. These relevant institutions gave the scientific profile, more oriented to natural and exact sciences. The institution began operations on 18th April 1897 as the La Plata Provincial University (Universidad Provincial de La Plata) with Dr. Dardo Rocha as its Rector. In 1906, and after becoming a national

university, Joaquín V. González, was appointed as the first Rector.

The university coat of arms was adopted at the first university assembly on 14th February 1897. It represents the City of La Plata holding up the “Light of Science”. The constellation of the Southern Cross is also featured as well as the coat of arms of the Province of Buenos Aires which is held in the hands of the woman who represents the city. The university emblem is the oak leaf, and its motto “Pro Scientia et Patria” is a Latin phrase meaning “For Science and the Motherland”.

In chronological order, La Plata University is the third after Buenos Aires and Córdoba and is considered as one of the most prestigious of the country. Currently, it has fourteen colleges: Agrarian Sciences, Engineering, Liberal Arts, Law and Social Sciences, Veterinary, Exact Sciences, Medicine, Economic Sciences, Natural Sciences, Astronomical Sciences, Dentistry, Fine Arts, Architecture and Journalism.

The story tells that Joaquín V. González was impressed by the great comet that became very bright in September 1882 leading him to choose the Astronomical Observatory as one of the founding institutions of La Plata National University. In turn, La Plata, the capital city of the province of Buenos Aires, was founded by Governor Dardo Rocha (1838–1921) on 19th November 1882. The construction of the Observatory was scheduled in a decree passed by on 7th May 1881. In this decree, the Engineering Department was ordered to set up plans and a budget for several public buildings, including an Astronomical Observatory, relevant for the cartographic survey of the province.

La Plata city is widely known as the one of the best planned urban system of the 19th century. Urban planner Pedro Benoit designed a city layout based on a rationalist conception of urban centers. The city has been conceived on three fundamental axes on which most public buildings are located. One is limited by 51st and 53rd avenues and the other two cross it in 7th and 13th avenues. The House of Government, the Provincial Legislature, the Municipal Palace and the Cathedral rank among the main buildings. The House of Government was projected by the Belgian architect Julio Doral. It has typical Renaissance style and is located opposite the Provincial Legislature on the other side of San Martín Square. The Provincial Legislature emerges on the inter-



Figure 20.2: Aerial view of the Observatory at the beginning of 20th century

section of two of those axes on Plaza San Martín. It was designed by the German architects Gustav Heine and George H'agemann, from Hannover, who won the contest called by the provincial government in 1881. Carlos Nordman was the architect who directed the construction. The Municipal Palace is one of the most beautiful buildings in the city. It has German Renaissance style and it was designed by the German Architect Uberto Stier from Hannover School. The Cathedral of the Immaculate Conception, is one of the most characteristics symbols of La Plata. The style is Neogothic, with French influence. It was inspired by the cathedrals of Amiens (France) and Cologne (Germany), though smaller. The project was elaborated by the Department of Engineers led by Pedro Benoit.

The city Park is a great “lung” which still keeps a considerable area. The buildings that constitute a relevant part of this traditional park are the open air Martín Fierro theatre, the Zoo, The Natural Sciences Museum, and the Astronomical Observatory. As it already mentioned, the Natural Sciences Museum was one of the pillars of the National University. It is a great Greek-Romanic building, founded by Francisco P. Moreno in 1884. Moreno was the director for 20 years and placed it in the top international level, with about two million of classified pieces, a collection he contributed to gather in a significant way. It holds one of the most important paleontological and anthropological collections in South America.

20.2 The First Instrument

The 1882 transit of Venus in front of the Sun had influence in the decision of constructing an astronomical observatory and stimulated considerable efforts by astronomers from countries all around the world. 1st November 1881, a local committee was designed to collaborate with the French mission from Paris Astronomical Observatory that would observe the phenomenon from our latitudes. With the aim of observing this event of worldwide attraction, the provincial government ordered an equatorial refracting telescope with 21.6 cm of aperture and 3.1 m of focal length made by Gautier House. This first instrument, acquired as part of the activities that promoted the creation of the Observatory, has been kept at the observatory of the amateur Argentinian Association of Astronomy Friends (Asociación Argentina de Amigos de la Astronomía) since 1942.

The budget for the construction of the public buildings, including the astronomical observatory, was accepted 18th October 1882. Thirteen months later, 22th November 1883, Francisco Beuf was designated *Director of the construction of the building*, thus becoming the first Director of the Institution. He was a lieutenant of the French army and director of the Naval Observatory of Toulon. Astronomers at La Plata, in fact, celebrate the creation of the Observatory on 22th November.

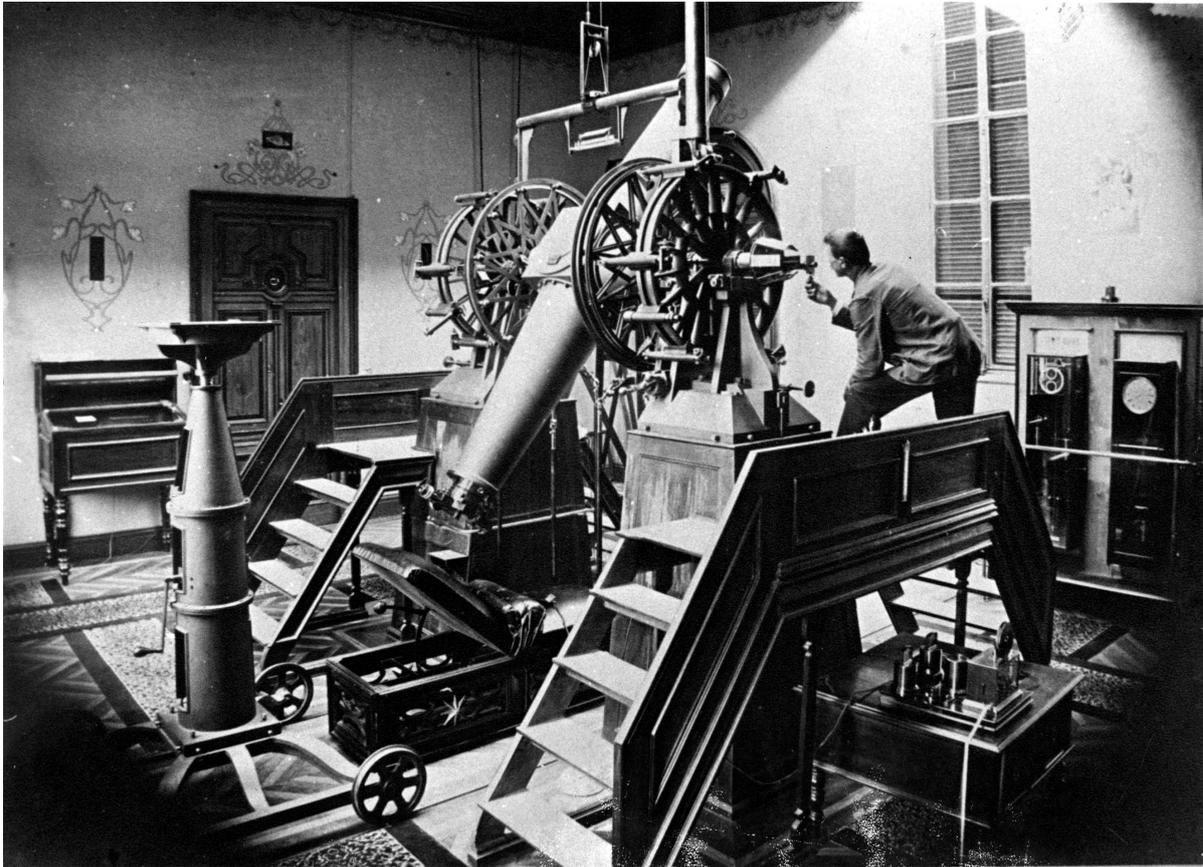


Figure 20.3: Large Gautier meridian circle

20.3 Instruments in the Period 1884–1890

In the period 1884–1890, during the Direction of Francisco Beuf (1883–1889), several telescopes were acquired: a Gautier zenith telescope, an astrograph, a Zeiss-Gautier reflector, a large Gautier equatorial refractor and a Gautier meridian circle. In the following, we describe the main characteristics of these instruments and their evolution, making a link to the different directors of the Observatory that contributed to build up its history and the development of Astrophysics in La Plata.

One of the purposes of the Observatory was the determination, by astronomical and geodetical observations, of the geographical positions of a sufficient number of places for the construction of an accurate map of the Province of Buenos Aires. By resolution of 17th March 1884, Director Beuf purchased two zenith telescopes of 8 cm of aperture and 80 cm of focal length from Paul Gautier of Paris. These instruments were installed in 1887 and 1888.

In April 1886, the purchase of a photographic refractor of 15 cm of aperture was entrusted to the care of Admiral Mouchez, Director of Paris Observatory. Admiral Mouchez suggested to buy a larger instrument, similar to others designed to carry out an important catalogue

of stars covering practically the whole sky, known as *Cart du Ciel*.

The astrographic telescope arrived in August of 1890. During the administration of Director Francisco Porro Di Somenzi (1906–1910), a new objective from Carl Zeiss firm was acquired. It was set on the instrument in August 1913, thus obtaining the first astronomical pictures with this telescope. The objective has 34.2 cm of aperture and 3.42 m of focal length. Since then, photographic observations of asteroids and comets had been taking place at La Plata Observatory. This telescope worked till 1986, providing a large number of photographic plates. During those years, the observatory contributed made significant contributions to the accurate determination of positions of asteroids and comets. Several asteroids were discovered in that period, such as (965) Angélica, (1029) La Plata and (1254) Erfodia.

In April 1886, a reflector telescope of 80 cm of aperture was ordered from Paris Observatory. The instrument was assembled by Gautier and finished in 1887. The optical devices were provided by Paul and Prosper Henry. The original large mirror was finished in 1889. Several modifications have been introduced since 1921 such as a new mirror provided by the firm Zeiss of Jena, Germany, in 1930, changing from a Newtonian to a Cassegrain system. These improvements were done by Dr. Johannes Hartmann, a German Director of the Observatory in the period comprised between

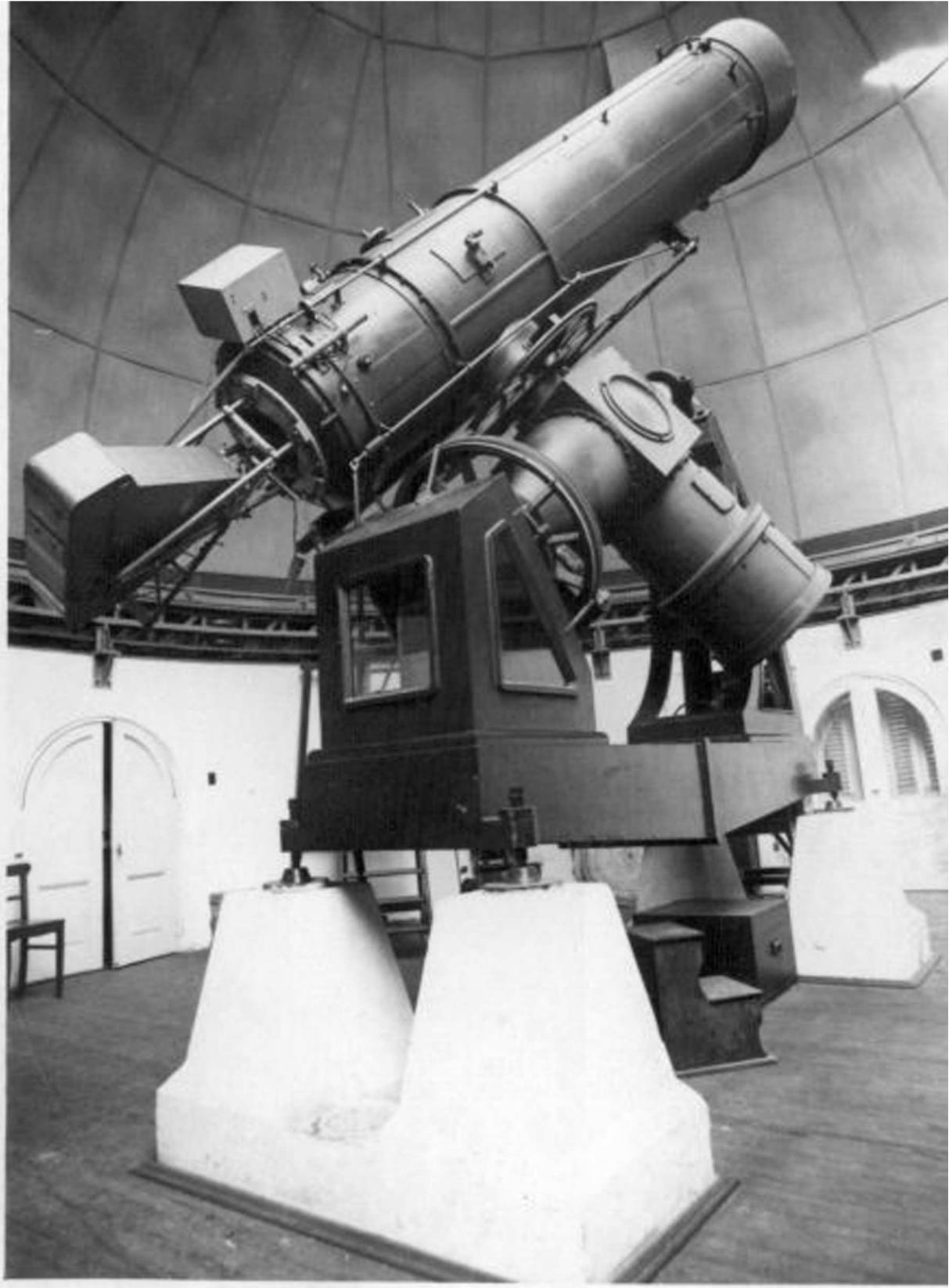


Figure 20.4: *Zeiss-Gautier reflector telescope*

1921 and 1934, who tried to promote the astrophysic and astrographic research activities. During this period, the asteroids Angélica, La Plata and Erfordia, already mentioned, were discovered and the programmes and observations of Eros and the Nova Pictoris were started. However, the instrument was not much used during this period. In 1954, several improvements were made by the mechanic Herbert Glinschert under the indications of Dr. Livio Gratton and during the direction of Guillermo O. Wallbrecher (1947–1955).

In April 1887, the acquisition of a refractor telescope of 43.3 cm of diameter and 9.6 m of focal length was approved. The assembly of this instrument was done by Gautier and finished in 1894. The optical devices of this large Gautier equatorial telescope were manufactured by Paul and Prosper Henry. Scientific research carried out with this instrument includes the observation of binary stars and asteroids and Mars opposition of 1956.

That same year, by resolution of 4th May 1887, the acquisition of a meridian circle refractor telescope was authorized. This instrument was designed by P. Gautier with the aim of being one of the largest and best telescopes of this kind in the world. The objective of this large meridian circle has 21.3 cm of aperture and 2.8 m of focal length (from the firm Henry Brothers). This telescope reached Buenos Aires in April 1890.

20.4 Instruments around 1906

In January, 1906, Dr. Francisco Porro di Somenzi was appointed Director of the Observatory and also became the first Dean of the Faculty of the Mathematical, Physical, and Astronomical Sciences that was created within the Observatory. Among the instruments obtained on Dr. Porro's initiative, was a Repsold meridian circle, a Zeiss comet-seeker, two Repsold transit instruments and Wanschaff zenith telescopes. We present now a brief description of the acquisition and main features of these instruments.

In October 1906, Director Porro placed an order with the celebrated firm A. Repsold & Son of Hamburg, for the construction of a large meridian circle. This instrument has a two-lens objective by Carl Zeiss, having 19 cm of aperture and 2.8 m of focal length. It was received in La Plata in May 1908. In 1932, the Director Johannes Hartmann lent the instrument to the Córdoba Astronomical Observatory, after having keeping it in its packing during a quarter of century. In 1934, during the Direction of Ing. Félix Aguilar (1934–1943), specialist in geodesy, the instrument returned to La Plata, replacing the large Gautier meridian circle in 1938.

While in Europe, and also in 1906, Director Porro ordered a comet-seeker to the well-known firm Carl Zeiss. The telescope has 20 cm of aperture and 1.38 m of focal length. It was with this instrument that astronomer Pablo T. Delavan on 26th September 1913, discovered the comet 1913d, an interesting discovery since it was the second apparition of Westphal's comet, 1852.

Two astronomical transit instruments were constructed by the house A. Repsold & Son of Hamburg, one of which was received in 1906 and the other in 1907. The objectives were made by Steinheil of Munich of 7.5 cm of aperture and 75 cm of focal length.

The zenith telescope was constructed by Julius Wanschaff, from Berlin. It is like all the zenith telescopes furnished by this maker for latitude observatories of the International Geodetical Association.

In 1945, Félix Aguilar proposed the construction of an astrometric station to better determine the position of circumpolar stars. It was established in Santa Cruz, in the south of the town Paso del Río La Leona, being the southernmost observatory at that time. The observations were done with the Repsold meridian circle.

20.5 Other Instruments

Among the instruments acquired in the two above mentioned periods, only the Zeiss-Gautier reflector telescope, the large Gautier equatorial refractor telescope and the Zeiss comet-seeker are currently in use, mainly for teaching activities aimed to the general public. The Zeiss-Gautier reflector telescope is also used with academic purposes, and some astronomical projects are carried out by both astronomers and undergraduate students. There is, however, a bigger reflector telescope of 2.15 m that was bought during the sixties thanks to the efforts of Dr. Jorge Sahade. It was installed in San Juan in 1986 and is currently used as a national facility.

A Mainka seismograph, a GPS system part a worldwide net, and a meteorological tower are also within the current equipment of the Observatory. Since the beginning of the 20th century, the institution has also had several clocks systems designed to provide accurate time to a number of different observing instruments.

20.6 Main Buildings Today

The Observatory extends over 7 ha area with 18 buildings, including domes and the small shelter for the Wanschaff telescope. The construction of these buildings started in 1885 and finished a decade later. Between 1885 and 1886, the small equatorial building and the east and west pavilions were built, and are used today as the Electronic and Astrometric Department, respectively. In 1889, the main building and the one hosting the Repsold meridian circle, that is currently used as a conference room, were finished. In 1891, the construction of the domes for the Zeiss-Gautier reflector telescope and the astrographic telescope were carried out. In turn, the building that host the Gautier equatorial refractor telescope was finished in 1895. The ground floor of this building became the Museum of Astronomy and Geophysics. This museum was created in May 1997 by the Astronomical and Geophysical Faculty (Facultad de Ciencias Astronómicas y Geofísicas), within the Web of Museums of La Plata National University. The main

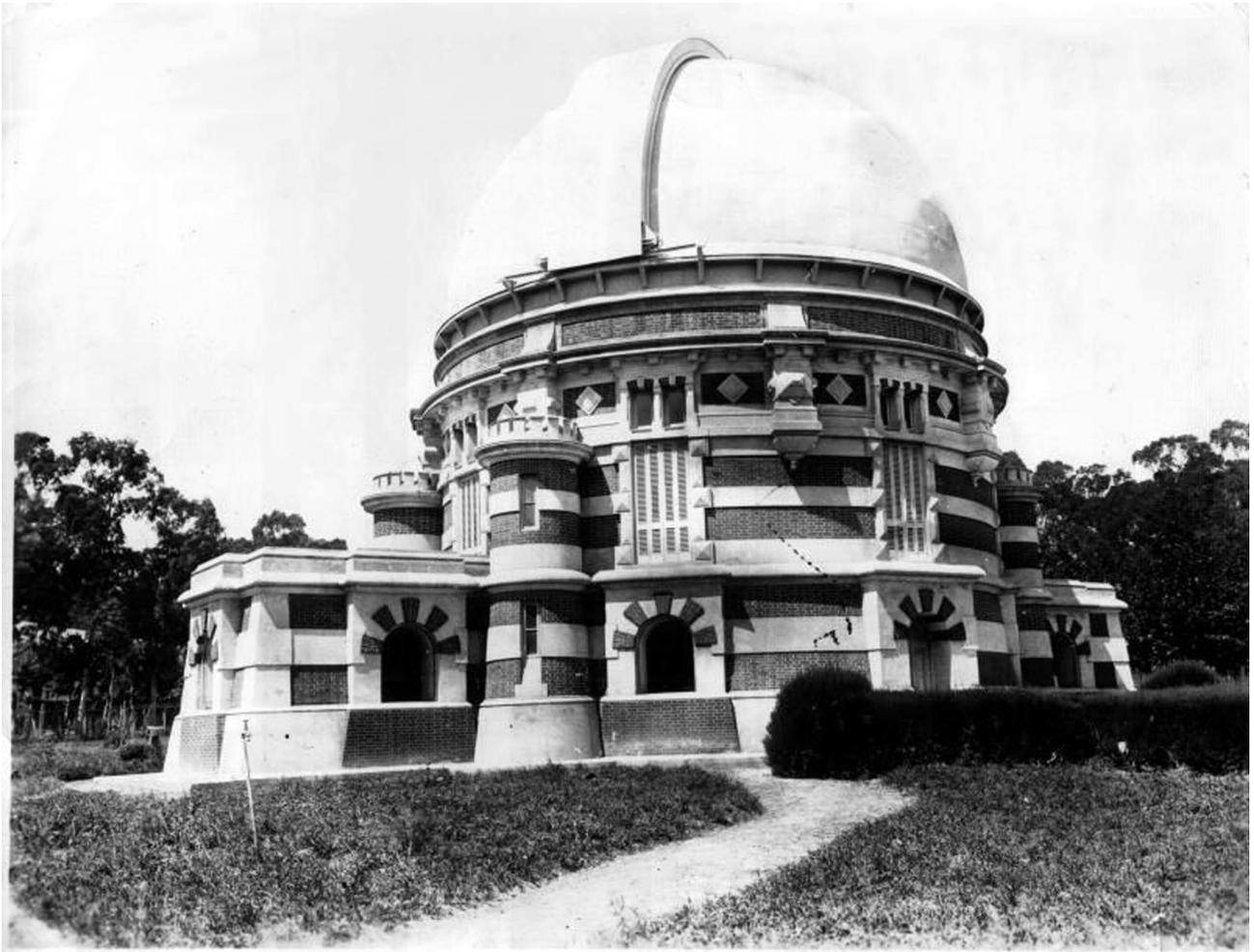


Figure 20.5: *Building that hosts the Gautier equatorial refractor telescope, where the Museum of Astronomy and Geophysics currently operates*

purposes of this museum are the restauration and conservation of the historical patrimony of the Observatory, mainly composed by the instruments acquired at the beginning of 20th century. For example, a Zeiss “blink microscope” for asteroids and variable stars research, as well as parts of the Repsold meridian circle and a photometric camera, among others.

The architectural style of these buildings are the same as those characterizing the main public buildings of La Plata city at the end of 19th century, most of them created by the Ingeneering Department, directed by Pedro Benoit.

20.7 Brief Description of the Main Building

The main building was originally used in part as the House of Directors. Contiguous to the current main entrance corridor, there is another one, that leads to the library, one of the most beautiful rooms of the observatory. The floor is made of heart pine and the room is equipped with a large size table. One of the objectives of the observatory, at the time of its foundation, was to

make a cartographic survey of the Province of Buenos Aires and that table was used for spreading and unfolding the large charts the experts had to draw. Since the table is wider than the door of the library, it is believed that it was assembled inside this room. There is also an antique cast brass gas chandelier. There is not much information about the origins of this lamp that maintains its original shape. It has several ornate arms with etched lampshades. In the 1880s, there was no electrical wiring in La Plata, so this chandelier ran on gas, which circulated down from the ceiling through the pipe into the arms. The ceiling of the library is ornamented with carvings and a central rosette. In the corners, there are paintings of different telescopes that still remain at the Observatory. Important meetings took place at this library, like the Symposium on Stellar Evolution in 1960, organized by Dr. Jorge Sahade. Outstanding astronomers, like Carlos Jaschek, Maarten Schmidt, Allan Sandage, Margaret and Geoffrey Burbidge, Olin J. Eggen, Alex Feinstein and José Luis Sérsic attended that remarkable meeting. Currently, the library is frequently used for special events connected with the institutional life of the observatory.



Figure 20.6: Current view of the main building

Connected to the library is the Dean's office, where meetings of the Academic Board take place. Just outside of this room, in the external part of the building, there is a gallery with missing statues corresponding to famous astronomers, like Newton, Kepler and Galileo. The story tells that the statues were lost with the sinking of the ship that was bringing them to La Plata. In fact, and as recently found in old recovered documents, these statues were never bought because of budget reductions.

Many of the original rooms of the original building are currently offices occupied by scientists, engineers and the Observatory administration.

20.8 Concluding Remarks

The most significant restoration works that have been done include the buildings that host the Gautier refractor telescope and the Zeiss-Gautier reflector telescope, and the ceiling of the library. They were carried out by the architect Leonforte, and specialist of Fine Arts.

On the other hand, future projects involve the construction of a Planetarium within the park of the Observatory, that will contribute to enhance the profile of the City Park as a scientific and cultural circuit that will also include the Zoo and the Museum of Natural Sciences.

Regarding the academic aspects, Félix Aguilar promoted the creation of the Superior School on Astronomical and Related Sciences (Escuela Superior de Ciencias Astronómicas y Conexas) between 1934 and 1935. In 1948, the graduate course of Geophysics was created. Later, in 1983, these Schools merged into the current

Faculty of Astronomical and Geophysical Sciences, being Ing. Pastor Sierra its first Dean. Both students and professors keep a deep connection with the historical past of the Observatory and there is a strong commitment to preserve the value of this unique cultural heritage.

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20.9 Bibliography

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