STRASBOURG ASTRONOMICAL OBSERVATORY AND ITS MULTINATIONAL HISTORY

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Abstract. Strasbourg Astronomical Observatory changed nationality several times since its foundation in the 19^{th} century. This paper[1] outlines the observatory history over roughly a century and introduces the directors together with a few high-profile scientists having been based there or associated with the institution during that time. The major instruments are presented as well as several big projects born (Hipparcos) or installed (CDS) in the observatory.

1. Introduction

Strasbourg Observatory is quite an interesting place for historians: several changes of nationality, high-profile scientists having been based there, big projects born or installed in its walls, and so on.

Most of the documents circulating on the history of the observatory and on related matters have been so far poorly referenced, if at all. Occasionally some elements are definitely wrong, such as even the founder's name in a recently printed leaflet. As it can be expected, such errors are unfortunately carried over in all kinds of publications copying each other. This made necessary the compilation of a dedicated volume (Heck 2005a), offering fully-documented historical facts and references.

Sect. 2 of the present paper recalls a few pecularities of Alsace, that region that switched borders several times in three quarters of a century. If

[1]Introductory chapter to the book *The Multinational History of Strasbourg Astronomical Observatory* (Ed. A. Heck, © 2005 Springer, ISBN 1-4020-3643-4), slightly edited to make the text self-standing in this reprint.

it is French today, life there is not quite the same as in the rest of France – something surprizing in a country where centralization and uniformization have been the rule for so long. The founding of the observatory is then introduced together with its main features.

Sect. 3 is devoted to a gallery of portraits of the successive directors from August Winnecke to Pierre Lacroute where we are stopping our historical considerations. Subsequent times are too close for a proper review. Their appreciation is left to future generations.

The main historical instruments of the observatory as well as a few noteworthy projects are then reviewed in Sect. 4, while Sect. 5 introduces a few additional scientific personalities associated with the institution. An Epilogue then refers again to the local context.

It should be kept in mind that this paper does not aim at exhaustivity. It is deliberately centered on what we consider as key features and characters. We encourage readers to peruse the various chapters in the dedicated volume (Heck 2005a) and to check out the bibliographical references therein.

2. The Regional Context

Strasbourg, capital of Alsace. A strong regional identity. A eventful recent history with several changes of nationality in three quarters of a century. This got unavoidably to be reflected in the observatory history and in the turnover of its personnel.

2.1. LOCAL PECULIARITIES

One of the last and continuing bestsellers in the region is the book by Laurence Winter (2000) entitled *"Ciel! Mon mari est muté en Alsace ..."* [2]. The subtitle is more explicit on the actual substance of the book: *"Petit manuel de comportement à l'usage des nouveaux arrivants pour leur éviter impairs et déconvenues"* [3]. Full of anecdotes, that volume (Fig. 1) is read with the greatest pleasure, by Alsatians and non-Alsatians alike. Some locals were confessing to feel even more Alsatian after reading the book!

Many French people, and *a fortiori* foreigners, are unaware that the law in Alsace is not quite the same as in the rest of France. A lawyer may plead in Strasbourg, Colmar or Mulhouse only after getting a specific qualification in "local law".

In the same way, locomotive drivers must have received a special training since, in Alsace, trains run on the right like in Germany. Lights and signs are thus positioned on the other side of the tracks compared to their location in

[2]Heavens! My Husband is Tranferred to Alsace ...
[3]Small Behavior Manual for Newcomers to Save Them Blunders and Disappointment.

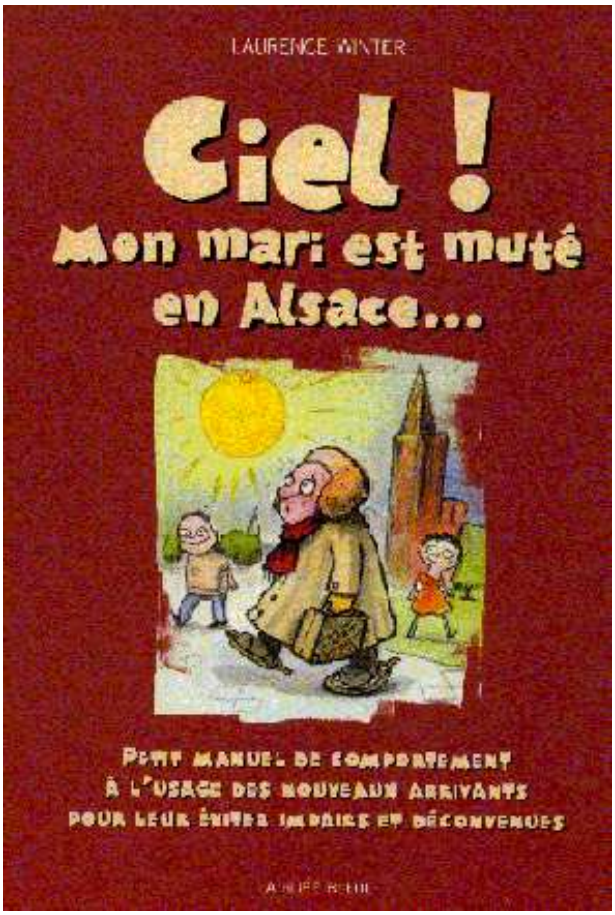


Figure 1. The book by Laurence Winter (2000).

France de l'Intérieur [Inner France]. The tracks themselves pass over each other at the level of the old border.

Alsace is also preserved ground for the chimney sweepers who recently protested violently against invading colleagues from the nearby Belfort Territory (now a separate French *Département*) who were not holding the necessary degrees nor obeying the same guild rules.

In the continuation of the "Concordat" going back to the Napoleonic Imperial decrees of 1801-1802, the priests and other cult ministers are paid by the State, which is not the case in the rest of the country. Alsace enjoys also two additional holidays: the Good Friday (Friday preceeding Easter) and the 26 December (day following Christmas), something which is always disturbing national tourists, surprized to find shops and official buildings

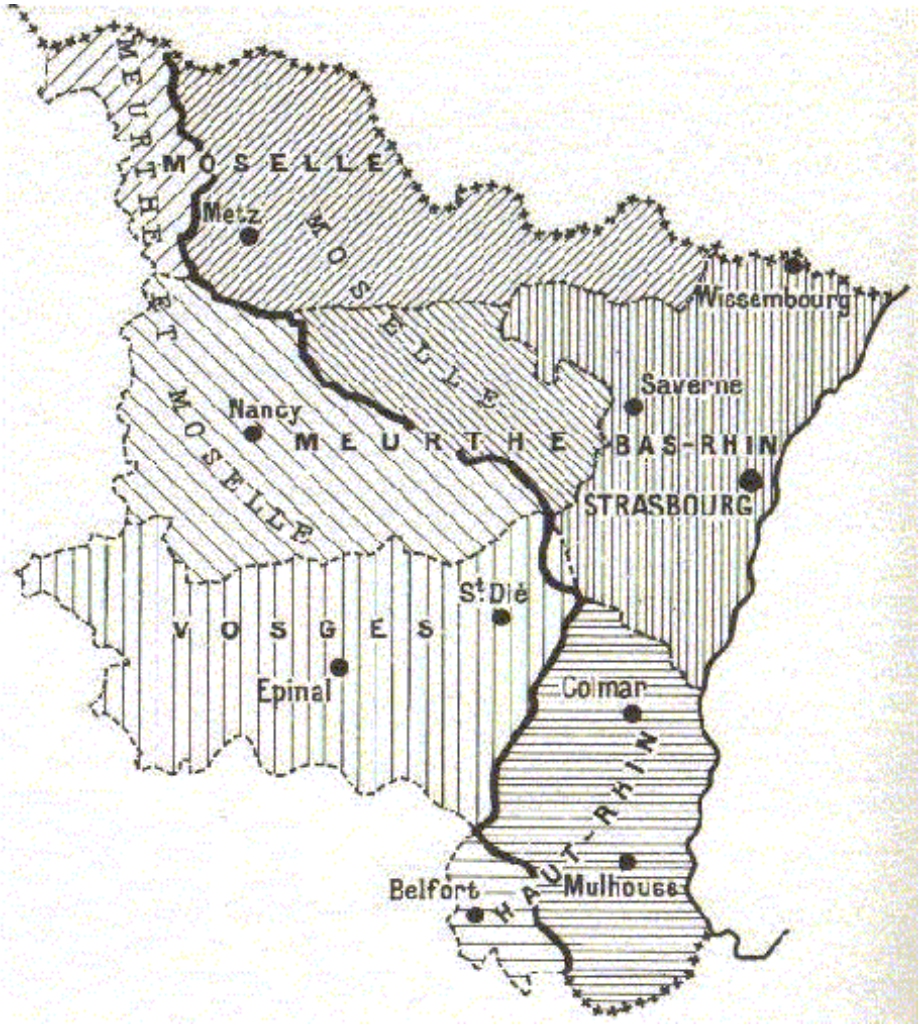


Figure 2. The annexed Alsace-Moselle area, pictured with narrow hachures, East of the new border after the Franco-Prussian war of 1870-1871.

closed those days.

The payroll of civil servants shows a line corresponding to an 'indemnity for administrative difficulties': a very small amount today as it has not been reevaluated since long. When created, it represented however a non-negligible bonus and a good incentive to motivate 'inner French' civil servants to come and work in a region where their language was not commonly spoken at that time[4].

[4]In the 1970s, we witnessed people from "Inner France", in particular educated

Figure 3. Wilhelm I. (Berlin, 1797-1888), the founder of Strasbourg Astronomical Observatory. Crowned King of Prussia in 1861, he was proclaimed German Emperor on 18 January 1871 in the *Galerie des Glaces* of the Versailles Castle before the very end of the Franco-Prussian war.

2.2. A BIT OF HISTORY

At the outcome of the Franco-Prussian war of 1870-1871, France lost Alsace (minus Belfort and a small territory around the city) as well as a part of Lorraine including the city of Metz (Fig. 2). That region, Alsace-Moselle, was improperly named *Elsaß-Lothringen* [Alsace-Lorraine] by the German empire – an incorrect denomination that it is still found today in many books including tourist guides.

As so often in the course of History, the new authorities decided to make a showcase out of the newly acquired region and in particular out of its capital Strasbourg. New spacious and structured quarters were built, roughly East of the old town (Fig. 4). They are still called today the 'Wilhelminian Quarters' from the name of the new masters, the Emperors Wilhelm I. (1797-1888, Fig. 3) and Wilhelm II.[5] (1859-1941) who ruled until the end

Parisians, repeatedly calling "illiterate" people from Strasbourg (imagine how were then considered people from the countryside) where Alsatian was frequently spoken spontaneously in everyday life contact.

[5]Wilhelm II. was in fact the grandson of Wilhelm I. who died in March 1888 and was succeeded by his son Friedrich III. who reigned only a couple of months before dying in

Figure 4. Excerpt from a 1899 map of Strasbourg showing the Eastern extensions (Wilhelminian quarters). The observatory Big Dome is the cross near the picture center.

Figure 5. Current view of some Wilhelminian university institutes built at about the same time as Strasbourg Observatory. On the left, the imposing outline of Strasbourg Cathedral dominates the old town. The back of the *Universitätspalast* is visible near the center of the picture, at the end of the alley. The observatory is behind the photographer. (Phot. J. Marcout, © Obs. Astron. Strasbourg)

of World War I (WWI).

The *"Dictionnaire historique des rues de Strasbourg*" [6] (Moszberger *et al.* 2002) offers interesting details:

> *"Adopted in 1880, the extension plan for Strasbourg, established by Head Architect Jean-Geoffroy Conrath graduated from the* École des Beaux-Arts de Paris *and left at his position by the German administration, increases roughly threefold the town area, from 232 to 618 hectares [...]. Conrath's ambitious design, taking also into account suggestions from August Orth, an architect from Berlin, summonned up during decades all energies and resources. One estimates to one Billion Marks of the time the spending by the State as well as by the City and private owners. The plan is carried out progressively, encounters some difficulties with most streets having to wait ten or twenty years to be completed. But in the end, at the dawn of WWI, the new town has risen from the wasteground."*

June 1888. Wilhelm II. was Friedrich III.'s son.

[6]Historical Dictionary of the Streets of Strasbourg.

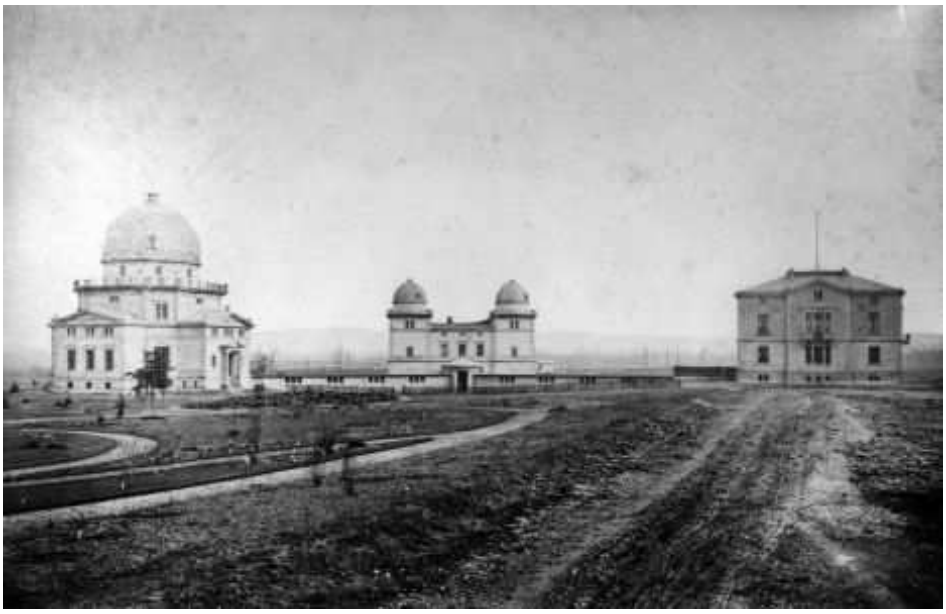


Figure 6. View around 1880 of the *Kaiserliche Universitäts-Sternwarte Straßburg*. A few pathes and young trees of the Botanic Garden are visible in the left foreground. The traces left by cartwheels heading towards the building on the right *(Bâtiment Sud)* mark the future *Universitätsstraße*. (© Obs. Astron. Strasbourg)

The new city extension included what one would call today a university campus with a 'palace' and a whole range of institutes (Fig. 5), together with an astronomical observatory.

The city became French again, as well as the whole of Alsace-Moselle, at the end of of WWI (1918). In 1940, the area was annexed by the Nazi regime at the outbreak of WWII. The French university had already been moved to Clermont-Ferrand. German staff run the activities in Strasbourg during the conflict. The region returned to France at the end of the war (1945).[7]

[7]It is generally little known that other neighboring regions, such as the Belgian 'Eastern Cantons', had the same fate during WWII: annexion, enlistment of men in the German armed forces (and sent to the Eastern front), execution of rebels with the families sent to concentration camps, girls having sometimes the option to join military brothels. In the case of Belgium, German remained the regional language after the conflict and the third official language of the country (together with Dutch and French). In France, the presence of several Alsatian elements in the division *Das Reich* moving Northwards towards Normandy in June 1944 and killing several hundreds of civilians (including eleven evacuated Alsatians) in Oradour-sur-Glane (Limousin) has been the source of multiple polemics and heated debates in the country. It is still a delicate matter nowadays.

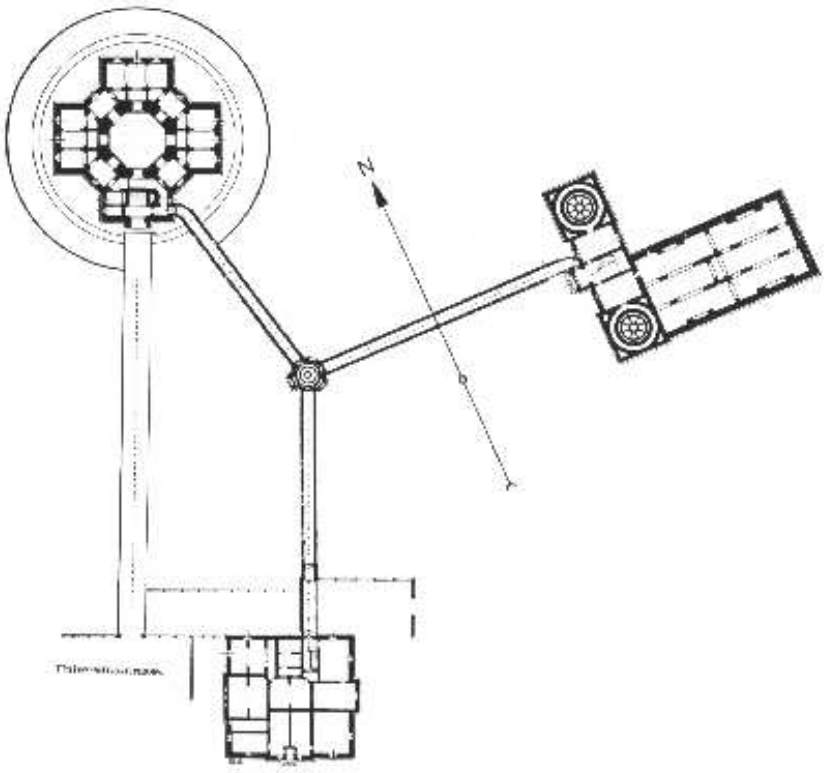


Figure 7. Blueprint of the original buildings of Strasbourg Observatory (Becker 1896a). (© Obs. Astron. Strasbourg)

2.3. THE IMPERIAL OBSERVATORY

Thus the decision to set up an astronomical observatory in Strasbourg just after the French-Prussian war of 1870-71 is to be seen as a political move, in line with the construction of an imperial university and of whole new quarters in the city. The construction took place between 1877 and 1880 under the direction of Architect Hermann Eggert. The buildings were inaugurated in September 1881 with a General Assembly of the *Astronomische Gesellschaft* [8] (see *e.g.* Seggewiss 2005).

As shown on Figs. 6 & 7, the observatory consisted from the start of several elements interconnected by covered corridors, still in existence and

[8]Founded in 1863 in Heidelberg with an asserted international vocation, the *Astronomische Gesellschaft* (AG) is one of the oldest astronomical societies, second only to the *Royal Astronomical Society* (RAS) founded in 1820 (Pfau 2000). Note that the AG membership includes about 2% amateur astronomers while, in the RAS, they are estimated to make about 55% of the membership (Heck 2000).

Figure 8. Construction of the Eastern Building. (© Obs. Astron. Strasbourg)

Figure 9. Current aerial view of Strasbourg Observatory. The Eastern building, added in 1933 and heightenend in 1958, is visible at the upper right in the continuation of the meridian building. (Phot. J. Marcout, © Obs. Astron. Strasbourg)

Figure 10. Current view of the Big Dome. One of the modern extensions is clearly visible. (Phot. J. Marcout, © Obs. Astron. Strasbourg)

allowing the personnel to move between the buildings while being protected from the bad weather.

The most emblematic building, the Big Dome, is located at the end of the *Universitätsallee* [9], itself in the continuation of the perspective linking the *Kaiserpalast* [10] designed also by H. Eggert and the *Universitätspalast* [11], conceived by Otto Warth.

The other original elements were (for details, see Becker 1896a as well as Müller 1975, pp. 170-175):
– a residential building (Bâtiment Sud [South Building]) for the Director, including offices, at the corner of the inverted-**L**-shaped University Street;
– an observational unit located East of the previous ones and including two smaller domes and two meridian rooms.

The observatory is located next to the Botanical Garden, also part of the urban extension. Anecdotes of the time report how employees were complaining for having to go and work "out of town" – a distance walked

[9]Or *Allée Universitaire* [University Lane], not to be confused with the nearby *Rue de l'Université* [University Street].
[10]Currently *Palais du Rhin* [Rhine Palace].
[11]Today *Palais Universitaire* [University Palace].

in only a few minutes. What would those persons have said of our current campuses, often exiled way out of the cities!

Later on, an office building with workshops in the basement (Bâtiment Est [Eastern Building]) was built in 1933 between the meridian rooms and the current *Rue de l'Observatoire* [Observatory Street] (Figs. 8 & 9). A story was added in 1958. Much more recently, extension modules (offices, auditorium) were added at the "armpits" of the Big Dome cross (Fig. 10). Those additions, albeit approved by the authorities in charge of historical buildings, will most likely not age in the same way as the original building. Therefore they could be removed only by leaving scars at the joints.

Additional internal modifications were brought later on, such as installing a planetarium in one of the meridian rooms in 1982. The second meridian room now hosts the new observatory library inaugurated there in 1995. External adaptations consisted mainly in an entrance module and offices for the planetarium as well as a junction (offices, stairs) between the meridian building and the Eastern building. Of course, we shall not detail here the internal restructurations of offices, irrelevant to our purpose.

3. The Directors

3.1. AN EVOLVING FUNCTION

Table 1 gathers together the successive observatory directors. Making a couple of points is in order before commenting various personalities.

First of all, the by-laws regulating French research institutions such as the observatories underwent several changes, especially after the 1968 events that rocked European universities. Following these, directors in particular were no more nominated in their position for the rest of their active life, but elected for limited terms. This explains the high turnover of directors in the last decades. Lacroute (whose directorship was the longest one, spanning 30 years) went in fact through the post-1968 transition and was reelected until his retirement[12].

Second, and given the way scientific activities are organized and financed nowadays, both nationally and internationally, one must keep in mind that people currently in charge of observatories are much more administrators than directors.

3.2. THE FIRST GERMAN PERIOD

The creation of an observatory implies the nomination of a first director. Thus August Winnecke (1835-1897, Fig. 12) was put in charge of building an observatory with a novel design. According to Architect Eggert

[12]Becker's directorship ranks second with 22 years.

TABLE 1. Strasbourg Observatory Directors. The period covered by this paper ends roughly with the directorship of Lacroute.

1872-1886	A. Winnecke
1882-1886	W. Schur (a.i.)
1886-1887	H. Kobold (a.i.)
1887-1909	E. Becker
1909-1919	J. Bauschinger
1918-1919	A. Baldit (a.i.)
1919-1929	E. Esclangon
1929-1945	A. Danjon (⇒ Clermont-Ferrand)
1941-1944	J. Hellerich (Strasbourg)
1946-1976	P. Lacroute
1976-1987	A. Florsch
1987-1988	D. Egret (a.i.)
1988-1990	A. Heck
1990-1995	M. Crézé
1995-2000	D. Egret
2000-	J.M. Hameury

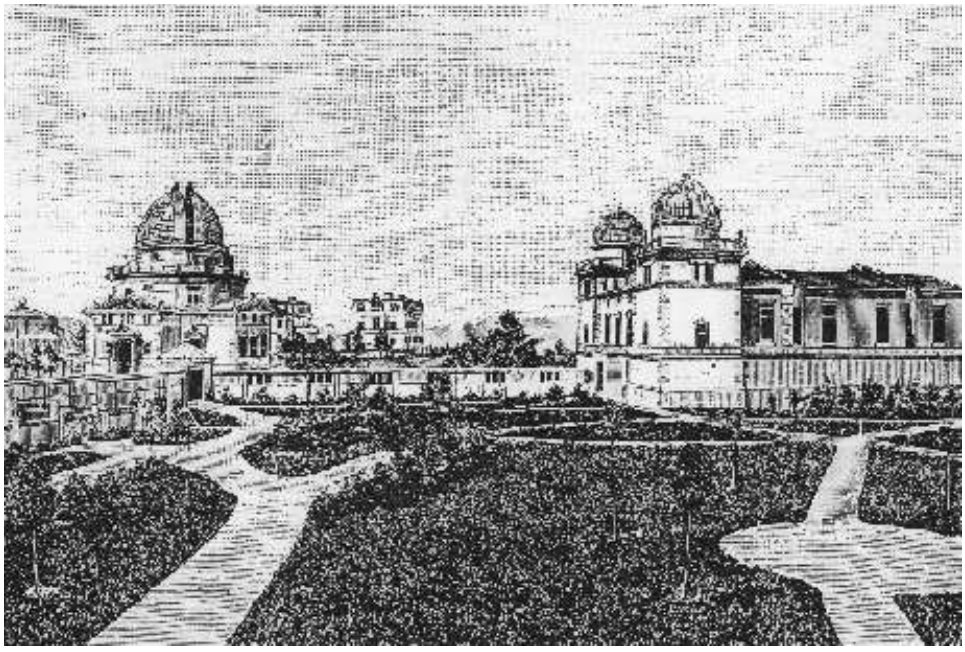


Figure 11. Strasbourg Observatory shortly after its construction (scarce buildings in the nearby streets). (© Obs. Astron. Strasbourg)

Figure 12. August Winnecke (1835-1897), the first Director. (© Astron. Gesellschaft)

(quoted by Mayer 1894), *"For laying out the group of buildings, as well as for arranging each of them in particular, Prof. Winnecke's program was determining."* Among the innovations, the dissociation of instrument pillars from the building foundations deserves a special mention, as well as the separation of the various areas of activities (lodging, observing, working).

Winnecke was appointed Director for Strasbourg Observatory in 1872. He had been earlier at Pulkovo Observatory that he had joined in 1858 and where he became Deputy Director in 1865. In 1864, he had married a niece of Otto Wilhelm Struve[13] who was in charge of Pulkovo since the retirement of his father in 1862. In 1869, Winnecke had been elected Secretary of the *Astronomische Gesellschaft* (AG, see Footnote 8), a position he was going to hold during a dozen years, *i.e.* until September 1881 when Strasbourg Observatory was inaugurated with an AG meeting.

Born in Groß-Heere (Hildesheim), Winnecke had studied astronomy in Goettingen, Berlin and Bonn. He worked with eminent scientists such as Gauß (1777-1855), Encke (1791-1865) and Argelander (1799-1875). He was an excellent observer with ten comets discovered between 1854 and 1877 and numerous stellar observations. In Strasbourg, he initiated an astrometric

[13]Otto Wilhelm Struve (1819-1905) belongs to a dynasty of astronomers spanning four generations and starting with his father Friedrich Georg Wilhelm von Struve (1793-1864) who set up Pulkovo Observatory (Saint Petersburg).

Figure 13. Strasbourg Observatory on a late 19^{th}-century or early 20^{th}-century postcard. The "i.E." (meaning *im Elsaß*) after the city name removes any doubt on the localization of the place and, in particular, avoids any possible confusion with the other German *Strasburg* (Uckermark), some 140km North of Berlin. Note the surrounding vegetation that could let an unaware eye to believe the location is in an equatorial country.

survey (precise positions) of nebulae which would be completed only in 1911 (by Kobold and Wirtz).

Winnecke was extremely busy[14] on top of supervising the observatory construction and the instrumental furnishing, not to forget the recruitment of personnel[15]. His family was not spared by tragedy as the eldest son died accidentally in January 1881. Multiple trips and the additional charge of University *Rektor* ended by wearing out Winnecke's health.

As he fell seriously ill in 1882, the observers Wilhelm Schur (1846-1901) and Hermann Kobold (1858-1942) acted as deputies. In 1886, Schur was nominated Professor and Director in Goettingen. Then the Faculty requested the Ministry to provide a new director, a petition that was satisfied with the appointment of Ernst Becker (1843-1912, Fig. 14), born in Emmerich am Rhein, educated in Berlin and Director in Gotha since 1883.

Hugo von Seelinger, Professor and Director in Gotha, then in Munich, had been approached, but he finally declined the offer with the following comment (quoted by Wolfschmidt 2005):

> *"Strasbourg Observatory is so incredibly, so beautifully well set up that I hold it for the best institute, the most adequate in all Germany and*

[14]For details, see Hartwig (1898).
[15]Wolfschmidt (2005) indicates that no member of the observatory was Alsacian then.

Figure 14. Ernst Becker (1843-1912), the German Director with the longest term. (© Astron. Gesellschaft)

in all Austria. It is with deep regret that I have to renounce to take advantage of such a treasure for my scientific investigations."

Becker took up his duties as Ordinary Professor of Astronomy and Director of Strasbourg Observatory in December 1887. He requested admission as Emeritus in Spring 1909, essentially because strong pains were diminishing his working abilities. He retired to Freiburg im Breisgau where he died three years later. Becker had been recognized as a talented calculator, but he had also built up a solid observational experience in Leiden, Neuchatel and Berlin at the beginning of the 1870s.

In his obituary, Jost (1913) described Becker as being no reformer on his own. Besides the many activities imposed by the directorship (including teaching from which he did not hold much satisfaction), Becker nevertheless initiated the publication of the *Annalen* of the observatory. He also conducted himself many observations of circumpolar stars at the altazimutal instrument (see Sect. 4) after the discovery of the fluctuations of the Pole in 1891. He had also to undertake several campaigns of relative gravity measurements in Alsace-Moselle, a reminiscence that, in the past, Strasbourg Observatory was in charge of both astronomy and geophysics.

Born in Fürth (Mittelfranken) and educated in Munich, Julius Bauschinger (1860-1934, Fig. 16) succeeded Becker. He was then heading

Figure 15. The Big Dome and the Botanic Garden before World War I (cf. Fig. 53). The fenced corner at the right border of the picture corresponds to the current *Rue Goethe*. (© Obs. Astron. Strasbourg)

the Berlin Astronomisches Rechen-Institut, a position coupled to a chair as Ordinary Professor of Theoretical Astronomy. Stracke (1934) mentions that it was not easy for Bauschinger to leave Berlin, but Strasbourg had some serious strong points: the observational equipment remarkable for the time; the proximity of the Black Forest and the Vosges; the easier life in a mid-size town; and finally the appreciated directorial residence surrounded by gardens offering larger moving space to the Director and his family. Bauschinger took up duties on 1 April 1909.

New programs were undertaken, such as the determination of positions for nebulae at the Large Refractor (see Sect. 4) as well as measurements of double stars at the meridian circle. Geodetic observations were continued in Alsace-Moselle at the request of the government.

The first World War (WWI) restricted and disturbed the activities of Bauschinger[16] and of his collaborators: the university was used as a military hospital; troops were camping in the observatory gardens and in the Big Dome; it was even officially planned to dig mass graves in those gardens in case of siege! When, in January 1919, Bauschinger had to leave Strasbourg with the permission to take away only his own personal observations, he

[16]Bauschinger also lost a son in 1916 on the front in Northern France.

Figure 16. Julius Bauschinger (1860-1934), Director until World War I. (© Astron. Gesellschaft)

went to Munich. In 1920, he was called to Leipzig (succeeding H. Bruns) where he stayed until 1930.

See also Duerbeck (2005a) and Wolfschmidt (2005) on the first German period.

3.3. BETWEEN THE WORLD WARS

The two French Directors between the two World Wars, Ernest Esclangon (1876-1954, Fig. 18) and André Danjon (1890-1967, Fig. 20) had *a priori* parallel careers, but their personalities and scientific profiles were very different. Both were Directors in Strasbourg before being in charge of Paris Observatory. History has retained mainly their Parisian years: Esclangon is remembered as being the father of the *talking clock*, accessible by telephone, that entered public service on 14 February 1933; Danjon has left a formidable mark of authority on French astronomy, on top of his various instrumental developments such as his impersonal astrolabe (described in *e.g.* Danjon 1958 & 1960a).

Esclangon, an astronomer at Bordeaux Observatory and professor at Bordeaux University, was nominated Director of Strasbourg Observatory and Professor of Astronomy at the Faculty of Sciences in January 1919. In his document entitled *Titres et Travaux Scientifiques* (1930), Esclangon

Figure 17. Unusual view of Strasbourg Observatory on another late 19^{th}-century or early 20^{th} postcard. Was the photographer on top of a tree, using a crane or balloon-borne as it was fashionable at the time for taking aerial pictures? In the far are visible the twin spires of the protestant church Saint Paul, known also then as protestant garrison church. Barracks were adjacent to the university campus (cf. Fig. 4), behind the houses on the left of the photograph, together with extensive exercising ground still called *Esplanade* and occupied today by modern housing and new University buildings.

explains:

> *"After the armistice [11 November 1918], I was sent to Strasbourg Observatory as Director and Professor of Astronomy at the Faculty of Sciences. Reorganizing the observatory in terms of equipment and personnel was then quite difficult because, on one hand, of the industrial and economic disarray, but also because of the extreme difficulties in staffing. Currently that reorganization has been achieved. All services have been restructured; the scientific equipment has been renewed and augmented. Astrophysics holds an exceptional share in the investigations. As to astrometry, far from being abandoned, its means have been improved and tuned to the progress of modern mechanics."*

Along the general conditions of the armistice regarding Alsace-Moselle, Strasbourg Observatory had been transferred to France on 22 November 1918. During the war, the personnel had been reduced to a strict minimum, in particular to men whose age or physical conditions had kept away from military activities on the front.

Figure 18. Ernest Esclangon (1876-1954), the first French Director, in a drawing dated 13 January 1930, *i.e.* just after his arrival at Paris Observatory. (© Acad. Sciences Inst. France)

In the opening lines of his review of the new organization of the observatory (including also geophysical aspects), Esclangon (1926) recalls: *"Similar circumstances took place in all belligerent countries, damaging considerably scientific activities that had no immediate applications to warfare."* At the end of November 1918, there was only one assistant, a concierge and a mechanics left in the observatory, the Director [Bauschinger] having been obliged to leave a few days after the arrival of French troops in Alsace. Albert Baldit, French officer and meteorologist had been put in charge *ad interim* of the observatory. The German astronomer (Karl Schiller) was "requested" by the new French authorities to stay a few more months at his position in order to continue observing until French staff be hired. The mechanics was also maintained to ensure good maintenance of the instruments. One cannot avoid being struck by the neutrality of Esclangon's discourse and by his consideration for his German colleagues.

"Esclangon was quite an affable man, and he did not speak ill of people. Danjon had no such scrupules.", tells us Jacques Levy (2003). This is very gracefully said. In a letter to André Couder dated 22 September 1930, Danjon releases *"Esclangon is a scoundrel."* in the context of their disagreement on the future location of Haute Provence Observatory (quoted by Véron 2001). Danjon had then just been nominated Director of Strasbourg Obser-

Figure 19. General view of the observatory surroundings in the twenties (Esclangon 1926). The Rhine (flowing from right to left) is visible in the upper part of the picture and Germany is beyond it. Today the area is totally urbanized, but the green spaces around the Big Dome (center right) have been largely preserved. (© Obs. Astron. Strasbourg)

vatory, an application on which Esclangon had produced a positive report (Esclangon 1929), in the same way he would do it later on for his succession at the directorship of Paris Observatory (Esclangon 1945).

Apparently Danjon had difficulties to accept divergences with his own ideas, at the professional level as well as on human grounds. When we arrived in Strasbourg, several independent sources were mentioning problems in the career of Alsacian astronomers whose conduct Danjon would have disapproved during WWII[17]. As to the relationship with Esclangon, Levy

[17]With all the usual caution in historical interpretation, it seemed that Danjon did not accept members of his staff, drafted in the French army at the war outbreak and taken as prisonners, remain in Alsace after being offered release by the occupying military authorities – a policy though that is routinely applied by victorious armies as it could be seen again with the recent (2003) invasion of Irak. Fehrenbach (1990) offers however some additional clues on the whole issue. From his comments on p. 239 of his book, it appears that Joseph Huss was the only astronomer who stayed in Strasbourg. Huss always said that, once freed by the Germans, he wanted to remain close to his wife and kids in Alsace. A few pages earlier (235), Fehrenbach (1990) says that – no name specified – an astronomer who had stayed in Alsace came with a German delegation to see

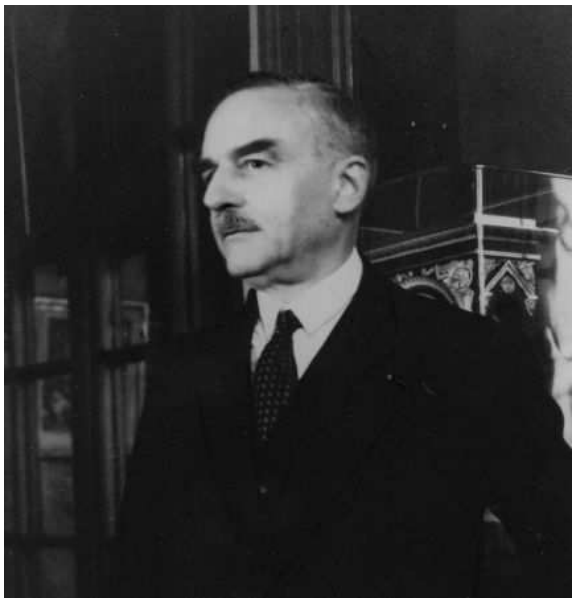


Figure 20. André Danjon (1890-1967), the second French Director. (© Acad. Sciences Inst. France)

(2003) adds:

> *"About Esclangon, [Danjon] was not soft. [Esclangon] had requested Danjon, upon his arrival in Strasbourg, to establish renovation plans for the observatory, plans that were followed and for which Esclangon would have claimed credit (something I do not believe true)."*

Called by Esclangon to Strasbourg as *Aide-Astronome* at the end of WWI, Danjon has been extremely active by carrying out all kinds of observations with the Large Refractor, but also by designing and building new instruments, such as his "cat-eye" photometer or his micrometer based on double-imaging through birefringence (developed with Muller). In 1929, he

Danjon in Clermont-Ferrand and claimed some material Danjon had taken away from Strasbourg Observatory. From the above, one unequivocally concludes that Huss was that astronomer and one can easily understand Danjon surely did not appreciate such a step on which Huss himself might have had little choice. For the rest of his life, Huss repeatedly complained that Danjon had systematically blocked his career after WWII. At this point, it is fair to add that – as far as we could check it – all German instruments had been left in place some twenty years earlier at the end of WWI. See also Winter's book (2000) mentioned earlier (Sect. 2) for a couple of anecdotes on the efficiency of German bureaucracy and archives, police and military officers showing up here and there during WWII with documentary evidence going back to WWI and earlier.

Figure 21. Johannes Hellerich (1888-1963), in charge of the German observatory during World War II. (© Astron. Gesellschaft)

took part, with Lallemand and Rougier[18], to an expedition for observing the total solar eclipse of 9 May 1929 in Indochina (see Sect. 4).

During his time as Director in Strasbourg, Danjon produced what has been a bible for many: the book *"Lunettes et Télescopes"* [Refracting and Reflecting Telescopes] (1935) that he wrote with Couder. That period saw also his novel elaborations of passage instruments and astrolabes that Kovalevsky (1967) qualified as *"greatest advances in positional astronomy"*. *"All in all, he was a really great fellow!"* concludes Levy (2003).

See also Débarbat (2005) on this period.

3.4. WWII AND THE POST-WAR PERIOD

The nearing of WWII induced the transfer of Strasbourg University and of its personnel to Clermont-Ferrand in 1939, something that was carried out with the active participation of Danjon who had become Dean in 1935. German authorities were however going to repopulate the Alsacian institution. Thus, on 28 August 1941, Johannes Hellerich (1888-1963, Fig. 21) was nominated Professor of Astronomy and put in charge of the observatory.

[18]See more on Muller, Lallemand and Rougier in Sect. 5.

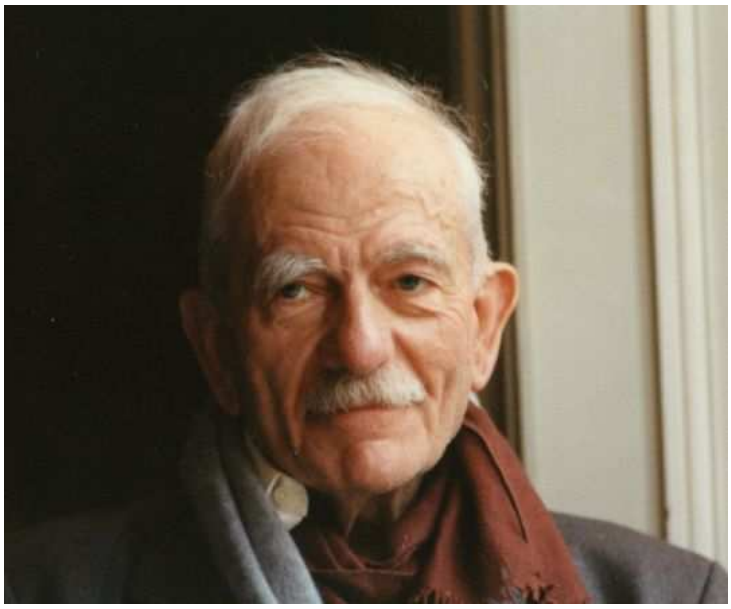


Figure 22. Pierre Lacroute (1906-1993), the Director with the longest term. (© Fr. Lacroute)

Hellerich was working at Hamburg-Bergedorg Observatory when he was drafted at the beginning of the hostilities as ensign in a maritime transportation company based at Wilhelmshaven shipyards. When in Strasbourg, Hellerich ensured several courses (also in Freiburg im Breisgau) and attempted to make best usage of the observational equipment. At the end of WWII, he was interned at Saint-Sulpice-sur-Tarn. He was authorized to go back to Hamburg in February 1946 (Strassl 1963).

To the question that many certainly have, one can answer that Hellerich became member of the national-socialist party in 1937, probably to ease his career, but that he obviously was not a fanatic follower (Duerbeck 2005b).

Danjon being called to Paris at the end of WWII, Pierre Lacroute (1906-1993, Fig. 22), an astronomer since 1935 in Toulouse, was nominated Professor in Strasbourg cumulating the function of Observatory Director.

In spite of being a spectroscopist by training, Lacroute decided to go on with the astrometric tradition of the observatory and he modernized the meridian circle (chronograph, photography of the circles, etc.). He also directed the first university computing center and was Dean of Strasbourg Faculty of Sciences from 1949 to 1952.

Lacroute quickly understood the importance of artificial satellites and the gain in precision that could be obtained from astrometric measurements collected outside the terrestrial atmosphere. His idea for an astrometric

spacecraft took shape gradually and the Hipparcos satellite was launched in 1989. See more on this in Sect. 4.

It is also during Lacroute's directorship that CDS was installed at Strasbourg Observatory. Initially called Centre de Données Stellaires (Stellar Data Center), CDS would be subsequently known under its current and generalized name as Centre de Données astronomiques de Strasbourg (Strasbourg astronomical Data Center – see Sect. 4).

3.5. THE FIRST CDS DIRECTORS

Officially created in 1972[19], the new unit was located in Strasbourg within the scope of a policy of regionalization and of "revitalization" of French provincial observatories.

Jean Jung (b. 1944, Fig. 23), with whom we were then working at Paris Observatory, had the difficult task to launch quite an innovating project for the time, the utility of which was even questioned by many Fremch astronomers. Fortunately, the structure set up by the Institut National d'Astronomie et de Géophysique (INAG[20]) involved participation from foreign astronomical institutions who were thus *de facto* backing the initiative.

In 1974, Jung decided to redirect his activities and he left astronomy. He was replaced by Carlos Jaschek (1926-1999, Fig. 24), from La Plata Observatory in Argentina, who was then on leave at Geneva Observatory in Switzerland. The official transfer of power took place in 1975. Jaschek was not coming alone. His wife Mercedes was an accomplished spectroscopist and was then scientifically strengthening the very reduced CDS staff.

The fifteen years of Jaschek's term saw spectacular progress for CDS (especially at the level of its international notoriety and adoption by projects, institutions, and agencies worldwide) thanks to the reinforcement of its staff, in particular by a member coming from the European Space Agency with extensive European and US connections. CDS then became quickly recognized as an international excellence center and as the only viable unit compared to some concurrent initiatives launched in the first half of the 1980s. Its scope was enlarged to data on non-stellar objects (solar system excluded). Last, but not least, the dramatic evolution in computing and the popularization of electronic networks (Heck 2002) completed the world penetration of the Center.

The current CDS relative abundance of personnel and finances (contracts, etc.) could lead people to easily forget (or to ignore for those who were not involved) the modesty of the initial means (human as well as ma-

[19]See Heck (2005b) for the pre-CDS years.

[20]Created in 1967, INAG has been renamed in 1985 as Institut National des Sciences de l'Univers (INSU).

Figure 23. Jean Jung (b. 1944), the first Director of the *Centre de Données Stellaires (CDS)*. (© J. Jung)

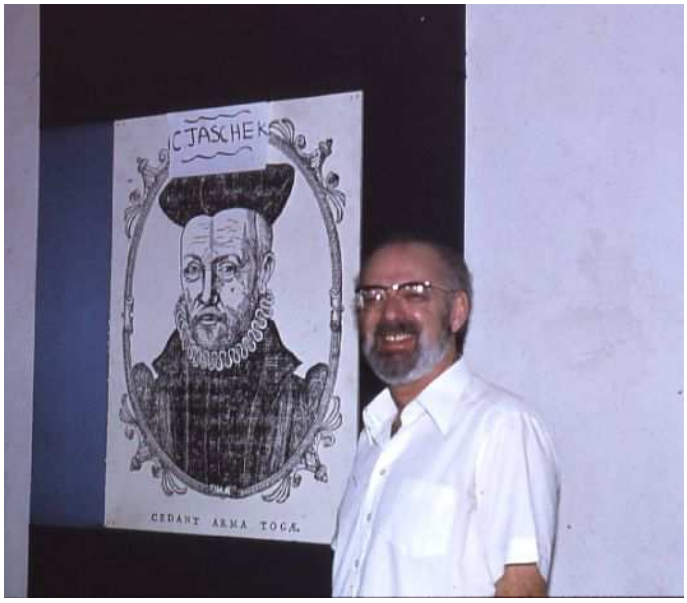


Figure 24. Carlos Jaschek (1926-1995), the second CDS Director. During his term, CDS was renamed *Centre de Données astronomiques de Strasbourg* to encompass non-stellar data (solar system excluded). (© A. Heck)

Figure 25. Current view of the Big Dome. (Phot. J. Marcout, © Obs. Astron. Strasbourg)

terial ones), the precarity of a status occasionally questioned, as well as the difficulties to get the national decision takers to understand the relevance of the project and the excellence center it was going to be[21]. The clearsightedness, the appropriateness of decisions ensuring the future, as well as the determination of the initial CDS managers and of their few collaborators are thus even more meritorious.

4. About Instruments and Big Projects

Many institutes and university departments of astronomy/astrophysics can be today extremely active observationally-wise while not operating nor hosting their own instruments. Specific bodies manage multiple ground-

[21]Such an excellence was first recognized internationally. In France, it really took place with the Hipparcos project (see Sect. 4).

Figure 26. Cover of the inventory book for Strasbourg Imperial Observatory, initiated in 1886. (scan by the author)

based or space-borne facilities welcoming visiting astronomers and/or carrying out observational programmes selected by expert committees[22].

When Strasbourg Observatory was founded, the very term of *observatory* was synonym of observations carried out within its walls. Thus the decision to create a new *observatory* implied automatically that it was furnished with instruments from the start.

4.1. A BILINGUAL INVENTORY

From the Franco-Prussian war to the French-German reconciliation, the official discourses in the two countries often consisted of words of hatred and revenge. In such an atmosphere, what could be expected from a new power taking over scientific institutions? To make a clean sweep of the past? To destroy the archives of the previous occupant? Or at least to relegate them to obscure attics and to disregard them forever?

The inventory of the *Kaiserliche Universitäts-Sternwarte Straßburg*, initiated in 1886 (cover reproduced in Fig. 26) is still in our hands. It reveals a

[22]The observational sociology is currently undergoing significant changes: observations are increasingly carried out by resident astronomers optimizing the available time (see *e.g.* Robson 2001 or Comerón 2004, as well as the references quoted therein).

Figure 27. Table of contents of the inventory. French translations have been added to the original headings in German. (scan by the author)

moving continuation of entries until the end of the thirties, switching from German to French at the end of WWI.

Thus Fig. 27 shows the inventory table of contents where the German headings are followed by their French translations, sometimes not quite identical. For instance, Fig. 28 illustrates, with a first writing dated 1919,

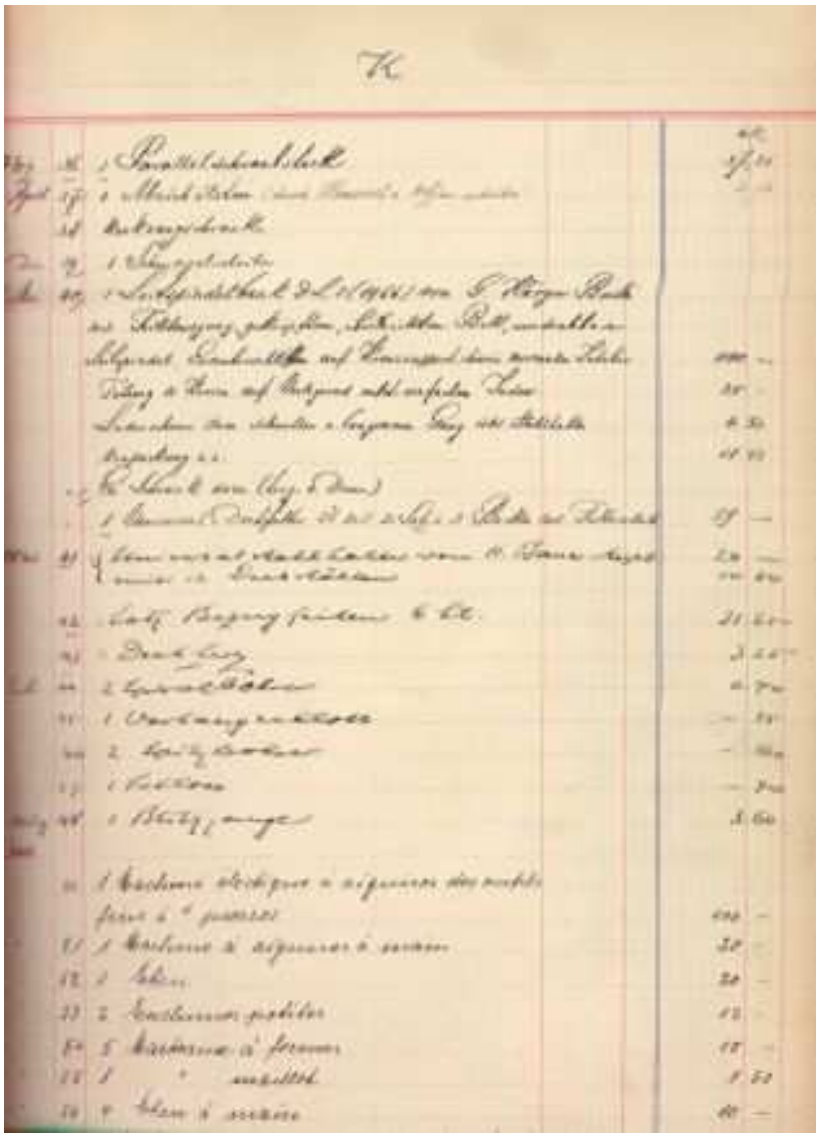


Figure 28. One of the bilingual pages of the inventory, illustrating the continuity of usage and the switch from German to French after World War I. (scan by the author)

the transition from German to French for entries under Section '**K**' entitled *Schmiede, Schlosser u. Mechaniker-Werkzeuge* [Smithy, Fitter and Mechanics Tools] translated as *Mécanique Menuiserie Serrurerie* [Mechanics Woodwork Locksmithing].

The inventory is obviously not complete for the French years, but en-

Figure 29. View of Strasbourg Observatory towards the end of the 19^{th} century (Becker 1896a). (© Obs. Astron. Strasbourg)

tries have been logged until the end of the thirties. This could be put in line with the fact that, at the return of Alsace-Moselle to France, people quite naturally continued using German material installed in the area. Thus trains continue to this day to run on the right-side tracks as mentioned in Sect. 2. Émile Schweitzer, kingpin of the *Association Française d'Observateurs d'Étoiles Variables* (AFOEV) [French Association of Variable Stars Observers], reminded us this was also the case for typewriters and – no joke at all – that the administrations of Alsace-Moselle were then employing *accent clerks* in charge of adding manually French accents on the texts typed on the German machines deprived of such features!

4.2. OBSERVING INSTRUMENTATION

The first volume of the *"Annalen der Kaiserlichen Universitäts-Sternwarte in Strassburg"* [23] was published in 1896, roughly a quarter of a century after the nomination of the first Director Winnecke and about fifteen years after the inauguration. Becker, the second German Director, describes in that publication not only the buildings, but also the instruments they were housing as well as the observations at the meridian circle for the period 1882-1886. Fig. 29 is reproduced from that volume.

Becker (1896a) offers a good description of the initial instrumentation that appears actually also in the *Inventar* introduced earlier. As emphasized by Wolfschmidt (2005), *"the German instrument-makers were the best on*

[23] Annals of Strasbourg Imperial Observatory. See Vonflie & Heck (2005) for a list of institutional publications.

Figure 30. Cauchoix passage instrument built in 1826 which was located the Western meridian room. (© A. Heck)

the market at that time" and they quite naturally equipped the new observatory.

A 132mm Cauchoix passage instrument, built in 1826, was however recovered from a building located *Rue de l'Académie* where earlier astronomical activities had been taking place. A new eyepiece was made by Repsold from Hamburg. The instrument was put in the West meridian room, today occupied by the planetarium. The instrument is currently exposed in the planetarium exhibit area, called the *Crypte aux Étoiles* [Stars Crypt] and located in the basement of the building (Fig. 30).

A 76mm heliometer by Utzschneider & Fraunhofer (Fig. 31) was moreover acquired in 1877 from the Ducal Observatory in Gotha. The following year, Repsold equipped it with a new graduated circle. In 1874, that instrument was part of an expedition to the Kerguelen Islands for the transit of Venus. It was sent to Bahia Blanca (Argentina) for the 1882 transit together with Hartwig and Wislicenus (see Sect. 5) as astronomers from Strasbourg (see *e.g.* Duerbeck 2004). Today that venerable traveller is collecting dust in an observatory storage room.

Figure 31. The 76mm heliometer, a venerable traveller that was part of expeditions (Kerguelen and Argentina) to observe transits of Venus in the second half of the 19^{th} century. (© A. Heck)

A 160mm meridian instrument was purchased from Repsold in 1876 and assigned in 1880 to the East meridian room (Fig. 32). It did not move, surrounded today by the new library inaugurated there in 1995 (Fig. 33). That astrometric instrument was extensively used all along the years until the end of the 1960s. Esclangon (1926) indicates that, at the end of WWI, that meridian circle was the only instrument still operational[24]. Observations were carried out, even after Esclangon's arrival as first French Director (January 1919), by the German astronomer Karl Schiller "requested" to stay to ensure continuity. The first French astronomers (other than the Director) arrived in May 1919 and Schiller left for Germany in August 1919. The German mechanic (Libertus), retained for maintenance, left in June.

The Large Refractor, a 487mm telescope, was built in 1877 by Merz (Munich) who had succeeded Fraunhofer. The mounting itself was manufactured by Repsold in 1880. The instrument was then the largest in

[24]The objective set of the Large Refractor (see below) had been stored in the basement to preserve it from potential air bombings.

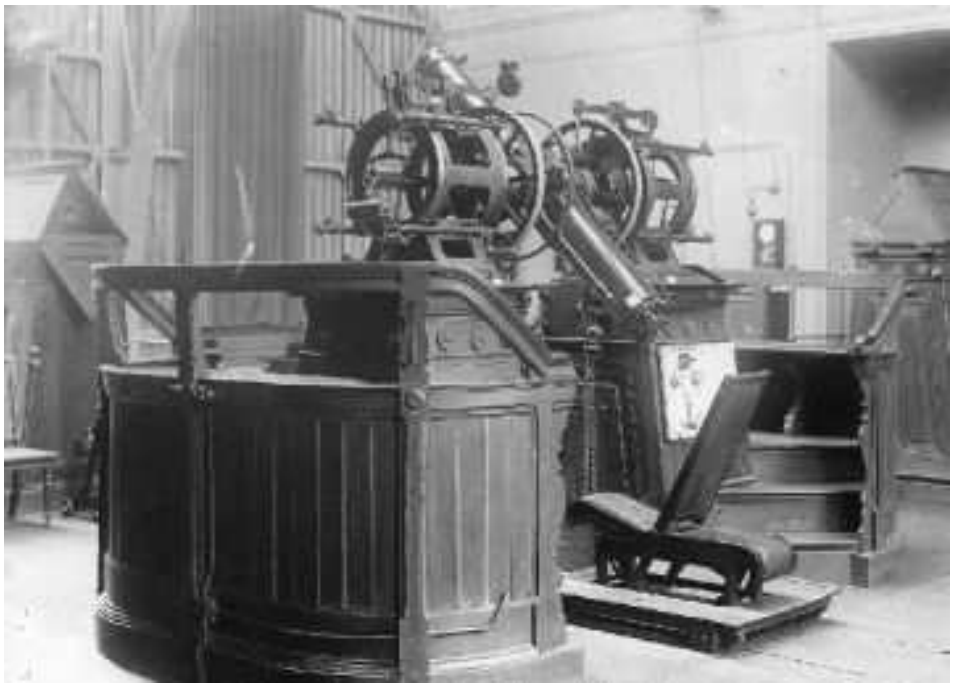


Figure 32. Repsold meridian instrument (Esclangon 1926). (© Obs. Astron. Strasbourg)

Germany (Figs. 34 & 35). In his obituary for Winnecke, Hartwig (1898) enthusiastically commented that:

> *"Whatever be the improvements invented by the quick progress of technology, [the Large Refractor] will always remain a exemplary equipment and will retain its efficiency."*

The instrument is still in the Big Dome, the roof of which was renovated in 1995. It is routinely open to the public and occasionally hosts cultural and musical evenings which – no doubt about that – would certainly be a big surprize to the designers and to the past august users of the instrument ...

As visible for instance on Figs. 29 & 36, the building hosting the meridian rooms is topped by two smaller domes. The Northern dome was equipped with a 136mm altazimutal refractor built by Merz & Repsold in 1879 and improved by Bamberg (Berlin) in 1891 (Fig. 37). That instrument is currently dismounted and its elements have been stored away in a corner of the observatory. The Northern dome currently hosts a 600mm reflecting telescope carrying piggyback a *Fliegerkamera* used for observing orbiting spacecraft[25].

[25]K37 cameras, positioned on the roof of the East building, were also used for that

Figure 33. The meridian instrument today, at the center of the new observatory library. (© A. Heck)

As to the Southern dome, it was hosting a 162mm refracting telescope manufactured in 1876 by Reinfelder & Hertel (Munich) and equipped in 1895 by a wire micrometer manufactured by Repsold (Fig. 38). Since the 1980s, that telescope is exhibited at the *Musée de l'Instrumentation Optique* [Museum of Optical Instrumentation[26]] in Biesheim (Haut-Rhin). The Southern dome currently houses a 210mm refracting telescope built by Mailhat. Its objective lenses had been re-shaped in 1952 by Couder & Texereau (Lacroute 1956).

The *Inventar* lists numerous other instruments among which a famous 162mm comet seeker built by Merz in 1876 with an altazimuthal mounting set on a mobile chair (Fig. 39). Other comet seekers, small refractors and various instruments were part of the sizable equipment of Strasbourg Observatory in those initial times. They went through the conflicts with uneven fortune. At the end of WWI, various restorations and improvements were

purpose, particularly under the supervision of Muller (see Sect. 5).

[26] `http://www.astrosurg.com/euroastronomie/F-68600.htm`

Figure 34. The Large Refractor in the twenties (Esclangon 1926). The movable stairs visible on the right are still existing. The central part can be raised and lowered to position at best the observer. (© Obs. Astron. Strasbourg)

Figure 35. Current ocular end of the Large Refractor. (Phot. J. Marcout, © Obs. Astron. Strasbourg)

brought by Esclangon and his collaborators (Esclangon 1926), the detail of which is of course outside the scope of this overview.

As to the astrophysical equipment largely inexistent at that time (to the exception of an astrophotometer from Gotha Observatory), it is essentially under Bauschinger that Strasbourg Observatory acquired spectroscopic, photographic and photometric devices. Photometers of all kinds multiplied with the French team after 1919.

As to time measurement, critical for activities centered on astrometry, Wolfschmidt (2005) lists:
– a Petit pendulum from the building located *Rue de l'Académie*;
– main clocks manufactured by Hohwü & Knoblich (1886);
– a Riefler precision pendulum (1907) who was then the first manufacturer.
There was also a Thomas computing machine manufactured by Burckhardt (1892).

4.3. THE TOTAL SOLAR ECLIPSE OF 1929

That total solar eclipse, visible in Indochina on 9 May 1929, was an opportunity for the French Bureau des Longitudes to set up a national expedi-

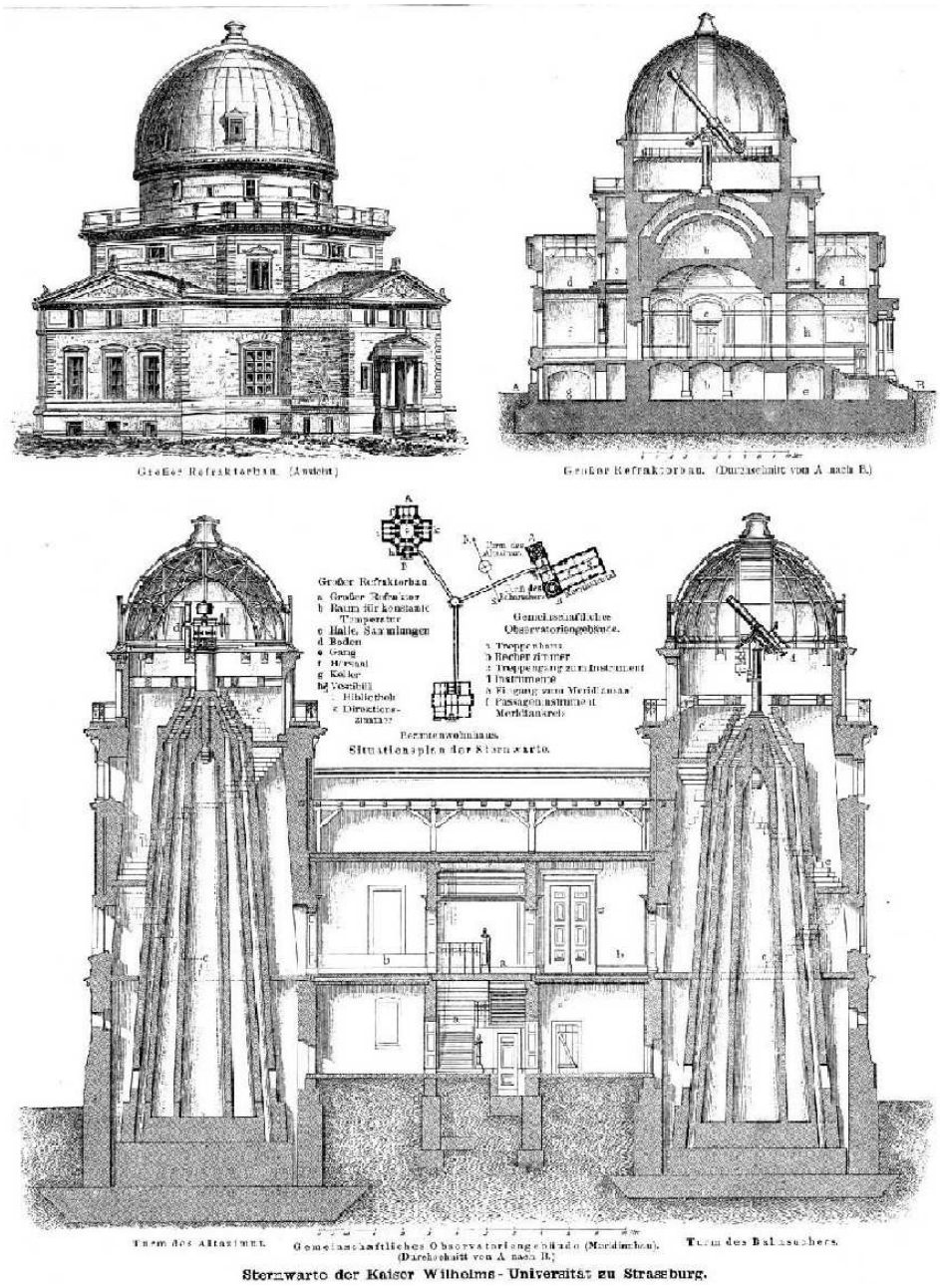


Figure 36. Sketch of Strasbourg Observatory reproduced from F. Küstner's article in the renowned *Meyers Konversations-Lexikon* (1888). A Russian version of that drawing was recently on sale on the Internet.

Figure 37. The altazimutal refractor of the Northern dome (Esclangon 1926). (© Obs. Astron. Strasbourg)

Figure 38. The 162mm refractor of the Southern dome, today at the Museum of Optical Instrumentation in Biesheim. It is pictured here at a intermediary position in a dome located in the observatory gardens. (Phot. J. Marcout, © Obs. Astron. Strasbourg)

Figure 39. Gilbert Rougier sitting at the comet seeker movable along the Big Dome (Esclangon 1926). (© Obs. Astron. Strasbourg)

tion coordinated by General Ferrié[27]. Strasbourg Observatory took part via Danjon (head of group) and Rougier, with the later addition of Lallemand. Such an *extra-muros* observing endeavor was far from being common at a time when intercontinental trips where only possible by boat.

The Strasbourg scientific program was organized around four themes:
– the study of the *Einstein effect* following a method developed by Esclangon (then Observatory Director);
– the determination of contacts;
– the photometry of the solar corona; and
– the study of that corona in the red and the infrared.

The team used a 240mm double (visual/photographic) equatorial refractor lent by Paris Observatory[28] and equipped with photometers built in Strasbourg. The observing station (Fig. 40) on the *Grande Condore* (Poulo Condore archipelago[29]), was located on a sand dune in the middle of a cultivated plain and not far from a ... penitentiary.

From the mission report (Danjon *et al.* 1938), it appears that the bad weather (monsoon reversal) disturbed the initial plans: no first contact; no observable *Einstein effect*, the stellar images being awful and simply unusable. For the rest, in spite of a veil of clouds, the Strasbourg team assisted by navy personnel could take a few good images of the corona in a phase of solar activity maximum.

The infrared photographs (Lallemand) were the first ones of the their kind. The global photometric study of the corona (Rougier) was impaired by the bad meteorological conditions, besides a deterioration of the cell that prevented any calibration back home.

Such an expedition represented an enormous amount of work, was a superb demonstration of ingenuity and of creativity, both instrumental and methodological, but has been frustrated by the too frequent vexations met by time-constrained observations.

[27]As an radio pioneer, Gustave Ferrié (1869-1932) developed military applications of the *télégraphie sans fil (TSF)*.

[28]The objectives lenses were re-shaped by Couder.

[29]At the Southern tip of the current Viet-Nâm, Poulo Condore archipelago is formed by eighteen islands for a total area of 17km^2. Its history cannot be dissociated from its *bagne* [convict prison] located on the biggest island, the *Grande Condore*. See for instance the book by Demariaux (1999).

Figure 40. Strasbourg Observatory station at Poulo Condore for the total solar eclipse of 9 May 1929 (Danjon *et al.* 1938). (© Obs. Astron. Strasbourg)

4.4. THE CDS

The Centre de Données Stellaires (CDS[30]) has already been described in many places and its two first directors have been presented in Sect. 3. Thus we shall only mention here a few historical facts.

CDS was created in 1972[31], by the French Institut National d'Astronomie et de Géophysique (INAG – see Footnote 20) with the following objectives:
– to compile the most important stellar data available in computer-readable form;
– to improve such data by critical evaluations and comparisons;
– to distribute the results to the astronomical community;
– to carry out its own scientific investigations.
CDS was thus installed at Strasbourg Observatory and managed by a Direc-

[30]Renamed in the mid-1980s as Centre de Données astronomiques de Strasbourg to take into account it was also dealing with non-stellar data. For details on current CDS resources, on its services, projects and collaborations, see its web site at `http://cdsweb.u-strasbg.fr/CDS.html` .

[31]See Heck (2005b) for the pre-CDS years as well as Jung (2005) on the Origins and early beginnings.

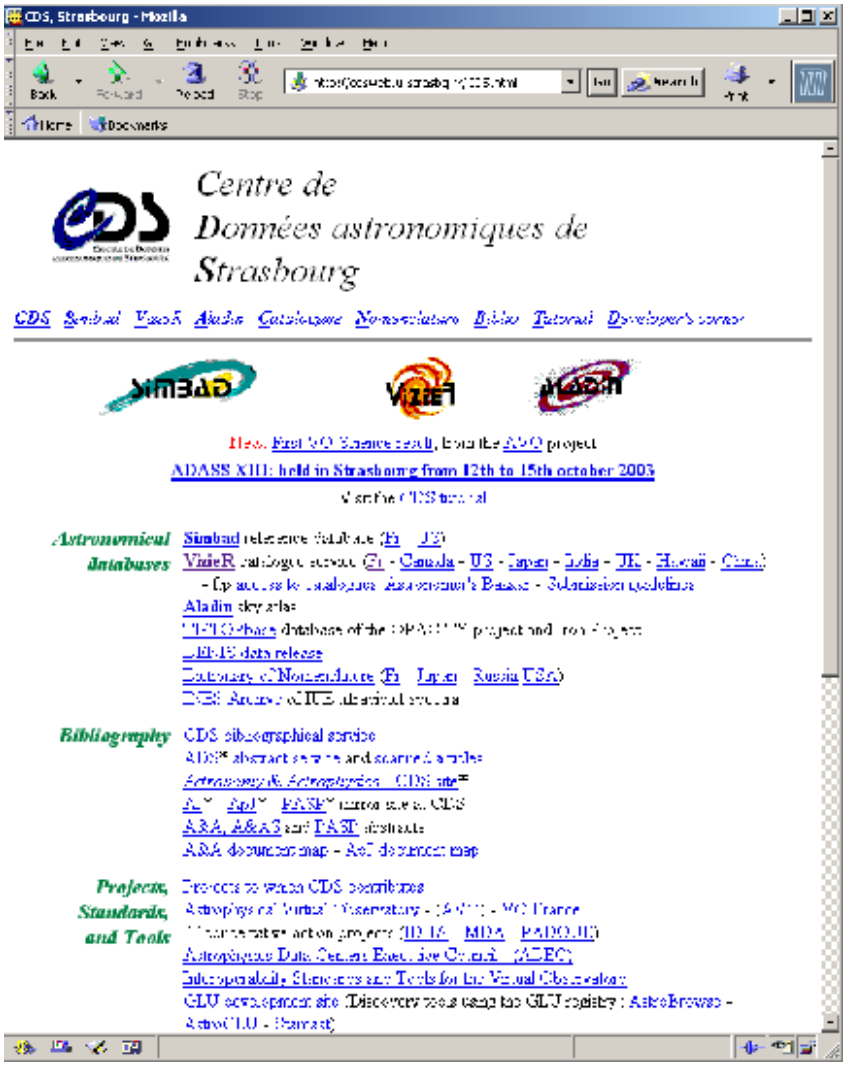


Figure 41. The CDS web page.

tor answering to a Council of twelve astronomers (including six foreigners).

One of the first tasks of the Center was to establish a huge table of correspondence between the various astronomical catalogs which were then machine-readable. Thus one identification of an object allowed to access all of them as well as all data available in all integrated catalogs. The bibliographical references of the papers where the objects were quoted were made accessible too.

Such a work of modern Benedictines has been the basis of the database

Figure 42. Pierre Bacchus and Pierre Lacroute at the Aussois Hipparcos colloquium in June 1985. (© C. Turon)

SIMBAD that made of CDS a world-wide reference allowing it to be in a strong position for *virtual observatories* projects (see *e.g.* Quinn & Górski 2004, but also Heck 2001). Incidently, the availability of such a tool avoids the recurrence of ludicrous situations of the past where two researchers studied the same star under different names without ever realizing it was the same object.

4.5. THE HIPPARCOS SATELLITE

As pointed out by Kovalevsky (2005), the genesis of the space astrometric mission Hipparcos took place essentially at Strasbourg Observatory. Around 1965, Lacroute envisaged pointing stars from spacecraft – a daring approach at a time where space astronomy was only in its infancy.

Lacroute's proposal – an idea of genius since it is applied now for all

Figure 43. The Hipparcos satellite, born in Strasbourg. (© ESA)

new projects of astrometric satellites – was to use a complex mirror pointing stellar fields with a constant reference angle. A grid positioned in the telescope focal plane screened the photon fluxes while the satellite scanned the sky. The analysis of light modulations from two stars enabled determining their angular distance.

A first draft of the project was sent in 1966 to the French space agency, the Centre National d'Études Spatiales (CNES), and then evolved towards an ever more elaborated version. As the French space program had been discontinued in 1971, a new proposal was sent to the European Space Research Organization (ESRO) in 1973. Lacroute, with the collaboration of Pierre Bacchus (in Strasbourg, then in Lille after 1973 – Fig. 42), tackled also the challenge of the data reduction.

Accepted as a program by the European Space Agency (ESA, succeeding ESRO) in 1980, Hipparcos was launched on 8 August 1989. The data collected during the operational life of the satellite (ended on 15 August 1993) led to very numerous investigations as demonstrated by the proceedings[32] of the impressive scientific colloquium organized in Venice by ESA in 1997.

[32]Proceedings published under the reference ESA-SP 402.

Figure 44. Tools of today: one of the observatory rooms full of computers and telecommunications/networking machines. (© A. Heck)

Lacroute had passed away in 1993 and could not see the enormous catalog resulting from his brainchild.

5. More Great Men ...

This section is devoted to a few prominent scientists who have been associated with Strasbourg Observatory. It is of course out of the scope of this paper to mention here all astronomers who contributed to the notoriety of the institution. A detailed list of personnel compiled from the observatory publications and archives, and as complete as possible, can be found in Heck (2005a).

5.1. THE FIRST GERMAN PERIOD

5.1.1. *W.F. Wislicenus*

Contrary to what many people tend to believe today, extensive bibliographic sources were not born with computers. Beyond a few undertakings dating from the end of the 17^{th} century, Walter (Friedrich) Wislicenus (1859-1905) initiated at Strasbourg an exhaustive compilation that lasted

Figure 45. Walter Friedrich Wislicenus (1859-1905). (© Astron. Gesellschaft)

one century.

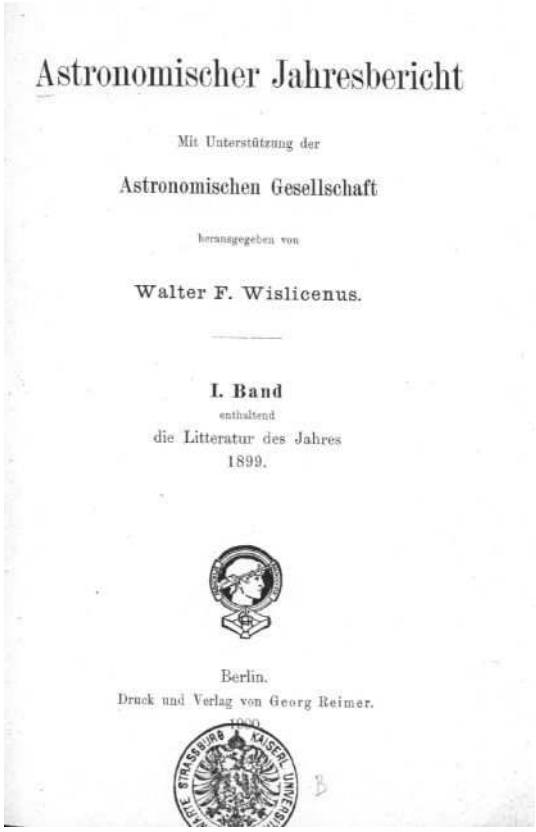
From the life and career of Wislicenus[33], let us retain here that he was born in Halberstadt (Saxe-Anhalt) and went to schools in Berlin and Dresden. He then tackled studies in mathematics and astronomy at the University of Leipzig. Wislicenus became *Assistent* at Strasbourg Observatory in 1884, then *Privatdozent* [34] at the University in 1889, and finally *Außenordentlicher Professor* [Extraordinary Professor] in 1894.

Under the patronage of the *Astronomische Gesellschaft*, he published, from 1899 and until his death, the *Astronomischer Jahresbericht* (AJB), an annual bibliographical compendium that survived him. The 68^{th} and last volume under that name was published in 1969[35] (literature of the year 1968) by the Astronomisches Rechen-Institut in Heidelberg. But the series went on under the title *Astronomy and Astrophysics Abstracts* (A&AA) until 2001 (literature of the year 2000) when it was discontinued indefinitely.

[33]For more details, see the obituary by Kobold (1906) and the dedicated paper by Duerbeck (2005c).

[34]His title today would probably be *Lecturer* or *Reader*, without being formally paid by the University.

[35]That year 1969 saw also the merging (with the financial support of ESO) of several national European professional journals into a single one under the title *Astronomy and Astrophysics* (A&A).


Astronomischer Jahresbericht

Mit Unterstützung der

Astronomischen Gesellschaft

herausgegeben von

Walter F. Wislicenus.

I. Band

enthaltend

die Litteratur des Jahres

1899.

Berlin.

Druck und Verlag von Georg Reimer.

1900.

Figure 46. Cover of the first volume (1899) of the *Astronomischer Jahresbericht (AJB)* edited by Wislicenus, with the stamp of Strasbourg Imperial Observatory. (scan by the author)

It was indeed difficult to stand competition with resources such as the *Astrophysics Data System* (ADS) available on the Internet[36].

5.1.2. *C.W. Wirtz (and H.O. Rosenberg)*

Born in Krefeld (Rhineland), Carl (Wilhelm) Wirtz (1876-1939) studied at Bonn Observatory. After staying a while in Hamburg, he joined Strasbourg Observatory in 1902. There he observed essentially nebulae and double stars with the Large Refractor, but his measurement for the diameter of Neptune in 1903 has remained a reference during decades (Seitter & Duerbeck 1999).

Duerbeck & Seitter (2005) detail Wirtz's life and research, while Theis *et al.* (1999) rather analyze the events of the national-socialist period. Wirtz has been definitely the most active and most productive astronomer of the

[36] `http://adswww.harvard.edu/`

Figure 47. Carl Wilhelm Wirtz (1876-1939) around 1903 (left) and around 1930 (right). (© Astron. Gesellschaft)

German times in Strasbourg. His work was critically disturbed by WWI and his personal life was also seriously hampered by the rise of national-socialism. He died just before WWII.

Wirtz had left Strasbourg in September 1916 when he was assigned to the war headquarters in Berlin. He was then busy with geodesy, astronomy, cartography and ballistics, as well as with some teaching. He had been nominated Professor in Strasbourg in 1909, at a time when the directorship was passing from Becker to Bauschinger (see Sect. 3).

Four years earlier, Wirtz had married Helene Borchardt whose sister Verena had just married Hans (Oswald) Rosenberg (1879-1940) who was originally from Berlin and studying then in Strasbourg. Wirtz and Rosenberg were sharing a strong interest in photometry. After some wandering due to the troubled period and a stay at Yerkes Observatory, Rosenberg became Professor and Director of Istanbul Observatory where he died of a heatstroke (Theis *et al.* 1999).

After WWI, Wirtz went to Kiel Observatory directed then by Harzer. There were also, not only Kobold (earlier in Strasbourg too – see Sect. 3) who was editing the *Astronomische Nachrichten*, but also Hellerich, then assistant, who was going to be put in charge of the observatory during WWII.

Wirtz has been occasionally called the *Hubble without telescope* with

reference to the lack of support and means he experienced in Kiel. He studied various relationships between the physical parameters of "nebulae" (Duerbeck & Seitter 2005), but, as many precursors in cosmology of the time, he remained largely ignored.

Had he the opportunity to read before his death *The Realm of Nebulae* published by Hubble in 1936? That book, translated into German (Hubble 1938) by Karl-Otto Kiepenheuer from the University of Goettingen, is making reference to Wirtz's investigations.

It should probably be mentioned too that in 1912 (and jointly with Kobold) Wirtz received the Lalande Prize from the French Academy of Sciences[37]. According to Theis *et al.* (1999), Wirtz would have declared that the arrival of French troops in Strasbourg at the end of WWI marked the happiest day of his life. Does this partly explain why Kobold denounced him a few years later during the national-socialist regime?

5.2. THE FRENCH PERIODS

5.2.1. *A. Couder (and G. Rougier)*

In 1925, Strasbourg Observatory has been a launching platform for a young brillant chemist who was going to be associated during half a century to the development of world-class astronomical optics.

Born in Alençon (Orne), engineer graduated in 1919 of the École de Chimie de Paris, André Couder (1897-1979) constructed his first refractor at the age of 14. After two years in the industry, he got a position as auxiliary assistant at the Strasbourg Institute of Chemistry under the direction of Louis Hackspill. But if the days were chemical, the nights were astronomical at the observatory.

With Gilbert Rougier[38], Couder was preparing the first photoelectric cells in Hackspill's laboratory. At the observatory, he was involved with meridian observations. He was also studying elastical and thermical distortions limiting the precision of measurements by modifying instrumental characteristics (Fehrenbach 1979).

Couder was nominated *Assistant Stagiaire* at Strasbourg Observatory in 1925. His CV (Couder 1954) mentions also observing campaigns in Southern France during the Summers of 1924 and 1925 organized by Danjon at the request of Esclangon. The site for what would become Haute Provence Observatory was already surveyed. In September 1925, Couder was transferred,

[37]See *C.R. Acad. Sciences Paris* **255** (1912) 1302-1303.

[38]Born in 1886 in La Mulatière (Rhône), Rougier joined Strasbourg Observatory at the end of 1919. He became Director of Bordeaux Observatory in 1937. He had considered applying for the directorship of Quito Observatory in Ecuador. For more details, see Danjon (1947) and Véron (2004). See also Heck (2005c) on Danjon & Rougier's observations of the green flash.

Figure 48. André Couder (1897-1979). (© Acad. Sciences Inst. France)

Figure 49. Gilbert Rougier (1886-1947). (© Obs. Astron. Bordeaux)

on the proposal of Danjon and General Ferrié, to Paris Observatory where he joined the Optical Laboratory where was then working the renowned American optician G.W. Ritchey. In July 1926, Couder was put in charge of the laboratory and, from then on, optics in all its acceptions monopolized his attention and brought him a world-wide reputation together with attractive foreign offers[39] that he declined.

As mentioned earlier (see Sect. 4), he had modified the objective lenses of the double equatorial used by the Strasbourg group for the eclipse expedition in Poulo Condore in 1929. In 1933, he tackled the objective lenses of the Strasbourg Large Refractor, significantly improving the instrument performance (Couder 1936).

The volume *Lunettes et Télescopes* (Danjon & Couder 1935) has been mentioned earlier (Sect. 3). Levy (2003) was commenting the occasional irritation of Danjon calling Couder a *cossard* [lazy fellow] as he did not write down his part fast enough!

5.2.2. *A. Lallemand*

Born in Cirey-lès-Pontailler (Côte d'Or), André Lallemand (1904-1978) studied at the University of Strasbourg. After a year spent in high-school teaching, and in spite of other offers, Lallemand accepted in 1928 a position as *Aide-Astronome* at Strasbourg Observatory. He knew the place as he had been helping out there as an assistant from 1925 to 1927. He was promoted as *Astronome-Adjoint* in 1938, still in Strasbourg before being officially assigned to Paris in 1943.

Barely associated with Strasbourg Observatory, Lallemand actively took his share in preparing the total solar eclipse expedition to Poulo Condore (Sect. 4). There he obtained the first infrared photographs of the solar corona. His microphotometric measurements confirmed the existence of the white corona that he then correctly described as a plasma.

Lallemand's instrumental *virtuosity* (Danjon 1960b) led him to propose as early as 1933 an instrumentation based on the photoelectric effect and aiming at reducing the long exposure times required by faint astronomical objects. The *electronic camera* [40] was thus taking shape and it would soon be called the *Lallemand camera*.

Interrupted by WWII, the trials resumed in 1949 and satisfactory electronic photographs were obtained during the 1950s – results then recognized

[39]Such as, in 1924, an offer from Otto Struve to polish mirrors for large American telescopes. See Fehrenbach (1990) for more details on this as well as on the genesis of the Parisian optical laboratory. Otto Struve belongs to the fourth generation of the Struve dynasty (see Footnote 13).

[40]The term used then was *electronic telescope* in a parallel with the electronic microscope that had just proved its capabilities.

Figure 50. André Lallemand (1904-1978) in a picture taken at Paris Observatory around 1950. (© Acad. Sciences Inst. France)

and appreciated abroad as testified by the following flattering citation by Gerald E. Kron (1959), himself an inventor of largely used amplyfing tubes:

> *"Use of an image tube can offer three advantages over direct recording with a photographic plate:*
> *(1) greater speed, by a factor of 50 to 100;*
> *(2) relative freedom from grain;*
> *(3) linearity between blackening and light intensity.*
> *"All three of these advantages have been demonstrated by A. Lallemand and his co-workers, working with the Lallemand image tube.*
> *"At the moment the Lallemand type of image tube seems to be the only one to offer to their fullest extent all the advantages just listed."*

5.2.3. *P. Muller*

Paul Muller (1910-2000) is the only person mentioned here who has been durably at Strasbourg Observatory before and after WWII. Born in Lorquin (then Loerchingen, Moselle), Muller joined the observatory in 1931 where Danjon asked him to study the astronomical applications of birefringent quartz prisms. Prisoner during all WWII, Muller had to wait 1948 to present

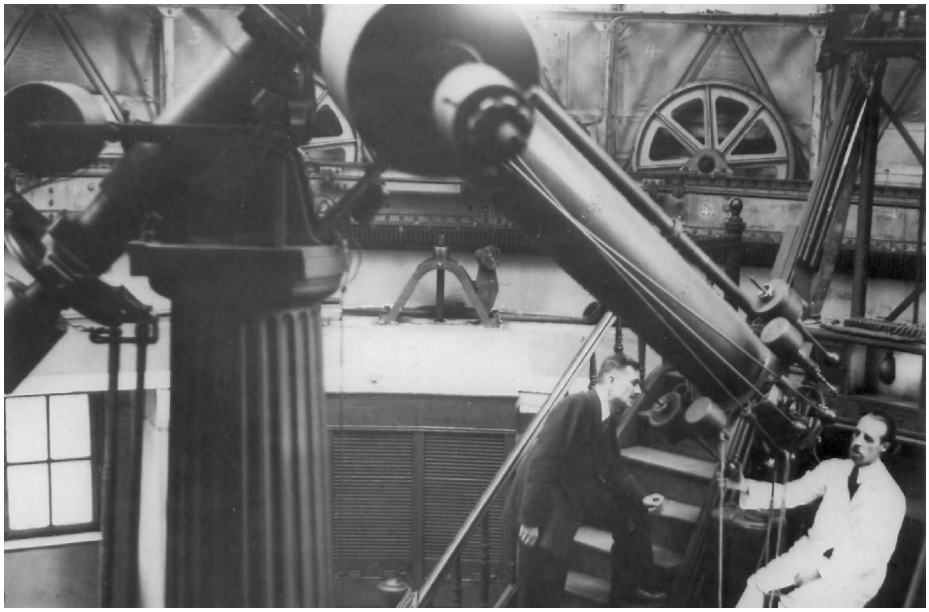


Figure 51. Paul Muller (right) with Director Pierre Lacroute at the Great Refractor of Strasbourg Observatory in the early 1950s. (Courtesy Mrs. L. Muller)

his thesis on a novel double-image micrometer[41].

Muller then devoted his studies essentially to double stars where *"his micrometer demonstrated a precision and a convenience of usage much superior to those of wire micrometers"* (Bacchus 2005). Muller left Strasbourg in 1956 for Paris Observatory. For his observations, he was a regular user of the two largest French refractors (Paris and Nice). He also monitored artificial satellites from the first launches, in particular with cameras installed for this purpose in Strasbourg (see Sect. 4).

See also Débarbat (2005) on Lallemand and Muller.

5.2.4. *J. Delhaye (and others)*

Though he has never been a member of Strasbourg personnel, Jean Delhaye (1921-2001) deserves a few words here, so big was his influence on the recent life of the institution[42].

[41]Such a micrometer can thus be considered as resulting from Danjon's ideas on the double-image principle, an ancient principle (heliometer) brought to Danjon's attention by Couder (Levy 2003). Muller's thesis was presented in Paris.

[42]In his CV (1979), Delhaye is in fact giving very little space to CDS, merely listed at the same level as other *INAG services of general interest* such as the computer center at Meudon Observatory, the Centre de Dépouillement des Clichés Astronomiques (CDCA) at Nice Observatory or a small plane for atmospheric research.

Figure 52. Jean Delhaye (1921-2001) together with Catherine Turon at a 1995 meeting in the observatory. (Phot. J. Marcout, © Obs. Astron. Strasbourg)

Born in Lourches (Nord), Director of Besançon Observatory from 1957 to 1964, Deputy Director of Paris Observatory from 1964 to 1968 (Jean-François Denisse having succeeded Danjon as Director), then Director from 1968 to 1971, later Director of INAG from 1971 to 1979, Delhaye is one of CDS' spiritual fathers. He was indeed instrumental to set it up and to install it in Strasbourg with the support of French and foreign colleagues who understood the appropriateness of the project.

A sample of these can be found as members of the first CDS Council: A. Bijaoui (Nice), A. Blaauw (ESO), J. Boulon (Paris), G. Cayrel de Strobel (Meudon), Ch. Fehrenbach (Haute Provence), W. Fricke (Heidelberg), B. Hauck (Lausanne), C. Jaschek (La Plata), G. Larsson-Leander (Lund) & C.A. Murray (Greenwich), besides Delhaye himself and, *ex officio*, J. Jung as first CDS Director.

Fig. 52 shows Delhaye together with Catherine Turon (Paris) who played a critical rôle in the success of the Hipparcos project (see Sect. 4), as well as in the exploitation of the corresponding data since she headed the INCA consortium, one of the two structures in charge of reducing the data collected by the spacecraft.

6. Epilogue

A French national champion of field athletics from just before WWII was recently telling his story. During that conflict, he wore first on the Eastern front the German uniform of the some 130,000 Alsatians and 30,000 Mosellans *"malgrés nous"* [enlisted in spite of themselves] and under which they were considered as little reliable by the nazis.

Prisoner of the Red Army, he knew the harshness of Tambov concentration camp[43] before being liberated by drawing. He then switched from the Soviet uniform to the British one while transiting in Tehran, then to American clothes when joining in Algiers Général Leclerc's '2e DB' group. He was finally demobilized under the French uniform after reduction of Adolf Hilter's so-called Eagle Nest[44] in the Berchtesgadener Alps. One of his friends went via the Baltic Sea, then down through the Benelux where he was enlisted as an interpreter by the British troops moving towards Berlin. Such itineraries are far from being isolated cases.

This paper started with a description of the Alsatian context. It is ending with this example of the wounds[45] experienced by the region through its recent history, some of which are still very sensitive. At a time when, since Carolus Magnus, Europe is uniting again and regions are recovering a rising identity, sometimes through national borders, Strasbourg (rather than Alsace) is seen today in a European perspective. Quite a number of international organizations are indeed based there now.

For the period covered by this paper, we saw that Strasbourg Observatory and its personnel were essentially non-Alsatian. Studies have been devoted to the nationalistic rôle of academic institutions in that region contested by two countries, as well as to the position of teachers and students towards the local Alsatian society[46]. For Strasbourg Observatory, such considerations should probably by modulated by the open mind, the tolerance and the pragmatism generally shown by astronomers inspired by the cosmic character of their science and the international, sometimes planetary, collaborations characterizing it.

Since the end of WWII, political conditions in Europe have dramatically evolved: European integration process initiated by the 1957 Treaty of

[43]That camp (n° 188) was located at about 450km Southeast of Moscow. One estimates that some 17,000 Alsatians and Mosellans died in Soviet camps.

[44]The original nickname *Nid d'Aigle* was given by French Ambassador André François-Poncet when reporting a meeting with the Reich Chancellor in that place.

[45]A synthesis of these wounds, certainly romanced but well targeted, can be found in the TV series entitled *Les Alsaciens ou les Deux Mathilde* (Arte/FR3 Video 1996).

[46]See for instance the essay by Craig (1984) for the period 1870-1939.

Figure 53. The current Big Dome mirrored in the nearby pool of the Botanic Garden (cf. Fig. 15). (Phot. J. Marcout, © Obs. Astron. Strasbourg)

Rome[47], Franco-German reconciliation ratified by the 1963 Élysée Treaty, and so on. Mentalities spectacularly changed too, influenced by the progress in education, in telecommunications, in transportation means, etc., as well as by the omnipresence of medias and by the mass travel phenomena, not

[47]Some historians go back to the 1944 Benelux Treaty (signed in London by the exiled government of the three countries involved), sometimes even to the 1924 Monetary Agreement between Belgium and Luxembourg ...

to forget the now common view from space of our planet, mankind's ship, inducing the notion of "small world" with all possible connotations in peoples' subconscient.

The by-laws regulating research institutions have also significantly evolved over the last decades. The universities have seen their student population exploding, generating enormous teaching requirements tapping human resources often to the prejudice of other initial fundamental missions such as service, research and knowledge progress. Entities created with a specific identity, the French observatories have become research units with a derogatory status (*i.e.* hybrid with a direct link towards the ministry and the other one towards the local university). They are occasionally under pressure either to become laboratories purely associated to the French Centre National de la Recherche Scientifique (CNRS) [National Center for Scientific Research] or to be integrated within more important university centers meaning, in either case, the end of their own existence.

Nowadays the organigram of Strasbourg Observatory is rather complex with people depending from various administrations: Comité National des Astronomes et Physiciens (CNAP) [National Committee of Astronomers and Physicists], CNRS, universities, not to forget specific contracts (space agencies, European programs, international collaborations, etc.). The current staff is varied and cosmopolitan, a sign of the times certainly, but also an indication that the institution succeeded in making itself attractive while reaching a world-class excellence in the course of its short history.

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