3 The 1786-prize contest for the design of a new building

The first problem the Felix Meritis building-committee had to tackle was the question how to raise enough money to realize their goals. As the Netherlands lacked a royal court, all funds had to come from the individual members of the society. Thus a loan was organized, the first 'negotiatie' of March 1786. The enthusiasm of the Society's members was great. Very soon enough money was raised to bring the plans a step further. With these funds three neighbouring old houses could be bought at the Keizersgracht, one of the most prominent canals of Amsterdam. After the demolition of these houses new premises could be erected. A map of the acquired terrain was produced by Lector De Hartog as a result of a surveying exercise in his mathematics classes. In April 1786 the building-committee started deliberations on the requirements for such a building. A 'program' listing the Society's preconditions was prepared by Pieter Kerkhoven, representative of the Physics Department. The program requested a complete design for a spacious building. This building should enhance the glory of the city and should encourage 'the practice of the noble arts and sciences in our beloved Fatherland'.[1] The program listed the demands and wishes of all departments. The Drawing Department for instance requested a room for 60 persons, suited to produce drawings at daylight as well as at night; the Department of Literature and Commerce requested space for gatherings up to 300 persons, but they were willing to share this large room with the concert hall of the Music Department – suited for 600 persons – if acoustics and heating arrangements would allow this. In short, the inner construction of this hall had to fulfil all necessary 'mathematical and physical demands' that would make this music hall a success. The Physics Department had also listed quite some preconditions. The first wish was a physics theatre with space up to 300 persons in the shape of a 'rotunda or hexagon'. This amphitheatre had to be designed in such a way that it easily could be darkened. Experiments with light or with a solar microscope would need such a setting. Next to this physics theatre, other rooms were planned, such as 'a Museum' or cabinet for housing the scientific instruments, a chemical laboratory 'with a large chimney and a stone floor', and a working space 'suited to prepare raw experiments'. And indeed, the building had to be completed by a modest astronomical observatory: The architect had to design a small platform on the roof of the building,

1 *Programma [...] Felix Meritis* (1786).

suited for taking simple astronomical observations. The construction however had to be designed in such a way that an enlargement of the observatory at a later date could be made 'at low cost and with few changes'. Further some space had to be reserved, firstly to be used as a storage room for the astronomical instruments, and secondly to use it for observational purposes. Instruments placed in this room had to have a clear view at the heavens, at least to the southern parts of the meridian.[2]

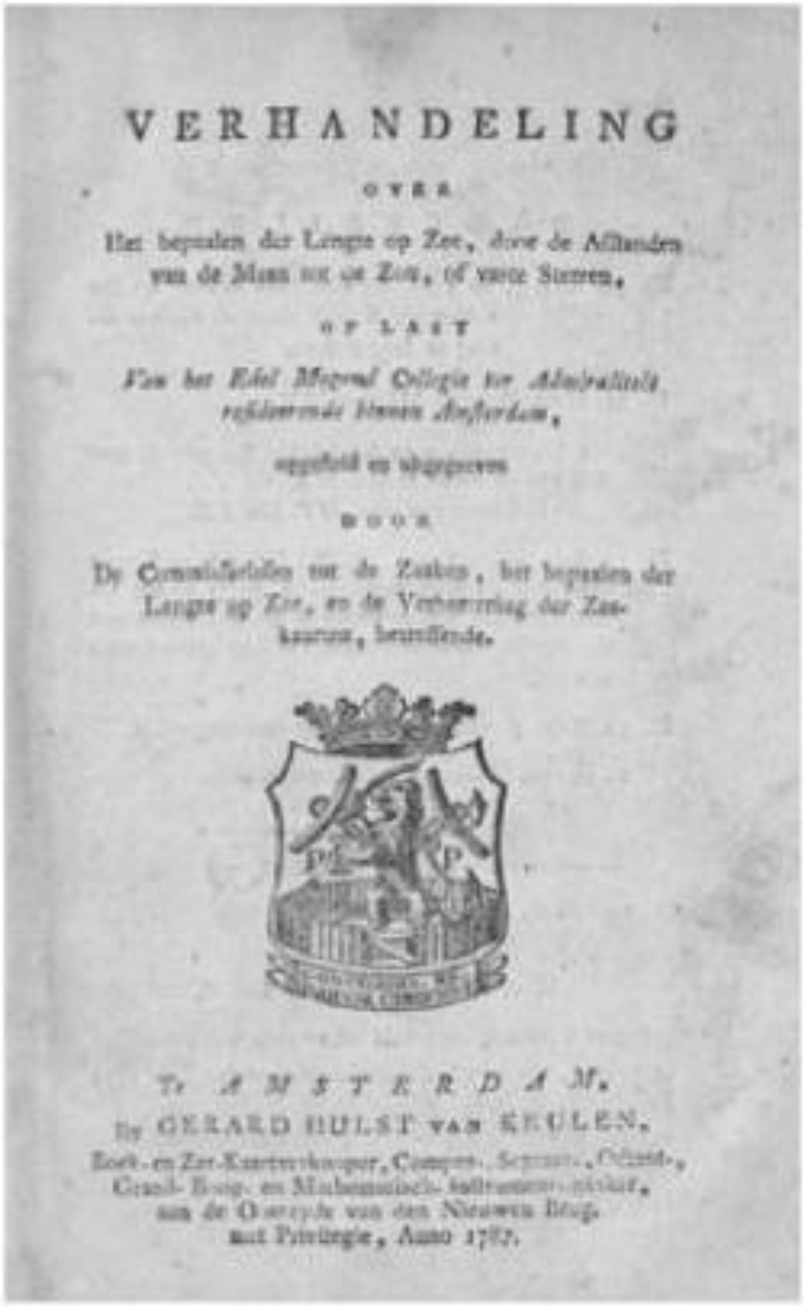
The unexpected emergence of a renowned collection of astronomical instruments from Batavia

The announcement of the architectural prize contest was printed in November 1786 in 500 copies. It brought the ambitions of the Felix Meritis Society to the attention of a much wider Amsterdam audience.[3] This initiative triggered at least one rather unexpected result. Within a month after the publication of the scheme in which the intention to install a modest astronomical observatory was revealed, two Amsterdam merchants came forward with an offer the Society could hardly refuse. It placed the proposed observatory in a completely new perspective. The merchant Hendrik van Akker and his business partner Adriaan Gilles Heineken revealed to the board of the Society that they were in the possession of most of the astronomical instruments that had been used at the well-known and well-equipped private astronomical observatory of the late reverend Johan Maurits Mohr (1716-1775) at Batavia in the Dutch East Indies (nowadays Jakarta, Indonesia).[4] This – almost royal – observatory had been operational from 1768 until 1775. After the death of its wealthy founder, the astronomical instruments of Mohr's Observatory had been bought by the local clergyman Jacob Hooijman, who in 1778 would become one of the founding fathers of the 'Bataviaasch Genootschap voor Kunsten en Wetenschappen', the first European-modelled scientific society in Asia. Initially Hooijman had hoped to continue Mohr's observations, but as a result of the humid Indonesian climate the instruments were in such bad shape that repairs were urgently needed. For that reason Hooijman had shipped the instruments to Amsterdam, but for reasons unknown to us they were not repaired, but stored at Van Akker's warehouse, gathering dust on an attic for almost ten years.

Van Swinden's plea for an astronomical observatory

Again it was Van Swinden, who at Felix Meritis had the decisive vote in accepting the offer of the usage of Mohr's former instruments. Earlier in that very year 1786 he had been appointed member of the board ('Commissaris') of the Amsterdam 'Kweekschool voor de Zeevaart', a newly founded maritime institution for the education of sea pilots. In that capacity Van Swinden would determine the policy of this institution with regard to the Dutch education in seamanship until his death in 1823.[6] Van Swinden was convinced of the vital importance of astronomical knowledge for the improvement of navigation and geography. Early 1787 Van Swinden had pressed the Amsterdam Admiralty to form a committee for the improvement of navigation, also called the 'longitude committee'. Van Swinden personally would chair this committee. The two other members were the publisher and instrument maker Gerard Hulst van Keulen (member of both the board of the Amsterdam 'Kweekschool voor de Zeevaart' and the Physics Department of the Felix Meritis Society) and the gifted mathematician Pieter Nieuwland, a young student of the Felix Meritis Lector Henricus Aeneae. Together they would publish in November 1787 a *Verhandeling over het bepaalen der lengte op zee, door de afstanden van de maan tot de zon, of vaste sterren* ('Treatise on the determination of longitude at sea, by the distance of the moon to the sun, or fixed stars'), to be followed by the first volume of a maritime almanac with astronomical tables. This *Almanach ten dienste der zeelieden* ('Almanach for sea pilots) would be published annually for a long time.[7] So, for Van Swinden, the erection of a well equipped astronomical observatory at the Felix Meritis Society fitted in his individual scheme of the advancement of navigation for the benefit of commerce.

So, in January 1787, having heard Van Swinden's advice on this matter, the board of the Felix Meritis Society accepted Van Akker and Heineken's offer. The board of the physics department commissioned the Amsterdam instrumentmaker Bernard François Pasteur to repair Mohr's famous instruments.[8] In addition Van Swinden was granted permission to order a precision clockwork from



VERHANDELING

OVER

Het bepaalen der Lengte op Zee, door de Afstanden van de Maan tot de Zon, of vaste Sterren,

OF LAST

Van het Eêd. Mogend. Collegie ter Admiraliteit residerende binnen Amsterdam,

opgesteld en uitgegeven

DOOR

Dy Commissarissen tot de Zaaken, het bepaalen der Lengte op Zee, en de Verbeetering der Zeekaarten, betreffende.

TE AMSTERDAM,

By GERARD HULST VAN KEULEN,

Zee- en Zee-Kaartverkooper, Compas-, Sextant-, Octant-, Graad- Boog- en Mathematische Instrumentmaker, aan de Overzijde van den Nieuwen Brug, met Privilegie, Anno 1787.

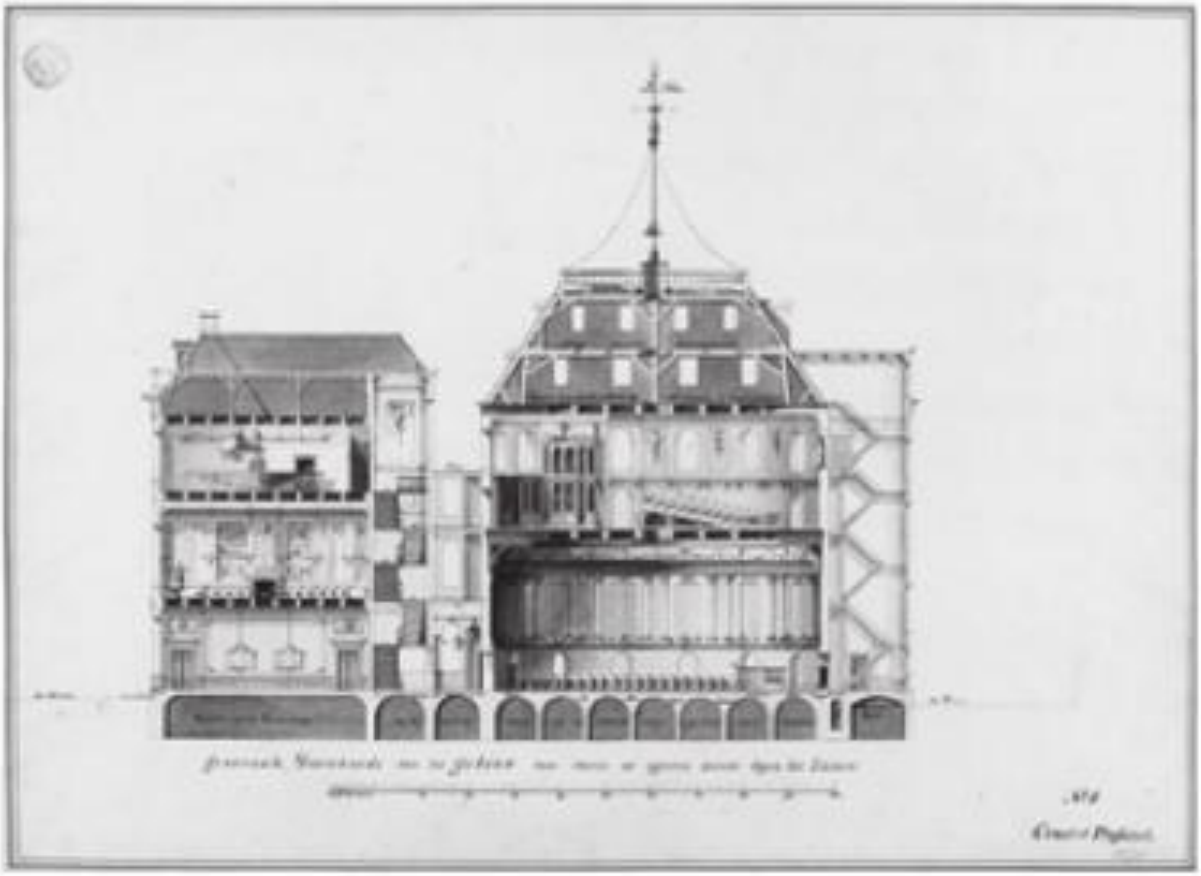
Title page of the *Verhandeling over het bepaalen der lengte op zee, door de afstanden van de maan tot de zon, of vaste sterren*, edited in 1787 by Van Swinden, Nieuwland and Hulst van Keulen.

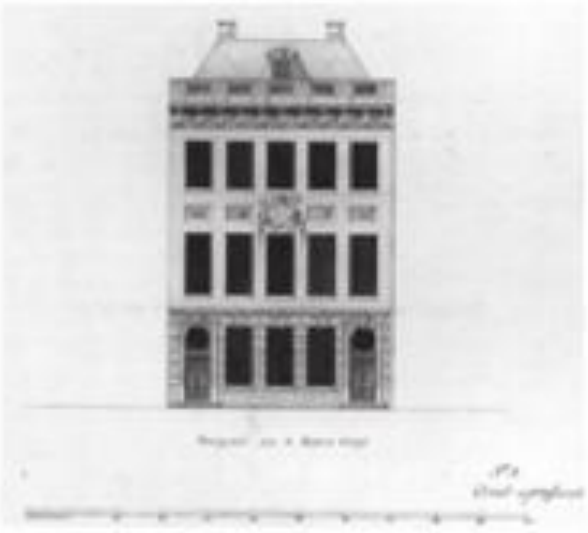
the famous Parisian instrument maker Antide Janvier. This instrument arrived in the spring of 1789, according to the invoice drawn up under the supervision of the French astronomer De Lalande.[9] Finally, at the end of 1789 the Frisian telescope maker Bauke Eisma van der Bildt also delivered new mirrors for Mohr's two Dollond-reflectors.[10]

The winning architectural design

The unforeseen acquisition of Mohr's astronomical instruments caused a more significant focus to the proposed scheme for an observatory. This shift becomes obvious from the assessment of the plans by the twelve members of the building committee. Before 1 March 1787, the (postponed) deadline of the prize contest, sixteen architectural designs had been submitted.[11] These proposals had to be delivered anonymously, only to be distinguished by Latin mottos. The names of the contesting architects were put in separate envelopes bearing these mottos. Only the two best designs would receive a prize (70 ducats for the winning design; 30 ducats for the second best). The envelopes of the other contestants would be burned, and the designs returned.[12] For that reason we now know only five architectural designs: the three winning ones and two which by chance (partly) have survived.[13] On 30 March 1787, after a month of deliberations, the building committee made its decision public. Two plans were selected as best: the winning design – with the motto 'Ornet et Proficiat' [= 'equipped and useful'] – appeared to be made by Jacob Otto Husly, one of the main city-architects.

The second plan with the motto 'Felix si Mercar' [= 'Fortunate like commerce'] came from the drawing table of the architect and broker Jan Willem le Normant, a member of the Felix Meritis Society. Surprisingly, the building committee also selected a third design 'Pour Satisfaire', which was awarded 20 ducats, because of its impressive architectural significance. According to the architect-historian Meischke who studied the plans, this design was undoubtedly the most elegant. The designer had used the most modern windows, after the latest French fashion. The fact that this third scheme was dismissed, underlined in the eyes of Meischke that not the architectural quality, but the usefulness of the designs was valued as the most important factor.[14] But perhaps there were also other reasons not to choose this plan. For this third design was drawn up by Pierre Esaie Duyvené, 'architect civile à Amsterdam'. He was a person with a nasty history concerning the Felix Meritis Society. Three years before Duyvené had competed with a few members of the Felix Meritis Physics Department, in the construction of a large hot air balloon. At that time the Felix Meritis effort had failed dramatically, whilst Duyvené's elegantly crafted balloon had made a successful flight. At the time many pamphlet writers had ridiculed the affair, and especially the members of the Physics Department responsible for the project.[15] If this painful affair

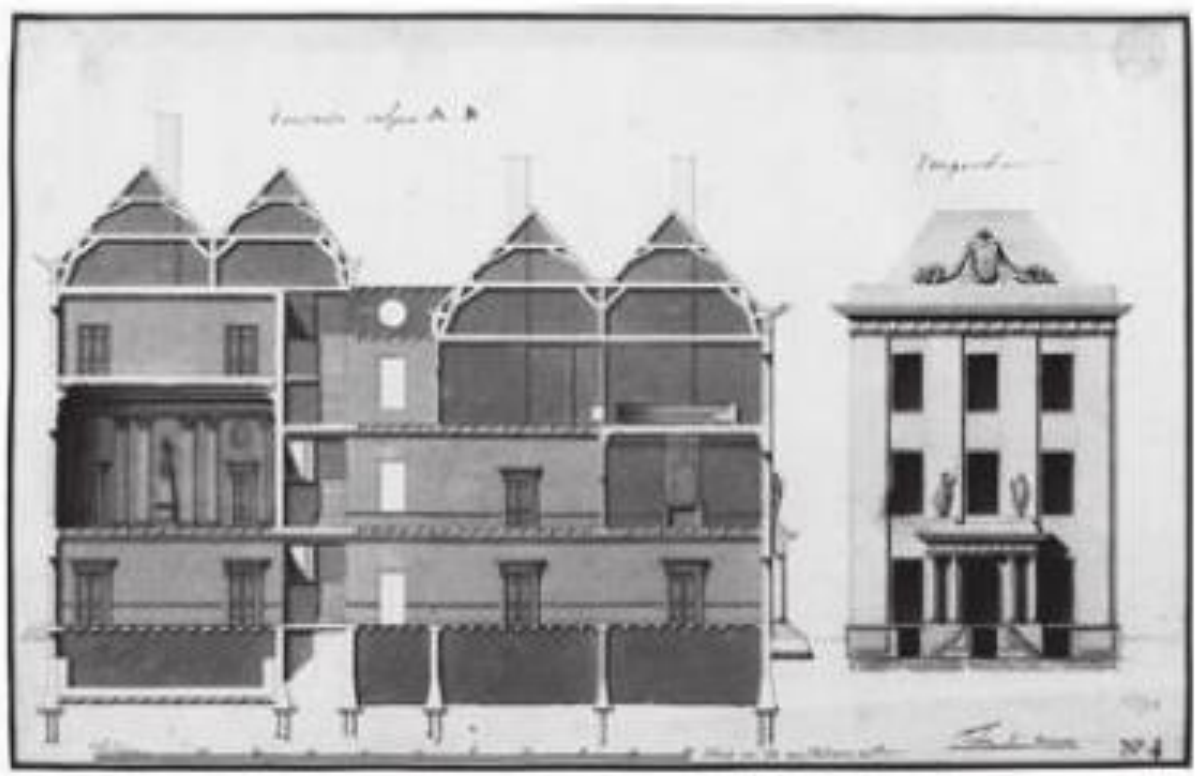




Cross section and façade of Husly's first design 'Ornet et Proficiat', 1787.

had not happened, one can wonder if the choice for the design had been different.

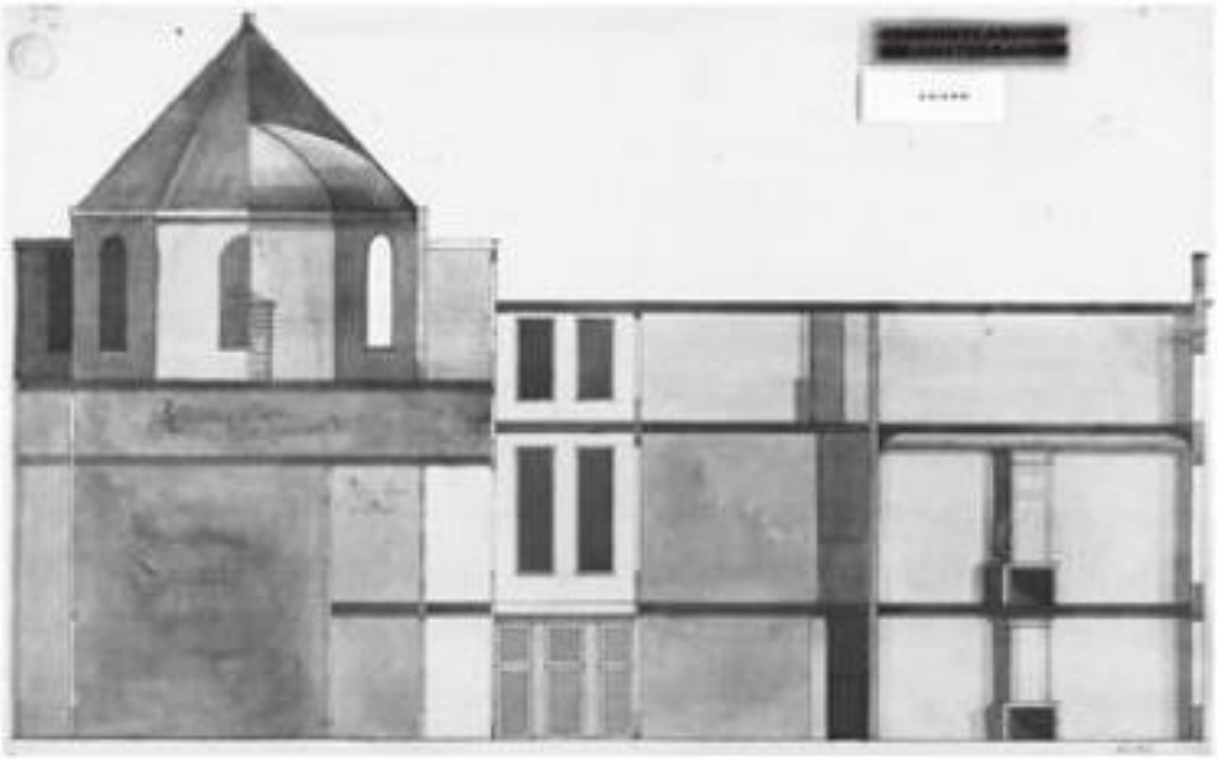
About the two remaining designs very little can be said, as the names of the designers are not known. One of these plans is rather crudely executed and can hardly be seen as serious, although it is evident that the proposed observatory had received a prominent place. A fifth and last known design was expanded in



Cross section and façade of Le Normant's design 'Felix si Mercar', 1787.

great detail, but reduced the observatory to the status of a gazebo. Just like the choice made in Haarlem at Teyler's Museum, in this design the observatory was only seen as symbolical.

Although the final report of the building committee has not been preserved, a minority report presented by two of the twelve members of the committee does reveal that the observatory played an important role in their deliberations, at least to exclude some of the architectural plans. In this report the design of the observatory was the first item to be tested against the requirements of the printed program. Both winning designs were severely criticized as far as the observatory was concerned. Husly's design had large chimneys on the roof of the building, which would obstruct astronomical observations. Also the construction of a separate observation tower was questioned. Amsterdam's geology, with its rather loose soil probably would present a problem. A separate tower would probably sway too much to guarantee any accurate astronomical observation. For that reason the 'Program' had requested an observation platform founded on the entire structure. Similar criticism was given to the second design of Le Normant. A large chimney near the centre of the observational platform, and the roofs and other chimneys in its vicinity also would seriously obstruct astronomical observations. So both winning plans had to be adjusted on this point.[16] Nevertheless



Cross section of an anonymous fourth design, possibly by J.F. Helmers, 1787.

Husly's final design for the façade, with a colonnade in Corinthian style. Engraving by N. van der Meer after a drawing by J. Kuijper and J. Otten Husly (c. 1800).

the minority members preferred Le Normant's plan, mostly for economic reasons. They feared that Husly's design would end up far too costly, with eventually bitter consequences for the Society. History would prove how right they were!

In the mean time the Felix Meritis Society had been able to buy another adjoining house, which enlarged the building area, so the winning architect, Jacob Otto Husly, had to adjust his architectural design in order to make space for a more solidly grounded and more spacious building. This adaptation of the first design was very remarkable, not indoors, but on the front side of the building. Husly's original plan for the façade had been rather traditional. The front hardly differed from a traditional canal side house. But now he was instructed to design an architectonical statement: a palace-like façade that reflected the new self-awareness of the upcoming Amsterdam social middle class.[17] Eventually Husly came up with an impressive building in a neo-classical style, on a scale unheard of before at one of the Amsterdam canals. After its completion, contemporaries stated that such a large edifice would have been better suited on a large square, like some of other Husly designs, such as the town halls of Groningen and Weesp.[18]

A costly building

After a second fundraising session,[19] the demolishing of the old houses started on 2 May 1787. On the 7th of July the first stone of the new building was laid by Cornelis Sebille Roos, at that time President-Director of the Society.[20] The construction of the Felix Meritis 'temple' required more than two years. Years that belonged to the most politically turbulent period in the history of the Netherlands.[21] In 1787 the clash between two political factions, the conservative 'Orangists' and the more liberal 'Patriots', resulted in a failed revolution, turned down by the military force of the King of Prussia, the brother-in-law of the Dutch stadholder, the prince of Orange William V. But as the Society's laws prohibited any political or religious discussion, the Felix Meritis organization managed in this respect to remain in calm waters.[22] After the political upheavals of September 1787, the Felix Meritis membership grew further, then with a large participation of the politically silenced well-to-do aristocracy.

The ceremony of laying the foundation stone of the Felix Meritis Building on 23 June 1787 by Cornelis Sebille Roos. Drawing by C.L. Hansen.

The mild winter of 1787-1788 stimulated the progress of the building activities. The contractor Hendrik Blomberg and his mason Cornelis Twisk were able to work quite rapidly. In October 1788 the front side of the building was completed far enough to hold an opening ceremony.[13] Professor Jan Hendrik van Swinden was invited to deliver the opening speech. As we saw in the introduction Van Swinden praised the new building and the possibilities it offered for pursuing the arts and sciences. In enthusiastic words he also referred to the astronomical instruments, acquired in 1786:

> I know that [Felix Meritis] has a wonderful collection of artefacts, made by the most famous English artisans, first shipped at great costs to the East Indies, where they were used in Batavia by the late Mr. Mohr. They were returned to the Fatherland after his death and were relegated to an attic as dead weight, being subjected to rust and decay [...], but you have been able to retrieve them, and had them restored [...] with the intent of installing them in your observatory.[14]

Title page of the program for the architectural prize contest, 1786.

PROGRAMMA

VAN DE

MAATSCHAPPY DER VERDIENSTEN,

ONDER DE ZINSPREUK,

FELIX MERITIS,

Opgerigt te Amsterdam, A°. 1777.

TE AMSTERDAM,

By J. C. SEPP, Boekverkooper op den Hoek van 't Heylige,
MDCCLXXXVI.

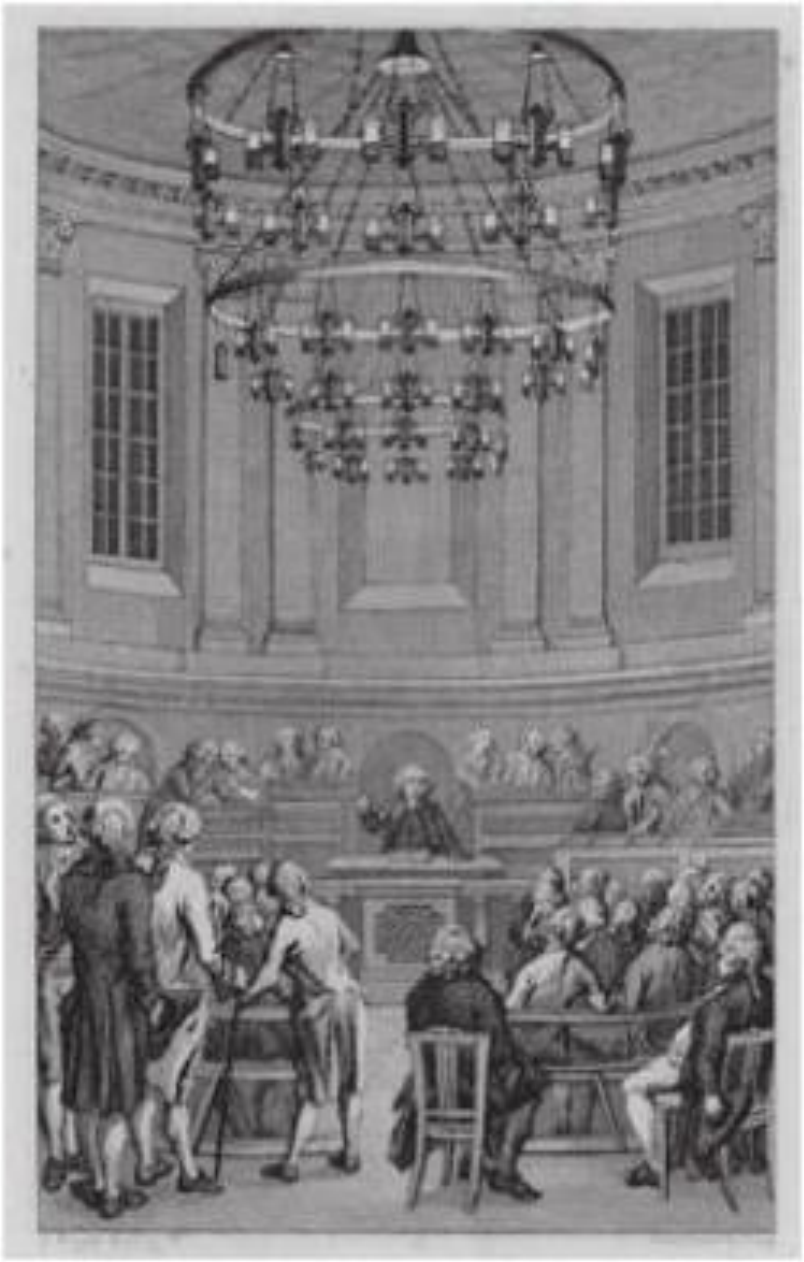
The requirements of the Physics Department, represented in the program of the prize contest of 1786.

Voor de NATUURKUNDE.

Een Rotunda of een Scikant, geschikt tot het doen der Proeven en Natuurkundige Verhandelingen, voor eene Vergadering van 300 Personen, voorzien met een ingang naar een

MUSEUM, en naar een Vertrek, voorzien van een ruime Schoorsteen en sheene Vloer: als mede naar eene Werkkamer geschikt tot het prepareeren van nieuwe Proeven, indien zulks gevoeglyk wezen kan

Ook dient men acht te geven, dat het Vertrek voor de Natuurkunde, behoorlyk kan verduisterd worden, en dat de Lichten van het zelve, zodanige rigting hebben, als nodig is, om de Proeven over het Licht en met de Zon Microscoop, in het werk te stellen. Wyders dient het Dak voor het Gebouw, of een gedeelte van het zelve, met een platte form, dus te worden ingerigt, dat het bekwaam is, tot het doen van Astronomische waarneemingen, [en onder het zelve een Kamer geschikt tot plaatsing van Instrumenten, insonderheid van de zulken welke beftendig in den Meridiaan naar het zuiden moeten gekeerd zyn] ten einde, wanneer men t'eenigen tyde wilde overgaan, tot het oprichten van een uitgebreider Astronomisch Observatorium, zulks dan gevoeglyk met geringe kosten, en weinig veranderinge geschieden kan.



Van Swinden's speech at the inauguration ceremony of the Felix Meritis building (1789). Drawing by J. Buys, engraved by R. Vinkeles in 1799.

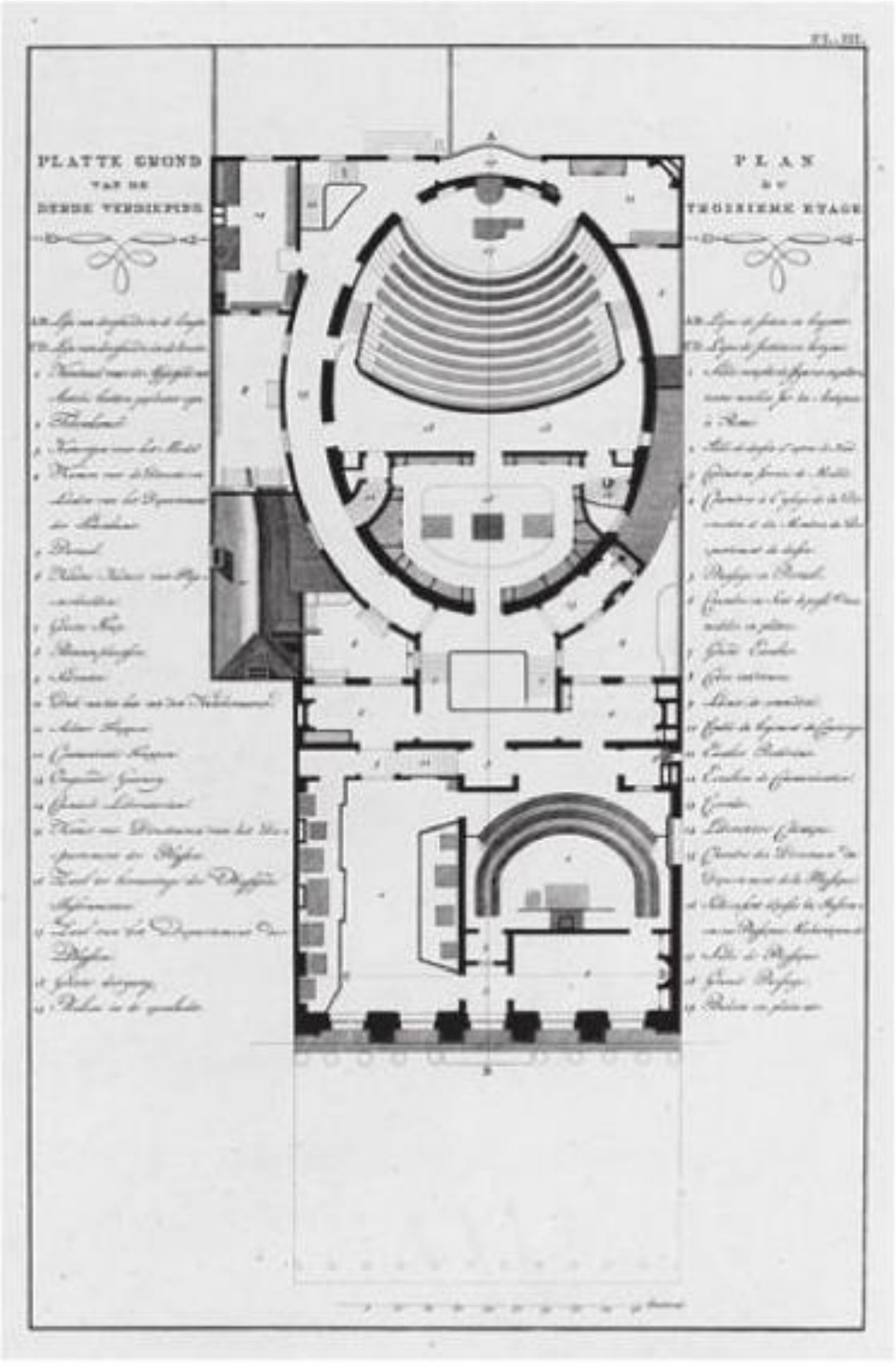
Van Swinden deliberately used the phrase 'intent'. Although the building was officially opened, it was far from being completed. The rear part of the building with all the planned facilities of the Physics Department was finished only in outline. In the months to come it even became questionable whether these facilities were to be finished at all!

As time had gone by, the fears of the minority members of the building committee came true. The actual building process was more complicated and required much more funds than had been raised. In January 1788 a financial crisis almost ended the Society, and bankruptcy seemed near. In early 1787, in the budget accompanying his prize proposal, architect Husly had estimated 90.000 guilders as the cost of the carcass of the building. In reaction it was feared by the minority

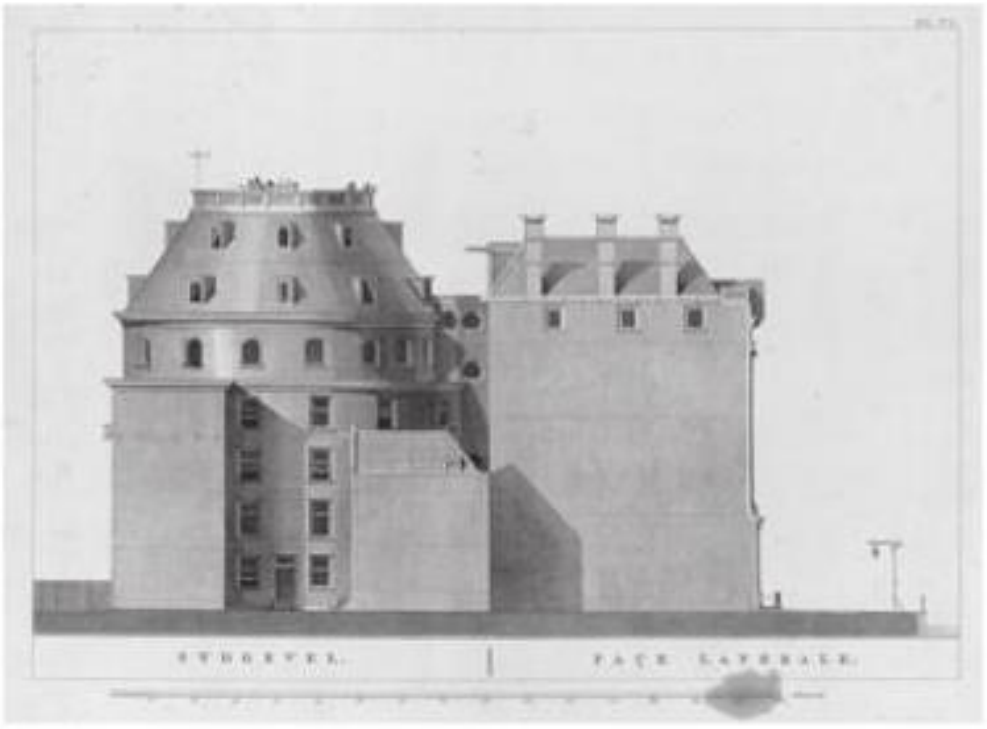
members of the building committee that the completion of the premises would demand almost twice as much. But at the opening ceremony it was revealed that already 120.000 guilders had been spent, and that a deficiency of some 90.000 guilders was foreseen.

Pamphlets were spread in which the mismanagement of the building committee was severely criticized. Especially the president of the building committee, Pieter Kerkhoven (also president of the Physics Department), was seen as the person most to blame. His accumulation of functions was one of the reasons for the late notice of this financial derailment. 'The right honourable is principal, treasurer and director, which results that one has to come to the same person for questioning or confession', an anonymous critic wrote. Kerkhoven's proceedings 'had jumped over millions of stars, and these large numbers evidently had confused his honourable, so now he had tumbled down from the observatory to the bare earth'.[15] As a result the building activities were halted and three wealthy society members were asked to come forward with a proposal for a financial solution.[16] Their investigation revealed that the completion and furnishing of the building would demand up to a total amount of no less than 400.000 guilders. However, they succeeded to avert the crisis. In June 1789 they proposed to fill the enormous financial gap by introducing a series of bonds that would pay off only after 50 years and more. So at the last moment a bankruptcy was averted.[17] The construction of the building could be finished, and the noble work of the Society continued. In November 1789 the last rooms, containing the Departments of Physics and Drawing, were opened, this in spite of the fact that a year later much of the finishing work still had to be done.[18] Nevertheless, in one of the first speeches held in the brand new physics theatre the medical doctor and 'Dutch chemist' Jan Deiman cheered the moderate but regular practise of science as being healthy for humans, paying a special tribute to the star-spangled sky above the building, and to the 'perfect instruments' that could provide its user with unexpected discoveries. Deiman could not think of another phenomenon that commanded such respect that it brought its viewer almost always in a philosophical mood.[19]

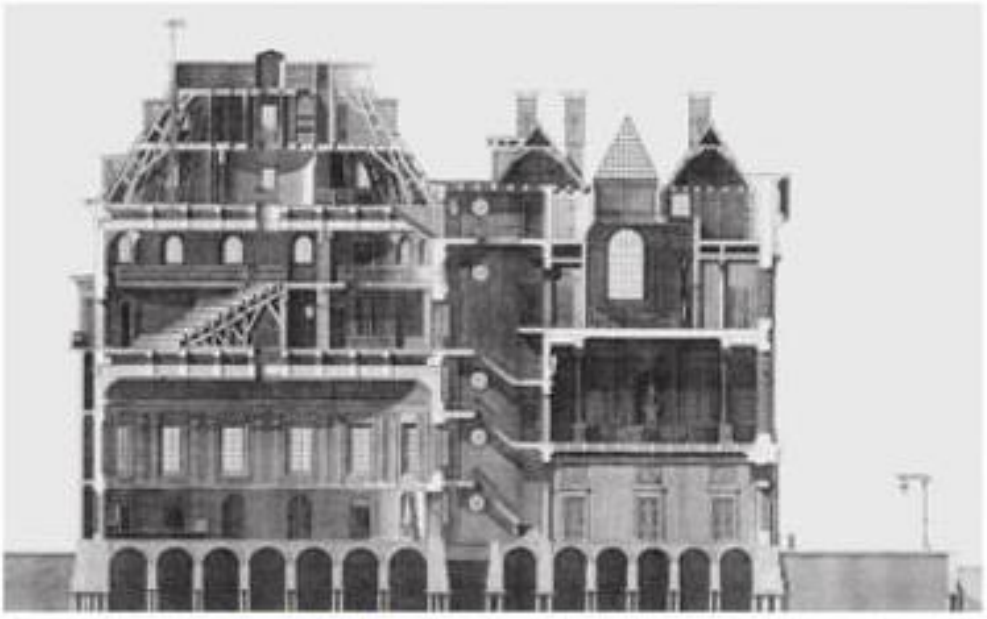
A year later, in the fall of 1790, at last the remarkable event of completion of the observatory could be proclaimed. This moment was commemorated by the advertisement of a large plate work in folio. The portfolio was issued in 1794, highlighting various parts of the illustrious building with several floor plans,



Floor plan of the Department of Physics (1790).



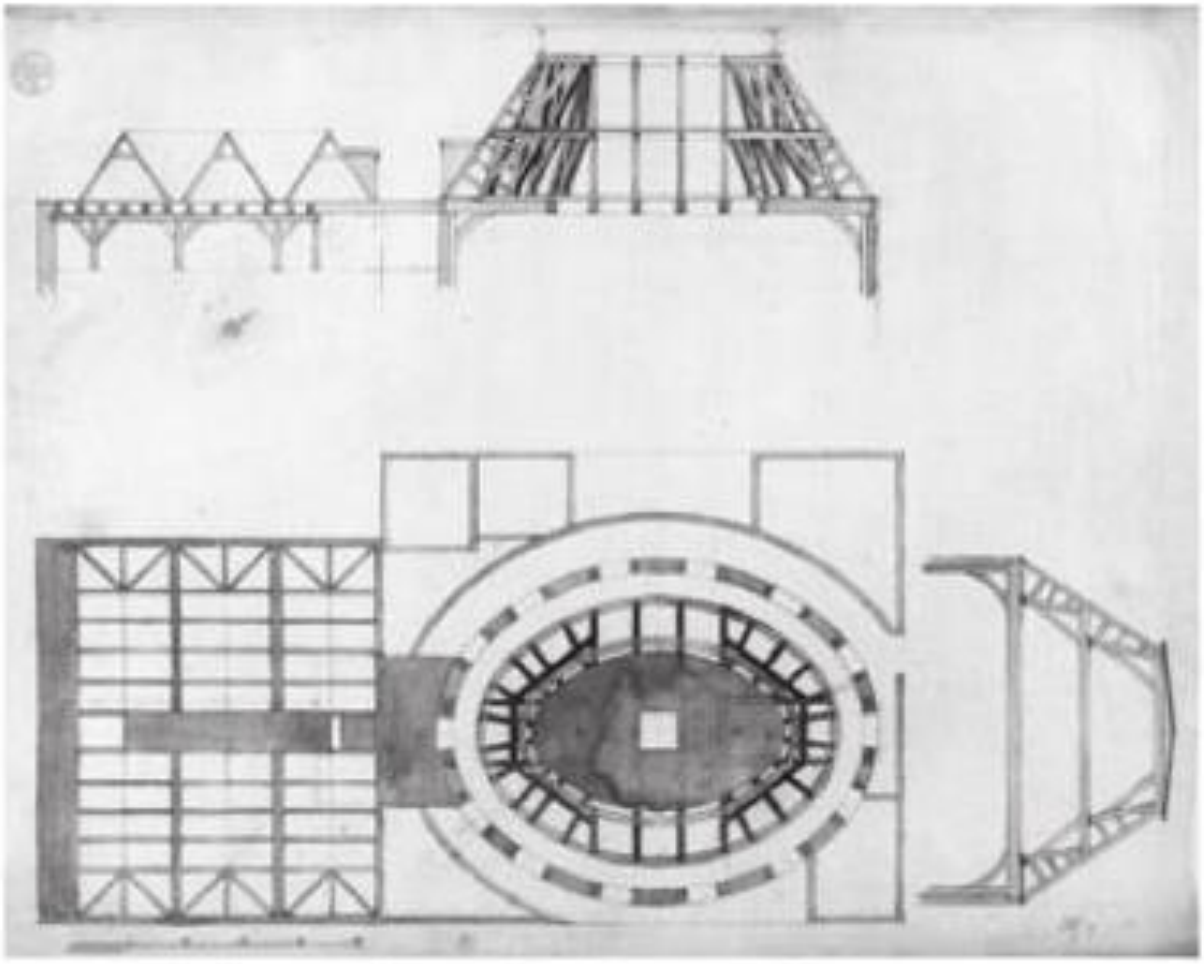
Side view of the Felix Meritis building (1787).



Cross section of the Felix Meritis building (1787).

The observatory

The observatory itself was situated on the third floor of the rear building. An attic above the large 'physics theatre' provided entrance to the Observatory. The southern part of this attic was destined for astronomical observations in the southern meridian.[18] Here a transit telescope was positioned, having its axis rotating in two brass pivots, fixed into the stone wall, guaranteeing the telescope's movement in the meridian plane. A window and a hatch at the rear of the building offered an unhindered view from the horizon up to an angle of some 80 degrees. In this room a quadrant was housed with an astronomical clock. Another part of the attic was reserved for the storage of other instruments. Above this attic another smaller one was situated: here a space with eight windows gave an un-

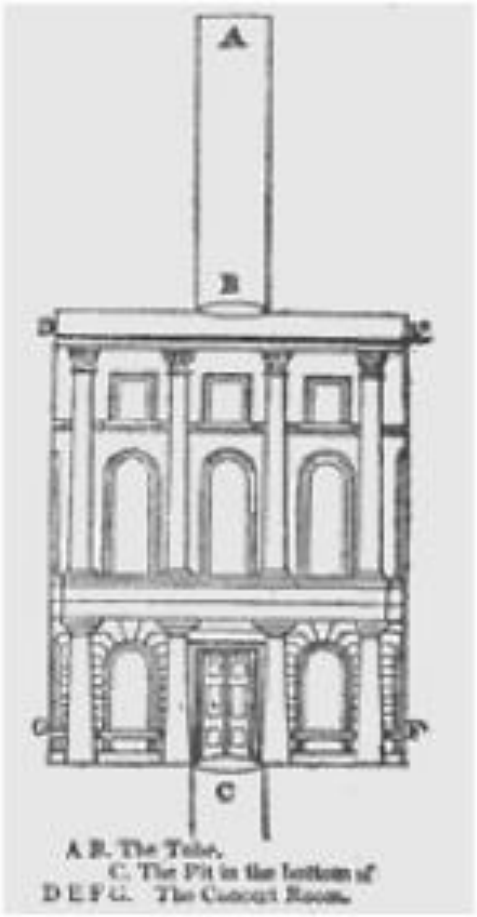


Husly's design for the roof beams of the observatory (1787).

The interior of the Felix Meritis Observatory during the recent restoration (2011).

Present interior of the Felix Meritis Observatory: the 'Sterrenzaal' (2012).

hindered view to the heavens, suitable for making observations when the winter cold would frustrate telescopic observations from the platform above. Also visiting ladies could observe here. A gnomon at the southern window was used as a sundial. From this attic a small staircase provided entrance to the upper observatory. This was an oval platform, measuring 80 to 40 feet, on which several astronomical instruments could be placed. In the middle of the platform, a deck was



Stars by Day-light. [Feb. 1.

To the Editor of the Monthly Magazine.

SIR,

WITH a long tube, the experiment of seeing the stars in the day-time may be made, by shutting yourself in a perfectly dark room, so that that light which is outside may fall in the tube, under which your eyes are perpendicularly placed. Whether it will do sideways I do not know; that in Felix Meritis (in Amsterdam) is straight downward, and the pit in the middle of the room.

Mr. Tho. Dick (if he would personally convince himself) need only go to Amsterdam, where, from the bottom of the concert-room in Felix Meritis, he will see, in broad day light, the stars above him.

To make myself better understood, the following is a rough draught of the construction in Felix Meritis.

London; Dec. 27, 1815. C. Q.

'Rough draft' of a 'plan for seeing the stars at day-light', published in 1816 by a misleaded visitor of Felix Meritis.

situated, covering the opening for falling bodies, mentioned before. By a stray visitor this 'tube' was mistakenly thought to be a zenith telescope, to be used for daylight observations of stars passing overhead.[39] In the end this arrangement was hardly used for actual experiments on falling bodies, for in 1793 the Physics Department bought an Atwood Fall Machine, which made these experiments obsolete.[40] On top of the deck of the Observatory, a fixed stand was placed, equipped to hold a telescope parallel with the Earth's axis. As the time keeper, hanging in the lower observatory could not be heard at the platform, observations here required a portable chronometer.