

# The First Astronomical Observatory in Cluj-Napoca

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**Abstract.** One of the most important cities of Romania is Cluj-Napoca (Kolozsvár, Klausenburg). This is a traditional center of education, with many universities and high schools. From the second half of the 18th century the University of Cluj has its own Astronomical Observatory, serving for didactical activities and scientific researches. The famous astronomer Maximilian Hell was one of those Jesuits who put the basis of this Astronomical Observatory. Our purpose is to offer a short history of the beginnings of this Astronomical Observatory.

**Keywords:** Astronomical observatory, history of astronomy.

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## INTRODUCTION

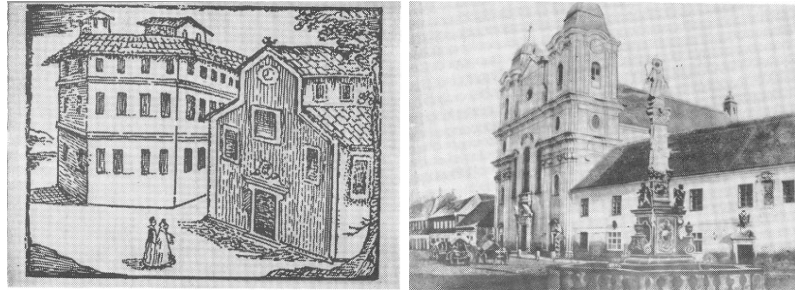
Astronomical preoccupations in Transylvania have started with centuries ago. We mention here only some of the most important moments. More details can be found in [1] and [2]. In this multi-secular tradition is important to note the astronomical activity of Ioan Vitéz de Zredna (1408-1472), bishop of Oradea, who was in contact with the famous astronomers Peurbach and Regiomontanus. The Transilvanian humanist and reformer, Johannes Honter (Honterus, 1498–1549) presented in his geographical book *Rudimenta cosmographica* (Kraków, 1530) the description of the Universe following Ptolemy. Honter also engraved and printed two stellar charts (Bazel, 1532).

The most spectacular astronomical phenomena, the appearance of comets, of big meteors were observed and recorded in books printed in Transylvania by authors as Gaspar Heltai (Caspar Helter), Wilhelm Misocacus, Stephanus Wolphard. Astronomical papers were published in the 17th century by Izrael Hübner and Samuel Kaposi too.

Astronomy was present also in the existing high schools. Famous professors, authors of textbooks, as *Johannes Henricus Bisterfeld* (1605–1655), *Johann Heinrich Alsted* (1588–1638) or *János Aptáczai Csere* (1625–1659) introduced astronomy in the schools.

The special interest to the astronomy leded in Transylvania too to the foundation of astronomical observatories. The most important ones are the Observatory of the University of Cluj (1759–1766) and that of the Batthyanium library in Alba Iulia (1794).

The first university college in Transylvania was founded in 1581 in Cluj by prince of Transylvania and king of Poland *Stefan Bathory*, under the control of the Jesuits and having the Italian *Antonio Possevino* as rector. The set up of this college was approved by *Pope Gregory XIII* in 1582, year of the reformation of the calendar.



**FIGURE 1.** a) The first building of the Bathory College (1582); b) The building of the Collegium Academicum (1740).

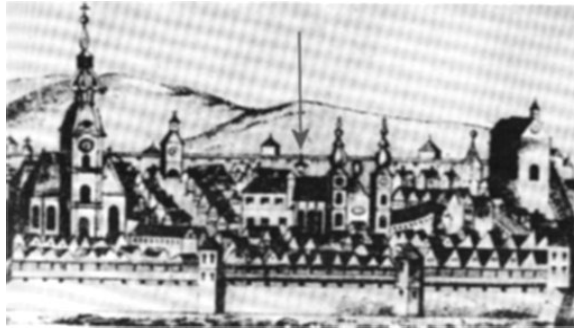


**FIGURE 2.** Maximilian Hell (Höll) (a) and the inner front page of his mathematical book (b).

## THE DESIGNERS OF THE CLUJ OBSERVATORY

With the development of the Cluj University the natural science became more and more important. In this trend the astronomy had an essential place. As a consequence, the set up of an astronomical observatory became a necessity. In the astronomical education and design of an astronomical observatory in Cluj the central role was played by two Jesuits: *Nicolaus Ianos* (1701–1741) and *Maximilian Hell* (1720–1792).

The Jesuit father Nicolas Ianos, original from Cluj, a few years after finishing his studies in Vienna, he became professor at the University of Cluj (1734–1739). In this period he laid the foundations of an astronomical education of high quality, and made the first planes of an astronomical observatory. He published in 1737 in Cluj a student book in trigonometry: *Trigonometria plana et spherica cum selectis ex Geometria et Astronomia problematis* [6]. This book can be considered to be the first student book in mathematics and astronomy published in Transylvania. This is a completed reedited version of the book of the Jesuit Jacob Gooden (1670–1730), published initial in Lüttich, in 1703. This Latin work is structured in two chapters dedicated to plane and spherical trigonometry, with problems from geometry and astronomy. The used basic astronomical notions are also presented. E. g., the eclipse is described as "circulus maximus, quam Sol unius anni spatio percurrit", i.e. the maximal circle described by the Sun in space through one year. Classical basics of the fundamental astronomy are presented in this volume.



**FIGURE 3.** Cluj in 1759. Copper engraving by János Szakál.

To continue the constructions of the astronomical observatory, the Jesuits sent father Maximillian Hell to Cluj in 1752. Hell made here new projects for an astronomical tower, directed the constructions and ordered astronomical instruments from Vienna for the future astronomical observatory.

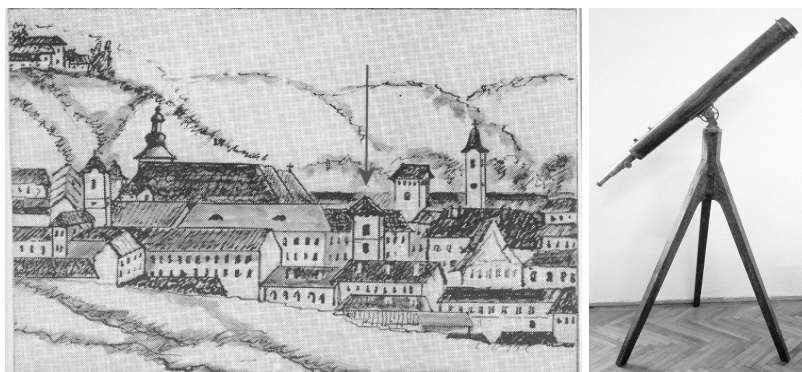
In these years spent by Hell in Cluj he was teaching mathematics and astronomy. He also started to write a series of mathematical monographs, under the title *Elementa mathematica naturali philosophiae ancillantia*. He finalized and printed in 1755 the book dedicated to the arithmetic and algebra: *Elementa Arithmeticae numericae, et literalis seu Algebrae* [3], completed with a problem book [4] (Fig. 2). Hell also printed in Cluj a short booklet referring the mathematical examination hold in 1755. In the period spent in Cluj Hell had an intensive and valuable didactical and scientific activity [2, 7, 8, 9].

Unfortunately — for the University of Cluj — Hell had not have the possibility to finalize his dream, to see with his eyes the astronomical observatory, because he was removed in Vienna in 1755, before the constructions of the new buildings of the university and the astronomical tower were finished. In the following years, as imperial astronomer, director of the astronomical observatory and professor Hell had a brilliant scientific activity in Vienna.

## **ASTRONOMICAL TOWERS AT THE UNIVERSITY OF CLUJ**

The work started by Ianos and Hell was finalized by *Nandor Hartmann*, the professor of mathematics, who has activated in Cluj from 1755 to 1769. In this period was finished the construction of the new building of the university, with the special tower dedicated to astronomical observations. This tower is present in an engraving dated 1759 (Fig. 3). Hartmann continued to equip the new astronomical observatory with astronomical instruments. He has called for a mobile quadrant, an astronomical clock and lunettes from Vienna.

The history of this first astronomical tower was not a long one. At 31 of August 1798 a big fire raved the center of Cluj, devastating the university and the Astronomical Observatory too, together with the astronomical instruments. The reconstruction of the university was finalized in 1805. A new astronomical tower had been set up in the new



**FIGURE 4.** a) Tint-drawing with the second astronomical tower. b) The 200 years old telescope.

building, and new instruments were procured. The 9.3 cm telescope brought at this time from the Pössel Institute of Vienna still exists in the Báthory High School in Cluj.

The astronomical observatory of the university was dedicated mostly to didactical activities. The most important astronomical observations made in this tower were those of the passage of the Venus, made in 1874 by Miklós Konkoly Thege, the famous Hungarian astronomer, and later the observations of variable stars made by *Friedrich Schwab*, in 1885 and 1886. The results of these observations related to variable stars were published in the *Astronomische Nachrichten*.

The tower dedicated to astronomical observations existed until 1893. In this year the university started the reconstruction of all its central building. At this moment the conditions were no more favorable for a new astronomical observatory in the center of the town. A new, modern astronomical observatory was built in Cluj later, starting with 1925, in a more favorable place, at the margin of the town.

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