

## 1. Antecedents and goal

In 1877 the archbishop Lajos Haynald founded an observatory in Kalocsa. It has also served for academic studying purposes, amongst one the first ones in the world to have done that. Unfortunately, the place and the circumstances, and also the technical and political changes have written the fate of the observatory. However, during the functioning of the observatory, very important theoretical and practical results were obtained in astronomy, meteorology and seismology.

The goal of this present work is to collect data concerning the foundation and functioning of this observatory, in depth, relying on original sources as much as possible. Our target could not be the criticism of the scientific obtained, since they themselves would already surpass the frames of a thesis.

## 2. The method of the examination

Our research commenced in the Archive of the Archiepiscopal Authority of Kalocsa, in the late 1970s. In that time, the way the documents were kept didn't satisfy the criteria of archive storage. Hence, we had to collect them from different parts of the Office. Also, the organisation of the documents needed to be done. Even at this time, we could clearly see that certain documents were missing. We could not decide if they had been annihilated with the Archive of the Observatory or if they had had another fate. Later it has turned out that an unidentified person had taken the documents, probably before the Second World War, and has sent them back to the Office in the late 80s anonymously.

We have done the identification of the scientific publications resulting of the work done in the Observatory. We studied the original ones when they could be found in Hungary. With this method, we managed to reduce the possibility of inaccuracy in the bibliography, and also, we have discovered further publications on the similar topic, that the original list didn't contain.

The author of this thesis has also a message to convey, that research done far from the big scientific centres can also lead to significant results. In order to succeed, apart from human qualities, communication also plays an important role, which at that time mainly consisted in telegraphy, and in the post-system that was much better organised at the time. Today the instruments of communication are naturally different, but the role of the communication itself has become more significant.

## The literature in connection with the thesis

The first results of this research were published in a book in 1986 in connection with a conference („The role of the Hungarians in the world's technical-scientific progress”). The presented 800 copies of the book went a long way in the world thanks to the participants of the conference.

Later on, an unknown person put the book on the internet so it became recognised in the technology history.

Hereby I give the list of my publications and presentations on this topic.

1. **A Kalocsai Haynald Obszervatórium története**  
'The history of Haynald Observatory in Kalocsa, Hungary'  
Imre Mojzes  
MTA-OMIKK edition, 140 pages, Budapest, 1986.  
ISBN 963-83-61-23-9
2. **A Kalocsai Haynald Obszervatórium alapítása**  
'The foundation of the Haynald Observatory in Kalocsa'  
Imre Mojzes  
Újabb eredmények a hazai tudomány-technika- és orvostörténet köréből [New results from the history of the Hungarian science-technology- medical science] (MTESZ Conference) 19-20<sup>th</sup> September, 1984., Budapest

In the *first part* of this thesis I will present: the structure of the Observatory based on documents of the Public Record Office, the used instruments, and the foundation of a scientific institution in a small countryside village in the late third of the XIX<sup>th</sup> century.

The *second part* of the thesis will show the functioning of the Observatory. I will present its birth and connections with the Hungarian and international scientific progress. The institution reached its highest point of observing and research activities under the work of director Gyula Fényi. His research was mainly focused on the surface activity of the Sun, and the examination of gas explosions. Fényi has also done meteorological observations, which includes his own observations and processing as much as the treatment of the information given to him by the Missions in China and Mozambique.

In the *third part* of the thesis we will tell about the history of the meteorological observations. These were done at the same time as the astronomical observations. They together took part in the progressing meteorological observing and predicting system. The data collected in Kalocsa was important in the wind observation of the Great Hungarian Plain.

The Observatory was also quite soon connected to the earthquake examination. However, the town lies on a seismologically stable area, because there is no fault line close to it. Hence, the data obtained consisted mostly in listing and noting down information about distant earthquakes.

In the meteorological research, the building of a storm-warning machine by Gyula Fényi, was the sign of a significant progress. In fact, it was build from an old detecting radio. It quickly became well known as much amongst professional as amateur observers. A clock-maker in Budapest manufactured the storm-warnings in mass production for national and international users. Nowadays we can even find some of them still functioning, for example the one in South-Africa.

The thesis' *fourth part* concerns the results obtained by the work done in the Observatory and its reception. Thanks to the Jesuits' mission work. The religious order (and so the Observatory too) always paid a lot of attention to international relationships. The mission work of the Hungarian Jesuits concentrated on the Zambezi river and China. The Chinese mission work included the sisterhood of the poor sisters in Kalocsa, called 'Miasszonyunk'. They and the Hungarian Jesuits set up mission colonies where they used meteorological instruments. The operation of these machines was part of the mission's work. We can only talk about the operation of the meteorological instruments since the circumstances were not given to transport and setup the bigger telescopes. The results of the measurements were mainly processed in Hungary, but partly sent by radio on shortwaves to Shanghai from the station set up in China, and sometimes also to Hungary.

The data collected in the colonies was treated with the biggest depth in Kalocsa, and was published in different languages in the Observatory's own editions.

### 3.2. New scientific results

In the followings, I summarize the new scientific results of my thesis:

1. According to the original documents I found in the Public Record Office, I noted down the foundation, birth and functioning of the Haynald Observatory in Kalocsa. I explored and systematized the original documents.
2. I pointed out that a well chosen research area with fast decision making and persistence from the researcher can lead to significant results and recognition even far from the big scientific centres.
3. I wrote the biographies of the people who worked in the Observatory.

4. I assembled the publications' list of the astronomical and meteorological notes of the Haynald Observatory in Kalocsa. Other sources in addition to the list can only be expected from publications in other languages or from second-hand source.
5. I assembled the data from the Jesuits' work in Boroma (on territory of the present Mozambique). The observations made there were treated in Kalocsa and published in different languages later on.
6. I drew up a list of the national and international references of Gyula Fényi's work.
7. I assembled the earthquake examination's list in Kalocsa, which didn't lead into any scientific results because of the geological conditions of the area and the short period of the observation.
8. I found that apart from the mission's work other scientific achievements were done, such as:
  - the redaction of a Chinese-Hungarian dictionary
  - meteorological observations
  - factual knowledge in radioing
9. With the help of the internet I was able to identify pictures I had stumbled into accidentally, hence, clarifying the circumstances of the Chinese mission's foundation.
10. I found that a regular radio connection existed between the Chinese Mission and the scientific institutions in Sanghai. This radio connection sometimes also extended to Hungary in the limits of the radio-reception.

#### 4. The usege of the results

The results of this work can be included into the Hungarian astronomical, meteorological, and seismological researches, descriptions, summaries. The discovered bibliography can be part of a Hungarian bibliography on a similar topic.

We have also done research in the Haynald Observatory, where we mainly listed the instruments.

The research we did on the internet played an important role as well. It was with internet that we found and analysed some slides, which had been done in the 20s and 30s in China, and were given to the author of the present thesis.

The analysis of the documents received from different institutions and private persons was also significant.

We had the chance to prepare interviews with two persons, including dr. Mátyás Tibor, the last director of the Observatory, and we studied the observations he had made in Rome in the 1940s. He told us about the efforts of the Observatory's rebirth after the World War II.

With the help of the records we have, and other personal connections we managed to make an interview with sister Mária Lidvina Kőnig who worked in the Chinese Mission for more than a decade. Her memories on everyday life and the destruction of the Mission are irreplaceable.

We also got in touch with priest István Jaschkó, who now lives in Taiwan, and also worked in the Chinese Mission, but turned the interview aside because of health reasons.

The content and the length of both of the recorded interviews would surpass the limits of this present thesis, but out of the collected and recorded material a TV film will be made.

### 3. New scientific results

#### 3.1. Structure and content of the thesis

In the XIX<sup>th</sup> century the town of Kalocsa had an important role in schooling. Its most important establishment at that time was the Stephaneum Gymnasium, ruled by Jesuits. In 1877, archbishop Lajos Haynald founded the Observatory in Kalocsa, which served amongst other things, for educational purposes in a secondary grammar school, one of the first observatory in the world to have done that.

3. **Egy Csillagda alapításáról.**  
'About the foundation of an Observatory'  
Imre Mojzes  
published in Fizikai Szemle, XXXVI/12, 1988.
4. **Hozzászólás egy levélhez**  
'Contribution on a letter'  
Albireo, XVII/11. November, 1988.
5. **A mikrohullámú technika első száz éve**  
'The first hundred years of the microwave technology'
6. **A Csillagda nem került Pécsre**  
'The Observatory did not get in Pécs'  
Imre Mojzes  
published in Magyar Nemzet, XLVIII/206, 06<sup>th</sup> of September, 1985
7. **Fényi Gyula és a Kalocsai Haynald Obszervatórium**  
'Gyula Fényi and the Haynald Observatory in Kalocsa'  
Imre Mojzes  
A Fényi Gyula Miskolci Jezsuita Gimnázium nyilvános előadássorozata [the Jesuit Gymnasium Gyula Fényi's public series of lectures in Miskolc], second year, first presentation 26<sup>th</sup> September, 1995  
19<sup>th</sup> February, 2004, Budapest
8. **Jezsuita missziók és a web**  
'Jesuit missions and the internet'  
I. Mojzes, U. Kiss, A. Faludy  
Előadás a Magyar Egyházi Levéltárosok Egyesülete Vándor-gyűlésén, (presentation)  
6<sup>th</sup>, July, 2004, Sopron
9. **Fényi Gyula munkássága**  
'Gyula Fényi's lifework'  
Conference on the 'Role of the Jesuits in the natural sciences'  
Conference in Piliscsaba, 4-6 November, 2004.  
(to be published)

## The program and the influence of Haynald Observatory in Kalocsa

PhD thesis

by

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