Mendel University in Brno
Czech Society of Landscape Engineers – ČSSI, z.s.

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MENDEL UNIVERSITY IN BRNO

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and

Department of Landscape Management
Faculty of Forestry and Wood Technology
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of prof. Dr. Ing. Libor Jankovský, the Dean of the Faculty of Forestry and Wood Technology, Mendel University in Brno,
of doc. Ing. Tomáš Vrška, Dr., the Director of Training Forest Enterprise Masaryk Forest Křtiny, Mendel University in Brno,
of Ing. Dalibor Šafařík, Ph.D., the Chief Executive Office, Forests of the Czech Republic,

of JUDr. Markéta Vaňková, the Mayor of the City of Brno,

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METEOROLOGICAL ACTIVITIES OF J. G: MENDEL AS PART OF A TOUR OF THE AUGUSTINIAN ABBEY

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Abstract
Gregor Johann Mendel is known worldwide for establishing the genetic laws. What is less well known is that during his life he devoted far more time to meteorology. He started as an assistant to Dr. Olexíka, who performed meteorological measurements on the premises of the Hospital at St. Anna in Brno. G.J. Mendel independently carried out his measurements in the grounds of the Augustinian Abbey in Staré Brno from July 1878 to July 1883 as a meteorological observer of the Austrian Meteorological Services. He studied at the University of Vienna and used his knowledge of physics to process meteorological data, which was unusually extensive and graphically expressed for that time. His physically very expertly described tornado that occurred in Brno on October 10, 1870 is very well known. He supported the development of weather forecasts and and forecasts with specifically focused on agriculture. Part of the exposition in the Mendel Museum of the Masaryk University in Brno is dedicated to his meteorological activities. Visitors to the Abbey can familiarize themselves with the meteorological instruments located in the meteorological booth on the terrace. In the courtyard, there is a replica of the tin meteorological booth from the period of Mendel's measurements in its original place.

Keywords: meteorological observations, weather forecast, wind storm, data processing

Introduction

Part of recreation in cities are visits to museums, important buildings and the like. On July 20, 2022, 200 years have passed since the birth of the world-renowned scientist Gregor Johann Mendel. He went down in the history of science as a genius geneticist. However, the fact that this abbot of the Augustinian monastery in Brno called himself a meteorologist at the time of his fruitful scientific research still arouses great astonishment and surprise.
This fact is evidenced by the records of his meteorological observations, which he not only wrote down by hand, but also evaluated and published. Considering the extent of his meteorological activities, one can say quite responsibly that he devoted a significant part of his other scientific activities to meteorology. A visit to the grounds of the Augustinian Abbey, including the Mendel Museum, gives an opportunity to get to know and learn about his meteorological activities as well as genetics.

Meteorological measurements

On the petition of the Naturalist Association in Brno from 1870, in the proposal for the establishment of the Moravian University, Mendel's expertise was listed as a meteorologist (Kříženecký, 1965). Quite realistically, one can state that unlike his genetic knowledge, where he did not receive recognition during his lifetime, his meteorological background and studies were known and his opinions were sought after. To the question of what Mendel's activities were in meteorology, one can answer that they were very diverse, corresponding to his style of scientific work, i.e. from basic observation and measurement, through data processing to the publication of his results (Seiner, 1965). Nowadays, his handwritten records of meteorological measurements (Fig. 1) are safely stored in the archives of the Brno regional office of the Czech Hydrometeorological Institute.
They form part of the continuous meteorological observations and measurements within the data series of the Brno city (Štěpánek 1998). The longest period of meteorological measurements in the Czech Republic is that of Klementinum (Prague), which has a continuous temperature series since 1775. In Brno, continuous meteorological data has been available since January 1, 1848, thanks to meteorological measurements conducted by dr. Paul Olexík in the general hospital of St. Anna (Vitasek, 1952). G. J. Mendel was a close friend of dr. Oleksík and helped him with meteorological measurements at his station.
It is assumed that G. J. Mendel already during the collaboration with dr. Oleksík performed simultaneous measurements in the monastery, according to some opinions, as early as 1857 (Orel, 1965). Mendel's separate measurements are from January 1, 1879 to July 1883 (Liznar, 1886). As

part of the exposition in the Mendel Museum, we can find a monthly report filled out by Mendel (Fig. 1).

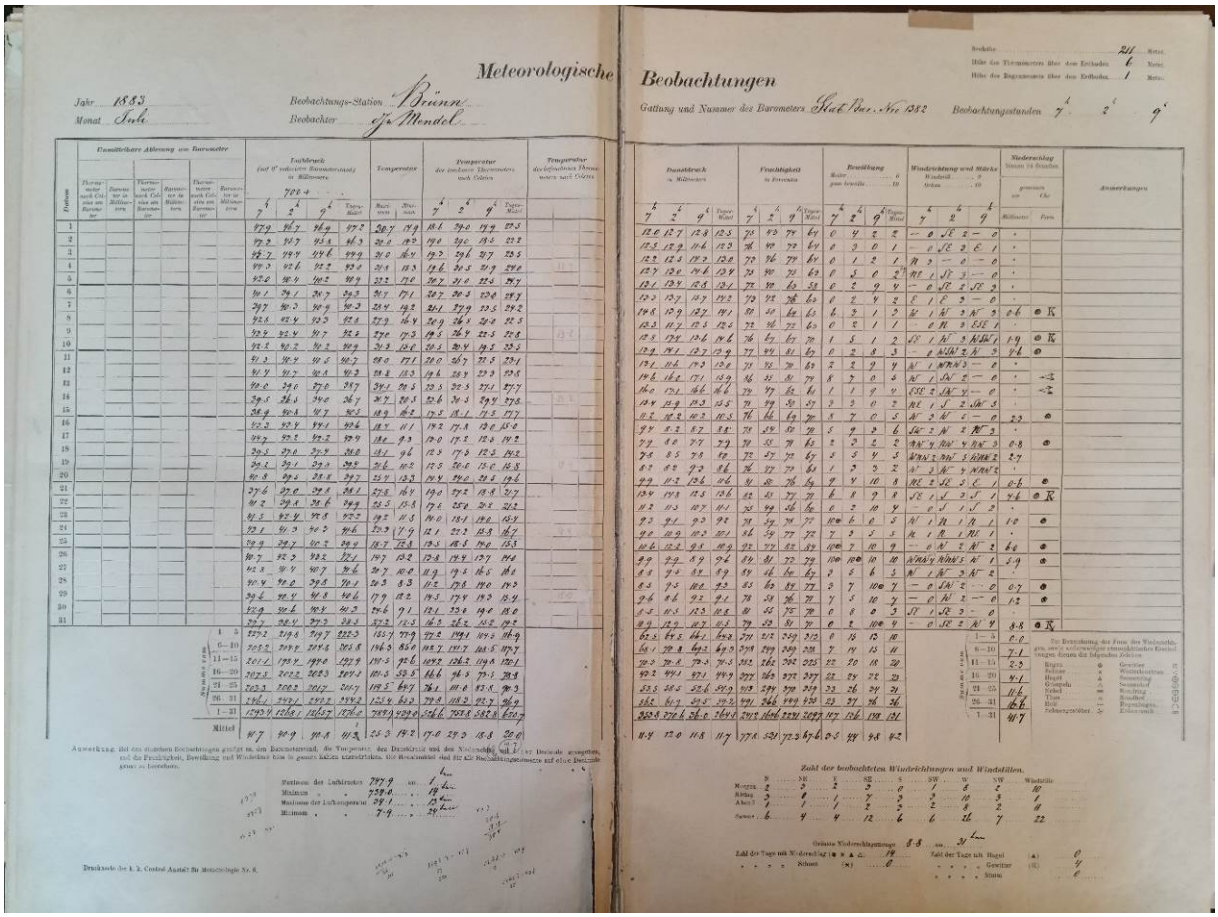

Fig. 1: Monthly report of meteorological observation written by G. J. Mendel

Apparently, we also have a preserved tin meteorological booth and thermometers from the period of his measurements. During renovations on the grounds of the Abbey, a partially damaged booth was found in which the mercury thermometers were preserved, which were also undamaged, and the mercury column was completely clear, i.e. the capillary was not contaminated by mercury, as is common with meteorological thermometers after prolonged use. Visitors can find a replica of the tin meteorological booth as part of the exhibition in the museum, but also in the courtyard on the wall at the place of Mendel's probable observations (Fig. 2).

Visitors to the abbey can learn more about meteorological measurements thanks to the installed meteorological booth and rain gauge on the terrace (Fig. 3).

In the 1862 annual report of the Society of Natural Sciences in Brno, he mentions the publication "Bemerkungen zu der graphisch-tabellarischen Ubersicht der meteorologischen Verhaltnisse von Brünn" (Notes on the graphical and tabular overview of meteorological conditions in Brno). His remark that air temperatures are higher in the city center compared to its outskirts is significant. It is a warning about a phenomenon that we study extensively today and call it the urban heat island. Only after more than twenty years has this knowledge become the subject of interest of meteorologists and climatologists (Dobrovolný et al. 2012, Litschmann and Rožnovský, 2012).

Fig. 2: A replica of the tin meteorological booth in the Mendel Museum exposition

Fig. 3: Meteorological booth and rain gauge on the terrace in the abbey grounds

Experiments with weather forecasting

G. J. Mendel was an active meteorologist, he had a physics education, so he knew the essence of many processes in the atmosphere. He also perceived the influence of the course of the weather on nature and, given his agricultural roots, was aware of the importance of weather forecasting. What still applies today - our effort to use the knowledge of meteorology in various fields of human activity.

It is therefore logical that G. J. Mendel perceived all this and was not only interested in the possibility of predictions, but also tried to make predictions himself. He was aware of the importance of weather in agriculture and supported the issuing of weather forecasts for farmers. He therefore supported the publication of short-term weather forecasts by the then Central Institute for Meteorology and Earth Magnetism in Vienna. These predictions were telegraphed to subscribers, who then passed them on further.
The Ministry of Plowing at the time set up a kind of institute of local forecasters, who edited the general forecast and sent it out in the form of telegrams to individual interested parties. In the villages, simple signaling was introduced, e.g. by hanging flags or baskets. G. Mendel tried to compile his own weather forecasts for three days, but essentially unsuccessfully. If we imagine the information he had at his disposal and compare it with today's, there is a big disparity. When evaluating this activity, we must realize that he was clear about the physical nature of weather forecasting, that he was aware of the scope and importance of this newly emerging part of meteorology, which today we call synoptics.

Professional activities

As noted, G. J. Mendel's meteorological work was extensive. He was also interested in the use of meteorology in other fields, as evidenced by his activities in professional societies. As early as 1851, on 7/23, he joined the natural science section of the Moravian-Silesian Society for the Improvement of Plowing, Natural Science and Homeland Studies (abbreviated Moravian-Silesian Economic Society). A year later, he becomes a member of the fruit-growing, wine-growing and horticultural section of this company. His esteem is evidenced by the fact that in 1871 he was elected to the committee of the Moravian-Silesian Economic Society and in 1882.
He was accepted as a member of the Zoological and Botanical Society in Vienna on January 5, 1853. He is a co-founder of the Natural History Society in Brno, which was established on 21st December 1861, in which he presents himself as a meteorologist. He is known for his activity in the Beekeeping Association in Brno, in which he later held the position of deputy mayor and was nominated for the post of mayor. G. J. Mendel was one of the important personalities of the Austro-Hungarian meteorology of that time. He was a founding member of the Austrian Meteorological Society.

Conclusion

The meteorological activities of Gregor Johann Mendel contributed significantly to the development of meteorology in several directions. His personal measurements became part of a long-term series of meteorological data from the territory of the city of Brno. As part of a visit to the Starobrněnské Abbey, it is possible to get acquainted with the entire breadth of Mendel's activities at the exposition in the Mendel Museum. The installed meteorological booth gives the opportunity to get closer to the basics of meteorological measurements, as they were performed prior to them being fully automated. In the courtyard it is then possible to see a replica of the tin meteorological booth, which was most likely used by G. J. Mendel. This review of meteorological documents gives visitors the opportunity to assess how technical conditions and methods are progressing even in meteorology.
However, the legacy of G. J. Mendel is not only in professional activities, but also in the overall approach to science. When evaluating his legacy, one must always remember that he was an abbot of the Augustinian order, i.e. a scientist and a Christian at the same time. As a representative of orders and a scientist, he proved his not only managerial but also financial abilities. The proof is that, among other things, he was also the chairman of the bank board.
In order not to forget Mendel's meteorological activities, meteorological measurements were provided on the grounds of the Abbey outside the event for his significant anniversaries. Evidence of his meteorological measurements is also part of the exhibition in the Mendel Museum.

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Souhrn
Gregor Johann Mendel je celosvětově znám stanovením genetických zákonitostí. Méně známé však je, že během svého života daleko více času věnoval meteorologii. Začínal jako pomocník dr. Olexíka při měřeních v areálu Nemocnice u sv. Anny v Brně. Svá měření samostatně prováděl v areálu Augustiniánského opatství na Starém Brně od července 1878 do července1883 jako meteorologický pozorovatel Rakouské meteorologické služby. Studoval na vídeňské univerzitě a svých znalostí fyziky využil pro zpracování meteorologických dat, která byla na tehdejší dobu neobyčejně rozsáhlá a graficky vyjádřená. Známá je jeho fyzikálně velmi odborně popsaná smršť, která se vyskytla v Brně 10. října 1870. Zasloužil se také o rozšíření meteorologických stanic na Moravě. Podporoval rozvoj předpovědí počasí a jejich specifikaci pro zemědělce. Sám se o předpovědi pokoušel, ale ne úspěšně. Z jeho uváděných 13 publikací je 9 věnováno meteorologii. Byl také aktivní v odborných spolcích. Meteorologickým aktivitám je věnována část expozice v Mendelově muzeu Masarykovy univerzity v Brně, které je umístěno v areálu Starobrněnského opatství. Návštěvníci Opatství se mohou seznámit s meteorologickými přístroji umístěnými v meteorologické budce na terase V nádvoří je na původním místě umístěna replika plechové meteorologické budky z období Mendelových měření.

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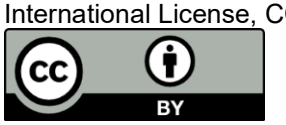

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