

MEMOLETTER

www.memo2018.abel.bielsko.pl • July 2018

MEMO

The 12th Middle European
Mathematical Olympiad

What is MEMO?

The Middle European Mathematical Olympiad (MEMO) is an annual mathematical competition that was first held in 2007. It is the successor of Austrian-Polish Mathematical Competition (ÖPMW / APZM), which was held 29 times from 1978 to 2006 as a competition between one Austrian and one Polish team. Now ten countries participate in the MEMO: Austria, Croatia, Czech Republic, Germany, Hungary, Lithuania, Poland, Slovakia, Slovenia and Switzerland.

Similar to the International Mathematical Olympiad (IMO), each country participates with up to six students and two team leaders. As one of the main goals of the new competition was to provide the possibility for a lar-

On August 27 - September 2, 2018, the 12th Middle European Mathematical Olympiad (MEMO) for high school students will take place in Bielsko-Biała.

Teams from eleven countries will take part in it: Austria, Croatia, the Czech Republic, Lithuania, Germany, Hungary, Poland, Slovakia, Slovenia, Switzerland, Ukraine.

We wish all the participants of MEMO and their leaders a lot of unforgettable experiences from their stay in Poland, especially in Bielsko-Biała.

In this issue we present Bielsko-Biała in a brief historical description.

ger number of students to gain experience in international competitions, the teams participating in the MEMO are typically disjoint from the IMO teams of their countries. Also, MEMO is meant to prepare younger students for a future participation in the International Mathematical Olympiad, therefore students in their senior year are not eligible to be in the MEMO team.

The MEMO consists of an individual competition and a team competition, each lasting five hours. The problems are of the "olympic" type, typically divided into four areas: algebra, combinatorics, geometry and number theory. In the individual competition, the students solve one problem from each area. The

team competition consists of eight problems, two from each area (although at the first two MEMOs also the team competition had only four problems). In the team competition, the students of each team solve the problems together, which gives the competition a very special atmosphere. The team part of the competition existed also at the ÖPMW / APZM, but it is a rarity in mathematical competitions.

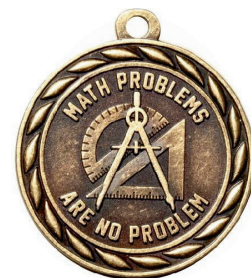
The whole program lasts one week. Problem selection, translation, the competition itself, and the scoring are all performed during this time. Besides, the individual and team competitions, the program also contains excursions and sports activities.

MEMO 2009

Individual competition

Find all functions $f: \mathbf{R} \rightarrow \mathbf{R}$ such that

$$f(xf(y)) + f(f(x) + f(y)) = yf(x) + f(x + f(y))$$

for all $x, y \in \mathbf{R}$, where \mathbf{R} denotes the set of real numbers.*Can you
solve it?*

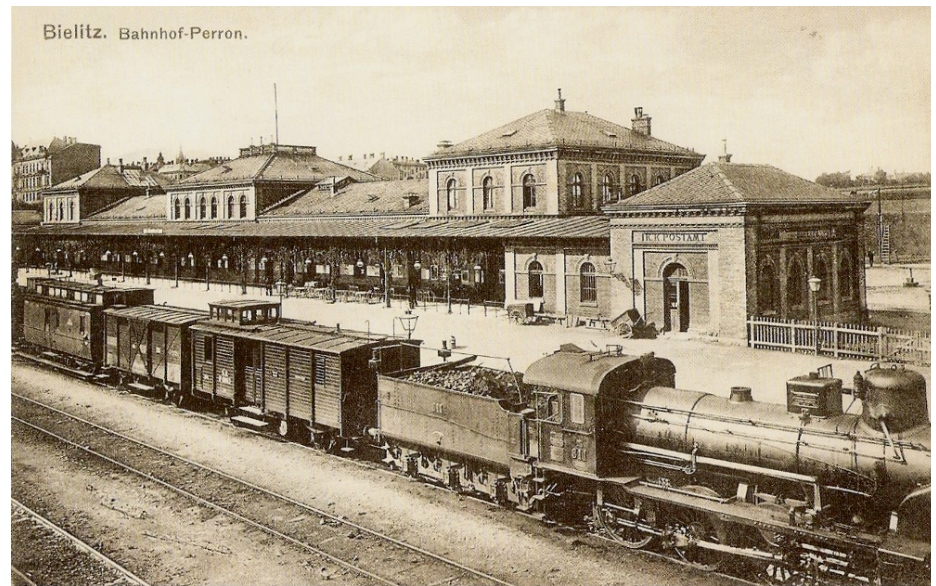
The city of Bielsko-Biała

The city of Bielsko-Biała (German *Bielitz-Biala*, Czech *Bílsko-Bělá*, Silesian *Biłsko-Bioło*) located at the foothills of the Beskid Mountains, brings together the beauty of unspoilt nature and a vibrant city with a thrilling history.

The city was officially founded on 1st January 1951, by amalgamating the Silesian Bielsko and Galician Biała, but the history dates back to the end of the 13th century. Even though the cities were not officially integrated before the year 1951, there was a great deal of institutional overlap between the two. The name Bielsko-Biała is a loan translation of Bielitz-Biala — the name used by German and Jewish inhabitants in the 19th century referring to the two cities.

The City of 100 Industries

The industrialisation of the city dates back to the Napoleonic Wars. After a long period of feudalism in Europe the industry of Bielsko and Biała consisted of small workshops. During the war the demand for textiles rapidly



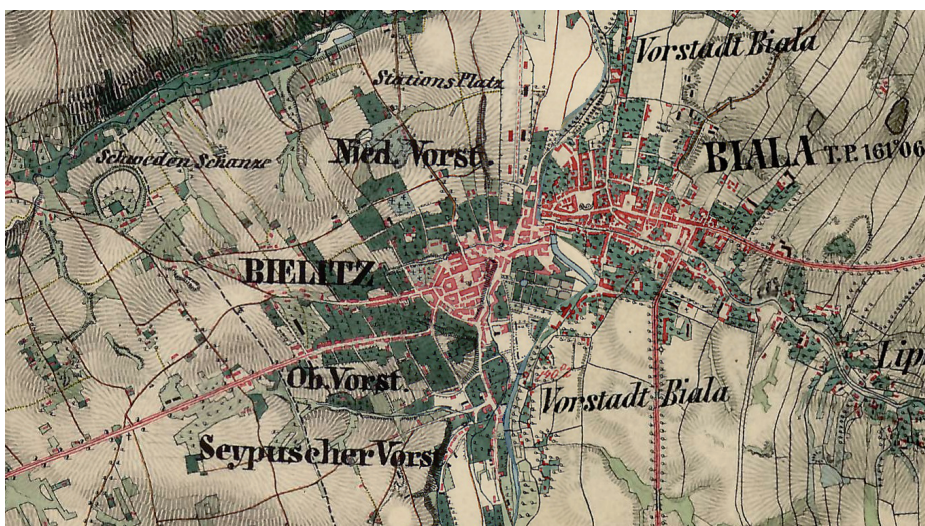
Main Train Station from the platform side, 1911 / www.fotopolska.eu

increased. The productive capacity of the two cities was insufficient to meet demand and so the small manufacturers started to consolidate into groups, thus forming the foundation of the future mechanised factory enterprises. This event defined the industrial character of the city. Ever since, Bielsko has not only been a textile powerhouse within Austria-Hungary, but an industrial center of significant meaning in Europe. That is why Bielsko was called the *Silesian Manchester*.

The city entered a period of prosperity in the late 19th century. Numerous industries were founded and the landscape of the city changed. The industries managed

to operate until 1945 when Soviet troops entered Bielsko and confiscated the most of industrial private property and chattel. Then most of the factories were nationalised and operated as the national enterprises. In the 60s and 70s due to the competition and decline in the demand for high quality textiles all factories closed down, leaving dozens of people jobless.

The crisis was overcome as the city's industry diversified and started to operate in new areas like motorisation, metallurgy and electronics. Now the condition of the industry in Bielsko improved and the city once again attracted investors and provides jobs for the people.



Map of Bielitz, 1855 / www.pl.wikipedia.org

Bielsko-Biała was a language island

Since its beginning the city of Bielsko-Biała has been a melting pot of German, Polish, Czech, Silesian and Jewish culture. Why? The answer is simple. Bielsko and Biala for 600 years were divided by the Austrian-Polish border.

Bielsko, situated at the eastern tip of Silesia, is close to many other regions: Lesser Poland, Moravia and Northern Slovakia. Because

of its prominent industry, the city has always attracted people from many places.

In the early 20th century Bielsko-Biala was a *language island*: the German and Jewish centre found itself surrounded by a sea of Polish and Czech speakers. As a result, until 1945 most of the inhabitants of the city were bilingual. Although the official language of the province of Austrian Silesia remained German, Polish and Czech schools were permitted to operate, unlike in Prussian Upper Silesia. However, due to financial trouble, the number of Polish schools was insignificant and people tended to choose a German-language education.

After the decline of the Austro-Hungarian Empire the region of Austrian Silesia was split into two parts based on ethnic distribution, unlike in Prussian Silesia where a plebiscite was held. Bielsko was ceded to the newly re-born Poland. The city remained bilingual in the new autonomous

the voivode (head of the province). During this period Polish was made the exclusive official language of the Voivodeship. Bilingual street names were removed, and many German-speaking people were made redundant and replaced with people from outside Silesia. These changes escalated the Polish-German conflict present since the end of the Great War.

The Trams in Bielsko

In the late 19th century the city authorities started building a tram system in Bielitz (Bielsko). The developing city needed a connection between the city centre and the remote residential area of Eichenwald (Eng.: Gypsy Forest, Pol.: Cygański Las). The electric tram service started in 1895. Meanwhile in Vienna, Krakow and Warsaw the only municipal rail vehicles in operation were horse trams.

Unlike in many cities, cargo trams operated in Bielsko. Used mainly

In 1950 a new line connecting the city centre and Aleksandrowice was built.

In 1970 due to a lack of support from the local government and the poor condition of the obsolete infrastructure the authorities of Bielsko decided to remove the trams and replace them with buses, in spite of massive protests. The trams were sold to the city of Łódź. Still, trams remained one of the symbols of Bielsko.

Little Vienna

One visiting Bielsko may feel like walking the streets of Vienna or Budapest. The architecture of the city is modelled on the buildings of the capitals of Austro-Hungarian Empire. Bielsko has even hired the architects, who had designed the buildings in Vienna.

The most important figure among the architects of Bielsko was Karl Korn. He designed and supervised the construction of the Train Station, Hotel *Kaiserhof* (now *President*), building of the Main Post Office, Municipal Hospital, Sixt Villa and Municipal *Sparkasse* (Bank). If asked 'who designed this building' in Bielsko answering 'Karl Korn' is usually correct — more or less half of the city was designed by him.

However, the symbol of Bielsko-Biała — the neoclassical town hall was not designed by Korn, but by Emmanuel Rost Jr. — a German architect. Apart from the beautiful elevation with numerous ornaments the building has great interiors — the spacious staircase and elegant auditorium, which can be seen on weekdays during the work-hours of the institution.

*Krzysztof Habdas
a student
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Tram on 3 May Road, 1930 / www.fotopolska.eu

Silesian Voivodeship. In this period many Polish schools were built, although most of the city (62% in 1921) remained German. The situation changed drastically when Michał Grażyński became

to transport goods and coal to neighbouring industries they operated in the mid-war period. The overall length of the industrial tram sidetracks in 1927 was 2557 meters.

We invite you to Bielsko-Biala

FACT FILE

Silesia province
Area: 124,500 km²
Population: around 172 000
Unemployment rate: 2.4%
(one of the lowest in Poland)

SHORT HISTORY

Bielsko was established in the 14th century, and Biala in the 16th century. They connected in 1951, giving birth to Bielsko-Biala city.

In the past, Bielsko was a part of Czechia or Austria-Hungary. In the 19th and 20th century, Bielsko and Biala were one of the most important industrial and trade centers of Austria-Hungary, famous for its textiles. Later, machines, cars or gliders industry developed.

Bielsko and Biala were once multicultural; nationalities included German, Jews and of course Polish.

In years 1855-1971 a tram was one of the most popular means of transport in Bielsko.

Today, Bielsko-Biala is known from its Beskidy mountains surrounding the city, the Castle, puppet theatre, jazz festival or Animated Film Studio.



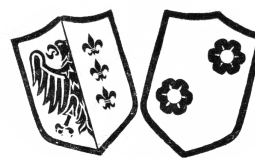
Bielsko-Biala

Interesting facts about the region

- In the mid-war era teachers in Silesia were obliged to be celibate.
- In the late 30s the Silesian Voivodeship gave a loan to the Republic of Poland, even though it was uncommon for a region to loan money to the state and not the other way around.
- At the height of Bielsko's industrial era it was possible for the citizens to know what colour of textiles had been dyed that day. All waste from the textile factories was emptied into the River Biala, changing its colour.
- When the Polish-Austrian border separated the two cities,

many citizens on each side became richer through goods smuggling. Often this was a result of families living on both sides of the border, making the act of smuggling much easier.

- Many tenement houses in Bielsko are connected by underground tunnels. The passages can be entered through a hole in the railway tunnel or the basements of some old buildings.
- Apart from these tunnels Bielsko possesses a number of vaults. Most are abandoned, but some are still in use. The majority were built during the Polish People's Republic.
- The only statue of Martin Luther in present-day Poland can be found in Bielsko.
- Bielsko-Biala has 4 market squares.
- Every three hours the anthem of Bielsko-Biala can be heard from the clocktower of the town hall.
- The difference between the lowest and the highest points in Bielsko is 849 meters. The highest point is Klimczok Mountain (1117 m).
- Bielitz (Bielsko) was the second most prosperous city in the whole Austro-Hungarian Empire, after Vienna.



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