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Event PTM Jubilee Congress, 3–7 September 2019, Kraków

100th anniversary Polish Mathematical Society

From 3 to 7 September 2019 the Polish Mathematical Society celebrated its 100th anniversary with a Jubilee Congress in Kraków (Cracow), Poland. This is a short account of this congress by Krzysztof R. Apt and Einar Fredriksson.

The Polish Mathematical Society (Polskie Towarzystwo Matematyczne, in short PTM) was founded in Kraków (Cracow), 2 April 1919, less than half a year after Poland regained independence at the end of the First World War. (Between 1795 and 1918 the country was divided between Germany, Austria and Russia.) The founding group consisted of 16 mathematicians, among them Stefan Banach and Otto Nikodym. The society was first a local organization, but soon became a countrywide one. In particular, in November 1919 some Warsaw mathematicians, including Samuel Dickstein and Wacław Sierpiński, became its members.

In 1920 the PTM founded the *Fundamenta Mathematicae* journal that exists up to the present day. The journal and its name were conceived by Zygmunt Janiszewski. Unfortunately, he did not live to see the first issue since he succumbed soon after to the influenza pandemic at the age of 31. Wacław Sierpiński and Stefan Mazurkiewicz took over as Editors-in-Chief. The first issue consisted of articles exclusively written by Polish mathematicians, but as a gesture towards the international community they were all written in French (except one written in Italian).

Kazimierz Kuratowski mentions in his historical book [1] that from the beginning the PTM maintained close contacts with mathematicians in other countries and cites as examples P. S. Aleksandrow, Elie Cartan, E. Čech, S. Lefschetz, T. Levi-Civita, N. N. Łuzin, P. Montel, R. L. Moore, G. Vitali, J. Winogradow, and E. Zermelo.

The decade preceding the WWII was a period of glory of Polish mathematics, especially flourishing in Lwów (now Lviv, Ukraine). A group of prominent mathematicians, including Stefan Banach, Mark Kac, Stanisław Mazur, Hugo Steinhaus, and Stanisław Ulam, worked at the Lwów School of Mathematics, notably in functional analysis, set theory, topology and probability theory.

So, not surprisingly, the first congress of the PTM took place in Lwów in 1927 and gathered about 200 participants. Ten arrived from abroad, among them John von Neumann from Budapest and Witold Hurewicz from Amsterdam.

Throughout its existence several famous mathematicians were presidents of the PTM. Perhaps the best known are (chronologically): Samuel Dickstein, Stefan Banach, Kazimierz Kuratowski, and Wacław Sierpiński.

To commemorate the 100th anniversary of the PTM a Jubilee Congress took place in Kraków from 3 to 7 September 2019. It was an impressive event that attracted 852 participants and led to no less than 508 lectures. The list of participants read as a 'Who is Who in Polish mathematics', with only few exceptions, such as Jan Mycielski and Andrzej Ehrenfeucht from the University of Boulder, Colorado, USA, and Janusz Onyszkiewicz (a former Minister of Defence in the first post-communist government and Solidarity pioneer), a former mathematician at the Mathematics Department of the Warsaw University. All three of them were active in mathematical logic, and connected in the sixties and seventies with the Warsaw seminar of the great logician Andrzej Mostowski; we both were his students.

Photo: Marek Welzel

Plenary meeting of the congress

In total there were 34 plenary lectures, about one third of them delivered by Polish mathematicians living abroad, which testifies to the size of the Polish mathematical diaspora. Several (almost exclusively Polish) participants arrived from Canada, USA, France, UK, Australia, and other countries. (To our knowledge there were three participants from the Netherlands.)

All talks were supposed to be given in Polish, though some of the invited speakers living abroad after a general introduction switched to English. (The website of the congress stated: "English will only be acceptable in case of plenary lectures given by those invited guests, who have been living abroad for many years and thus feel more comfortable talking about mathematics in a foreign language.")

During the opening ceremony Jean-Pierre Bourguignon, the President of the European Research Council, obtained an honorary membership of the society. Also a number of the society awards were conferred.

The extensive scientific programme was divided into several parallel sessions that were named after famous Polish mathematicians. The organizers of the sessions tried to adjust the subjects of the talks to the sessions' names.

In particular, one of us was a co-organizer of a session on Logic and Theoretical Information Science, called 'Tarski', which included a historical lecture about Alfred Tarski, lectures on Mathematical Logic, and on Theoretical Computer Science related to decidability.

The programme of the congress reflected a broad understanding of mathematics in Poland. In particular, there were sessions on the Didactics of Mathematics, Philosophy of Mathematics, and on Mathematical Physics ("Kac and Ulam"). Also, there were special sessions devoted to Theoretical Computer Science (with invited lectures on Algorithmic Game Theory), on Mathematics in Economics and Finance, and on Mathematical Olympiad Problems of 'remarkable beauty'.

The scientific programme also included a number of panels, in particular about the state of Polish mathematics, popularization of mathematics, and on the education of mathematics teachers.

Wiadomości Matematyczne (Mathematical News), a magazine of the Polish Mathematical Society, devoted a special, 269 pages long, issue to the anniversary. It contains among others accounts of the first three congresses of the society, that took place in 1927, 1931, and 1937, and interviews with the last four presidents of the European Mathematical Society.

The event was widely covered in the Polish press. There was also an extensive social programme and several interesting 'side' events. One of them was indirectly related to the aforementioned Lwów School of Mathematics. The meeting place of their members was the Scottish Café and the 'Scottish Book' written there contained open problems posed by mathematicians. 24 of these were given by Banach's collaborator Stanisław Mazur, and for many of the problems a prize was offered to the person giving the solution. For one of the problems (from 1936), Mazur had offered a live goose.

A young Swede, Per Enflo, showed in 1972 that the problem had a negative solution, and was later, in Warsaw, duly presented with a live goose by Mazur. In a film preceding the conference on the theme of the Lwów School, Per Enflo played a part. At the evening of the closing day he also gave a piano concert.

On the first evening of the conference there was a live performance of Opera Matematyczna, produced by the recently deceased Roman Kołakowski. The opera also focussed on the Lwów School of Mathematics, Banach, and the turbulent times around the city in the period before and including the WWII. Between the wars Lwów was a legendary Polish city, with outstanding contributions not only to science, but also the arts and media.

Another film shown during the conference dealt with the other profound Polish contribution to mathematics and computer science, playing at the same time as the Lwów School, but this time having its centre in Poznań. Cryptologists there had been working on deciphering a German encryption machine 'Enigma' since 1930. The machine went through improvements during a decade and was adapted for use by the German army/Luftwaffe, as well as the navy. With the help of the French security service, the three leading Polish cryptologists, Marian Rejewski, Jerzy Różycki and Henryk Zygalski, were moved to France just after the outbreak of the WWII, including their research and samples of Enigma.

This research proved critical for the Allied War effort as it became a basic building block for the UK intelligence work at Bletchley Park from the outset of the war. A large number of British cryptology experts worked towards the cracking of the German codes, most notably the logician and computer science pioneer Alan Turing. The accomplishments there became part of early computer history, but the significant contribution by the Polish cryptologists has been underexposed. Subsequent publications, and not the least a publication three years ago by the French authorities, threw new light on the Polish contribution.

Alan Turing's nephew Dermot Turing was present at the conference, promoting a Polish translation of his recent book — partly based on the new French publication. At a large ceremony in the Peter and Paulus Church in Kraków, the National Pantheon, the three cryptologists, Rejewski, Różycki and Zygalski, were re-buried during the last day of the conference.

A significant participation of mathematics teachers from high schools and a variety of educational institutions, as well as a new organization 'Women in Polish Mathematics', showed the broad anchorage of mathematics awareness and activity of the PTM — with active chapters in several regions of the country.

Given that in Poland a lunch is traditionally the main meal, the catering during the conference presented a — successfully met — challenge. During the day the conference took place at the new campus of the university, the lunch was ingeniously served in the emptied and thoroughly cleaned underground garage, the only space that could include so many guests. Finally, a large banquet was held at the Royal Castle of Niepołomice some 40 km outside of Kraków.

Acknowledgement
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Reference

1 Kazimierz Kuratowski, *Pół Wieku Matematyki Polskiej 1920–1970*, Wiedza Powszechna, 1973, in Polish. English version appeared as: *A Half Century of Polish Mathematics: Remembrances and Reflections*, International Series in Pure and Applied Mathematics, Vol. 108, Wydawnictwo Naukowe PWN/Pergamon Press, 1980.