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# One hundred years of the Polish Mathematical Society

**Abstract.** The paper deals with the history of Polish mathematical societies since 1917, when the Mathematical Society in Lvov was founded. In the second half of the 19th century first national mathematical societies appeared in Russia, France, United Kindom, Italy, United States, and Germany. In Poland, then partitioned by neighbouring powers (Russia, Prussia, Austria) whose policy was to suppress Polish national development, this was not possible. An attempt was made abroad in the form of the Society of Exact Sciences in Paris (a Polish society, with a dozen or so mathematicians as members), which functioned in 1870-1882. The situation was changed by the outbreak of World War I and the subsequent fall of all three partitioning powers. The Polish Mathematical Society was founded by its constituent assembly on April 2, 1919.

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**1. Prehistory.** In the second half of the 19th century first national mathematical societies appeared: in Moscow (1864), London (1865), France (1872), Palermo (1884), United States 1888, Germany 1890. In Poland, then partitioned by neighbouring powers (Russia, Prussia, Austria) whose policy was to suppress Polish national development, this was not possible. An attempt was made abroad in the form of the Society of Exact Sciences in Paris (a Polish society, with a dozen or so mathematicians as members), which functioned in 1870–1882. In the country, since

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1869, Congresses of Polish Physicians and Naturalists were organized, patterned after the German model. Because of Prussian and Russian obstructions most of those Congresses took place either in Cracow or in Lvov (the first one was in Cracow) (See [13]). Mathematicians took part in them since VI Congress in 1891, forming there a special section.

> Before World War I there was no congress of Polish mathematicians. There was only a section of mathematics at congresses of Polish physicians and naturalists. In such a congress, which took place in 1911 in Cracow, four mentioned professors of mathematics and Dickstein[1] from Warsaw have participated.[2] Each had a communication but afterwards we talked in a friendly way about everything but not about mathematics, since each of us has worked in a different part of mathematics. (...)
>
> After that congress I came to the conclusion that this state of affairs is not favorable. Among our mathematicians there was neither cooperation nor mutual check. Although some mathematicians were known abroad for their work, there was no Polish mathematics. I came to the conclusion that it would be better if a major number of our mathematicians worked in one research area(cf. [28]).

The citation not only stresses merits of closer cooperation (nobody yet in the partitioned country dreamed then of a professional society) but it also discovers a germ of later Polish mathematical school (see below).

**2. Founding.** The situation has changed by the outbreak of World War I and the subsequent fall of all three partitioning powers.

The first move towards all-Polish mathematical society was the Mathematical Society in Lvov, founded in 1917. It started and members began to meet, but at the end of World War I a Polish-Ukrainian war

[1] In this article many names of Polish mathematicians are mentioned. Each has a biographical entry in [10].

[2] They were Stanisław Zaremba and Kazimierz Żorawski, professors from the university in Cracow, and Józef Puzyna and Wacław Sierpiński, professors from the university in Lvov. Samuel Dickstein from Warsaw was not a professor (in Warsaw there was only a Russian university, boycotted then by Poles) but he also contributed a communication. Those not of the professor rank were also present at the Congress: Zygmunt Janiszewski, Antoni Łomnicki, Alfred Rosenblatt, Edward Stamm, Hugo Steinhaus.

broke out. The Society could hardly continue and quite soon, after the death in 1919 of Józef Puzyna, its founder and first president, it died out altogether (cf. [30], [6]).

Cracow, a city not touched by wars, was in a better situation and so soon after the armistice another Mathematical Society was founded. Its constituent assembly was convened on April 2, 1919. Among 16 participants there were Stefan Banach, Leon Chwistek, Antoni Hoborski, Franciszek Leja, Otton Nikodym, Alfred Rosenblatt, Jan Sleszynski, Stanisław Zaremba, Kazimierz Żorawski - all active mathematicians living then in Cracow.[3] The assembly resolved that "The aim of the Society is defined to be a cultivation of mathematics pure and applied". In consequence, the assembly turned down motion to widen the aim by including popularization of mathematics. And during the next two decades the Society shunned popularization, restricting its activities to supporting research, organizing congresses, publishing its Annals, and maintaining international relations. Stanisław Zaremba was elected the first president of the Society and the next meeting, on April 9, was devoted to a lecture by Antoni Hoborski. In that way the work started and went on.

Formally, the Society was a local one, as shown by "Cracow" in its name, but there was a pressure, both internal and external, towards extension. On the internal side, half a year after its founding, on November 19, the Society admitted members from Warsaw, including Samuel Dickstein, Zygmunt Janiszewski, Stefan Mazurkiewicz, Wacław Sierpiński - all mathematicians then widely known: Dickstein was a man of great merits (cf. [24], [5]), while the latter three were leaders of the emerging then Warsaw school of mathematics (cf. [20]). And soon thereafter came next ones including Wiktor Staniewicz from Vilnius, Zdzisław Krygowski from Poznań, Hugo Steinhaus, Antoni Łomnicki, Stanisław Ruziewicz - all three from Lvov. Thus by having within its ranks many eminent representatives from the all five university centres in Poland, the Society actually lost its local character. From the outside, the changing status of the Society could be seen also in a letter which came on February 1920 to Stanisław Zaremba, then president of the Cracow Society and for that reason considered as a representative of all Polish mathematicians, inviting him to join the group founding the International Union of Mathematicians (below IMU).

The formal initiative to drop "Cracow" and admit openly a national scale came from Samuel Dickstein who proposed the new name *Pol-*

[3] On the founding of Polish Mathematical Society see [7], [26].

*ish Mathematical Society* (below abbreviated PMS) and the relevant change of its character. The motion was accepted on April 21, 1920, and from that day the Society became eventually all-Polish, with the same S. Zaremba as its president. Its uninterrupted existence runs now to the centenary and this article tells briefly its history (v. [18, 19, 29]).[4] An important borderline in its development was the outbreak of World War II and so the history is naturally divided into two parts, before World War II and after it.

**3. Beginnings.** In view of the approaching first postwar International Congress of Mathematicians (below ICM), the first after 1912 and thus very important one, the Polish Mathematical Society elected Stanisław Zaremba and Wacław Sierpiński as its two delegates to the Congress, held eventually in Strasbourg on 1920. The Congress called International Mathematical Union (below IMU) into existence. The Polish delegates supported earlier the initiative but, due to the Polish-Soviet war which raged exactly at that time (cf. [3]), they were unable to attend the Congress, excusing themselves by telegrams.[5]

When peace in Central-Eastern Europe was finally established by the Polish-Soviet Riga Treaty in 1920, the PMS has resumed its activity. Since it possessed now a countrywide scope, sections appeared in all university cities. The hitherto Society in Cracow became Cracow section of the PMS, followed first by that in Lvov, founded 1921 (on the basis of the former Lvov Society), and two years later, in 1923, by those in Warsaw, Poznań, and Vilnius. In that way a territorial organization of the PMS was established and kept unchanged until 1945.

The case of Warsaw was a specific one. In 1923 its position was rapidly increasing,and it soon became an unquestionable leader of Polish mathematics (v. [12]). Initially, however, the Warsaw community was highly influenced by Zygmunt Janiszewski who, still during World War I, authored an article on how "to win an independent position for Polish mathematics" [16][6], which marked out a possible way of development of Polish mathematics and eventually led to the foundation of the Polish school of mathematics (v. [28]). Janiszewski highly opposed any forms of strict administrative rules. He argued that research should be free, deprived of any burden of a strict formal frame, including that

[4]There are many articles covering some parts of the history of PMS, e.g., [8], [15], [18], [19], [29].

[5]In particular, W. Sierpiński was then engaged in the successful decoding of the Soviet military code "Revolution", see [25, p. 70-76].

[6]An English translation in [20, p. 112-118].

of a professional society. It was his deep conviction but one can see in it also an experience of partitions, when organizational forms exposed the risk of disclosure of forbidden activities with grave consequences for participants. Whatever the reason, it was only after his death in 1920 and much debate that those shadows of the past became overridden and the Warsaw section was founded. With the five highly autonomous sections the PMS actually was a federation of sections and the role of governing body consisted in coordinating local activities, representing Polish mathematics as a whole, both abroad and interim, and some other activities on a country scale, mostly editorial ones. An underestimated and very important role of the PMS consisted in the integration of Polish mathematical community, previously divided by boundaries and living under different legal systems. Being closely connected with the life of Polish mathematical community, the history of PMS is largely a history of Polish mathematics (in the last century, of course).

**4. Scientific activity.** The very first statute of PMS stated that the Society is aimed at the "cultivation of pure and applied mathematics by holding scientific meetings with lectures". In consequence, meetings in sections consisted in presenting research communications, vivid discussions during meetings and afterwards, and stating open problems. As Steinhaus used to say, "every meeting of mathematicians must have a scientific part in it". The meetings got together all mathematicians active in the city, often with a participation of invited guests from other sections or from abroad, debates were vivid and often continued in a café. The most famous one in this respect became the "Scottish Café" in Lvov (v. [32], [27]). A testimony of meetings in the Scottish Café was "The Scottish Book", in which those who attended were putting down their problems and all interested could add their comments or solutions As Gian-Carlo Rota put it "For those of us who grew up in the golden age of functional analysis, the Scottish Book was and will remain the romantic mainspring of our mathematics. (...) That spirit of modern mathematics is foreshadowed in the striking problems of the Scottish Book." (v. [23]).

In view of rare research seminars in those times, meetings in sections of PMS were a desired opportunity chance to see each other regularly, to exchange views and discuss some matters, and to get an information of what is going on, with a chance to become involved. No wonder then that those meetings have enjoyed a great popularity and thus have become a driving force for the rapid development of Polish mathematics in the

interwar period.[7]

**5. Editorial activity.** In the first amendment to the statutes of PMS in 1921 the aim of the Society was extended to comprise also "editing a periodical journal and maintaining communication with the mathematical scientific movement". In consequence, in the same year 1921 there appeared the first volume of "Rozprawy PTM". The journal was published in Polish but it was not continued since in the next year it was replaced by the journal "Annales de la Société Polonaise des Mathématiques" (below "ASPM"), which appeared yearly and was published in French. Its editor-in-chief was Stanisław Zaremba. During the interwar period "ASPM" were the only organ of PMS. They published original papers and reports concerning the current activity of the whole Society and its sections, including lists of members and accounts of meetings. Original papers were mainly concerned with mathematical analysis, thus areas closed to personal interests of Zaremba and rather far from those in Warsaw and Lvov. Nevertheless, the journal caught attention and attracted good papers also from abroad. From reports on current activity of PMS of particular importance are those on meetings in sections, because they provided not only the person and the title of his/her communication in each meting, but quite often also a summary. Many of communications were later extended and published as separate papers, but some were not and such a summary remains now the only trace of it. Sometimes an important one.

Of course, members of PMS published not only in "ASPM" and "ASPM" was not the most important Polish mathematical journal, but it enjoyed a solid reputation and its part in the contemporaneous activity of PMS is now of an invaluable historical meaning. A vivid editorial center was then Warsaw, where then-leading Polish mathematical journals *Fundamenta Mathematicae* (since 1920) and *Acta Arithmetica* (since 1935) appeared, along with the book series "Monografie Matematyczne" (since 1932). Another leading journal, *Studia Mathematica*, appeared in Lvov since 1929.

**6. IMU and ICM.** International Congresses of Mathematicians

[7] Accounts of those meetings were published in *Annales de la Société Polonaise des Mathématiques*. They cover the periods: Warsaw 1923-1938 (excepting 1936), Lvov 1927-1938, Cracow 1929-1938, Poznań 1929-1938, Vilnius 1931–1938. In numbers, 446 scientific communications were then delivered in the Warsaw section, 373 in the Lvov section, 184 in the Cracow section, 76 in the Poznań section, and 64 in the Vilnius section. In total, 1143 scientific communications are recorded, but their actual number was greater (not all years were covered).

have been organized since 1897 (cf [1]). Each such a Congress up to World War I was attended by Samuel Dickstein, who published later an account on it in his *Wiadomości Matematyczne*.[8] However, "political correctness" demanded to consider him as a Russian (because of passport and in spite of his protests) and similarily other Polish participants as Russians, Germans or Austrians, depending on the type of passport they had.

After World War I there was an effort to renew an international scientific cooperation by putting it on a new solid basis. In relation to the League of Nations founded then, the International Research Council (Conseil International de Recherches), for short IRC, was established, which was a kind of superstructure over specific subject unions, consecutively founded afterwards. Among them was IMU (International Mathematical Union), officially founded during ICM'20 held in Strasbourg (v. [21]). In that way science, in particular mathematics, became connected with the postwar political system. It was a weakness of IRC, because the document founding the League condemned Germany as the cause of war and all subsequent disasters, thus preventing her and her satellites from joining the new system. IMU has followed that unfriendly trend, but the next ICM'24 in Toronto has decided (with the support of Polish delegation) that the discrimination of Germany in the area of scientific cooperation is unfair and thus opened the way to her membership of IMU. However, it was not enough. The stumbling block was the condemning document of the League, still in force. In 1931 IRC was replaced by the politically independent International Council of Scientific Unions, in short ICSU (it still exists today), but it also didn't help. Tensions continued. In such a situation the General Assembly of IMU, held during ICM'32 in Zurich, decided (this time against the view of Polish delegation) to dissolve IMU, with the intention to replace it by a new politically independent union. Thus the old IMU ceased to exist and it was revived only after World War II (see below).

Luckily, ICMs were independent from IMU and they were organized each fourth year (Strasbourg 1920, Toronto 1924, Bologna 1928, Zurich 1932, Oslo 1936), all (with the only exception of Strasbourg) with the Polish attendance. Official delegations were nominated by PMS. In Oslo Banach had a plenary lecture.

**7. Congresses of Polish Mathematicians.** Congresses of Polish Mathematicians were an important integrating factor of the Polish

[8]It was the first Polish purely mathematical journal, founded by Dickstein in 1897 and edited by him at his own expense until 1939.

mathematical community. The first such a Congress was organized in Lvov in 1927 by the Lvov section of PMS[9]. There were two hundred participants in it and one hundred communications, presenting some achievements. In addition, resolutions were passed: a request to found a central mathematical library, a demand to reform teaching mathematics in schools, and the claim to organize Polish mathematical congresses every fourth year and Slavonic mathematical congresses every second year.

Following the I Congress in Lvov, the II Congress of Polish Mathematicians, organized by the Vilnius section of PMS, took place in 1931 in Vilnius (cf. [4, p. 132–151]).

The III Congress was to take place in 1935 but due to the crisis in that year (see section 9) it was delayed for two years. Organized by the Warsaw section of PMS, it convened in 1937 in Warsaw (v. [31, p. 182–240]). All three congresses enjoyed great popularity and were successful. Among important events of the III Congress there were a jubilee of 65 years of a scientific, pedagogical and public activity of Samuel Dickstein, and an approving voting for a memorandum prepared by Mathematical Committee (see section 10). The memorandum was intended to mark out the strategy for the next generation. Its main points were:

1. To continue research in the areas in which Polish mathematics has already distinguished itself in order to maintain high position of the Polish mathematical school.
2. To develop also other areas of pure mathematics, in particular algebra and some geometries, and to raise up the level of applied and practical mathematics.
3. To support endeavours for the establishment of a central Institute of Mathematics, devoted exclusively to research.

Soon after the Congress the outbreak of World War II halted that development but its memory persisted and efforts were renewed after 1945 (see section 12 below).

**8. Some other international meetings.** Following the resolution passed during the I Congress of Polish Mathematicians (see section 7), the First Congress of Mathematicians from Slavonic Countries was organized by PMS in 1929 in two cities, Poznań and Warsaw (v. [22]). It also

[9]Księga Pamiątkowa Pierwszego Polskiego Zjazdu Matematycznego, Lwów 7–10 IX 1927 [The Memorial Book of the First Polish Mathematical Congress, Lwów 7–10 IX 1927], An Annex to "Annales de la Société Polonaise des Mathématiques", Kraków 1929 [reprint: 2009].

was a success, although the Soviet Academy objected to the "national principle" and in consequence Soviet mathematicians didn't come. In spite of that boycott, there were 140 participants from Poland and 40 from abroad, and it was decided that the next such a Congress will be organized in 1934 in Prague. And so it was[10]; and it also was a success but because of some political tensions that congress had less attendees than expected. And the third such a congress, which had to take place in Belgrade in 1939, didn't materialize because of World War II.

Polish mathematicians were also active participants in some other events abroad. As a rule, attendants were nominated by PMS and the Society helped to secure necessary documents and funds.

Here are some examples of participation of Polish mathematicians in international events:

- Congress of Soviet Mathematicians (Kharkov, 1930);
- II Congress of Romanian Mathematicians (Cluj, 1932);
- International Conference on Differential Geometry (Moscow, 1934);
- International Conference on Topology (Moscow, 1935);
- Conference on Probability Theory (Geneve, 1938).

**9. Crisis 1935.** Since its foundation, the seat of the governing body of PSM was Cracow. However, early in 1935 Kuratowski wrote a letter to that body demanding its transfer to Warsaw. The demand was rational: Warsaw was by far the strongest mathematical centre (one example: in the interwar period Warsaw granted 44 Ph.D. degrees in mathematics, while all other university cities together granted only 36) and Warsaw was the capital of the country, thus close to the government and other deciding centres. The letter has not been kept and we don't know whether it was preceded or accompanied by some talks but we do know that it shocked the Cracow community. According to the minutes of February 16, the letter was to reveal "a dazzling discrepancy with commonly accepted principles of coexisting members of any scientific association". A crisis burst forth, a threat of disintegration came into sight. Mazurkiewicz was then the president of PMS, but being from Warsaw he was not credible to Cracow, and so the role of an arbiter was taken up by Banach. An unquestionable authority as a mathematician, he was close to all sides: born in Cracow, professor in Lvov, close to the Warsaw school. Then vicepresident of PMS, he turned to be a clever negotiator. In consequence, the transfer was done, but Zaremba became

[10] *Zprávy o druhém sjezdu matematiků zemi slovanských*, Praha 1935.

the president of PMS and all other members of the governing body in the term 1936–1937 were from Cracow, and the journal "Annales ..." remained in Cracow under the editorship of Zaremba.

In that way the integrity of PMS was preserved, but the events delayed organization of the III Congress of Polish Mathematicians until 1937.

**10. State initiative: Mathematical Committee.** With the consolidation of the state also science became an object of its closer interest. In 1936 the Council of Exact and Applied Sciences (in Polish: Rada Nauk Ścisłych i Stosowanych) was appointed, with the aim defined by the governement as follows: "to do everything that depends on scientists and researchers, in helping the State in its work to increase its defensive forces and to strengthen its power". The Council acted through scientific committees, one for each field of science, with the wide aims including evaluation of the state of the field, supervision and guidance of cooperation between different country centers, editorial matters, bibliographical works etc.

The following persons were called to Mathematical Committee: Wacław Sierpiński as chairman, Stefan Banach as deputy chairman, Stefan Mazurkiewicz, Witold Pogorzelski, Stanisław Zaremba as members, Antoni Zygmund as a representative of PMS, Tadeusz Banachiewicz as a representative of the Academy of Technical Sciences, Kazimierz Kuratowski as secretary. All members of the Committee were eminent mathematicians and all were members of PMS, but the high authority of PMS required it to have a separate representative.

The Committee started its work by preparing a memorandum on the state and needs of mathematics in Poland. The memorandum was presented to the III Congress of Polish Mathematicians as the highest authority. And only after voting by the Congress (see section 7) was it recognized as the stand of the Polish mathematical community.

Establishment of the Mathematical Committee marked shifting of the deciding center of the Polish mathematical community from PMS to a body connected with the government. However, PMS kept its high authority until the end of the interwar period.

**11. Catastrophe of the World War II.** In 1938 PMS counted 162 members but the catastrophe of World War II, which crashed down upon Poland in 1939 and raged until 1945, cut that number by half and the total population of the country by 1/3, from 36 millions in 1939 to 23 millions in 1946. In the years 1939-1941 Poland was divided between

Soviet Union and Germany, suffering on both sides of the border, and from 1941 till the end of the war the whole country suffered under German occupation.

Some mathematicians were mobilized to the Polish army in 1939 and perished in battles (e.g., Stefan Kaczmarz). Four members of PMS fell into Soviet captivity and in the spring of 1940 all were murdered (among them was Józef Marcinkiewicz, whose talent was comparable to that of Banach), among victims of Sonderaktion Krakau taken in 1939 by Gestapo against Cracow professors there were 9 members of PMS and one of them (Antoni Hoborski) died later in Konzentrationslager Dachau. Some fell into Soviet Gulags or Soviet prisons and perished there (e.g., Stefan Kempisty). Germans entering Lvov in July 1941 shot there a few dozens of Lvov professors, including 5 members of PMS (Kazimierz Bartel, Antoni Łomnicki, Stanisław Ruziewicz, Włodzimierz Stożek, Kaspar Weigel), Holocaust engulfed further dozens (Herman Auerbach, Meier Eidelheit, Adolf Lindenbaum, Stanisław Saks, Juliusz Schauder, Józef Schreier, Ludwik Sternbach, and many others). Some died later in other German Konzentrationslagers (Stanisław Kierst, Aleksander Rajchman, and others), some perished without a trace and the circumstances of their death remain unknown (Mojżesz Jacob, Józef Pepis, and others). Personal losses during the war were thus enormous but one should add also indirect victims of the war for some died from exhaustion soon after liberation (Stefan Banach, Stefan Mazurkiewicz, and some others) (v. [9]).

Material losses were also enormous: ruined buildings, burnt libraries. plundered archives, destroyed editorial houses etc. In addition to all that, Poland lost altogether two university cities (Lvov, Vilnius), captured by Soviets and incorporated into Soviet Union. There remained ruined Warsaw and relatively little touched universities in Cracow and Poznań.

Although during the war all five prewar universities conducted some underground teaching and promoted some research, PMS had little chance to act. Formally, its president was Stefan Banach, elected in 1939, but in the war conditions he was rather passive in that role and died in August 1945. In spite of all that, vivid and warm memories of prewar activities of PMS were kept.

**12. Pioneer spirit and revival after 1945.** Situation of Polish mathematics after World War II was dramatic: the number of active mathematicians was cut by more than half, the country was in ruin and fell under the yoke of Soviet Union, and the whole future was completely

uncertain. New borders, established by Potsdam Peace Conference in August 1945, cut off the eastern part of the country with the universities in Lvov and Vilnius, conceding it to the Soviet Union. In the form of a compensation the Conference gave to Poland some former German territories in the west and north with the university city Breslau/Wrocław. The Conference decided also on the relocation of Germans still living there to the west and their replacement by Poles from the east; in total, more than 10 million people were set on move.

Since Banach, president of PMS, died in August 1945 and vice-president Mazurkiewicz died in June 1945, even before Banach, according to the statutes of PMS the role of a temporary president was taken by Kuratowski, then chairman of the Warsaw section of PMS. He was very active and a year later (in December 1946, during the first post-war Congress of Polish Mathematicians) he was formally elected president of PMS and remained in the office until 1952.

In spite of great commitment of all survivors, due to unfavourable postwar conditions the revival of PMS and of the whole Polish mathematics was a rather slow process, which took several years to come.

A moving sign that Polish mathematics has not been totally destroyed were the first postwar issues of "ASPM" and "Fundamenta Mathematicae". They appeared in December 1945 with the first (necessarily incomplete) lists of personal losses and were commonly received as a manifesto that Polish mathematics survived and resolved to continue.

In that pioneering period the role of PMS was inestimable. After reviving its structures (sections in Lvov and Vilnius were lost, but soon there appeared new ones in Lublin, Wrocław, Łódź, and Toruń, founded at the new universities established in those cities, and later further ones), it started soon a research work at regular sessions in all those sections, old and new alike. Prevented from doing research during the war and hungering for it, mathematicians eagerly attended those sessions and begun obtaining new results.

To discuss some common problems of the surviving community, but also to present new areas of research, some achievements and related questions - PMS has begun to organize each year, starting with 1946, Congresses of Polish Mathematicians. IV Congress was held in Wrocław in December 1946. With only 48 participants, including 3 guests from abroad, it was a manifestation of desire to continue the previous activity and an opportunity to celebrate all those who lost their life because of war, with a particular attention to Banach. V Congress (Cracow, 1947)

commemorated Zaremba (who died 1942 in Cracow)[11]. VI Congress (Warsaw, 1948) was combined with the jubilee of 40 years of Sierpiński's university professorship.[12] The number of participants grew (in Warsaw over 100) but still it was less than before World War II. Particularly interesting was VII Congress, held in Prague in 1949. It was a joint congress with the III Congress of Czechoslovak Mathematicians and there was a common desire to continue cooperation with great hopes for the future.[13]

Publications were another important field. PMS very early established an editorial unit, organized and directed by Bronisław Knaster until 1950. The unit took care of prewar journals (*Annales de la Société Polonaise de Mathématique*, *Fundamenta Mathematicae*, *Studia Mathematica*) and new ones (*Colloquium Mathematicum*), and revived the distinguished book series "Monografie Matematyczne". To assure proper editorial work, Knaster also organized a scientific printing house.[14]

Polish mathematics had enjoyed great sympathy in the world, which found expression both in many book gifts enriching devastated libraries, and in frequent visits of foreign mathematicians. Besides short occasional visits mathematicians from abroad attended all Congresses of Polish Mathematicians held 1946–1949 and Gustave Choquet spent here the whole year (v. [14]).

In those pioneering times there was a unique atmosphere characterized by great enthusiasm and devotion, intensive organizational work and equally intensive teaching, with much hope into future. However, dark times were coming. One of the first victims was international cooperation. In the West an idea of revival of IMU (section 6) appeared and so an Organizational Committee was established, consisting of 7 persons including Kuratowski, then President of PMS, as a representative of Poland. Soviet Union, being then hostile to the West ("Cold War" has just begun), decided to boycott the first post-war ICM in Cambridge, Mass., in 1950 as well as preparations to renew IMU. In consequence,

[11]Sprawozdanie z V Zjazdu Matematyków Polskich w Krakowie w dniach 29–31 maja 1947 roku oraz akademii poświęconej uczczeniu pamięci profesora Stanisława Zaremby [Proceedings of the Vth Congress of Polish Mathematiciancs held in Cracow on 29–31 May 1947], „Dodatek do Rocznika PTM" 21, Kraków 1950.

[12]Jubileusz 40-lecia działalności na katedrze uniwersyteckiej profesora Wacława Sierpińskiego [A jubilee of the 40-years activity on a university chair of Professor Wacław Sierpiński], „Dodatek do Rocznika PTM" 22, Kraków 1950.

[13]Zpravy o společném 3. Sjezdu Matematiků Československych a 7.Sjezdu Matematiků Polskych, Praha 1950.

[14]As an expert in the area, B. Knaster had a talk in Prague during Polish-Czechoslovak Congress (v. [17]).

Kuratowski was compelled to give in. The IMU was officially founded in 1950 in the absence of Poland and of other countries of the Soviet bloc.

**13. Communist reforms and marginalization of PMS.** In 1948 Polish government founded in Warsaw the State Institute of Mathematics (in Polish: Państwowy Instytut Matematyczny). It looked like realization of a prewar dream, but in reality the Institute was intended to assure state control over Polish mathematics. However, main posts in the Institute were taken by mathematicians of high scientific and moral authority (director became Kuratowski) and so the damage in mathematics was not as big as in other fields.

The year 1949 saw some radical changes which greatly influenced mathematics. In Czechoslovakia a communist coup d'etat happened, which cut off cooperation between mathematicians from Poland and Czechoslovakia. And in all countries of the Soviet bloc reforms proceeded with the aim to secure state omnipotence also in the area of science and higher education. So after prolonged preparations the I Congress of Polish Science was organized in Warsaw, held in grand style in 1951. The Congress decided upon establishing the Polish Academy of Sciences (below PAS), which was to become "a supreme organ of the state authority in the sphere of science" (until 1990 presidents of PAS were members of the Council of Ministers, thus asserting execution of government orders). To secure that position of the "organ of state authority" all so far independent scientific institutions, including Polish Academy of Arts and Sciences in Cracow, Warsaw Scientific Society, Mianowski Bank etc., were closed down and their property conveyed to PAS. All scientific publications became subjected to double control: official censorship (not so painful with respect to mathematics) and state editorial monopoly with the State Publishing House at the top.

PMS was saved but its activity was much confined: representation of Polish mathematics was transferred to PAS (State Institute of Mathematics became Institute of Mathematics of PAS), all publications of PMS, including "Annales de la Société Polonaise de Mathématique", were closed down, organization of congresses was prohibited. The only admissible activities were scientific meetings in sections.

Here are some illustrations of the atmosphere of those times. Ministry of Higher Education and Science ordered Kuratowski in 1951 to resign as a member of the Temporary Committee of IMU. Editorial activity of PMS was taken over by the State Publishing House and so the editorial unit in PMS was duly liquidated. In 1953 there was or-

ganized VIII Congress of Polish Mathematicians in Warsaw but the PMS was drawn aside (organizer was PAS). In the "Month of Polish-Soviet Friendship" in 1954 all sections of PMS were obliged to organize solemn meetings devoted to cover "achievements of Soviet mathematics". A request of French Mathematical Society in 1955 to obtain the list of members of PMS was turned in for permission to PAS.

One of painful consequences of those reforms was marginalization of PMS. Although the Society did (and does) its best to serve mathematical community and even, in more favourable times, also to regain some earlier taken areas, the sad truth is that in spite of much effort (see also below) the Society has never fully recovered from that blow. Nevertheless, its services were and are not to be overestimated.

**14. Slow and partial revival: competitions and prizes.** After taking away from PMS some important prerogatives, there remained regular meetings in sections with research communications and for many years it was the main activity area of PMS[15]. However, with the extensive growth of mathematics and rising number of its specialities, research began to concentrate in special seminars, while general meetings were losing their attractive value. They were becoming less regular and changing their character from research to general surveys, which retained some interest for wider public. In total, in the years 1949–1975 there were 5598 research communications, but their number was steadily falling. In the period 1976–2003, roughly of the same length as the former, their number was 3860. And nowadays they hardly exist. The former main area of activity of PMS became desert, but new areas appeared.

The search by PMS for new areas began early. Quite natural was interest in teaching and popularization of mathematics. Neglected in the interwar period, now it consumed much energy and the main vehicle to act in that field were special commissions of PMS. Elected for 2-year terms they often changed their names and chiefs, but usually were very active and did their best to influence members, teachers, ministry of education etc., sometimes with success.

Another new area of activity were competitions. The first ones were annual olympiads for schoolchildren. Initiated by PMS in 1949, sup-

[15]Reports from those meetings were a continuation of prewar times, but after closing ASPM (which reported meetings until 1951) reports were resumed by new journals *Colloquium Mathematicum*, *Prace Matematyczne*, *Wiadomości Matematyczne*. However, around 1970 the reports vanished. For details see R. Duda, Polskie Towarzystwo ..., op. cit.

ported by the ministry of education, they turned out to be a great success and developed extraordinarily Today many other school subjects enjoy analogous competitions while mathematical olympiads are organized also on an international scale (initiated by PMS and for a long time connected with it, olympiads now are autonomous). Apart from olympiads, PMS has been organizing also other competitions, e.g. for the best student paper (named after Marcinkiewicz, granted by Toruń section since 1957), for the best student paper in probability theory and applications (Wrocław section, granted since 1957), for the best student paper in didactics of mathematics (named after Krygowska), for the best Ph.D. in mathematics etc.

Related to competitions are prizes. Before the war PMS granted no scientific awards, but already the first Polish Mathematical Congress after World War II (Wrocław, 1946) established Great Prizes named after Banach, Mazurkiewicz, and Zaremba. There were three of them, but later the number of patrons increased, including also Sierpiński (1971), Dickstein (1978), Steinhaus (1979), Ważewski (1980), Pogorzelski (1985), Janiszewski (1987). With the intention not to multiply prizes and thus to avoid their inflation, PMS decided to divide all those names into two groups, and to establish only two annual Great Prizes, one in mathematics itself (Banach, Janiszewski, Mazurkiewicz, Sierpiński, Ważewski, Zaremba) and another for cultivation of mathematical culture and applications (Dickstein, Pogorzelski, Steinhaus), selecting a proper name in each case. Besides Great Prizes there is also a prize for young mathematicians (granted since 1956).

Apart from competitions and prizes, PMS is also involved in granting some medals, e.g. Warsaw section of PMS jointly with the Faculty of Mathematics, Computer Science and Mechanics of the Warsaw University grants each year the Sierpiński Medal.

In 1962 PMS began to grant honorary membership both to native and foreign mathematicians.

**15. Editorial work.** "ASPM" were lost in 1952, but on the initiative of Cracow mathematicians a new journal was founded there in 1955. Its Latin title *Annales Polonici Mathematici* was very close to the lost one, the editorial board remained the same, and only the publisher was now the Institute of Mathematics of PAS, and not PMS. Actually, however, the new journal was a clever continuation of the closed "Annales".

In PMS the editorial activity was always highly valued and so the Society looked for an opportunity to resume it. The chance came in

1955 and in that year there appeared the first volumes of two series of new "Annals of PMS". Series I was called "Prace Matematyczne" with reference to "Prace Matematyczno-Fizyczne", published 1888–1952 and then closed. In 1969 the series changed its name to "Commentationes Mathematicae" and since that time the papers appear only in English. Series II was called *Wiadomości Matematyczne* [Mathematical News], with reference to the journal under that name which was founded and edited by Dickstein in 1897–1939. The series appears in Polish and publishes both information on the current activity of PMS and scientific essays.

Getting somewhat ahead of time, in the years to come there appeared next four series of "Annals of PMS".

Series III appeared in 1973 as "Matematyka Stosowana" and covered applications of mathematics. After 1999 it changed the name to the Latin "Mathematica Applicanda" and extended its profile by adding promotion of mathematics in the common public.

Series IV, published since 1977 under the name "Fundamenta Informaticae", was initiated by Helena Rasiowa, who became its first editor. It covers "mathematical foundations of computer science" and publishes exclusively in English.

Series V, published since 1982 under the name "Dydaktyka Matematyki", appeared in recognition of merits of Zofia Krygowska, an eminent didactician of mathematics, who became its first editor. Later it changed the name to Latin "Didactica Mathematicae" and publishes also in English.

Series VI, published since 2007 under the name "Antiquitates Mathematicae", is devoted to the history of mathematics. It began as a sequel to the proceedings of Schools of History of Mathematics, organized since 1987 almost every year by the Commission on History of Mathematics of PMS, but is an independent journal now (the Commission ceased to exist).

**16. Resistance and revitalization.** With the death of Stalin in 1953 a slow thaw began and the general situation started relaxing a bit.

PMS never agreed to a passive role imposed upon it and often tried to loosen the grip. Within the new system the statute of PSM had to be approved by the "register authority". It happened that that authority demanded an inclusion of friendly courts (opening the way to impeachment) and a change of traditional practice of enrolling members from abroad (there was a reciprocity agreement between AMS and PMS according to which any member of one of those societies was automat-

ically the member of the other; the authority demanded an additional procedure of admission). PMS opposed and won in both cases.

Within the new system it might seem that PMS was subordinated to PAS. When PAS demanded some reports and subordination in budget matters. PMS opposed and send to PAS a memorandum explaining that there were no legal foundations to such demands. And in this case PMS also won.

After long break and bypassing a ban, PMS dared to organize IX Congress of Polish Mathematicians which took place in 1969 in Cracow on the occasion of the jubilee of 50 years since founding the Society. With 352 attendees it was a great success[16], thus opening the way to organization of next ones.

One of underestimated features of activity of PMS during hard communist times was the democratic style of its procedures, particularly seen in discussing new and original initiatives, accepting resolutions or electing members of governing bodies. In the total absence of democracy around, PMS was one of a few islands of some freedom and democracy.

**17. Towards mass organization.** X Congress of Polish Mathematicians, organized by PMS in 1970 in Katowice, brought a major change.

It was a mixture of circumstances. State authorities privileged mass organizations, making allowances dependent on the number of their members. Scientific activity in sections of PMS was decreasing and PMS was looking for new areas of activity. The number of mathematicians active in industry and economy was steadily rising. In such circumstances an idea arose to open up PMS to the whole community of professional mathematicians working not only in pure science but also teaching mathematics in schools or applying mathematics in economy or industry. There were different plans, but eventually the idea to incorporate all interested directly into PMS and thus to turn PMS into a mass society, won. It was believed that researchers would become closer to practice and practitioners closer to research, with clear profits on both sides. The relevant resolution was passed during X Congress, which was one of the biggest so far (547 attendants, of which around 200 decided to join the Society). Also important were accompanying decisions to organize at PMS a special consulting unit informing all interested about achievements in applications of mathematics, to start special courses for practitioners willing to expand their knowledge, to found new series of

[16]The volume *Wiadomości Matematyczne* 12.2 (1971) contains several articles on it.

"Annals of PMS" devoted to applications of mathematics (it was series III, see section 15 above), and to present propositions concerning some changes in curricula.

The beginnings were promising. The consulting unit had a good start and special courses enjoyed really great popularity. They were organized twice a year in Warsaw and sometimes also in other cities. Up to 1993 the courses had 29 thousand participants in Warsaw and 5 thousand out of it [17]. The number of members of PMS rose to 1546 in 1973 and still more, 2215 in 1979. III series of Annals started in 1973 with some success. However, some years later there came a decline. Now, nearly half a century after X Congress, one may say that hopes which accompanied those changes didn't materialize. PMS lost the character of a scientific society and did not find a proper formula for a new non-scientific membership. In such a situation PMS lost attractiveness for active mathematicians (some resigned, new ones are not much interested, many remain outside) while practitioners did not find a place for themselves, many resigned and new ones didn't come. The unit and courses ceased to exist.

A comparison between American Mathematical Society (below AMS) and PMS might be of some interest. AMS was founded in 1888 with the aim to support mathematical research and facilitate communication between mathematicians, with the intention to cultivate friendship between Americans interested in mathematics. In the last decade of XX c. those aims were extended to elevating the significance of mathematical profession and increasing the role of mathematics in everyday life. Thus from the very beginning AMS was broadly oriented and it still enjoys great popularity and prestige. The history of PMS is different. Founded thirty years after AMS, it played an inestimable role in the interwar period but confronted with the new postwar reality it still tackles the problem of its mission. And even in proportion to general population AMS is much bigger than PMS.

**18. Martial law and ICM.** In recognition of achievements of Polish mathematics and in an atmosphere of a general sympathy to it, Poland was charged with the organization of ICM in 1982. Preparations started. However, wishing to stop growing liberty movements within the Polish community and to crash "Solidarity" as their emanation, the authorities introduced the martial law on December 13, 1981. Civil liberties were suspended, thousands of people (including this author)

[17] See "Biuletyn Informacyjny PTM", nr 2 / 1993.

were interned, and many organizations, including PMS, were suspended as well. It was clear that the Congress, planned in 1982 in Warsaw, could not take place.

Feverish consultations began, formal and informal, in the country and abroad. What to do? To move Congress to another place or only delay, but keep in Warsaw? France and many foreign mathematicians were against ICM in Warsaw and Belgium offered a new seat. In the autumn of 1982 more than 80% American mathematicians were still rejecting an idea to come to Poland (main reasons: Congress would be considered as a support of the military regime, participation was against personal convictions), while the remaining 20% considered a participation combined with manifestations. Military authorities were favourable to the idea of organizing Congress in Warsaw, although necessarily delayed for a year, and most Polish mathematicians also wanted to have it. In such a situation IMU put forward conditions: release all interned and imprisoned mathematicians, release suspended PMS, allow facilitations for all willing to come to Congress. The regime accepted conditions and so, with the great personal involvement of Czesław Olech as a chairman of Organizing Committee, the decision passed that the congress would be held in Warsaw in August 1983.

And so it was. Mathematicians were released, including even those under a warrant, PMS was released, facilitations for participants introduced. However, the mathematical community remained divided and many mathematicians didn't come[18]. And those who came, before delivering their lectures they dedicated them to individual Polish mathematicians who suffered from the regime[19].

The Congress ICM'83 eventually took place. It was a success but not a complete one and the feeling remained unsatisfactory (v. [1]).

**19. Emigration.** Decisions to leave the country and start a new life abroad were taken not only for material reasons but quite often people were looking after a better atmosphere for a personal development and sometimes even because they felt threatened in their physical existence. Emigration was a regular ingredient of the life in Poland throughout XIX and XX centuries (cf. [11]).

In the interwar period the main reasons compelling Polish mathematicians to emigrate were inadequate number of academic positions, the spectre of approaching war, and a rising wave of anti-Semitism.

[18]See [2]. Out of 16 invited plenary speakers 3 did not come, out of 128 invited sectional speakers 31 did not come , that is, 18% and 24%, respectively.

[19]This author was honored by Hao Wang.

In consequence, a few dozens of mathematicians left the country in that time, including such eminent figures as Samuel Eilenberg, Witold Hurewicz, Mark Kac, Jerzy Spława-Neyman, Alfred Tarski, Stanisław Ulam. All mentioned were members of PMS as were most of the remaining ones. Subsequent events showed that if those mentioned had not left, most of them would probably have perished in the Holocaust. Instead, they succeeded in making substantial contributions to the world mathematics.

After World War II Poland became a subservient member of the Soviet bloc, which meant several restrictions and even personal threats. In those conditions many Poles were willing to leave but it was a difficult and dangerous undertaking, since already a request to obtain passport was attracting a hostile attention from the authorities. Thus there were only two ways to leave safely: if one had a Jewish or German connection, then he/she could pledge a "family reunification", or if one was a member of a delegation, one could go and then refuse to return. The so-called "non-returners" were comparatively frequent but for their personal safety they had to pay a price: as a rule, family members were treated as hostages and were not allowed to leave the country to join the offender. Separation could last several years.

One way or another, in the first two decades of postwar Poland some 20 mathematicians (all members of PMS) left the country, including Witold Bogdanowicz, Stefan Drobot, Andrzej Ehrenfeucht, Stanisław Knapowski, Stanisław Mrówka, Jan Mycielski, Józef Wloka – all to become professors.

In 1968 authorities started the shameful anti-Zionist campaign, which was accompanied by a pressure, sometimes quite brutal, exerted upon people of Jewish origin to leave the country. Thousands left, among them around 20 young mathematicians, including Michał Jaegermann together with his wife Nicole Tomczak-Jaegermann, Krystyna and Włodzimierz Kuperberg (a married couple) and others.

After that campaign there was already a steady outflow of mathematicians, tempered only by severe passport policy. Among those who left then there were Jacek Bochnak, Andrzej Granas, Teodor Przymusiński and some others.

Another turn came in 1981 when communist authorities proclaimed Martial Law with the intention to crash the "Solidarity" movement and to introduce economic reforms. Neither intention was fulfilled. Although Martial Law was suspended in 1983, and ICM in Warsaw, originally planned for 1982, took place with a delay of one year (section 17), the

failure of reforms and general disillusionment have still raised emigration tendencies. For authorities it was an opportunity to get rid of people making "troubles". Consequently, taking the occasion and relying upon hospitality of many countries sympathetic to the "Solidarity", there was a high wave of young mathematicians leaving the country for good. That wave was more devastating than ever before. In those years the following left the country, among many others: Henryk Iwaniec, Tadeusz Iwaniec, Maciej Klimek, Lech Maligranda, Józef Przytycki, Jan Rosiński, Anna Sierpińska, Mieczysław Warmus, Wojbor Woyczyński.

Data are incomplete but one may say that at least 270 mathematicians emigrated from Poland in the years 1919-1990. Among those emigrating after 1947 there were 10 titular professors, 36 with a habilitation, 134 with a Ph.D., and 46 with M.A. All these figures can be supported by specific names (see [11]).Most came from Warsaw (around 50%), Wrocław (20%) and Cracow (8%), and those centres suffered the most. And most (but less than a half) went to United States, the other "popular" countries being Canada, Germany, and France. Many successfully continued their career but some did not.

**20. Return to the free world.** The year 1989 radically changed the political situation in Poland and, in consequence, in the whole Soviet bloc. In the partially free elections in 1989 Poles voted against communists and soon thereafter a democratic government was installed, the country became a member of NATO, and after necessary adjustments also a member of the European Union. After Polish elections the process of a general communist decline started: the Berlin wall collapsed and Germany became united, there was the Velvet Revolution in Czechoslovakia and analogous events in other countries, Soviet army retreated from Europe, and eventually the Soviet Union itself dissolved and Soviet republics, including Ukraine and Baltic states, gained freedom.

In this new situation one can hardly speak of emigration: with a passport at home, people are freely moving all over free world. Due also to internet, contacts and cooperation are easy and used eagerly. The world shrank and mathematical community became united as never before.

PMS maintains its activity, continuing its work in all areas as before: it offers prizes and other distinctions, continues all six series of its "Annals", each year organizes all-country gatherings (since 2006 called "forum"), relying upon commissions cooperating in the field of education, etc. It does organize national congresses (XIII Congress, Cracow 1989; XIV Congress, Warsaw 1994; XV Congress, Cracow 1999; XVI Congress, Wrocław 2005) and, starting in 2007, it does organize,

and with great success, congresses common with other mathematical societies: Joint Polish-American Congress (with American Mathematical Society, 2007), Joint Polish-Israeli Congress (2012), Joint Polish-German Congress (jointly with Deutsche Mathematiker-Vereinigung, 2014), Joint Polish-Italian Congress (2018).

In 1990 European Mathematical Society was founded, with the active participation of PMS. Its vice-president was Andrzej Pelczar and one of its congresses (they are organized in the mid-term between ICMs) took place in Poland (Cracow, 2012).

**21. Centenary.** During one hundred years of its existence PMS was and remains the only institution firmly and durably encompassing the whole mathematical community in the country. And even in the most unfavourable conditions it was initiating forms of activity which supported the community and served its integrity.

The golden years of PMS were the first twenty years of its existence, the interwar period 1919-1939. Encompassing all five university cities, it enjoyed then the highest authority, being the main forum of research activity, organizing national congresses, and representing Polish mathematics on the international forum.

After the tragedy of World War II, it was PMS that started rebuilding of the Polish mathematical community within new borders and in new conditions. With pioneering energy it initiated research in its sections, organized four congresses of mathematicians each year 1946-1949 (the last one jointly with Czechoslovak Mathematical Society in Prague), renewed publishing, and acted internationally.

Communist reform halted that development. PMS luckily survived but became heavily restricted, loosing crucial prerogatives. The situation compelled PMS to look for new forms of activity, which it found in extending its interest to school education, organizing competitions, awarding prizes and other distinctions, etc. And, after some relaxation in the communist policy, in returning to editorial matters and organizing national gatherings.

Hard was the last decade of communist regime, with the temporary suspension of PMS in the years 1981-1983. Nevertheless, PMS has survived also that trial and played a role in the organization of ICM'83 in Warsaw.

Throughout all that time Polish mathematics, and PMS in particular, heavily suffered from emigration.

The year 1989 became another milestone in the history of PMS, after that year being opened to and thus being confronted with entirely new

conditions of the free world. Three decades later one may say that PMS passed also this exam, continuing what could be continued and entering with great energy into new fields, of which particularly important is international cooperation. In short, the centenary of PMS is a story of inestimable services in integrating Polish mathematical community and promoting mathematics.

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## Stulecie Polskiego Towarzystwa Matematycznego

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**Streszczenie.** Artykuł poświęcony jest dziejom polskich towarzystw matematycznych od 1917 r., kiedy to założono Towarzystwo Matematyczne we Lwowie. Pierwsze narodowe towarzystwa matematyczne pojawiły sie w Rosji, Francji, Zjednoczonym Królestwie, Włoszech, Stanach Zjednoczonych, Niemczech w drugiej połowie XIX wieku. W Polsce, podzielonej wówczas przez sąsiadujące mocarstwa (Rosję, Prusy i Austrię), które hamowały polski rozwój narodowy - nie było to możliwe. Podjęto próbę za granicą w formie Towarzystwa Nauk Ścisłych w Paryżu (towarzystwo polskie, z kilkoma matematykami jako członkami), które działało w latach 1870-1882. Sytuacja zmieniła się wraz z wybuchem I wojny światowej i późniejszym upadkiem wszystkich trzech mocarstw zaborczych. Polskie Towarzystwo Matematyczne zostało założone przez jego zgromadzenie konstytucyjne 2 kwietnia 1919 roku.

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