MATHEMATICS IN STEFAN—BATORY VILNIUS UNIVERSITY (1919-1939)

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At the end of 1918, after the establishment of Soviet power in Lithuania, by the decree of the Council of People's Commissars headed by Vintsas Mitskyavichyus-Kapsukas of Mar. 13, 1919, "On the opening of the Workers' University in Vilnius," Vilnius University which had been closed by the tsar's government in 1832, was reestablished. There was apportioned means (1 million rubles), the organization of a scientific establishment was begun, and staff was recruited. Lithuanian scientific society (1907-1940) was organized into higher scientific courses, opened Mar. 24, 1919. Representatives of the Lithuanian intelligentsia were attracted to the work of these courses and to the preparation for the establishment of a university.

After the capture of Vilnius, Apr. 19-21, 1919, by the armies of bourgeois Poland, all work on the establishment of a university was discontinued. By decision of the Polish government on Oct. 11, 1919, there was opened a Polish university and it was given the name of the Polish king and Lithuanian grand duke Stefan Batory, who in 1579 awarded the privilege of establishing a university to the city of Vilnius, the capital of the Grand Duchy of Lithuania.

The first scientific staff of Stefan Batory University (SBU) were transferred in the majority of cases from other Polish universities in existence at that time.

Among the six faculties of Stefan Batory University there was the natural-mathematical one. Based on the tradition of the ancient Vilnius University, the physicomathematical sciences were assigned right from the beginning to this faculty and not to the faculty of philosophy as was the case at most universities in Poland itself [1].

V. Stanevich, S. Kempistyi, and Yu. Rudnitskii worked on the natural-mathematical faculty in the early years at SBU. Each of them directed one mathematical seminar.

The oldest of them, Viktor Stanevich (1866-1932), graduated in 1887 from St. Petersburg University with a Candidate's degree and in 1890 took his masters' exam. Receiving his masters' degree,* he taught in universities in Russia and worked in the domain of number theory. From 1919, V. Stanevich was an extraordinary professor at SBU, headed the mathematics department I, and directed the seminar on differential geometry and algebra. In 1920-1921 he was Dean of the Faculty and in 1921-1922 he was Rector of SBU.

Stefan Kempistyi (1892-1940) obtained his licenciate in 1911 at the Sorbonne in Paris. In 1919, for his dissertation "On semicontinuous functions," Krakov University awarded him the degree of Doctor of Philosophy. From 1921 he was Assistant Professor and head of the mathematics department II of SBU. After habilitation in 1925 he became extraordinary and from 1937 ordinary professor at SBU. He taught mathematical analysis, set theory, theory of functions of a real variable, a special course in functions of two variables. He directed the seminar on functions of a real variable. S. Kempistyi studied functions analytically representable, Denjoy and Burkill integrals, functions of several variables, functions which are bounded in the sense of Tonelli. He applied triangle functions, generalizing interval functions, to the expression of surface area by the Lebesgue integral.

Yuliyush Rudnitskii (1881-1948) got his licenciate in mathematics in 1901 at the Parisian Sorbonne University, and his diploma in electrical engineering at the Polytechnic. In 1915 Krakov University awarded him the degree of Doctor of Philosophy for his dissertation "Study of a certain type of growth of functions." Yu. Rudnitskii taught at Warsaw University

*In prerevolutionary Russia, the learned degree of Master was awarded after taking masters' exams and defending a dissertation; it gave the right to employment on a faculty. In Polish universities after 1919, the title Master signified simply a diploma from a high school.

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and Warsaw Polytechnic, and from 1923 to 1939 he was ordinary professor at SBU, heading mathematics department III, and directing the seminar on functions of a complex variable, integral equations, and second-order partial differential equations. In 1927-1929 he was Dean. Yu. Rudnitskii was Curator of the Lithuanian student union of SBU. After the war he left for Poland.

In SBU, Yu. Rudnitskii taught higher algebra, number theory, analytic geometry, differential geometry, didactics (methods) of geometry, and a special course "From classical mechanics to quantum mechanics." In papers prior to 1919, Yu. Rudnitskii proved by elementary methods certain propositions of geometry and number theory, considered upper exponential functions, functions generalizing hypergeometric series, and also functional equations generalizing the gamma-function.

Professors V. Stanevich, S. Kempistyi, and Yu. Rudnitskii participated in 1927 in the First Congress of Polish Mathematicians in the city of Lvov: V. Stanevich, as a member of the honors committee of the congress, chairman of the section on algebra and the theory of numbers; S. Kempistyi gave two reports on interval functions.

A. Zygmund and his student Yu. Martsinkevich were the most famous mathematicians of SBU. Doctor of Philosophy A. Zygmund (b.1900), leaving Warsaw University, worked at SBU in 1930-1939 as an extraordinary professor, heading the department, and directed the seminar on the theory of functions of a complex variable and the theory of series. He was curator of the student scientific society and several then progressive student organizations. At SBU he taught analytic geometry, differential and integral calculus, differential equations, mathematics for chemists, and a special course on the general theory of series. At the time of the war in 1940, he left Vilnius for Sweden and then the USA, and since 1947 he works at the University of Chicago.

Zygmund's English language monograph "Trigonometric Series" is world famous. Its first edition appeared in Poland [2] (Russian translation, 1939). Working in the USA, Zygmund prepared a second, extended edition of the monograph, published by Cambridge University Press (England) in two volumes [3] (Russian translation, 1965). In the second volume there are included the latest achievements, obtained after 1935, and up to the time of publication, only in papers in journals. The questions considered concern applications of generalized derivatives and integrals to trigonometric series, convergence of these series almost everywhere, interpolation of linear operators, and a survey of multiple Fourier integrals. In the monograph of Zygmund there are also included results obtained by him himself and his student Yu. Martsinkevich.

Zygmund and the Warsaw mathematician S. Saks (1897-1943) prepared a course in analytic functions of the character of a monograph, published in the Polish language [4] in 1938 (three editions and two English translations).

In his original works A. Zygmund considers questions of the theory of functions and probability theory, singular integrals, generalized convergence of formal products of trigonometric series, and also conjugate trigonometric series, localization theorems. Some papers are written jointly with Yu. Martsinkevich, some with other mathematicians.

Yu. Martsinkevich (1910-1940) entered SBU in 1930; under the influence of Professor A. Zygmund he began to be interested in trigonometric series and while still a student in 1933 wrote his masters' thesis. Upon graduating from SBU in 1934 he worked in it as a junior assistant. For his dissertation "Interpolating polynomials for absolutely continuous functions" in 1935 he was awarded by Vilnius SBU the degree of Doctor of Exact Sciences (in the field of mathematics). He specialized in 1935-1936 in Lvov, where in connection with a question posed by Yu. Shauder (1899-1943), he wrote a paper on factors (multipliers) of Fourier series. There too, under the influence of S. Kachmazh (1895-1939) he studied orthogonal series. From 1936 he worked at SBU as an assistant, and in 1937 he habilitated. In the spring of 1939 he received a stipendium from the People's Cultural Fund and left for Paris, but in a year he had to take a position in the department of Poznan. In the summer of 1939 he was in London, whence, despite the arguments of friends, from a feeling of patriotic duty he returned to Vilnius, was mobilized into the army, taken captive, and died.

The results of the 6-yr scientific activities of Yu. Martsinkevich were published in 55 papers (of which 15 were written jointly with A. Zygmund). His papers are referred to

in the world mathematical literature. Some of them were published after his death. Some manuscripts which remained with his parents vanished after their death. In a paper about Martsinkevich [5] Zygmund characterized his scientific activities as follows: "I was his teacher at Vilnius University and drew him into research work in mathematics, aroused his curiosity about questions which interested me at that time. Afterwards we were collaborators, published a series of joint papers, but his scientific development went so fast, and the originality of his intelligence was so great, that in certain areas of my own specialties I myself can only be considered as his student and extension." In the same place there is also a survey and complete bibliography of the works of Yu. Martsinkevich.

In joint papers A. Zygmund and Yu. Martsinkevich considered Riemann derivatives, trigonometric integrals, limit values of analytic functions, certain questions on the summation of trigonometric series. They extended a theorem of Hardy and Littlewood on the norm of a function of class L_p and its average to the case $p = 1$ and they refined the law of the iterated logarithm of A. N. Kolmogorov.

Yu. Martsinkevich himself studied a singular integral later named after him, studied the connection between Fourier series and interpolation by polynomials. He introduced the concept of space of almost-periodic functions (space M), generalizing Besicovich's function spaces [6]. In a theorem published without proof on interpolation of operations [7] Yu. Martsinkevich essentially extended an assertion of Riesz—Torina on the interpolation of linear operations. A proof of the theorem was published later by Zygmund [8]. On the basis of this theorem of Yu. Martsinkevich, the theory of scales of Banach spaces was created. The theorem was generalized and applied by Krein, Petunin [9], Semenov (USSR), Madzhenes [10] and Stampacchia (Italy), etc.

From 1938 the mathematicians of Vilnius SBU published, mainly in the French language, the Bulletin de Seminaire Mathematique de l'universite de Wilno [11]. In the Bulletin there were printed papers published earlier in the natural-mathematical section of the Prace Towarzystwa przyjaciol nauk w Wilnie [12]. In the Bulletin there was printed only a small portion (only 12) of the papers of the mathematicians at Vilnius SBU, the rest being in Fundamenta Mathematicae (Warsaw) and in other Polish and foreign journals.

The works of the mathematicians of SBU, especially the works of Zygmund and Martsinkevich, were of great value for the mathematical sciences, but they did not have an influence on the later development of mathematics at Vilnius University. Between the Lithuanian Republic and Poland there were no diplomatic relations up to 1938. After the deaths of Kempistyi and Martsinkevich and the departure of their colleagues in the university, there did not remain any mathematicians who had worked earlier in SBU. The new collective was based on mathematicians coming over from Kaunas University or graduating from this university. At SBU there remained mathematical literature, mainly in the French language. It was reinforced by the library sent over from Kaunas University, a rather rich mathematical literature: complete sets of journals from the 19th century, many reprints of papers, abstracts of dissertations (a largepart in German) and a large collection of the works of classical mathematicians in Latin.

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SOME WORK OF LITHUANIAN MATHEMATICIANS IN THE DOMAIN OF MATHEMATICAL LOGIC AND PROGRAMMING

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In this survey we shall elucidate some basic work in mathematical logic and programming, done at the V. Kapsukas Vilnius State University directly or by graduates of the university and its teachers, working at the Institute of Mathematics and Cybernetics, Academy of Sciences of the Lithuanian SSR. The survey includes almost all work in mathematical logic (excluding applications of the theory of Boolean functions to technology) and also a considerable part of the scientific and practical work in programming carried out in our republic.

The good traditions in the study of logic installed in Vilnius University in the middle ages were not continued subsequently up to the 1950s. The start of work on programming and also the revival of work on mathematical logic in our republic date from the 1950s. The main initiator and trail-blazer in this work at that time was I. Kubilyus. In 1954 he organized a seminar on "Calculating machines." This seminar was continued in 1956 under the name "Electronic calculating machines." In that year at a university mathematical conference I. Kubilyus gave a report "Electronic calculating machines." In 1959 the university organized evening courses for engineering and technical staff on electronic calculating machines and their application.

I. Kubilyus was also the first in the republic in 1960 to start to teach a faculty course in Vilnius University on "Mathematical logic." At that time courses in mathematical logic were taught only at some of the leading universities of the country.

1. Mathematical Logic and Its Applications

In 1958, on the initiative of I. Kubilyus, V. Matulis, a graduate of Vilnius University, was sent as a graduate student to Leningrad to the eminent Soviet specialist in mathematical logic Professor N. A. Shanin. This in some measure determined the theme and the future scientific connection of Lithuanian logicians with the Leningrad group of mathematical logicians, headed by N. A. Shanin. Lithuanian logicians always found fruitful scientific contacts with the whole group of Leningrad logicians, among them, in the first place, with N. A. Shannin, S. Yu. Maslov, G. E. Mints, Yu. V. Matiyasevich, V. P. Orevkov, A. O. Slisenko, and G. V. Davydov. All four condidates' dissertations were defended at Leningrad: V. Matulis in 1964, R. Plyushkyavichyus in 1967, A. Plyushkyavichene in 1972, S. Norgela in 1978.

Lithuanian logicians maintain scientific contacts with other groups of mathematical logicians also. In the first place one should mention the group of Yu. L. Ershov, a corresponding member of the Academy of Sciences of the USSR. On work on the application of mathematical logic to programming, contacts with the Novosibirsk group headed by A. P. Ershov, a corresponding member of the Academy of Sciences of the USSR, and Professor B. A. Trakhtenbrot, the Kiev group headed by Academician V. M. Glushkov, Doctors of Physical and Mathematical Sciences Yu. V. Kapitonov and A. A. Letichevskii, the Moscow group headed by S. V. Yablonskii

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