

KALINA BARTNICKA*

ACCESS TO HIGHER EDUCATION AND STUDY FOR POLES IN THE SECOND HALF OF 19TH CENTURY

DOSTĘP POLAKÓW DO WYKSZTAŁCENIA I NAUKI W DRUGIEJ POŁOWIE XIX W.

Abstract

In the 19th century, in Poland divided among Russia, Austria and Prussia, the occupants hindered access to education for Poles. Fighting the restrictions, the Poles organized scientific institutions, published texts enabling self-study and founded high and academic private schools. In the Polish Kingdom in 19th century these schools were mostly clandestine, becoming legal at the beginning of 20th century. In Galicia, polonized high schools and universities in Lwów and Kraków educated students, including women, from all occupied territories. Many studied abroad. People educated in the second half of 19th century rebuilt the system of higher education in Poland Reborn.

Keywords: partitions of Poland, Germanization, Russification, universities, secondary schools, underground education, women's education, "Flying University", The Manual for a Self-Learner, Society of Science Courses

Streszczenie

W XIX w., w Polsce podzielonej między Rosję, Austrię i Prusy, zaborcy utrudniali Polakom dostęp do wykształcenia. Walcząc z ograniczeniami Polacy organizowali instytucje naukowe, wydawali publikacje ułatwiające samokształcenie, zakładali średnie i wyższe szkoły prywatne. W Królestwie Polskim w XIX w. przeważnie tajne, od początku XX w. legalne. W Galicji spolonizowane szkoły średnie i uniwersytety we Lwowie i Krakowie kształciły studentów, w tym kobiety, ze wszystkich zaborów. Wiele osób studiowało za granicą. Ludzie wykształceni w drugiej połowie XIX w. odbudowali szkolnictwo wyższe w Polsce Odrodzonej

Słowa kluczowe: rozbiory Polski, germanizacja, rusyfikacja, uniwersytety, szkoły średnie, tajne nauczanie, edukacja kobiet, „Uniwersytet Latający”, Poradnik dla samouków, Towarzystwo Kursów Naukowych

* Kalina Bartnicka, Institute of History of Science, Polish Academy of Sciences, Warsaw.

Throughout the whole 19th century, from the collapse of Commonwealth of Two Nations (the political union of the Grand Duchy of Lithuania and the Kingdom of Poland) in 1795 until 1918, Poles had no longer a state of their own that would support the development of teaching and science. The 19th century saw the Polish schooling system in each partition gradually integrated into the occupying states' systems. The foreign rulers had no interest in developing the Polish scientific life and Polish schools. Such a policy prevailed in all three partitions but was the most hurtful in the Russian partition.

The mid-19th century saw a deterioration of the Polish schooling system and scientific life on the former territory of Poland now partitioned among three occupying countries. This resulted directly from a deliberate political decision: the foreign invaders' repressions following the collapse of the Polish uprising against Russia in 1831. Polish people's access to studies and ability to participate in the European scientific life, also with regard to exchange of ideas in pure sciences, depended on their access to universities and scientific thought abroad. A young, talented and scientifically ambitious young person had to meet the following criteria:

1. Receive education at secondary level confirmed by a secondary school (*gimnazjum*) certificate (*matura*) because *matura* was the only certificate giving access to university studies at home and abroad.
2. Start studies at home, at a school available to secondary school graduates or leave for abroad to start or complete university studies.
3. Possess or obtain financial assets enabling them to pursue their interests and scientific research after finishing university with a Master's or Doctor's degree.
4. Be able to live off scientific work or possess funds that would keep the research going.
5. Establish contact with domestic and foreign communities that stimulate scientific work.

At that time there were only two universities operating in the whole former territory of Poland, in Galicja (the Austrian partition): one in Lwów (Lemberg), developed according to Austrian patterns, and the Jagiellonian University of Krakow, which was practically Germanized in 1850. These two establishments did not teach in Polish, nor did they educate the Polish youth from the other partitions. In the Russian partition the universities were dissolved, and in the Prussian partition there were no universities whatsoever. In all three partitions the only schools granting their alumni the right to study at a university were men's *gimnazjums*. In the Prussian and Austrian partitions they became Germanized, while in the Russian partition their number was dramatically reduced, and their curriculum given a strictly philological character.

For more than thirty years few young men completing secondary school in the so-called Kingdom of Poland were legally eligible to embark on university education. In a country bereft of universities in those days even those few had nowhere to go to study. The foreign rulers forbade teachers or students to travel to a university abroad, even to the University of Krakow! A legal departure required obtaining a permit from the tsar himself. The youth already studying abroad were ordered to return home. Those who declined this order lost a possibility to work in public administration. "An unlawful use of a passport" while abroad was punishable¹.

¹ J. Skowronek, *Nauka i nauczanie w okresie międzypowstaniowym (Science and Teaching Between the November and January Uprisings)*, [in:] *Dzieje Uniwersytetu Warszawskiego 1807–1915*

Few young people had an opportunity to study at Russian universities that educated the teachers for secondary schools in the Kingdom of Poland². This offered little contact with Europe's scientific thought anyway as it was a period of distrust nursed by the Russian authorities towards the very institution of university, as well as towards any associations of the Russian professorial community with its Western European counterparts that had grown since the 1820s.

The 1840s saw Tsar Nicholas I impose a stricter supervision over universities, professors, students, and the contents of the academic programs. Access to university studies had been limited (quantitative limits, raised tuition fees), a ban on trips abroad was issued, and censorship of imported books (including scientific literature) exacerbated. The rising repressiveness stemmed from distrust towards universities and Europe's scientific thought. Suspicion and the tendency to isolate the Russian youth from a foreign influence reached their climax in the period between the Spring of Nations and the mid-1850s³. As it stood, the difficulties to obtain a passport endured by young people in the Russian partition shut the door to university studies in Western Europe, limited the flow of ideas, and made it impossible to access the European scientific thought.

Some sixty years later, in 1918 Poland regained its independence. The newly reborn country had to put in place a new schooling system, universities, and academic and non-academic scientific centres. It needed professorial staff, scientific infrastructure, and young people keen and eligible to take up university studies (the requirement of the *matura* certification). The time was extremely unfavourable due to the social unrest, political instability, economic, social and cultural consequences of the partitions, as well as the enormous material, moral and demographic ravage inflicted by World War One. And yet, in these circumstances, it took just two years for a new and quite efficient system of higher education to be set up and running. In 1920 as many as ten schools of higher education were operating in Poland: five universities (in Lwów, Kraków, Poznań, Warszawa, and Wilno), two technical universities (in Lwów and Warsaw), the Mining Academy in Kraków, the Veterinary Academy in Lwów, and Warsaw University of Life Sciences. One need add to this group also private schools that would acquire their academic status soon: the Catholic University of Lublin and the Free Polish University (*Wolna Wszechnica Polska*) in Warsaw. Also, a network of non-academic schools of higher education was created. The departmental positions were filled with care and usually aptly in didactic and scientific respects. In July

(*The History of the Warsaw University 1807–1915*), ed. by Stefan Kieniewicz, PWN, Warszawa 1981, p. 207.

² R. Wroczyński, *Dzieje oświaty polskiej (The History of the Polish education)*, vol. II, 1795–1945, (ed. II) „Żak”, Warszawa 1996, p.100-107; see also Karol Poznański, *Oświata i szkolnictwo w Królestwie Polskim (The Education and Schooling System of the Kingdom of Poland) 1831–1869*, vol. 1–2, Warszawa 2001.

³ K. Bartnicka, „Jaki powinien być uniwersytet rosyjski?” – *Sprawy uniwersyteckie w świetle ankiety Ministerstwa Oświecenia Narodowego w 1849 r.* (“What Should a Russian University Be Like?” – *University business in light of the National Education Ministry's survey n 1849*), [in:] *Rozprawy z dziejów oświaty (Essays on History of Education)*, ed. by Józef Miąso, vol. XXXVII, Warszawa 1996, p. 91-117.

1920 the *Bill on Academic Schools* was passed in parliament⁴. The positions of lecturers and heads of departments were taken up by people educated in the second half of the 19th and at the turn of the 20th centuries.

Such a swift restoration of the Polish system of higher education was a cause of pride to many people at the time. “Poland commenced its statehood with a step that proved its nation’s high culture: by creating universities” – said in 1920 Juliusz Makarewicz, lawyer, professor, and later also Lwów University’s Chancellor⁵. A dozen or so years later, Adam Wrzosek, a Professor of Medicine at the Jagiellonian University, and Head of Science and Higher Education Department at the Ministry of Religious Affairs and Public Education (MWRiOP), wrote: “In the history of our higher education so far, there hasn’t been a finer time than the first year after Poland regained its independence”⁶. Also today, the pace at which the higher education system was created, the “European” scientific level of the professorial staff, and the scientific achievements of the interwar period rightly deserve admiration.

One may ask where the professorial staff of these new universities came from. What was Polish men and women’s access to higher education in the three partitions in the period prior to Poland regaining its independence? How did the scientific associations come into being on the former Polish territories under partitions that would entertain an academic level enabling them to receive new scientific ideas and conceive them? As far as I know, such questions have not been yet raised in the literature dealing with problems of education of young Polish scholars. Relation rather than analysis has been the subject of study. Aside from universities’ own monographs, usually on the peripheries of some synthetic historical studies of science or education, the object of interest lay in the socio-economic problems concerning access to higher education or the political engagement of students⁷. At the level of secondary education, the object of scientific attention were not the pedagogical or scientific aspects of teaching, but above all the problems of national subjugation, and later the patriotic character of different forms of underground teaching. My remarks are meant to outline a problem in a longer time perspective and on a national scale, which has yet to be researched.

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Since the time of the Enlightenment a conviction has been prevalent among Polish people that the development of education and culture is the way to rise from a political

⁴ *Ustawa z dnia 13 lipca 1920 roku o szkołach akademickich (Bill on Academic Schools of 13 July 1920)*, Official Journal of the Republic of Poland, 1920, N° 72, item 494, publ. by Dorota Zamojska, *Akademy i urzędnicy. Kształtowanie ustroju państwowych szkół wyższych w Polsce 1915–1920 (Academics and clerks. The shaping of the system of state higher schools in Poland 1915–1920)*, Warszawa 2009, p. 248-267.

⁵ J. Makarewicz, *Społeczna rola najwyższych uczelni (The social role of higher education institutions)*, Lwów 1920, p. 3; cited by: D. Zamojska, *op. cit.*, p. 15.

⁶ A. Wrzosek, *Szkolnictwo wyższe. Uniwersytety (Higher education. Universities)*, [in:] *Dziesięciolecie Polski Odrodzonej 1918–1928 (The decade of a Reborn Poland 1918–1928)*, Warszawa 1933, ed. II, p. 554, cited by D. Zamojska, *op. cit.*, p. 16.

⁷ D. Zamojska, *op. cit.*, p. 9.

collapse⁸. This conviction led to the implementation of a comprehensive school system reform in Poland in the 1770s by the National Educational Commission (KEN), which put the Commonwealth ahead of its neighbouring countries. The reform involved the universities (*Akademia*) in Krakow and Wilno, and integrated them into the schooling system. The schools became homogenised and modernised in terms of organisation, management, curricula, methods of teaching, and teacher training. The level and scope of education at secondary school were separated from those at university. Admission into university required a completion of a secondary school, i.e. departmental or sub-departmental (*wydziałowe i podwydziałowe*)⁹ or passing an exam that verified one's eligibility to study at a university. The universities, now called "main schools", had their study offer expanded, received a modern organisational structure and were supplemented by a number of assisting research institutes¹⁰.

The educational needs in society led to a growing interest in schools of all levels, and their growth ensued despite the collapse of the state (1795) until the November Uprising in 1831. Gradually, however, the time for teaching mathematical and natural sciences was reduced and the number of hours for the teaching of languages was rising¹¹. However, until the November Uprising 1830–1831, the Polish people had a say in the teaching and schooling policies, particularly in the territory annexed by Russia¹², where they undertook

⁸ Similar views in response to Prussia's debacle in the Napoleonic Wars led at the beginning of the 19th century to Prussia having its schools structure put in order by Wilhelm von Humboldt and creating the Berlin University in 1810.

⁹ They varied in the number of teachers and classes, and lesson organization: as far as teaching curriculum was concerned, there were no major differences. Separate teachers were put in place to teach mathematics and physics, with the latter also teaching natural history. Mathematics was intended to deliver practical knowledge, useful in everyday life, management and measurements, and also train the student in "thorough and accurate thinking". The object of physics is to explore and understand "(...) the natural causes and effects". See Grzegorz Piramowicz, *Uwagi o nowym instrukcji publicznej ukladzie /.../ (Reflections on the National Educational Commission's new public school curriculum /.../)*, Warszawa 1776, publ. by Stanisław Tync, *Komisja Edukacji Narodowej (Pisma Komisji i o Komisji). Wybór źródeł (Writings on the National Educational Commission – an Anthology)*, Wrocław 1954, p.161-183; Tadeusz Mizia, *Szkoły średnie Komisji Edukacji Narodowej na terenie Korony (The National Educational Commission high schools on the Crown's territory)*, Warszawa 1975, p. 159-170.

¹⁰ The new university structure introduced division into two colleges in place of the traditional faculties: humanities, social studies and theology constituted the so-called Moral College, whereas mathematics, physics, natural history, and medicine constituted the Physics College; see *Ustawy Komisyyi Edukacyi Narodowej dla stanu akademickiego i na szkoły w krajach Rzeczypospolitej przepisane (The National Educational Commission's Acts on the Commonwealth's academic class and on schools)* (1783), publ. by S. Tync, *op. cit.*, p. 589-593: Chapter 2 "Main Schools", points 14-16.

¹¹ By contrast to KEN curricula, the proportions in subjects taught were distorted with mathematical and natural subjects suffering cuts. See: A. Winiarz, *Szkolnictwo Księstwa Warszawskiego i Królestwa Polskiego (1807–1831)*, Lublin 2002, p. 231: "The total weekly teaching time in classes 1–6 was 192 hours, of which 102 involved (the teaching of) languages". Latin and literature alone took up 44 hours a week.

¹² From 1807 the schooling system in Polish central territories including the Duchy of Warsaw, and from 1815 the Kingdom of Poland united by personal union with Russia, was governed by

to retain the encyclopaedic curriculum in secondary schools, which were very well organised¹³.

Pure science and natural studies were available in the Russian partition at the universities in Wilno and Warszawa, and in the Austrian partition in Kraków and Lwów. Since the late 18th century the Lwów University had been administered like other Austrian universities and was totally dependent on the Austrian regional (*gubernium*) and central (Vienna) authorities. The departments' structure was traditional, and the teaching was performed in Latin and German. Neither this university nor the Germanised *gimnazjums* in Galicja underwent KEN's school system and educational reforms, as eastern Galicja had been severed from Poland in the first round of partitions.

The Austrian authorities imposed their methods on the Krakow University, temporarily Germanising it between 1805–1809. Pure and natural sciences were parcelled out to different departments. In the first three decades of the 19th century the university was going through a very hard time¹⁴. The political and organisational changes were not helpful in stabilising the academic staff and raising its scientific level. The university was not playing an important role at that time, however some outstanding scholars did grace its premises, such as the Austrian astronomer Joseph Johann Littrow or mineralogist and botanist Balthazar Hacquet. 1809 saw the resumption of lectures in Polish. First Hugo Kołłątaj,

Polish educational authorities: the Educational Chamber (Izba Edukacyjna), and in the years 1816–1831 the Government's Commission for Religious Faiths and Public Education (Komisja Rządowa Wyznań Religijnych i Oświecenia Publicznego). The lands annexed directly by Russia saw the creation of the Vilnius Scientific District (Okręg Naukowy Wileński) with schools from the 8 western governorates (*gubernia*) answering to the Vilnius University.

¹³ In the Kingdom of Poland in 1830 there were 15 provincial secondary education schools (szkoły wojewódzkie) with some 5800 students and a few more were set to be established. Following the 1831 defeat of the Uprising and the successive reorganisations, in 1855 the Kingdom of Poland was home to government-licensed seven-level philological *gimnazjums* with 1504 students. In the late 1860s the *gimnazjums* accommodated only 1882 students which was several times fewer than that in 1830. See Adam Winiarz, *Szkolnictwo Księstwa Warszawskiego i Królestwa Polskiego (1807–1831) (The Schooling System of the Duchy of Warsaw and the Kingdom of Poland 1807–1831)*, Lublin 2002, p. 185-264.

In the Vilnius Scientific District, in the years 1803/4–1832, the Vilnius University administered the total of 102 secondary education schools. Admission into the university was granted on completion of *gimnazjums* (each *gubernia*'s leading schools) as well as county schools (szkoły powiatowe) which made up the majority of schools in the Vilnius Scientific District. About 53 schools were closed down in the years 1831–1835 or soon after. All schools were Russified. 13 *gubernia*-level *gimnazjums* were retained while the levels of county-level schools was lowered, therefore hindering their graduates' access to universities. See Leszek Zasztowt, *Kresy 1832–1834. Szkolnictwo na ziemiach litewskich i ruskich dawnej Rzeczypospolitej, (The Kresy. 1832–1834. The Schooling System on the Lithuanian and Ruthenian Lands of the Former Commonwealth)*, Warszawa 1997, p. 376-380, Anex III.

¹⁴ Between 1795–1809 Kraków was in the Austrian partition. In the years 1809–1815 it was incorporated into the Duchy of Warsaw. The Congress of Vienna created a diminutive state of the Free City of Kraków, also known as the Republic of Kraków. On its liquidation in 1846, Kraków was definitively annexed by Austria.

and later Stanisław Staszic undertook attempts to modernise the university¹⁵. Several talented Polish professors were appointed heads of departments: the mathematician Karol Hube, the chemist Józef Markowski, the physicist Roman Markiewicz, and the astronomer Józef Łęski. In the latter part of the 1820s, the distinguished mineralogist Ludwik Zejszner was made the head of his department. After the collapse of the November Uprising, this was the only Polish university until the mid-19th century. After 1849 the University of Krakow was Germanised for a dozen or so years.

At the newly opened in 1816 Imperial University of Warsaw consisting of five departments, mathematical studies along with the Philosophy Section and the Natural Sciences Section became part of the Philosophical Sciences Faculty. The departments of advanced algebra, experimental and applied philosophy, chemistry, mineralogy, and botany were developing successfully. The Mathematics Section soon established its position and “acquired a good reputation, whereas its professors enjoyed respect and recognition”¹⁶.

The Imperial University of Wilnius, which had achieved a high scientific level prior to the November Uprising, comprised four faculties/divisions of science: Physical and Mathematical; Doctoral and Medical; Moral and Political; and Literature and Fine Arts. In 1803, the *Act of Confirmation* granted by Tsar Alexander I declared the university would provide “all sciences, superior skills, and free arts”¹⁷. According to the university’s *Statutes*, the Physical and Mathematical Faculty consisted of ten departments: physics, chemistry, natural history, botany, farming, pure advanced mathematics, applied advanced mathematics, astronomy, civil architecture, as well as the position of astronomer observer. The professors included distinguished scholars, such as the renowned mathematician Jan Śniadecki, and his no less renowned brother, the chemist and physician Jędrzej Śniadecki.

The Warsaw and Wilnius universities were developing quickly in scientific respect and attracted many young people. The number of students at the University prior to the November Uprising reached over one thousand (or including students of the Wilnius gimnazjum closely cooperating with the university—nearly 1800 students)¹⁸. In the academic year 1828/1829,

¹⁵ Irena Danuta Sieniuc, *Szkoła Główna Krakowska w dobie Ks. Warszawskiego (The Kraków Main School in the era of the Duchy of Warsaw)*, „Rocznik Krakowski” („Kraków Yearbook”), vol. XXXIII, book 2, Kraków 1954, p. 77-78. The author states that the prospective teachers, lawyers and theologians at the Philosophy Faculty had to study courses in “lower mathematics, philosophy and physics, and medics had to additionally attend their own dedicated programme”.

¹⁶ M. Wawrykowa, *Uniwersytet Warszawski w latach 1816-1831 (Warsaw University 1816-1831)*, [in:] *Dzieje Uniwersytetu Warszawskiego 1897-1915*, *op. cit.*, p. 109 and the following.

¹⁷ *Akt potwierdzenia Imperatorskiego Uniwersytetu w Wilnie (The Act of Confirmation of the Imperial Vilnius University)*, of 4 April 1803, publ. by Michał Baliński, *Dawna Akademia Wileńska (The Ancient Vilnius Academy)*, Petersburg 1862, p. 552-558, Annex XVIII; See *Ustawy czyli ogólne postanowienia Imperatorskiego Wileńskiego Uniwersytetu i szkół jego wydziału (Acts, that is general decisions made by the Imperial Vilnius University and its Schools)*, of 18 May 1803 r., publ. by Michał Baliński, *Dawna Akademia*, *op.cit.*, p. 559-596, Annex XIX, in Russian and Polish.

¹⁸ Following considerable fluctuations during the Napoleonic Wars, after 1815 the Wilno students community was quickly rising. See Daniel Beauvois, *Szkolnictwo polskie na ziemiach litewsko-ruskich 1803-1832 (Polish Schools on Lithuanian and Ruthenian lands 1803-1832)*. Volume I, *Uniwersytet Wileński (Wilno University)*, Rome—Lublin 1991, p. 273), [in:] 1830, the Wilno

the University of Warsaw had 964 students, 55 of whom were studying physics, and 42 mathematics at the Mathematic-Physical Department¹⁹.

From its outset, Warsaw University had attracted young people not only from the Kingdom, but also from the territory of Lithuania, Ukraine, and Belarus. Incidentally, those from the eastern lands usually chose to study at the Law and Administration Department²⁰. It may be that because pure science at the Wilno University had achieved a high level, young people from those lands would usually choose to study it in Wilno rather than Warsaw.

Warsaw of the latter half of the 1820s saw preparations for the opening of a technical university, Polytechnic, and professors were being educated abroad. In order to create equal opportunities at university entrance exams, the Preparatory School for the Polytechnic Institute was created. The successive classes of preparatory students it educated were becoming first-year students at the newly created Polytechnic. In 1829 “Almost all the departments were staffed, and it started operating as a centre of technical thought because entrepreneurs were calling on its professors with queries regarding the modernisation of their companies or products”²¹.

The creation of new universities, the growing interest of young people in academic education, the creation of repositories and research institutes, the thorough education of the young academic staff (scholarships, foreign study trips), as well as the development of and maintenance of contacts with foreign scholars (inviting them as honorary members, correspondence, etc), was all interrupted and consequently suppressed by repressions inflicted by the Russian authorities following the collapse of the November Uprising. The universities in Wilnius and Warsaw were shut down, as were the newly created Polytechnic Institute and the Warsaw Society of Friends of Learning. The scientific repository was removed and taken away. The Kingdom was deprived of its educational autonomy: in 1839 the Warsaw Educational District was created, to be directly supervised by the Ministry of Education in Petersburg. The number of secondary schools was drastically reduced and a strictly philological curriculum was imposed on them, while the duration of learning gradually shortened. And all this transpired despite the significant increase of the population and the continually rising educational needs of the Polish society²².

University had 1300 students in 1830, which made it Russia’s biggest in terms of numbers, with the Petersburg University coming next with a little more than 800.

¹⁹ D. Beauvois, *op. cit.*, p. 327; in the years 1822/1823 and 1825/1826 the Mathematical and Physics Faculty was chosen by 305 and 316 students, respectively.

²⁰ M. Wawrykowa, *op. cit.*, p. 158.

²¹ A. Winiarz, *op. cit.*, p. 404.

²² Before the second partition (1793), the Commonwealth was home to 10 million people; in the mid-19th century the territory of a similar size accommodated some 16 million, and in 1910 more than 34 million. On regaining its independence, according to the 1921 census Poland was home to some 27.7 million people; see: Ireneusz Ichnatowicz, Antoni Mączak, Benedykt Zientara, *Spółeczeństwo polskie od X do XX wieku (Polish Society from the 10th to the 20th century)*, Warszawa 1979, p. 457-478; Andrzej Chwalba, *Historia Polski 1795-1918 (History of Poland)*, Kraków 2000, p. 24.

Although other schools and educational institutions provided a bigger scope and a higher level of education, they still did not offer sufficient preparation for university education²³. However, the seven-grade *real* gimnazjum provided a higher scientific level and a broader scope of study, to a certain extent filling the void left by the lack of a technical university, training students for “industrial purposes”. It provided its students with quite a large knowledge of scientific subjects, while the number of languages and hours dedicated to studying them was reduced; it taught students arithmetic, geometry, mineralogy, physics, chemistry, natural history, technology, machine construction, geography, and world history. It was extremely popular and the number of its students grew threefold from 349 to 1070 between 1840 and 1850.

Impeding, and in fact suppressing, Polish people’s learning and scientific aspirations by the Russian authorities was characteristic of the whole period 1831–1915. Such a policy prevailed in all the three partitions but was the most hurtful in the Russian partition²⁴, which came to encompass more than 66% of the former Commonwealth’s territory and 45% of the population. The degradation of Polish education was extremely afflicting and upsetting for the Polish society which understood the gravity of education and the cultural, social, economic consequences of educational repressions. Attempts to overcome them were undertaken since the mid-19th century: efforts were made in all partitions to restore the Polish educational system, especially in the Russian and Austrian partitions. The fight against constraints proceeded differently in each partition, and the beginning of the changes took place in the 1860s.

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Following the ascent to the throne by Tsar Alexander II (1855), the anti-Polish course of Russian policy was mitigated, among other things, with regard to the educational policy in the Kingdom of Poland. In 1857, the Medical and Surgical Academy was opened in Warsaw. In 1861, the Kingdom’s educational autonomy was restored (KRWRiOP). Count Aleksander Wielopolski was appointed as its head and soon undertook to draw up an educational reform. In May 1862, the tsar approved *The Bill on Public Education in the Kingdom of Poland*²⁵. It restoring the Polish school’s national character, and introducing a progressive school structure. Secondary schools were organised on two levels: 5-grade county schools (szkoły powiatowe) and 7-grade gimnazjums²⁶.

²³ For example, the Agronomic Institute restored in 1836 (later renamed as the Agricultural and Forestry Institute) in Warsaw’s Marymont, the pharmaceutical, and veterinary and lower veterinary schools, and the so-called “additional courses” at Warsaw gimnazjum.

²⁴ The Russian partition encompassed the so-called Kingdom of Poland formally united with Russia by personal union and the so-called “annexed lands” incorporated directly into the Russian Empire.

²⁵ Karol Poznański, *Reforma szkolna w Królestwie Polskim w 1862 r. (School Reform in the Kingdom of Poland in 1862)*, „Monografie z dziejów oświaty” (“Monographs on the History of Education”), ed. by Łukasz Kurdybacha, vol. X, Ossolineum, Wrocław 1968.

²⁶ The biggest influence on the concept of high school was exerted by Tytus Chałubiński (1820–1889), doctor of medicine and naturalist, professor at the Medical and Surgical Academy in Warsaw, and

The objective of the *gimnazjums* was set out in detail: it was to prepare young people “both for various walks of life and to [enable them] listen to refined lectures at a Main School”²⁷. The *gimnazjum*’s curriculum had balance restored in the teaching of various groups of subjects, with the mathematics-natural science block being strengthened, as 34% of the effective learning hours were dedicated to such subjects as: logic, arithmetic, geometry, measurements and algebra, plane and advanced trigonometry, descriptive geometry, general mechanics, analytical geometry, physics, mathematical-physical geography, chemistry, and natural history. The new curriculum afforded the students better preparation for university studies.

The Kingdom maintained two university-level institutions: the Main School in Warsaw with the departments: philology-historical, law and administration, medical, and mathematics-physical. Puławy was home to the multi-disciplinary Polytechnic and Agricultural-Forestry Institute. The didactic and scientific staff was swiftly completed for both schools and recruitment went on. The graduates of philological *gimnazjums* were admitted without examinations to all departments, as were the students of the Medical-Surgical Academy that had been converted into the Medical Department of Warsaw’s Main School. Other candidates had to sit an entrance exam which was identical for all departments and addressed mainly the knowledge of humanities and social issues. The examinations showed poor results as the secondary education in the Kingdom was narrowly focused and its level was low²⁸.

The objective of the Historic-philological and Mathematic-Physical departments was to educate teachers but the intellectual quality of the academic staff surpassed the needs of the *gimnazjum* teachers and largely reflected the scientific ambitions of the School’s creators²⁹. In the autumn 1862, 721 students began their study, 120 of them at the Mathematical-Physical department. The needs of the industry were taken into account when this department was being created. Aside from mathematics, the curriculum included also mechanics, geodesy and technology, astronomy, mineralogy, and human anatomy and physiology³⁰.

later at the Warsaw Main School; and Józef Korzeniowski (1797–1863), a well-known writer with an extensive educational experience. They both advocated the importance of thorough general education based on combination of humanities and mathematical and natural sciences.

²⁷ *Ustawa o wychowaniu publicznym w Królestwie Polskim (The Act on Public Education in the Kingdom of Poland)*, 1862, Section Two: *O zakładach naukowych średnich (On Secondary Scientific Facilities)*, art. 56; publ. by Stefan Wołoszyn, *Źródła do dziejów wychowania i myśli pedagogicznej (Sources for History of Education and Pedagogical Thought)*, vol. II, *Pedagogika i szkolnictwo w XIX stuleciu (Pedagogy and Schooling System in the 19th century)*, ed. II, altered, „Strzelec”, Kielce 1997, p. 482.

²⁸ Students who failed the exam and graduates of *real gimnazjums*’ 6th grade (which did not grant them admission into university) could attend a preparatory class that would enable them to complement their education in Polish, Greek, Latin, algebra, and geometry.

²⁹ K. Poznański, *op. cit.*, p. 207-236: Chapter VII. *Realizacja Ustawy o wychowaniu publicznym w Królestwie Polskim na polu szkolnictwa wyższego (Implementation of the Act on public education in the Kingdom of Poland in the field of higher education)*.

³⁰ S. Kieniewicz, *Akademia Medyko-Chirurgiczna i Szkoła Główna (1857–1869) (The Medical-Surgical Academy and Warsaw Main School 1857-1869)*, [in:] *Dzieje Uniwersytetu Warszawskiego*, *op. cit.*, p. 306.

After the exam, like at the Main School, the inauguration of lessons followed for 168 students of the Institute in Puławy.

Between 1862 and 1868, the Mathematical-Physical department of the Main School educated 826 students (28% of the total). The Mathematical section proved more attractive than the Natural Science section. 105 people graduated with a Master's degree, none with a Doctor's degree, eight habilitations were pursued: Władysław Kwietniewski, Władysław Zajączkowski and Aleksander Czajewicz in mathematics; Jan Kowalczyk in astronomy; Erazm Langer in chemistry; Edward A. Strasburger in botany; August Wrześniowski in zoology; and Jan Trejdosiewicz in geology. Some students obtained doctoral degrees abroad. Many mathematics students continued their engineering studies in Russia and made a career there³¹.

The Mathematical-Physical department of the Main School was divided into the mathematical and natural sciences parts. The Department's professors included distinguished professors and graduates of the Dorpat University: biologist, one of the first university scholars of evolution, Benedykt Dybowski (1833–1930) and botanist Konstanty Górski (1802–1864), as well as the world-renowned discoverer in the field of artificial dyes, chemist Jakub Natanson (1832–1884). However, none of the seven mathematics professors belonged to such outstanding personalities.

The opening of the Main School resounded throughout the whole country as it was taking place in a tense political situation. The outbreak of an armed uprising with students joining in the fighting ranks threatened shutdown of the School by the tsarist authorities. The inauguration speeches and political commentaries emphasised the responsibility of the youth for the School's well-being³².

Wielopolski's school reform revealed the weaknesses of secondary schools created between 1831 and 1863 and activated Polish people in the Russian partition to challenge the Russian authorities' repressive policies following the collapse of the January Uprising. Efforts to rebuild the educational system and pursue scientific work began to be associated with the concept of serving the nation. The conviction was set forth: "the guarantee for the nation's survival may only be achieved by sustaining its cultural identity and individuality, as well as by its presence in the European intellectual community"³³. The Main School was developing successfully and its creators had vast plans for its further development. It operated briefly, however (1862–1869), as there was too little time, scientific resources and funding to implement these plans. The didactic staff never managed to stabilise. In mathematics and science there was not enough time for "research schools" to form and there were no conditions for independent research or exchange of scientific ideas³⁴. However, after 30 years of no university in the Kingdom of Poland and the isolation from

³¹ *Historia Nauki Polskiej (History of Polish Science)*, ed. by Bogdan Suchodolski, vol. IV. 1853–1918, edited by Zofia Skubała-Tokarska, Wrocław 1987, p. 381-385; this important but little known problem is discussed by Jerzy Różewicz, *Polsko-rosyjskie powiązania naukowe (1725–1918) (Polish-Russian scientific links)*, Wrocław 1984.

³² In discussions questions were asked: "what can a country gain on losing its only scientific institution which was supposed to restore Poland's bygone intellectual glamour and finesse to its future generations", cit. by K. Poznański, *op. cit.*, p. 225.

³³ D. Zamojska, *op. cit.*, p. 16.

³⁴ S. Kieniewicz, *op. cit.*, p. 318-319.

European science, the Major School had opened the door to young men in the Kingdom of Poland to university studies.

In January 1863, an armed uprising broke out in the Kingdom of Poland, which was suppressed in the spring 1864. Again, severe political and economic repressions came to torment the people of the Kingdom of Poland. In 1872 schools organised according to laws that came into effect in Russia in 1871 and 1872, underwent complete Russification. There were 6 and later 7-grade “real gimnazjums”. While in 1870/71 there were 21 gimnazjums (including two “*real*” gimnazjums) with 6836 students, in 1904/05 there were 23 classical gimnazjums with 10,301 students.³⁵ The number of governmental schools was insufficient therefore private schools were allowed to exist but they gave no *matura* certificates to their graduates. One way to evade the restrictions constraining the secondary schools system were commercial schools which included 7-grade schools with their curriculum similar to that of classical gimnazjums. They were not supervised by the educational authorities but by the Ministry of Finance, which was less restrictive towards the Polish population.

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Girls’ schools, private boarding schools and convent-run schools, while different in terms of the number of grades and the level of teaching, were all strictly supervised by the authorities. In 1827, the first government-licensed secondary school for girls was founded in Warsaw the so-called Institute for Governesses (Instytut Guwernantek), which was intended to educate girls to become home teachers or teachers for private girls’ schools. After the November Uprising the Institute was Russified and converted into a 6-grade boarding school so called Instytut Aleksandryjski for Girls’ Education in Puławy, with a curriculum similar to that in a girls’ *gimnazjum*. The principle was to educate 200 female students including 100 on a scholarship. The Institute was run under the auspices of the Empress, so it was sometimes referred to as Instytut Maryjski, taking the name after her. In the 1860s it was transferred to Warsaw, where, as it seems, it was integrated in the network of governmental girls’ gimnazjums.

In the 1860s, the Russian authorities began to develop government-licensed schools for girls in the belief that this would accelerate the Russification of the Polish society. As a result, many 6-, and later 7-grade general education girls’ gimnazjums were created (with one optional eighth pedagogical grade), with Russian as the official language. The graduates obtained the licence to work as a private teacher. While in 1870/71 there were 9 *gimnazjums* in the Kingdom, in 1904/5 there were 14 gimnazjums with 6,200 students, of whom only 36.4% were Polish!³⁶ Their learning curricula were similar to those of boys’ classical gimnazjums, except that classical languages were replaced by “female” works and

³⁵ M. Szymański, *Higiena i wychowanie fizyczne w szkolnictwie ogólnokształcącym Królestwie Polskim 1815–1915 (Hygiene and physical education in the Kingdom of Poland’s general education schools 1815–1915)*, Wrocław 1979, p. 122. The curriculum was characterised by, according to K. Poznański, *Reforma szkolna, op. cit.*, p. 317: “excess of classical subjects”. For 9 years including the preliminary grade, “Latin and Greek took up 85 hours weekly, whereas mathematical and naturalist subjects only took 37”.

³⁶ M. Szymański, *op. cit.*, p. 123.

the so-called “talents”: dancing, singing, musical instruments, drawing. Given that the length of the learning time at girls’ schools was shorter than that at boys’ schools, female students completed a narrower curriculum.

Generally, private boarding schools were not allowed to provide education at the level of higher government-licensed gimnazjums. The lessons of the Polish language, literature and history, and the higher gimnazjums curricula were therefore taught illegally, often as secret courses.

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In 1869, the Polytechnic and Agricultural Forestry Institute in Puławy was made the Russian Institute of Farming and Forestry without the technical profile, whereas the Main School in Warsaw was in 1869 converted into the 4-departmental Imperial Warsaw University, with Russian scientific and educational staff. The Polish professors were removed if they did not possess Russian scientific titles of Master or Doctor (degrees or titles from other universities were not recognised) or if they were unable to lecture in Russian³⁷.

Warsaw University was different from its Russian counterparts in the selection of departments of the particular faculties, especially the Historical-Philological and Legal Departments. The Mathematical-Physical Department was almost identical to those of Russian universities, comprising 11 divisions: pure mathematics, analytical and practical mechanics, astronomy and geodesy, physics, experimental and analytical chemistry, mineralogy, geology and palaeontology, physical geography, botany, zoology, technical chemistry, and agronomical chemistry. The staffing was unstable (especially in the Historical-Philological department)³⁸ and many positions of heads of departments remained vacant.

Warsaw University was open to young people from the Kingdom of Poland who had completed a secondary school in the Warsaw Educational District. School graduates from other regions had to obtain permits from the district educational supervisor. The objective was to isolate the youth living in the Kingdom from the young people living on the “annexed” lands. Furthermore, in order to isolate young people living in Russia’s western governorates from the Polish influence in the Kingdom, the authorities recommended admitting the former into universities in the Russian interior³⁹.

³⁷ I. Ihnatowicz, *Uniwersytet Warszawski w latach 1869–1899 (Warsaw University 1869–1899)*, [in:] *Dzieje Uniwersytetu Warszawskiego, op. cit.*, p. 419, 421.

³⁸ I. Ihnatowicz, *op. cit.*, p. 424–438. While the Mathematical-Physics Faculty employed 10 professors and 5 *docents*, over the course of 30 years 54 people filled these positions. Poles constituted some 21% of this staff; with some even taking the positions of Dean (physicist Stanisław Przysański, mathematician Tytus Babczyński, geologist Karol Jurkiewicz). Apart from the Russians, (67%), the Faculty employed also Germans (11%).

³⁹ I. Ihnatowicz, *op. cit.*, p. 440–441; a Ministry of Education circular letter of 11/23 July 1899 banned providing accommodation to high school graduates from the Wilno Educational District. These students were allowed to study in Moscow, Petersburg and Dorpat. In 1886 and 1887 decrees were issued regulating the limits for numbers of students of Jewish origin. The Warsaw educational authority set the limit at 10% but it was not strictly obeyed. Jews constituted 15%–20% of Warsaw’s students population.

The graduates of classical gimnazjums were theoretically supposed to be admitted without examinations. Others, including graduates of “real” gimnazjums, had to take exams in the “missing subjects”, usually Greek and Latin. It is estimated that in the years 1870–1900 Warsaw University educated about 10.000 students including 6.500 Polish and several hundred Jewish and German ones⁴⁰.

The Imperial Warsaw University was not a hub of innovative scientific thought. Its contacts with scholars from foreign universities were sporadic, and its educational work with scientific objectives in mind was negligible. For thirty years, until 1900, only 21 master’s degrees and 9 doctoral degrees were granted (doctors of medicine, exclusive). The Polish had no chance to pursue a scientific career in Warsaw so they sought scientific degrees elsewhere. But for many the studies in Warsaw were the beginning of their scientific work. If they returned to Warsaw, they had to organise their scientific work outside the government-licensed universities. The state patronage began to be overtaken by Polish social institutions.

At the end of the 19th century Warsaw saw at last the creation of a Russian school, namely the Polytechnic Institute. In 1898, after many years of efforts and calls by the Polish society for the establishment of a technical university in Łódź, Nicholas II approved of the opening of 4-department Russian Polytechnic Institute. Most of the didactic staff were Russian, but 90% of the students were Polish. In 1905, following the school strike and the resulting boycott of Russian schools in the Kingdom of Poland, the Institute emptied, it was partly closed by the authorities in the years 1905–1908, and in 1915 evacuated to Russia⁴¹. However, the Institute did at times employ Polish professors, such as Wiktor Biernacki, Tadeusz Tołwiński, Aleksander Wasiutyński, Józef Jerzy Boguski, Mieczysław Pożaryski, and Tadeusz Miłobędzki. These scholars, as well as the few Poles employed in some departments of the Imperial University, did not evacuate, but, as the temporary staff, joined the new Polish universities that were being created then in Warsaw. They also continued teaching in the framework of the Warsaw Society of Friends of Learning.

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As early as the 1880s, the Kingdom of Poland saw the development of a vigorous movement of clandestine teaching and studying on its territory, in various forms and at various levels. For example, institutions at university level were created embracing larger

⁴⁰ The proportion of Polish students, calculated on the basis of their confession, was decreasing from 86% to 60.7%, the Russian (Orthodox) students’ proportion was rising from 2% to 19%. Following the school strike of 1905 and the Polish boycott of Warsaw University, the Catholic youth constituted 5% of the total 1556 students, with a growing tendency to 14% of the total 2062 students in the year 1914/15; the Orthodox students’ proportion was 17% and 74%, respectively; see I. Ihnatowicz, *op.cit.*, p. 442; Halina Kiepuska, *Uniwersytet Warszawski w latach 1899–1915 (Warsaw University 1899–1915)*, [in:] *Dzieje Uniwersytetu, op. cit.*, p. 552.

⁴¹ See: J. Miąso, *Szkoła Przygotowawcza do Instytutu Politechnicznego i późniejsze starania o kształcenie inżynierów w Królestwie Polskim (Polytechnic Institute Preparatory School and subsequent efforts aimed at education of engineers in the Kingdom of Poland)*, [in:] *150 lat wyższego szkolnictwa technicznego w Warszawie 1826–1976 (150 years of higher technical education in Warsaw 1826–1976)*, Warszawa 1979, p. 31-44.

groups of young people, other forms and institutions provided opportunities to compensate for the deficiencies of official secondary schools; yet other forms provided self-study opportunities, while research workshops supported financially individual researchers. An important role among the institutions operating independently of the government-licensed schools, and therefore in a separate educational system, was played by an underground Polish university created by Jadwiga Szczawińska-Dawidowa, operating between 1885–1905 in Warsaw, educating mainly women (but not exclusively), called “The Flying”, or “Petticoat University” (“Latający” or “Babski Uniwersytet”)⁴².

“The Flying University” was maintained by its students’ fees. It comprised three faculties: Social Sciences, Historical-Philological, and Mathematical and Natural Sciences. The whole course was intended to last five or six years. The students were taking tests and final exams, received student books and certificates of the subjects they had completed. The University” engaged Warsaw scholars who had no opportunity to be employed at a government-licensed university. The lectures and classes for a dozen or so strong groups were held at private flats of the students or professors. For reasons of secrecy, the flats were often changed. The numbers of students kept growing: from about 200 a year at the outset, to about one thousand at the end of the century, when the lectures were also attended by male-students of the Imperial University and the Polytechnic Institute, who were complementing their knowledge in the field of humanities and social sciences. The local police were bribed. When the Petersburg authorities found out about the university a few years later, they did not seem particularly disturbed. It may be that they considered it as a non-menacing institution that provided an outlet for young women’s political activeness.

The Mathematics and Natural Sciences department held courses in the following subjects: mathematics (algebra, geometry, basics of trigonometry), physics, organic and inorganic chemistry, cosmography, mineralogy with geology, anatomy and physiology of plants, plant systematic, human anatomy and physiology, zoology, and hygiene. The lectures were held in a one-year or two-year cycle, usually for two hours a week. Among the lecturers one may find such names as: mathematicians Samuel Dickstein or a former professor of the Main School Władysław Kwietniewski, the physicist Jerzy Józef Boguski, the geographer Waclaw Nałkowski, zoologist Józef Nusbaum-Hilarowicz, or bacteriologist Odo Bujwid. The chemistry courses were held at the Laboratory of the Industry and Agriculture Museum and at a workshop of the Leppert and Karpiński Paint Production Plant, whereas clandestine mineralogy classes at ... Warsaw University’s Mineralogy Lab, whose curator was the distinguished petrographer and mineralogist Józef Morozewicz. The Mathematics and Natural Sciences Faculty seems to have been the least academic in nature. Mathematics and natural science subjects at girls’ gimnazjums were taught in a very limited scope, therefore, at the Floating University they were addressed probably at the boys’ gimnazjums educational level⁴³. The school had its code

⁴² J. Miąso, *Tajne nauczanie w Królestwie Polskim w XIX i XX wieku (Underground teaching in the Kingdom of Poland in the 19th and 20th centuries)*, [in:] *Wybrane prace z historii wychowania XIX–XX w. (Selected works on history of education 19th–20th centuries)*, „Zak”, Warszawa 1998, p. 101-116.

⁴³ J. Miąso, *Tajne nauczanie, op. cit.*, p. 106-107.

of conduct and curriculum, as well as its own library created by Eugenia Kierbedziowa, a private Scientific Papers Reading Room, to which some lecturers contributed their own books⁴⁴. In 1906, the Flying University was converted into the openly operating Society of Educational Courses (Towarzystwo Kursów Naukowych – TKN)⁴⁵.

The Flying University's principle was to "provide quite solid education" to many women who had no opportunity of studying abroad. It provided educational preparation to those interested in leaving. "Nearly all women from the Kingdom of Poland, who had obtained completion certificates from foreign universities by 1905 (...) had earlier studied at the Floating University. (...) Its lecturers were almost all the Warsaw scholars deprived of the possibility of normal work at the Russified Warsaw University"⁴⁶.

Since 1898, an invaluable source for keen students was the world's unique publication series *The Manual for a Self-Learner (Poradnik dla samouków)*, initiated and published by Stanisław Michalski and Aleksander Heflich, and financially supported by the Mianowski Foundation for the Promotion of Science (Kasa Mianowskiego). It was an intermediary between an encyclopaedic publication and an academic book. In *The Manual*, the self-learner received a general discussion of a selected area of knowledge supported by recommended literature with tips for the sequence of reading, as well as a set of questions which allowed evaluating their level of the acquired knowledge. *The Manual* was, to a certain extent, a substitute of the formal school and university education, and made possible studying in Polish to those who were deprived of this opportunity⁴⁷.

Political prosecutions in the Kingdom of Poland, the school strike of 1905 and the boycott of the Russian universities in the Kingdom of Poland drove many young women and men to study abroad from the turn of the 20th century onward. In 1909/10, in Europe, except Austria and Russia, about there were 1400 students from the Kingdom and Lithuania, while 2500 in Russia; in total 11.831 people studied outside the Kingdom of Poland. In 1915, 821 Kingdom citizens studied at both universities in Galicja. In total, 18,500 Polish students studied outside the Kingdom of Poland⁴⁸. But many people were unable to leave, for different reasons, financial or family-related.

The Russian authorities, pressured by revolutionary sentiment and domestic unrest, made a series of concessions in the field of education. Among other things, they allowed creating private elementary and secondary schools, for boys and girls, with Polish as the official language, but without the entitlements of a government-licensed school. A problem arose, however, as to the further education of the graduates of these schools, because the certificates they received from these schools had no administrative power, and consequently, they did not

⁴⁴ This Reading Room was the origin of the current Public Library of Warsaw.

⁴⁵ H. Kiepuska, *Wykładowcy Towarzystwa Kursów Naukowych (1906–1915) (Speakers of the Educational Courses Society 1906–1915)*, [in:] *Inteligencja polska pod zaborami. Studia (Studies on Polish intelligentsia under partitions)*, ed. by R. Czepulis-Rastenis, Warszawa 1978, p. 261–309; S. Brzozowski, *Zabór rosyjski – Królestwo Polskie (The Russian partition – the Kingdom of Poland)*, [in:] *Historia Nauki Polskiej, op. cit.*, vol. IV, p. 445–489.

⁴⁶ J. Miąso, *op. cit.*, p. 102.

⁴⁷ Jan Piskurewicz, *Warszawskie instytucje społecznego mecenatu nauki w latach 1869–1906 (Social patronage of education in Warsaw 1869–1906)*, Wrocław 1990, p. 125–126.

⁴⁸ H. Kiepuska, *Uniwersytet Warszawski, op. cit.*, p. 556.

grant the students the right to enter universities. Hopes were growing among Polish people with regard to achieving some degree of autonomy for the Kingdom and some concessions on the part of the authorities concerning higher education which required educated didactic staff. All these factors led social activists along with scholars and people with political and economic influence to undertake efforts to legalise the operations of the Floating University, and consequently received permission from the Russian authorities to create the Society of Science Courses, TKN. TKN founders included Henryk Sienkiewicz, Tadeusz Korzon, Leopold Kronenberg, Stanisław Leszczyński, Antoni Osuchowski, Karol Benni, Antoni Kryński, Ignacy Chrzanowski, Piotr Drzewiecki, J.A. Świącicki and Stanisław Kalinowski⁴⁹. The so-called “protector members” and “lifelong members”, which titles were given to people supporting the TKN with substantial sums of money, included the Natansons, Michał Bergson, Stanisław Rotwand, Ignacy Paderewski, Stefan Dziewulski, industrialists, bankers, social institutions, and so on. Also the lecturers of TKN courses became members. The Society was a social institution maintained entirely from members’ fees, donations, and fees collected from students.

The TKN operated legally since 1906. Its statute was registered as late as 1907 and stated that the Society’s objective was “to provide higher education to and facilitate the pursuit of scientific work of people with appropriate preparation”, and “to promulgate science news among society at large”⁵⁰. TKN was led by the principle of the freedom of studying and teaching, it had its chancellor, and consisted of faculties headed by deans and managed by faculty boards. The number of faculties over the next few years including wartime years was rising. In 1906 the following faculties were created: Natural Science, Humanities, Technical, and Agricultural (from 1913, Horticultural); in 1915, Physics & Mathematics Faculty and the interdisciplinary Pedagogical Institute; in 1916 Forestry Faculty; and 1918, Political & Social Sciences Faculty.

Salaries were not high, so TKN lectures were largely an additional occupation for teachers, and the departments’ staffing was changeable. The lecturers were required to possess habilitation licences and individual research achievements, or at least present good potential for individual research work. The candidates’ scientific and moral qualifications were examined carefully and in general, as the future would show, without mistakes. The candidates had to be approved by the Russian authorities. Very many lecturers would later fill professorial positions at universities in the Second Republic of Poland. Their work for TKN was considered, to a certain extent, to contribute to their didactic and scientific tenure.

Originally, pure science subjects were allocated to the Natural Sciences Faculty, which was sizeable, with the number of natural subjects rising. In 1915, the Physics & Mathematics Faculty was singled out and created. Yearly, it had about 30 students. Mathematics was lectured by Samuel Dickstein, Zygmunt Janiszewski, Stefan Kwietniewski, Stefan Mazurkiewicz, Jan Krassowski, Waclaw Sierpiński, Lucjan Zarzecki; astronomy by Tadeusz Banachiewicz and Jan Krassowski; physics by Marian Grotowski, Stanisław Kalinowski,

⁴⁹ H. Kiepuska, *Wykładowcy (Speakers)*, *op. cit.*, p. 263; the author considers S. Kalinowski as one TKN founders as he had given lectures on mathematical and naturalist subjects yet before the establishment of the TKN, which were subsequently included into TKN curriculum.

⁵⁰ Cited by H. Kiepuska, *Wykładowcy (Speakers)*, *op. cit.*, p. 263.

Józef Wierusz Kowalski, Ludwik Silberstein, and Bruno Winawer; chemistry by Edward Bekier, Józef Boguski, Tadeusz Miłobędzki, Stanisław Glixelli, Hilary Lachs, Jan Bielecki, Kazimierz Sławiński, Ludwik Sperl.

This institution was co-educational and admitted people even without the *matura* certificate if they had completed the 7th grade of the gimnazjum, in the belief that they would catch up on the one grade without difficulty. Some classes were run in the evenings to enable working people to attend them. The curriculum involved both lectures and classes, students took tests and exams, and the level of teaching was high. The number of students attending TKN courses in the years 1906–1920 is estimated to have been about 25,000, of whom 70% were women. The passing of exams was honoured by universities in the Galicja, France and Switzerland. The TKN created a secular form of a “free university” which in 1920 was converted into Wolna Wszechnica Polska (Free Polish University), soon received partial academic rights, and after World War II gave rise to Łódź University.

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In 1860, Galicja received autonomy within the Austro-Hungarian monarchy, which proved to be a very favourable situation for Polish educational and academic aspirations. From 1867 the Galicja’s schooling system was administered by the National School Board (Rada Szkolna Krajowa), which was autonomous of the Austro-Hungarian authorities. Polish was again the official language at most rural schools, in secondary schools, at the Lwów and Kraków universities and at the Polytechnic Institute in Lwów. In 1872 the school attending duty was introduced. A quick growth followed of 8-grade classical gimnazjums for boys, as well as that of real, government-run and private gimnazjums.

In 1860, there were 16 gimnazjums with 4850 students in the Galicja; in 1883/1884 – 25 gimnazjums and “real gimnazjums” and 5 “real schools” with about 11 000 students; in 1908 – 45 gimnazjums and “real gimnazjums” and 11 “real schools” with about 35 000 students. Until the end of the 19th century girls’ general education secondary schools (departmental or *liceums*) did not prepare their students to take *matura* final exams. Since 1896 women could take *matura* exams as external students at boys’ gimnazjums. Since 1897, the women citizens of Austria received the right to enter universities’ philosophical departments, and soon also medicine departments, as regular students. In 1896 Kraków saw the opening of the “first girls’ private gimnazjum”. In 1900 the first 20 students received their *matura* certificates. By 1914 three other girls’ gimnazjums had been created in Kraków. At the same time, first girls’ gimnazjums were created in Lwów (first *matura* in 1904) and in provincial towns: by 1912, 5 classical and 9 “real gimnazjums” had been created, providing *matura* certificates with the right to enter universities. Ukrainian girls were admitted into 5 Ukrainian private boys’ gimnazjums from 1907. Girls’ liceums, which prepared students for the *matura* examination, posed certain competition for the *gimnazjums*⁵¹.

⁵¹ R. Dutkova, *Żeńskie gimnazja Krakowa w procesie emancypacji kobiet (1896–1918)* (*Girls’ gimnazjums of Kraków in the process of women’s emancipation*), Kraków 1995, p. 12-44, 88; of the 944 female high school graduates of Kraków’s oldest gimnazjums 709 took up studies at the Jagiellonian University.

The educational level of gimnazjums and its graduates caused criticism of the Jagiellonian University's Senate and the Higher Schools Teachers Union. In 1913–1914 the criticism was directed at the philological-historical-aesthetic bias of the gimnazjum curriculum, obsolete teaching methods, and the erudite, detached from social needs, curriculum of “real gimnazjums”, where pure science and natural sciences were taught in place of Greek. The critics pointed out that the candidates had insufficient education, insufficient knowledge of the Polish language, were incapable of thinking and learning, and all this was caused by too quick development of secondary schools and the excessive scope of its social expansion.

At the time of the autonomy, Galicja's Polonised universities blossomed, with new departments, and new research institutes being created. The professorial staff kept growing and scientific contacts with foreign universities were expanding. The education of the young academic staff was developing successfully and the number of students grew considerably. Lwów University in 1914 accommodated more than 5500 students, and its staff amounted to 147 employees including 67 professors. The Jagiellonian University at the time had about 3000 students with 264 academic staff including 79 professors. After 1905, boys and girls from the Russian partition began flowing in great numbers to Galicja's secondary schools and universities. The composition of the students and academic staff had acquired a national and co-educational character⁵².

Pure science subjects were allocated to the philosophical departments. In the 19th century they had attained an equal status with other subjects. Various forms of attracting students and young academics allowed for picking the most talented individuals and consequently supporting their scientific development (seminars, positions of university assistant, scholarships, study trips and foreign studies, habilitations, positions of university reader)⁵³. For example, at the Jagiellonian University, where the full-time positions of university assistants had been reserved until 1920 only for the Philosophy and Medical Departments, the number of assistants grew from 11, including 6 at the Philosophy Department, in 1860/1961, to 113 in 1917/1918, including 51 in the Philosophy Department. Professors were helped in conducting classes by exhibitors and the so-called “teaching fellows”, who could be students in their senior years.

Two-year scholarships had existed at the Chemical Laboratory since 1856, at the Physics Section since 1894, and as part of the Mathematics seminar as late as 1916. Some future professors had taken advantage of scholarships, for example chemistry scholarships were granted to Karol Olszewski, Tadeusz Estreicher, Michał Siedlecki; physics scholarships to Zdzisław Krygowski, Tadeusz Godlewski, Stanisław Loria; mathematics scholarship to Franciszek Leja. From the 1880s professors were also assisted free of charge by cadets (Polish: *elelowie*, *elewi*). Full time academic positions were held also by adjunct

⁵² R. Wroczyński, *Dzieje oświaty polskiej (The History of the Polish education)*, *op. cit.*, p. 184-208; data on teaching staff, see p. 200; in the years 1891–1929, the Jagiellonian University's 585 assistants included 164 coming from the Kingdom of Poland, 32 from Russia, 8 from the Prussian partition; the 206 *docents* included 53 from the Kingdom of Poland, 7 from Russia, 8 from the Prussian partition.

⁵³ U. Perkowska, *Kształtowanie się zespołu naukowego w Uniwersytecie Jagiellońskim (1860–1920) (The shaping of the Jagiellonian University's scientific staff)*, Wrocław 1975.

professors, but these had to possess senior scientific qualifications. The position of adjunct professor was held by such scholars as astronomers Daniel Wierzbicki, Lucjan Grabowski and Władysław Dziewulski (the latter two were later professors in the reborn Poland).

Research and scientific specialisation were developing which led to the creation of new departments. In pure science and natural sciences, the originally single chairs were gradually expanded into a series of new chairs of physics, mathematics, chemistry, earth sciences, astronomy, and natural sciences. At the Philosophy Faculty in Kraków the number of chairs grew from 14 to 52 (including 3 chairs of each of physics, chemistry and mathematics), it included 26 sections and 25 seminars including 2 mathematical. In Lwów, the number of chairs grew from 13 with 12 professors in 1863, to 36 chairs with 44 professors, 27 university readers, 23 assistants, and 11 junior lecturers; including 2 chairs of each of mathematics, physics, and chemistry. Seminars were launched, also in pure science, which spurred scientific development, creation of research workshops, and introduced methodological research concepts.

In Kraków, during the autonomy of Galicja, at the Philosophy Department 144 habilitations were completed and approved. Although the biggest number involved habilitations in the history of Polish literature (10) and 7 in each of classical philology, philosophy, modern world history, but also 5 habilitations in each of mathematics, chemistry, and zoology. The universities of the Galicja were home to the elite personnel of the future academic community of the 2nd Republic, or even the first years following World War Two.

Among the professors working at both universities there were many distinguished scholars. Sometimes it is hard to assign one name to one university only because one could observe frequent transfers from one university to another, and an exchange of professors between the universities of Galicja. Their disciples or visitors from other universities (including the Russian partition) pursued habilitation here and consequently joined universities in Galicja or abroad. In pure science, Kraków and Lwów are associated with some great names of distinguished mathematicians, physicists, and chemists⁵⁴. They sustained lively contacts with academic communities in Germany, Austria, France, Switzerland, Russia, or Britain. During the second half of the 19th century, and especially at the turn of the 20th century, both universities had climbed from the provincial level to become vibrant academic centres keeping up with the advances of world science.

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⁵⁴ S. Brzozowski, *Warunki organizacyjne życia naukowego w trzech zaborach (Organizational conditions for scientific life in the three Partitions)*, [in:] *Historia nauki polskiej, op. cit.*, vol. IV, part I–II, especially p.74–142, 245–268. For example, the following Kraków academics: physicists Marian Smoluchowski and Zygmunt Wróblewski, Waław Dziewulski, Władysław Natanson, historian of pure science, physicist and mathematician Ludwik Antoni Birkenmajer, mathematicians Franciszek Mertens, Kazimierz Żorawski, Stanisław Zaremba, Franciszek Leja, chemists Karol Olszewski, Jan Zawidzki, Ludwik Bruner, Stanisław Glixelli. In Lwów: mathematicians Józef Puzyna Zygmunt Janiszewski, Waław Sierpiński, Stanisław Ruziewicz, Hugon Steinhaus; physicists Feliks Kreutz, Oskar Fabian, Marian Smoluchowski (before he moved on to Kraków in 1913), Jan Stock, Tomasz Stanecki, chemist Bronisław Radziszewski and others.

Unable to study domestically, ambitious women set out to study abroad. These departures were sporadic in the 1860s and 1870s; in the 1880s more than 70 departed, and in the later years they travelled in great numbers. The entrance into university depended on whether one possessed the *matura* certificate. In the Russian partition, Polish women could take the *matura* at a boys' gimnazjum as external students. On many occasions, however, they had to complement their general education and language knowledge deficiencies. They usually suffered from poverty and their studies lingered on. The foundations which financed Polish students' scholarships favoured men. All the same, women succeeded in completing their studies, getting doctoral degrees, and even achieving scientific recognition. They were enlarging the community of Polish intelligentsia that was up to date with the latest achievements of European science.

Usually Polish women chose to study medicine and philosophy, more rarely natural and pure science. They travelled to Switzerland (Zurich, Geneva, Basel, Lausanne, Freiburg, Neuchatel) and Belgium (Brussels, Gent, Leuven). To study pure science, they usually set off to Paris (7 students in the 1880s, 20 in the 1890s including Maria Skłodowska)⁵⁵. The biggest group represented women from the Kingdom of Poland, especially Warsaw. Jan Hulewicz, an expert of these issues, brings up an opinion from 1895 stating that: "On average, the women students from Warsaw are better prepared in scientific respects than others as they have had an opportunity to take part in collective classes, that are common in Warsaw, with the best professors"⁵⁶. This comment most probably referred to the courses which evolved into the Flying University. After women were allowed admission into Galicia's universities, most Polish women set their sight on the universities in Kraków and Lwów. In 1906, the opportunity opened up for women to attend legal courses organised in Warsaw by the Society of Science Courses.

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Young people in the Prussian partition usually went to study at German universities. Despite multiple (III!) attempts the Polish people did not manage to get their own university in Poznań⁵⁷. The Prussian authorities were interested in having Polish young people studying in Germany. It was only at German universities that scholarship students of the Society for Scientific Assistance⁵⁸ were allowed to study. Besides, students going to a 9-grade German

⁵⁵ J. Hulewicz, *Sprawa wyższego wykształcenia kobiet w Polsce w wieku XIX (The question of higher education of women in the 19th century)*, Kraków 1939, especially p. 192-225, chapter IX „Studia Polek za granicą w latach 1870–1900” (Polish women students abroad 1870–1900).

⁵⁶ J. Hulewicz, *op. cit.*, p. 202.

⁵⁷ D. Mycielska, *Drogi życiowe profesorów przed objęciem katedr akademickich w niepodległej Polsce (Life stories of Polish professors before they took charge of university faculties in the independent Poland)*, [in:] *Inteligencja polska XIX i XX wieku. Studia, op. cit.*, vol. II, Warszawa 1981, p. 247.

⁵⁸ Witold Molik, *Z dziejów kształcenia polskiej inteligencji na obczyźnie. Polscy studenci w uniwersytetach niemieckich 1871–1914 (History of education of Polish intelligentsia in exile. Polish students at German universities 1871–1914)*, [in:] *Inteligencja polska XIX i XX wieku (Studies on Polish intelligentsia in the 19th and 20th centuries)*, ed. by Ryszarda Czepulis-Rastenis, Warszawa 1987, p. 248-249.

gimnazjum were unable to command modern languages well enough to study in French or English.

In the years 1849–1870 the biggest number of students at German universities arrived from the Grand Duchy of Poznań and Prussia, and relatively fewer from the other partitions. Most of them headed to Prussian universities in Wrocław (Breslau), Berlin, Greifswald, Halle, Münster, as well as Heidelberg, München, Leipzig, Freiburg, Würzburg, and Goettingen. After 1871 the number of trips picked up. In the years 1871–1914, at 21 German universities (including Königsberg and Strasburg) 243 Polish students studied in a single year (1871) which number grew to 676 in 1914⁵⁹. They usually studied medicine (in 1914 as many as 36.7%). The philosophy department encompassing the subjects of study for future teachers attracted 10% of Polish students in 1875. In the subsequent years, the interest in philosophy gradually decreased to bottom 3.1% of Polish students in 1914. Natural sciences attracted 4–6% of Polish students, only temporarily in the years 1895–1906 this number rose to about 10%. Interest in agricultural studies was growing systematically, in 1916 it reached 16%. Women were allowed to study at German universities in 1900.

Few students from the Russian partition went to study at German universities. For example, in the late 1880s only some 50 people, comparing to the 1200 studying at Russian universities. Statistics prove that graduates from German universities clearly marked their presence among university professors, renowned politicians or activists. This confirms the high level of German science at that time. Few students left Galicja for Germany, and if they did, it was usually to complete their studies, and not at Prussian, but at southern German universities⁶⁰. Even though the young didactic personnel at Galicja universities did have a lively contact with German science, the biggest attraction for the young academics were university centres in Vienna, Berlin, Leipzig and Munich, and Paris. Medicine academics usually studied in Breslau, representatives of pure science were attracted first of all by Goettingen, and then Berlin and Leipzig; they also studied in England and France. France attracted especially mathematicians who also travelled to Switzerland, Netherlands, and sporadically to Austria. Thanks to them, Galicja universities kept abreast with European science, and new ideas were flowing into university education of Polish youth.

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In 1914, the three partitions were home to seven schools of higher education: in Galicja there were two Polish universities (Lwów and Kraków) and the Polytechnic in Lwów; in the Russian partition there were Russian schools: Warsaw's Imperial University, Polytechnic Institute, and Veterinary Institute; in Puławy the Polytechnic and Agricultural Forestry Institute, called Nowoaleksandryjski, because Puławy received the new name of New Alexandria⁶¹. There was no university in the Prussian partition. The Warsaw and Puławy Russian higher education institution and their the professorial staff left Poland in 1915: the University to Rostov-on-Don, and the Polytechnic to Nizhny Novgorod.

⁵⁹ W. Molik, *op. cit.*, p. 254-267.

⁶⁰ W. Molik, *op. cit.*, p. 267.

⁶¹ D. Mycielska, *Drogi życiowe (Life stories)*, *op. cit.*, vol. II, p. 244-245.

After 1918, the academic system in Poland, with the exceptions of Kraków and Lwów, had to build up their staff from scratch. This especially referred to the new universities in Poznań and Wilno, as well as Warsaw. However, some Polish professors, lecturers and students remained in Warsaw's high schools or the Polytechnic Institute despite the boycott of these institutions by Polish youth following the 1905 strike. The first Polish staffing of both Warsaw University and and Politechnic Institute was completed in 1915, when following the evacuation of Russian institution the German occupying authorities decided to open university and polytechnic with Polish as the official language. It should be noted that preparations had been launched as early as 1906: the Society for Science Courses – TKN – had been working on launching a Polish university in Warsaw. Benon Tadeusz Miłobędzki, a chemist and assistant at the Polytechnic Institute's Non-Organic Chemistry Section between 1899–1915, and later professor at Warsaw's SGGW and Poznań University, explains this in 1949 in his letter to Wojciech Świętosławski, reminiscing about the years of the strike and the boycott: "wise people who ran the strike decided that students should boycott the Russian school. But the professors, teachers and assistants were ordered not to vacate their positions and continue fighting in legal ways. The point was that in case the strike was defeated, which was not in any way improbable, the school should not be left completely without Polish teachers. The point at stake at the University and the Polytechnic was to defend the resources, libraries so they were not removed to Russia. Incidentally, we managed to keep hold of them"⁶².

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"In times of war the muses fall silent", goes the classic dictum derived from Cicero. In the background for Poland's collapse in 1795 and its restoration in 1918 wars were waged on the European and world scale: at the turn of the 18th and 19th century the Napoleonic Wars, and in the years 1914–1918 the World War One. The national restoration coincided with clamour of arms. In the case of Poland, this dictum did not find much confirmation. Among the nine muses, daughters of Zeus and the titaness Mnemosyne (the patron goddess of poetry, art, dance, and science), Urania was the muse of astronomy and geometry, and one of her sisters, Clio, was the muse of history. The muses suffered hardships on our land but they never fell silent. Both Clio and Urania can be considered the patrons of conference, dedicated to the period from the mid-19th century to 1918, the end of the World War One. In our case, the domain of Urania, the mathematical and natural sciences, was crucial in the second part of the nineteenth and early twentieth centuries. The answer to the question of how it was possible is given by history, the domain of Clio.

⁶² Cited by H. Kiepuska, *Wykładowcy Towarzystwa Kursów Naukowych (1906–1915) (Speakers of the Educational Courses Society 1906–1915)*, cited by *Inteligencja polska pod zaborami. Studia, op. cit.*, vol. 2, Warszawa 1981, p. 293-294.