

ACHIEVEMENTS OF THE TECHNICAL SCHOOL OF IAȘI IN THE SECOND HALF OF THE 19TH CENTURY

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Abstract. The beginnings of the technical education in Iași are to be found in the content of the course of “Boundary Engineering” presented by the scholar Gheorghe Asachi in 1813. From this modest beginning up to the end of the nineteenth century, the technical education made significant progress. When the University of Iași was founded, technical education was taught within The Faculty of Philosophy, the Second Section for Sciences. Although along the time it encountered numerous and various problems, at the end of the nineteenth century the Iași higher technical education was fully developing at national and European level. Professors such as Petru Poni and Dragomir Hurmuzescu are well-known among European scientists.

From the engineering course founded by Gh. Asachi in 1813 until the end of the 19th century, the higher education technical school of Iași registered remarkable progress. Faced the difficulties that come with any beginning, the higher education school of Iași imposed itself progressively, at European level, participating, at the beginning of the 20th century, in the debate concerning the separation of the technical sciences from the humanistic ones.

The confidence in the nobility of the mission as well as the national spirit animating the advocates of this school contributed to the overcoming the difficulties generated by the lack of space, of appropriate material means, of laboratories, etc. Despite the difficulties, inherent to any beginning, the University of Iași and the scientific and technical disciplines strengthened their positions and, eventually, became a powerful center for the proclamation and irradiation of culture, science and the national spirit.

In the spirit of the A.I. Cuza regime, for the purposes of benefiting from the services of highly specialized teachers, the university kept on sending the young people with exquisite learning abilities to the west of the continent. In 1860, over 32 scholars from Moldova were studying abroad. Among them there were future university professors such as: N. Culiănu, P. Poni, Gr. Cobălcescu, completing their studies at universities in Paris, Berlin, Bonn, Torino. Scholars were sent abroad, to study with well known specialists, since the general opinion was that the development of science and of the scientific spirit, on one hand, and the adjustment of the modern learning practices, on the other, can only be achieved via contact with the direct source and experiments. Practice and specialization abroad did not allow the Romanian universities to remain behind; on the contrary, they were given vigor and perspective.

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The courses, expression of the knowledge and experience of teachers, represented a direct and unmediated form of communication. Naturally, their force and efficiency would be directly proportional with the level of knowledge and the skill of the teaching staff. The integration of the technical and scientific school in the University of Iași was reflected, to an equal extent, in the expansion of the information, processing and consolidation capacity, as well as in the improvement of the transmission and assimilation means and forms. The university had to surpass the beginnings, to create appropriate work conditions, to accumulate experience and to focus more on research in order for the activity of the teaching staff to become meaningful and brilliant. The prestigious teachers who illustrated the scientific and technical education and consolidated its reputation were at the same time scientists with exquisite culture, citizens who used their talent for the prosperity of the society in which they lived. Anastasie Obregia, the creator of the organic chemistry school of Iași, who was the head of the department of organic chemistry founded in 1882, by separating it from Petru Poni's department, had an effective contribution, by harmoniously bringing together theory and practice, to the development of the climate necessary for scientific research. In this climate of scientific effervescence, in Iași, at the beginning of the 20th century, N. Costăchescu, the first doctor of the faculty of sciences in Iași, conducted his work, as well as Petru Bogdan, the father of the physical chemistry in Romania, whose course, made up of 4 volumes, was a prestigious contribution in one of the most important fields of modern science². After successfully taking his Ph.D. in Berlin, in 1897, P. Bogdan received the title of Doctor of Science, in 1906; up to 1910, he held a free course attended *with uncommon regularity and extreme interest* by all the students who studied there³. P. Bogdan proved to be a worthy continuator of his teacher, P. Poni, distinguished professor at the University of Iași. He gave a great deal of attention to the elaboration of the course he taught. In 1869, in order to increase the scientific level, he printed "The course of elementary chemistry", then "Notions of physics" and "Elements of physics", which appeared in several editions. P. Poni became a pioneer in the wide spreading of chemistry and physics in our country. His textbooks, famous for their clarity of expression and scientific level, were used for almost 50 years in the secondary education in our country. In 1866, being appointed professor at a military school, he enjoyed, for the first time, the inventory of a laboratory. On this occasion, he thought about approaching some scientific research problems that could be solved with a limited number of work means. He wanted to initiate the chemical study of the minerals and mineral waters in our country. The findings of his first research study were published, in 1877, in "the scientific magazine", and the study was entitled "The mineral water at the Neamțului Monastery". This paper was followed by others, focusing on the

² Contribuții la Istoria Universității din Iași 1860–1960, vol. II, Bucharest, 1960, p. 64,74.

³ Arhivele Naționale, Iași Branch, file no. 7a/1913 – Senate session of June 1, 1913.

analysis of mineral waters. He also had in mind the minerals in the country. In his research on the minerals at the crystalline massif in Broșteni, paper which appeared in the annals of the Romanian academy in 1882, P. Poni wrote “the study of these minerals, as well as of the rocks where they are found, has, apart from the scientific importance that this research normally enjoys, an altogether practical aspect. Indeed, some of these minerals comprise several useful metals such as copper, iron, manganese; by becoming familiar with their nature, with the conditions in which they are found, we may hope that they will be once extracted and thus, by setting up metallurgic industries, they will contribute to the growth of the national wealth”⁴. Interested in the development of practical learning, P. Poni starts a determined fight for the creation of laboratories. At his insistence, P. Poni holds the first course of chemistry, accompanied by experiments, and in 1883 he starts his first practical works with his students. In his laboratory inaugurated in the new Palace of the University, on October 21, 1897, Poni continues his scientific research. His research activity reflects his view on science, which must have an applied nature, in connection with the economic development of society, as well as his ceaseless struggle for progress: “We do not know”, wrote Poni in his letter addressed to the Ministry of Public Instruction in 1897, “the nature and the value of the mineral products in our soil, the scientific conditions of our agriculture, we do not know our mineral waters, in a word, we know nothing of what forms the basis of our national mineral wealth”. One of the most important problems studied by Poni was that of the oil in Romania. During an anniversary moment, Dragomir Hurmuzescu stated: “Via your works, you made our country known abroad, thus giving Romania the opportunity of successfully participating to the progress of science”⁵. Wanting to make the research of the scientists in Iași known, he laid the foundations of specialized collections of books and magazines, being the founder of the magazine “Annales Scientifiques de L’Université de Jassy”, magazine that became popular among the specialized magazines. A. Obregia started his activity on the path opened by P. Poni. With the movement of the University in a new building, Obregia installed a new laboratory, according to the model of the scientists in Zurich, endowed with all the necessary equipment that existed at the time. Professor Obregia was preoccupied with numerous and diverse problems of organic and analytic chemistry. Through his scientific training, the problems that preoccupied him and his enthusiastic activity, Obregia was the creator of the Iași school of organic chemistry. He published, in collaboration with C.V. Gheorghiu, important works related to the action of isosulfonates on oximes. In collaboration with other researchers, Obregia studied a series of syntheses with organomagnesium compounds, new condensations with benzoin and analogue products, conducted a study on the mechanism underlying the formation of oxazines in benzoin and

⁴ C. Cloșcă, M. Dorin, C. Neagu, “Gh. Asachi” Publishing House, 1996, p. 35.

⁵ D. Hurmuzescu, *Istoricul Facultății de Științe din Iași*, “Anuarul” Universității Iași, 1911, XLII.

nitriles. Very interested in scientific research and in forming as many researchers as possible, Obregia gave, even to students in the last academic years, small original assignments. Apart from the university and secondary teachers, from the research chemists that he formed, Obregia contributed, to an equal extent, to the formation of technologist engineers.

Starting with 1903, at the initiative of Poni and Obregia, in Iași were taught a series of courses of applicative nature. P. Poni taught a course of oil chemistry, and professor Obregia, a course of oil technology. The first students' trip in the industry took place in 1907, at the initiative and under the supervision of Obregia. Just like Petru Poni, Obregia contributed to the setting up of theoretical and practical learning, creating, at the University of Iasi, an environment favorable for the future advancement of scientific research. The foundation created by Poni and Obregia enabled the initiation of some new research directions. The theoretical material gathered in the second half of the 19th century brought about the necessity of creating a new field in chemistry, The Physical Chemistry. P. Bogdan determined the electric conductivity of the hydrochloric acid in water, and that of the nitric acid divided between water and ether. A problem that he studied throughout his entire life was that of the molecular structure of liquids. He was interested in the surface tension, for whose evaluation he even came up with a formula. He also elaborated a chapter on kinetic theory, on the occasion of a study concerning the constitution of solids, and he imagined a series of original demonstrations for Laplace's law, for the law of the masses, demonstrations that can be found in his course of physical chemistry, made up of four volumes: Kinetic Theory, Thermodynamics, Electrochemistry, and Radioactivity. Bogdan's scientific works were cited in renowned specialized treaties: Breiding, Drucker, Roth and others. His merits were acknowledged when he was elected member of the Romanian Academy and doctor *honoris causa* at the University of Nancy. Renowned Romanian scientists held their Ph.D. thesis with P. Bogdan, among whom H. Hulubei, R. Cernătescu, C. Mihul, A. Cisman. Petru Bogdan is the father of physical chemistry in our country. The field of chemistry was also enriched by the activity of P. Poni's disciple, N. Costăchescu, the first doctor at the Faculty of Science of Iasi, who became, in 1912, full professor at the department of mineral chemistry. As a researcher, his preoccupations focused on two main directions: I. In the field of knowledge and valorization of our natural riches, continuing, in this sense, the research of his great predecessor. II. In the field of the chemistry of compounds, whose initiator he was. The research performed in relation to our natural riches, resuming the research of his great predecessor, was inaugurated by N. Costăchescu in his very Ph.D. thesis, which dealt with the composition of the common salt in the Romanian deposits. He also drew some important conclusions concerning the connections between the deposits of salt and oil. He studied the chemical composition of the "gaz-oil" in Moreni and the composition of paraffin in

our country. Petru Bogdan, together with his illustrious predecessors, was one of the school creators in the field of chemistry and in the organization of the technical higher education.

Starting with 1903, at the Faculty of Sciences, P. Poni., A. Obregia, I. Simionescu taught free courses related to the chemistry, technology and geology of oil. These courses were not sufficient in order to create qualified teaching staff and that is why, at the meeting of the faculty board, on April 21, 1905, the professors of the Faculty of Sciences demanded the setting up of some new departments of applied chemistry, underlining the fact that "the setting up of these departments would attract more students and would accelerate the production that can be obtained by using the riches of the soil and of the subsoil"⁶. Following the endeavors of the university professors, a department of agricultural chemistry was founded in November 1906, under the coordination of Professor Haralamb Vasiliu. This department was the nucleus of agronomic education in Iasi. As concerns the department of technological chemistry, although its setting up was approved, it was founded only in 1912, after a period of ceaseless attempts to introduce chemical engineering education at the University of Iasi. In 1913, Niculescu Otin, one of the organizers of the polytechnic education system in Iasi, was appointed to teach this discipline.

Via its illustrious representatives, the teachers of chemistry in Iași focused on the connection between theory and practice, and were deeply interested in the setting up of a higher education institution with technical profile.

This idea preoccupied the chemists, as well as the representatives of other disciplines, interested in the achievement of the above mentioned objectives. It is worth mentioning, for the activity that he conducted, Dragomir Hurmuzescu, great physician and prestigious representative of Romanian physics, renowned for his original contributions in the field of experimental physics, professor, starting with 1896, at the Department of Gravity, Heat and Electricity of the A.I. Cuza University of Iasi. His contributions can also be identified in his Ph.D. thesis, where he determined Maxwell's "v" value, between the electromagnetic and the electrostatic units. Although it was often determined starting with 1865, the "v" value proposed by Hurmuzescu in 1896 lasted in time. On this occasion he built the first high voltage dynamo, up to 3 000 Volts. In Lipmann's laboratory in Sorbonne, he studied the electromotor magnetization force and built the first modern electroscopes with a metal box, an electrostatic screen and a dielectric insulator (a mixture of sulphur and paraffin) that he considered to be a good insulator, easy to work with at the lathe. His electroscopes served the first researchers in the field of reactivity. Together with L. Benoist, he discovered one of the fundamental properties of X rays, that of discharging electrified bodies. Hurmuzescu's courses were attended with interest by the students, due to the experiments, presented in a very talented manner, and to the scientific novelties. In order to create scientific

⁶C. Cloșcă, M. Dorin, C. Neagu, cited Works, p. 38.

research possibilities, he organized the laboratory, equipping it with modern devices, and created a mechanic workshop. Here would be built the machines and devices necessary for the scientific research performed in the laboratory, and built and repaired the equipment for the high schools throughout the country; thus, the students would have the opportunity of becoming familiar with the technique for building a device, with work at the lathe and with woodcutting. The laboratory, installed in 15 university rooms, had the material necessary for the investigation works, the experiments, the course presentations and the practical works with students. The laboratory also met other purposes. Since it had a room with a device for X-rays, the laboratory performed X-rays for the patients sent from Sf. Spiridon hospital. The laboratory also included a weather station built in order to enable the students to observe the weather phenomenon. The laboratory was frequented by many students who “started, for the first time, to perform quantitative determinations at the practical works of physics”⁷. Having a clear vision of the future of our country, the necessity of having a technical higher education institution and of preparing new engineers, due to his endeavors, D. Hurmuzescu managed, in 1904, to obtain the approvals for the setting up of a school of electricity, attached to the University of Iasi, which started to officially function on November 1, 1910. Advocating for the setting up of the School of Electricity, Hurmuzescu stated “this way, there would be a greater outlet for this speciality, the students would find some profit, and the faculties of sciences would be more populated”⁸. The school of electricity was structured according to university principles, functioning based on an appropriate higher education program. This school accepted only bachelors in physics, chemistry or mathematics, officers from the schools of military engineering and artillery, as well as engineers from the country and from abroad, whose awards were not acknowledged. Those who wished to become students of this school had to pass an entrance examination, having to prove that they were thoroughly prepared. They had to possess knowledge in superior algebra, analytic geometry, descriptive geometry, and drawing, notions of mechanics, analysis, physics and chemistry. On February 13, 1913, the school turned into an Institute of Electrical Engineering which incorporated the department of chemistry as well and represented the applied section of the Faculty of Sciences.

The school of electricity will constitute the basis of the faculty of electrical engineering. Professor Engineer C. Bedreag stated, with satisfaction and respect, the fact that “as concerns the teaching of electricity, the University of Iași has an indisputable advantage, thanks to the activity, spirit of initiative and organization of its first professor of electricity, Dragomir Hurmuzescu”⁹. The study duration was

⁷ Arhivele Naționale. Iași branch. Fond rectorat, inv. 8/1908, fila 60

⁸ D. Hurmuzescu, *Învățământul științific superior*, in the “V. Adamachi” Scientific Magazine, vol. II, n. 2, Iași, 1915, p. 109.

⁹ C.G. Bedreag, *Învățământul superior tehnic-științific* in the “V. Adamachi” Scientific Magazine, aug. 1915, p. 170.

of three years, and the graduates were awarded the title of engineer-electrician. Insisting on the merits and personality of D. Hurmuzescu, C.D. Bușilă, representative personality of the Romanian school of engineering, wrote for the posterity “the enthusiasm and the work channeled by a man of pure science for the guiding towards the science he studied in the laboratory, and the help of some professors and engineers, put the Institute on the right track, and, in time, it may form engineers-electricians. Bușilă concluded that, “We hope that, due to his departure from Iași to Bucharest, the idea will not be abandoned, and, with all the difficulties that may appear, the school will be preserved”.¹⁰ Dragomir Hurmuzescu conducted a fruitful scientific research, primarily approaching topics from the field of electricity. In the period 1897–1903 he studied the properties of bodies under the action of magnetization (as, for example, electrical strength, with the electromotor force caused by mechanic deformities). In the same period, he discovered the radioactivity of some oils in Romania. His works were cited in numerous physics treaties and in many articles published by theoreticians. His studies placed him among the top physicians in the world. At the radiology congress, held at Bruxelles in September 1910, the various sections were presided over, in turn, by M. Curie, Rutherford, Hurmuzescu, Arrhenius and others. He continued his activity in Bucharest and, in 1926, he set up the first radio broadcasting station in our country, in the laboratory for practical applications of electricity. On this occasion he also took charge of the first radio magazine in our country. In recognition of his merits, he was appointed corresponding member of the Romanian Academy. He was elected member of the French and German society of physics. The University of Iași and the Technical School of Iași owe him a part of their glory.

Hurmuzescu opened the doors for scientific research for several young men grouped around the department of heat and electricity. He studied, together with N. Patriciu and R. Severin, the radioactivity of some mineral water sources in Romania. Under his guidance, his laboratory assistant, C. Bedreag, commenced to study the electrical charging of the bodies subject to the action of X-rays. It was also here that Șt. Procopiu started his scientific research, publishing, in 1912 and 1913, some notes in the scientific annals of the University of Iași and in the Scientific Bulletin of the Romanian Academy, of which we must mention the work in which Procopiu predicts the existence of the theoretical magneton.

The affirmation of these specializations would not be possible without the profound study of mathematics. According to the law from 1864 regarding the organization of education, the Faculty of Physical, Mathematical and Natural Sciences was created in the University of Iași. The students of that section had to attend a year of physics as well. On February 1865, when the new law was enforced the following professors were working in the new Faculty: I. Popp at

¹⁰ C.D. Bușilă, *Învățământul electrotehnic în “Buletinul societății Politehnice XXIX”*, no. 11–12/1913, Bucharest, p. 7.

analytical geometry, Ștefan Emilian at descriptive geometry, Nicolae Culianu at astronomy and Ioan Melic in calculus and temporary professor at mechanics until 1860. After the premature death of Ioan Popp the analytical geometry course was continued by N. Culianu. He was followed by Gheorghe Roșu, who studied mathematics and engineering in Torino. The Chair was occupied in 1871 by Climescu, who was followed by Constantin Popovici, Ph.D. in mathematics by the University of Paris. Emilian worked at the Chair of Mathematics until his retirement in 1892. The chair was temporarily occupied for one year by I. Ralet and for one more year by E. Pangrati. Melic (engineer from Paris) worked at the Chair of Differential and Integral Calculus until 1919. He worked in the Chair of Mathematics as well between 1865 and 1869. In 1869 Militiade Țoni, who had a degree in mathematics and engineering, was named in that position. In 1907 Dimitrie Pompeiu, Ph.D. in mathematics by the University of Paris, was named in that chair. Nicolae Culianu worked in the Chair of Astronomy until his retirement in 1906. His son, P.N. Culianu, who held a degree from Paris, occupied the chair temporarily until 1910. The objective of these professors' activity was to train a generation capable to make scientific creations. They attempted to raise the level of the lectures they taught and publish treatises. N. Culianu and C. Climescu published university courses for mathematical analysis and descriptive geometry for the first time in Romanian language. The normal school began to work in 1874. This school produced well prepared didactic staff. A part of the faculty professors raised the prestige of this school. With the same purpose a group of university professors, supported by high school professors founded in 1883–1888 a review for pupils and students, called "Scientific Recreations". The material was presented as articles, solved problems, proposed problems and notes. The articles referred to mathematics, chemistry, astronomy, history of mathematics and didactic problems. The review succeeded to attract pupils and students from diverse places of Romania, some of whom had left to study to Western Europe. Among those who solved problems we may find pupils, who later became renamed specialists in the scientific and didactic world. Among them we might mention E. Pangrati, Anastasie Obregia, V. Cristescu (one of the founders of the "Gazette of Mathematics"), Sc. Panaitescu, P. Culianu, D. Pompei, V. Vâlcovici. Around 1910 the Chair of Mathematics received new staff: A. Myller and C. Popovici and, from 1919, Simeon Sanielevici. In this period there were founded the seminary of mathematics, the astronomic observatory and the laboratory of mechanics, endowed by Vâlcovici with demonstrative and scientific research equipment. These institutions represented the material base for new developments of mathematics in Iași. The school of mathematics from Iași formed exceptional specialists that later became lecturers or professors, such as: C. Bogdan, Al. Climescu, D. Mangeron and Ilie Popa. Exchanges of information and contacts with other schools of mathematics in Europe were very intense.

The extension of the academic profile of the University of Iași and the diversification and deepening of its field of research took place together with the intensification of links with the scientific community of that time and the integration within the European circuit. Links were deepened and diversified by all means: exchange of publications or programs, contacts by means of specialized literature, exchange of information and visits. As a sign of respect to universities with tradition and in order to show solidarity with the intellectual movements in the continent, the University of Iași paid homage to great personalities of universal culture and science. On February 4/16 1964, the University of Torino was informed that the University of Iași celebrated the birth Galilei “in order to pay homage to a great man and to show the feelings of solidarity that the University of Iași had for its sisters from Italy”. The Rector of the University of Torino answered by an elegant and warm letter¹¹. In the same way the three hundredth anniversary of Shakespeare was celebrated in the presence of the British Consul¹². The invitations to participate at anniversaries and establish exchange relations became more and more frequent. Such invitations were made when the Academy of Lausanne became a University, at the 500th anniversary of the University of Leipzig, at the 75th anniversary of the Catholic University of Louvain, at the 350th anniversary of the University of Geneva and in the anniversaries of similar institutions from Greece, Holland and U.S.A.¹³. Messages of human and intellectual solidarity were received and transmitted. A circular from the University of Madrid was received after the revolution of September 1869, by which the University of Iași was summoned to contribute to “the great and generous objective of our century: to eliminated and erase [...] entirely, in the name of liberty and science, all racial and religious antipathies and prejudices, that have separated and set apart for so much time the nations of the European Continent”. The Scientific Council of the University of Iași, expressed its solidarity and sympathy by means of a warm message addressed to the University of Athens¹⁴.

The most efficient way to maintain and enlarge the contacts with the international scientific community was the participation at meetings and congresses. Invitations of participation were numerous. Professors from Iași participated in official delegations, presented scientific papers and works that showed their preoccupations and achievements. The efforts of the Iași academic staff allowed the organization of scientific manifestations at European level. Due to efforts made by the Society of Sciences (especially by Dragomir Hurmuzescu and P. Poni) the first Congress of Sciences of Romania took place between June 2 and June 4. Some professors from European Universities participated at this congress. The integration

¹¹ Arhivele Naționale, Iași branch, dosar rectorat, 2/1863–1864, f. 96–106.

¹² Ibidem, dosar 2/1863–1864, f. 76.

¹³ Ibidem, dosar 1/1911, f. 353,7/A, 1913, dosar 5/1913, f. 435.

¹⁴ Ibidem, dosar 2/1896–1897, f. 168.

into the scientific and cultural circuit of the contemporary world was achieved gradually and represented one of the ways to raise the prestige of the country, together with economic and political achievements. The University of Iași and the didactic staff of the Faculty of Sciences made a contribution, whose value can be appreciated both internally and externally, as it succeeded to project its values abroad. Some of the best representatives of the University of Iași had that “warm and sincere patriotism” that Dragomir Hurmuzescu considered absolutely necessary to overcome the difficulties of the beginning¹⁵. In their activity and daily realizations they showed that principle expressed so clearly by A.D. Xenopol in his speech during the opening ceremony of the academic year 1898–1899. The direction in which we advance “cannot be any other than that one that leads to the strengthening of the nation, the exaltation of the Romanian nation. More than large nations – Xenopol continued – small nations must endeavor to ensure their own existence, as large nations are defended by their size [...]. They are extensively powerful, while we must try to replace that by internal value, just as the extension of life can be replaced by its intensity. While other nations may think about mankind in an abstract way, we must constantly think in all our deeds about our people and all our thoughts and must tend to its strengthening. The culture of large nations can be cosmopolitan, while our culture, as a small nations, as we are at least so far, restrained in the borders of narrow Romania, must be first of all national. All our efforts must lead to the exaltation of our nation, as just its strengthening and flourishing can ensure a good life and add one more string to the harmonious instrument of universal civilization. Professors must endeavor to strengthen the love for the whole, without neglecting any of its divisions, but constantly illuminating them with the enlivening light of science. Students must endeavor to use the knowledge and talent they have obtained to exalt and defend the nation”¹⁶.

The second half of the XIXth century and the beginning of the XXth century was a prolific scientific period for the Iași school of mathematics. Thus C. Popovici made an interesting correction to the law of Newton-Coulomb, coinciding in this field with the important works of the Italian mathematician Armellini. Almost all his scientific activity was dedicated to functional equations. The Academic Simeon Sanielevici researched equations regarding strings and vibrating membranes. He studied different differential equations. The seminary of mathematics trained generations of exceptional mathematicians, among whom we should mention professor Mangeron, who taught at the Polytechnic Institute, which was separated from “Alexandru Ioan Cuza” University in 1938, professors Climescu and Marcus. This generation of mathematicians from Iași fulfilled the ideal of previous generations to have original creations. Our retrospective cannot leave aside the

¹⁵ C. Turliuc, R. Matei, Universitatea și Marea Unire, în “Dialog”, an. XV, no. 5, p. LVIII.

¹⁶ Anuarul Universității din Iași pe anul 1898–1899, Iași, 1900, p. 5, 18.

important contribution made by Professor Al. Myller. In 1910 he was recommended as permanent professor at the chair of analytical geometry, which remained empty after C. Climescu retired. He settled in Iași, with his wife, who was also a renowned mathematician, and changed his field of work to geometry, which was the discipline he had to teach. He began to work on algebraic curves and linear geometry. Thus, there were published several works until 1919, in which he treated the problem of special surfaces, as well as geometric problems that lead to functional equations. Myller introduced in his lectures novelties from the field, such as the Levita-Civita parallelism and the more general idea of connection. He did not just present these novelties, but also made his personal contribution to them. His interpretation of parallelism in the variety of Euclidian spaces, made with the help of a linear surface formed by parallel directions, was used by Bianchi. Among the remarkable contributions Myller did we should mention: the transformation of surfaces by parallel tangent planes, a problem that attracted several disciples, spiral surfaces, the flexion of linear surfaces, polar geometry and middle torsion of surfaces. Professor Myller's pedagogical activity lasted the 37 years. During this period, he held the Chair of Geometry, which was one of the most prolific chairs in Romania.¹⁷

This promising beginning, made by the creation of chairs of applied sciences, took place in a decade characterized by the heavy consequences of war. In spite of the difficulties that Romanians had to face, the idea of technical education was not abandoned. The ideal of full unity of the Romanians was happily combined with the fight for cultural-scientific emancipation. "If destiny will help us in the future to fulfill our ideal (of total unity) – C.D. Bușilă wrote in 1914 – more schools will be organized with the same model, i.e. as a complete technical education"¹⁸. During the war, 1917–1918 the process of education could not continue. Many people from the occupied territories fled to Moldavia. In such conditions technical higher education remained an impossible ideal. University staff from Iași, together with colleagues from Bucharest, fled to the new capital and discussed the possibilities to organize technical education in Romania after the war. By requesting the assistance of French universities, Romanian intellectuals were aiming to reorganize after-war education in a modern way, according to requirements and necessities of Romanian society at European level. It was proposed that in the beginning a French mission would come to Iași, but this never happened due to war. It was decided then to send a Romanian commission to France empowered "to study general education problems and especially problems of technical higher education"¹⁹. The commission studied with great interest and attention the experience

¹⁷ Istoria Universității din Iași, Ed. Junimea, Iași, 1985, p. 91.

¹⁸ C.D. Bușilă, Învățământul tehnic superior în "Buletinul Societății Politehnice XXX", no. 8–9, Bucharest, 1944, p. 16.

¹⁹ Învățământul Tehnic Superior în România, Bucharest, 1919, p. 45.

of some academic institutions from other countries, such as higher polytechnic schools from Germany, French encyclopedic schools, technical faculties in Belgium, Switzerland, U.S.A. and Japan, as well as technical university institutions from France. After a serious analysis the Commission got to the conclusion that technical university institution had to be created in our country according to the French model, which implied the implementation of “certain modifications imposed by scientific knowledge and technical precision that such a form of education has in our times.”²⁰ In spite of the difficulties caused by war, problems of education were not left aside. In 1918 there were drafted Regulations of the Chairs of Electrotechnics, Industrial Chemistry and Agricultural Sciences of the Faculty of Sciences of the University of Iași, which was published in the Official Gazette n° 78 from June 29, 1918. These regulations confirmed the conclusions of the Commission regarding technical education in Romania. The new form of organization “matched in a better way the future necessities of the Romanian economy”²¹. The interest to create a technical institute grew after the First World War. Articles published in diverse reviews and volumes highlighted the necessity of having many and diverse technical specialists, but also technical schools.

Professors in Iasi were concerned about the organization of technical education much before the First World War. The progress of pure and applied science lead to the increase of knowledge that had to be taught in higher schools.

In that period the affirmation of Romanian higher schools became a major concern for both academic staff and politicians. After long discussions at ministry and government level, it was decided to create polytechnic schools according to the European model. Thus two polytechnic schools were created, the Polytechnic School of Bucharest in 1920 and the Polytechnic School of Timișoara in 1923. In Iași, higher technical education continued on the basis of the Regulations foreseen in the article 59 of the 1912 Education Law and there were three technical chairs: electrotechnics, industrial chemistry and agricultural chemistry²². Technical education in Iași was developed at a very high scientific level within the University of Iași and had three chairs of applied sciences until the creation of the Polytechnic Institute in 1937.

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²⁰ Raportul Comisiei publicat în “Revue générale des sciences ” din 15 noiembrie 1918, titlul “Organizarea învățământului tehnic superior pe lângă universitățile din România”.

²¹ *Istoricul Institutului Politehnic Iași*, Mss, vol. II, p. 57–59.

²² C.D. Bedreag, *Evoluția învățământului superior în universitățile politehnice, Iași*, 1921, p. 12.

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