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## GHEORGHE ION DUCA - THE REORGANIZER OF THE NATIONAL SCHOOL OF BRIDGES AND ROADS OF BUCHAREST

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**Abstract.** School had, has and will have an important role in building the elite of a nation. The National School of Bridges and Roads played an important part in educating engineers in Romania. Here big names from the Romanian engineering were educated, and later, they made the name of this school famous worldwide. As it usually happens, in the history of an institution, there is a man who, due to his force and vision, changes its destiny for good. In the history of the National School of Bridges and Roads, this man was Gheorghe Ion Duca whose name is closely linked by the beginning of the engineering school system in our country by its reorganization and by building the headquarters at the crossroads of Polizu Street and Calea Griviței, where the Polytechnics Institute of Bucharest functioned for a long time.

**Keywords:** *Georghe Ion Duca, The National School of Bridges and Roads, Polytechnics Institute of Bucharest.*

### Biography

**Gheorghe Duca** was born on the 3<sup>rd</sup> of February 1847 at Galați. His father, Ion Duca, was a minister during Alexandru Ioan Cuza's reign. He attended Louis le Grand High School in Paris. His education and his life were supervised by Iancu Alecsandri, the poet Vasile Alecsandri's brother, who was at his time one of the close collaborators of Alexandru Ioan Cuza. He passed the baccalaureate exam in 1864, and he immediately registered at the Central School of Arts and Crafts in Paris, getting the engineer diploma in 1869.

### Educational Reformer

He came back in the country in the same year and he got a job as a descriptive geometry professor at the Military High School from Iași where his organizational spirit and his teaching strictness were remarked.

As a result, he was appointed professor and manager of the School of Bridges and Roads of Bucharest on the 8<sup>th</sup> of April 1881. Following the model of the French school that he had graduated 12 years before, he improved the curricula for all disciplines and the teaching methods so that the results of the graduates would be similar to the ones got by the French students, by the European students. The new manager introduces a very severe discipline. Thus, in the Report no. 109 from the 16<sup>th</sup> of June 1881, approved by the minister,

he proposed measures which will allow the students to be declared repeaters or to be expelled if they do not study steadily or fail the general exam. Gheorghe Duca said: *"An essential condition to succeed is an absolute severity for behaviour as well as for study"*. With the Report no. 205 from the 19<sup>th</sup> of September 1881, he proposed for the 1881-1882 school year a preparatory year in order to complete the high school graduates' lack of mathematical knowledge.

Criticizing the tendency to form engineers from all branches (bridges, roads, railways, buildings, mining, industry and so on), Gheorghe Ion Duca considered that the state, which made huge money efforts, should form specialists for public works (namely bridges, roads, railways). Gheorghe Duca organized an extremely rigorous selection of the students. The number of students who managed to pass the first year was less than 15 although *"nothing would be easier than having at least 50 students in each class, but, in this case, the school would become a factory of nullities"*. *"He reorganized the school from the ground up"* was stipulated in a document of that time.

### **A Short Story of the National School of Bridges and Roads**

On the 1<sup>st</sup> of October 1864 the engineering school was founded after a project elaborated by Mihail Kogălniceanu. This school was named The School of Roads, Mining and Architecture which had as a goal the forming of specialists in charge with more and more numerous public works. The studies lasted two years. On the 30<sup>th</sup> of October 1867, this school became the School of Bridges, Roads and Mining, five years were needed to graduate: a preparatory year, three years with common courses and the fifth specialized year with two specializations: "The Department of Bridges and Roads" and "The Department of Mining". This is considered a stabile beginning of organizing the engineering academic system in Romania, and this beginning ended in 1881 when Gheorghe Duca was appointed manager of this school.

### **School under Gheorghe Ion Duca's Management**

On the 1<sup>st</sup> of April 1881, under Gheorghe Ion Duca's management, the institution changes its structure and name: The National School of Bridges and Roads. Its setting-up, only two years after the setting-up of the Polytechnics School in Berlin- Charlottenburg, is one of the many proofs of technical maturity of our great scientists. The National School of Bridges and Roads educated engineers in different specializations, in the domain of public works, of constructions, mining and oil exploitation and so on. The level of the theoretical knowledge was very high and helped some of the graduates approach new domains of sciences and they were even able to create new sciences. An example of such engineer is Gogu Constantinescu. He introduced compulsory practical hours in order to form artillery officers, and, together with their engineer degree, they also became the lieutenants in reserve.

Starting with 1890, the graduates of the National School of Bridges and Roads were acknowledged their diplomas at the same level as the diplomas got at foreign polytechnics schools.

Gheorghe Duca considered that a good school should have a lot of space, and this is why he moved it on the former Calea Craiovei, Calea Rahovei today, in a large building situated on Știrbei Vodă Street, where nowadays there is the "Ciprian Porumbescu" Conservatory.

Due to Gheorghe Duca's initiative, in 1884 the school started to build a new building on Polizu Street, at the crossroads with Calea Grivitei. This is Building A, ground floor and first floor, where, later, the Polytechnic Institute functioned for many years.

On the 2<sup>nd</sup> of October 1886, the new building was solemnly inaugurated. The building was designed for 100 students, with an area of 7000 m<sup>2</sup> and it contained an auditorium, many classrooms, a chemistry lab, a physics lab, a mechanic lab, as well as drawing rooms, a library and a museum which still functions.

Gheorghe Duca managed the School until March 1888 when he was appointed general manager of the railway company. In fact, a great part of his activity was carried out in the railway company. In 1874 he was appointed manager of Iași – Ungheni route. Between 1876 – 1881 he worked at the Central Direction of Guilloux Company, on Ploiești – Predeal railway route. In 1897 he was appointed general manager of Romanian Railway Company. In this position, he implemented a lot of innovative solutions, he developed the railway network, he used specific devices for increasing the safety of the railway traffic and reducing the number of accidents, he reduced the ticket prices. In order to increase the professional quality of the personnel, he set up a school for traction mechanics (1890), a school for maintenance chiefs (1892) and another one for manipulators (1893).

### Gheorghe Ion Duca and Professional Associations

Polytechnics Association. Gheorghe Ion Duca was one of the founding members, being vice-president from the very beginning and President in 1883 and 1890. He died too early, on the 7<sup>th</sup> of August 1899. He was only 52. His statue, made of bronze, is placed on Calea Grivitei from Bucharest, between the old building of the Polytechnics Institute and North Railway Station, two institutions which he dedicated most of his energy, and the stone statue is placed in the interior court of the building on Polizu Street.



Gheorghe Ion Duca's statue on Calea Grivitei



Gheorghe Ion Duca's statue in the interior court of Polytechnics Institute building in Bucharest, Calea Grivitei

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