AGUSTIN BETANCOURT IN RUSSIA

Vladimir E. Pavlov

1.- To the service of the Russian Crown.

Agustin Betancourt arrived for the first time in Russia in November 1807 and stayed there for several months, till April 1808. During this first stay he was presented to Alexandre I, charmed him as a person, pleased him as an engineer and got the invitation to enter the service of the Crown under very advantageous conditions (fig. 1). He also impressed the royal family, and namely the empress-mother Maria Fedorovna with whom he entertained a correspondence after his departure and whose benevolent attitude contributed greatly to concretise this opportunity. Thus, in her letter addressed to Betancourt in Paris, the royal Lady asked him not to postpone his coming to Russia that particularly influenced his decision. In his reply, dated June 22, 1808, Betancourt writes about his definitive decision and preparations for his journey.

The fact that Betancourt had given his prior agreement to Alexander I to turn to the service of Russia is evidenced by the Alexander I’s decree dated March 13, 1808, and addressed to the cabinet council “On the delivery of two thousand roubles

Figure 1. Alexandre I, emperor of Russia (1801-1825). Portrait 19th century.

---

1 The author warmly thanks M. Bradley who kindly accepted to review the English version of this paper.


3 This correspondence is housed in the Russian State History Archives = Rossijskij Gosudars-tvennyj Istoričeskij Arhiv (RGIA), f. 758, 1808, op. 6, d. 468.
granted for General Betancourt to the Minister of Foreign Affairs Count Rumyantsev”⁴. In July, a passport for coming to Russia has even been sent to Betancourt to Paris. His travel with his family to his new place of work coincided with the meeting of Alexandre I and Napoleon in Erfurt (September 1808) and Betancourt spent there several days on his way to Russia. The travel across the central Europe was permanently troubled by the movement of the troops and retinues of both Emperors. However, the Betancourt arrived to Russia ten days before Alexandre I⁵. Soon after, the engineer was placed on Russia’s service, at the Emperor’s court.

2.- Towards the new Engineering Education in Russia.

Agustin Betancourt’s 15-years period of life and activity in Russia began. At first, the family, –his wife Anna, his three daughters Carolina, Matilde (Mathilde), and Adelina, and his son Alfonso– stayed in a hotel and then, Betancourt having been appointed on September 15, 1809 Inspector of the Institute at the Corps of the Waterways and Land Transport Engineers (since 1810 – Corps of the Ways of Communication Engineers), with the aim of organizing the Institute and establishing a plan for training, he moved together with his family to the Yusupov’s Palace, on the Fontanka embankment (fig. 2). This palace housed the Institute whose inauguration took place on November 1, 1810⁶.

As early as August 1809, by order of Emperor, a Commission was established, with Betancourt and Dewollant among its members, to prepare Alexander I’s Manifesto on the organization of the General Direction of the Waterways and Land Transports which included, in its turn, the Manifesto on the creation of the relevant Corps of engineers with the Institute attached to this latter. The Manifesto was signed by the Emperor on November 20, 1809⁷. This date (December 2, new style) is the Institute’s Foundation Day (in 2009,

---

⁴ RGIA, f. 468, 1808, op. 34, d. 309.
⁵ This information has been communicated by D. Gouzévitch.
⁷ Polnoe Sobranie Zakonov Rossii skoj imperii, t. XXX, n° 23996 du 20.11.1809, 1305-1339.
the 200th anniversary of the first Russian transport educational institution has been celebrated) (fig. 3).

Betancourt’s ideas concerning the Institute’s structure, its library, classrooms and workshops, the curriculum, and the necessary academic and attendant staff were reflected in Alexander I’s Manifesto.

In the first 25 years, the students at the Institute were taught in French. To teach the sciences, Betancourt engaged some outstanding Russian scientists and architects, as well as some young French engineers and then several experts from France who became professors at the Institute8. Betancourt kept the best graduates at the Institute and trained them to become future Russian professors who would be able to carry out the training of the ways of communication engineers9.


For the first time, the curriculum of the higher engineering educational institution in Russia included higher mathematics and descriptive geometry which, together with physics and chemistry, formed the scientific basis for the training of the engineers of public works. Moreover, the combination of the students’ theoretical training with their practice at various construction sites created a solid basis for the future fruitful professional service of the Institute’s alumni. In 1816, the Institute started lithographing and publishing its professors’ lectures that became the first tutorials. They were also used at other engineering schools\textsuperscript{10}.

The main majoring courses were Structural construction and Applied mechanics.

The Structural construction course involved important aspects: building materials, structural engineering, construction works, main roads, bridges,

hydraulics, and from the autumn of 1823, railways. All these parts later became independent curriculum subjects.\textsuperscript{11}

The Applied mechanics course involved the study of steam machines, building and road building machines and mechanisms, as well as the entire system of mechanical devices related to transport facilities and water supply construction and operation\textsuperscript{12}.

Under Betancourt, 12 graduations took place, 150 people graduated from the Institute. They became the first ways of communication engineers and the source of a large number of engineers trained at the Institute over 200 years – more than a hundred thousand people.

Betancourt was the Inspector (Rector) of the Institute until February 4, 1824. At the same time, he had to act as the Chief Director of the Ways of Communication (1819-1822), Chairman of the Committee on building and hydraulic works (1816-1824), Chairman of the Commission on the Nižny Novgorod fair (1817-1824), Member of the Commission on the building of St. Isaac’s Cathedral (1818-1824).

Along with being director and organizer of works, Betancourt was engaged in implementing his particular engineering projects on the orders of the Government or individuals.

3.- The engineering projects.

The first Betancourt’s engineering project to be implemented in Russia was the Young girl with a jar fountain in the Catherine park at Tsarskoe Selo (sculptor: P. Sokolov) erected in 1810 (the gypsum figure was replaced by a bronze one in 1816), celebrated in Pushkin’s poetry. In 1810, Betancourt had


to rearrange and decorate the Upper Bath of the Mirror Pond in the Catherine park. He kept untouched the central octagonal hall, whose ceilings and walls were painted to engravings made from a V. Brenna drawing. Betancourt was meticulous with the 1779 design of the architect I. Neelov and kept untouched the original basic architectural ideas.

Alexander I charged the architect V. Stasov with the reconstruction of the Babolov’s Palace at Tsarskoe Selo. In 1811-1818, the unique tank in the Palace was made to the Betancourt’s design from a one-piece granite block weighing 160 tonnes and brought from Finland by water. The dimensions of the bath: 196 x 151 cms, diameter: 533 cms.

In 1812-1814, the Taitsky water pipe supplying potable water to Tsarskoe Selo and Pavlovsk was reconstructed to the Betancourt’s design. At the same time, in 1811-1812, Betancourt and Dewollant developed a project to protect the town of Tver against the Volga’s high water; the implementation of the project had eliminated any possibility of flooding there for good13.

In August 1812, the Izhorsky Works produced the first mechanical dredger, equipped with a steam engine and designed by Betancourt, to clean rivers and canals. The dredger was conveyed to the harbour of Kronstadt where it operated successfully for almost 10 years.

In 1813, the first permanent bridge (wooden arch bridge), called Kamennooostrovsky, was spanned across the Malaya Nevka to Betancourt’s design and it prompted the enthusiastic appreciation of his contemporaries (fig. 4). As a matter of fact, it was under Betancourt that his disciples laid the basis for the design of new types of bridges, suspension or chain bridges: Panteleymonovsky bridge across the Moyka river, and Egietsy bridge across the Fontanka, Bankovsky and Livity bridges spanning the Ekaterininsky canal (fig. 5, 6 et 7). In 1829-1830, a unique Malo-Konyushenny bridge was built across the Moyka river and the Ekaterininsky canal, and in 1828, the Bolshoy Konyushenny bridge across the Moyka, all of them becoming integral aspects of St. Petersburg’s architecture14.

13 KOVKin, I. (1829-1831), Istoriâ Sela Tsarskogo, t. 1-3. St-Peterburg. For a detailed study on Betancourt’s works in Tsarskoe Selo, see the paper of I. Stepanenko in this volume.
Figure 4. Kamennostrovsky bridge designed by A. Betancourt, St-Petersburg. Engraving 19th century.

Figure 5. Suspension bridge in Ekaterinhof, the first of the kind in Russia. Lithography 19th century.
Figure 6. Pantelejmonovsky bridge, engineer W. Traitteur. Engraving 19th century.

Figure 7. Bankovsky bridge. Modern view. Archives Gouzévitch.
In 1816, a saw mill was completed at the Okhta end of St. Petersburg; it was equipped with steam engines designed by Betancourt and became the prototype of many similar mills that were built in Russia.

In 1818, a factory was commissioned to produce banknotes – Expedition for the provision of public securities – designed by Betancourt and erected under his direct supervision (at present it is the Goznak factory that grandly celebrated its 190th anniversary in 2008) (fig. 8). Betancourt designed and directed the building of two factory shops: paper-making and printing shops; he also designed steam engines and equipment to install there, partly produced in St. Petersburg and partly in England; in addition, he developed a special method to manufacture paper using hemp and linen rag, proposed the drawings of the banknotes, and a special technology for their embossing onto paper; he also made machines for numbering and signature imprinting.\(^\text{15}\)

---

In 1821, they opened Betancourt’s St. Isaac’s pontoon bridge that connected the Neva banks along the line St. Isaac’s Cathedral – Building of 12 Collegia, whose pattern was used afterwards to build other pontoon bridges across the Neva and its tributaries (fig. 9).

In 1823, an original stone St. George’s church was erected at the Bolsheokhtinsky cemetery (no longer standing) to Betancourt’s design (fig. 10).

Betancourt designed the foundation as well as scaffolding and mechanisms to erect the columns of St. Isaac’s Cathedral and they were used by A. Montferrand, the French architect who had been recommended to Alexander I by the Spanish engineer. On their basis, Montferrand developed a system of mechanisms and in 1832, with their aid, he erected the Alexander Column at Dvortsovaya square in the capital. The creative co-operation between Betancourt and Montferrand lasted for 8 years, until the Betancourt’s last days.

Betancourt’s starry hour in Moscow: on November 30, 1817, the Riding Hall (Manež) was opened, erected to his design. A series of unique engineering ideas, first of all the unsupported span nearly 45 m wide (with the whole rafter 51 m long), were implemented by Betancourt in the structure of this enormous building.

---

ŠUJSKII, Valerij (2005) Ogust Monferran. Istoriâ žizni i tvorčestva, Moskva, St-Peterburg, Centrpoligraf, M i M-Deľta. See also the same author’s text in this volume.
Betancourt designs were applied in Tula, Kazan, Nižny Novgorod, and Warsaw. These works are evidence of the fact that Betancourt was an exemplifying model of an engineer who in the early 19th century elaborated technical projects on a scientific basis.

4.- An organizer of the engineering activity.

Betancourt’s immense contribution was the organization of the Committee on construction and hydraulic works under whose surveillance large-scale town-planning projects were carried out in major Russia’s cities. This Committee chaired by Betancourt played a decisive role in the expertise and realisation of the development of unique ensembles and structures in St. Petersburg (squares: Dvortsoyaya, Senatskaya and Mikaylovskaya; the Mars Field and their setting).

In 1820, Betancourt established the Commission of projects and estimates at the General Direction of the Ways of Communications, the first all-Russia
design organisation not only in the field of national transportation but also in that of civil construction. The Commission of projects and estimates, along with the Committee on construction and hydraulic works, was a State structure to carry out the surveillance of all major works in the Russian Empire (expert evaluation of the town-planning designs and architectural ideas, urban accomplishment, designs of some individual buildings and structures such as palaces, theatres, temples, canals, bridges, embankments, and control at all stages of their construction)\textsuperscript{17}.

Betancourt’s idea found widespread development in the ensuing years. In 1819-1822, being the Chief Director of the Ways of communications, Betancourt ensured the further building of the Moscow highway (St. Petersburg-Moscow) started in 1817, and establishing the Bridge-building Agency for this purpose. In the same years, the construction of the by-pass canal (Obvodny kanal) at St. Petersburg was continued.

Betancourt established the Duty service engaging experienced specialists to administer the Corps of the Ways of Communications engineers and the Corps Chief Staff, to manage the ways of communication building and operation. The Particular Office was a prototype of the future administrative support centre at the Ministry of Railways.

Another important Betancourt’s initiative was the publication of the bi-lingual French-Russian *Journal des voies de communication* (Žurnal putej soobšeniâ) which first issue appeared in 1826, after Betancourt’s death, and immediately the *Journal* became popular with engineers and scientists\textsuperscript{18}.

Betancourt’s fruitful activity for the welfare of Russia was crowned with the St. Alexandre Nevsky and St. Vladimir Orders which the engineer wore together with the Spanish Santiago de Espada Order.


5.- The last years.

The last years of Betancourt (1822-1824) brought him, however, a lot of resentment and undeserved adverse criticism because of envious schemings and malevolent intrigues among those who influenced the Emperor’s milieu.

Betancourt lost Alexander I’s favour and on August 2, 1822, he was replaced at the head of the transport administration by the Duke Alexandre of Wurtemberg. The post itself was renamed: the Chief Director became the General Director. Resentful and hurt, and in dispirited mood, in the summer of 1823, he left for his last journey to Nižny Novgorod to direct the works at the Nižny Novgorod fair (60 buildings and the church were being built to his designs). There he was overtaken by the news of the death of Carolina, his favorite daughter. On his return to St. Petersburg, he filed his petition of resignation that was granted on February 4, 1824, and five months later he died. He was buried at the Smolensky Lutheran cemetery, next to his daughter. In 1979, his remains were transferred to the graveyard at the Alexander Nevsky monastery. At his tomb, there is an imposing monument made to a drawing by Montferrand.

6.- The memory of Betancourt in Russia.

After Betancourt’s death, the name of his higher educational institution underwent a series of changes: Institute of the Ways of Communication Engineers, Leningrad Institute of the Railway Transport Engineers, and since 1993, Petersburg State Transport University.

On June 24, 2003, in the presence of students, professors and numerous visitors, a monument to its first Rector, Avgustin Avgustinovich Betancourt, was unveiled in front of the main administrative building of the Petersburg State Transport University. The Spanish hereditary Prince of Asturias Felipe attended the ceremony in St. Petersburg (fig. 11).

In 2003, on the initiative of the St. Petersburg higher school, the planet named Betancourt found its place in the Register of the Solar system small planets under the number 11446. In this way, the international community has immortalised the name of this outstanding Spanish engineer and scientist.
Reviewing the wide range of Betancourt’s creative achievements he should definitely be recognized the most prominent engineer of Russia of this time (late 1810s – early 1820s) and one of the founders of the modern engineering in Europe.

7.- The documentary heritage.

The library at the Petersburg State Transport University houses some valuable materials connected with A. Betancourt’s work in Russia. They are: 17 sheets of authentic drafts by Betancourt (drafts of a mill and a dredger); Betancourt’s reports and letters addressed to the Emperor Alexandre I; accounts of the state of affairs at the Institute concerning the Corps of the Ways of Communication engineers; a sketch-book with watercolours showing the Tula Weapons Works; drafts of the Kamennostrovsky (Betancourt) bridge and the Betancourt’s St Isaac’s pontoon bridge.

The Description de la salle d’exercice de Moscou by Betancourt published in St. Petersburg (Pluchard’s edition) in 1819 is of a special interest\textsuperscript{19}. The publication contains 9 lithographs and is signed by Betancourt.

The Betancourt’s manuscript titled Rapport sur différents sujets relatifs aux voies de communication en Russie dated December 15, 1820 (resulting from his travelling along the Volga, in the Caucasus and the Crimea) is also in the University library. The library houses the authentic service orders of the

\textsuperscript{19} BETANCOURT, Augustin de (1819). Description de la salle d’exercice de Moscou par M’. de Betancourt, Lieutenant=Général au Service de S.M. Impériale, Directeur=Général des Voies de Communication, Chevalier de l’Ordre de St. Alexandre, de Santiago d’Espagne, Membre correspondant de l’Académie royale des Sciences de Paris, etc. etc. St. Petersburg.: De l’imprimerie de P.P. Alexandre Pluchart.
Chief Director of the Ways of Communication A. Betancourt dating back to the years 1819-1822\textsuperscript{20}.

The Central Railway Museum houses:

– in the Arts section: three portraits of Betancourt (one painted on canvas, dimensions: 72 x 62 cm, by the academician Tyurin, another one with the dimensions 16 x 19,5 cm is an engraved copy of the same portrait by Sokolovskaya, and yet another is a water-colour 20 x 26,5 cm by an unknown artist);

– in the Models and Natural Exhibits section: 9 items, 6 of which made by Betancourt;

– in the Subsidiary stock: 10 photocopies of authentic documents concerning the creation of the Expedition for the provision of public securities.

These materials have been used in the display dedicated to the 250\textsuperscript{th} anniversary of Betancourt’s birth. The exhibition was opened on January 30, 2008 on the eve of the start of the International Conference at which a delegation of Spanish specialists participated. A return visit was paid in mid-February 2008 by a large Russian delegation.

It is good that Betancourt became part of the history of Russia where he was called the \textit{Russian Spaniard}.

\textsuperscript{20} ŠKLAR, I.V. (1969), \textit{Rukopisnyj fond biblioteki LIIŽTa: Katalog}, Leningrad.