

The Archives of the St Petersburg Institute of the Corps of Communications Engineers

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Introduction

The article outlines the history of Russia's oldest engineering and technical library – now approaching its 200th anniversary – and the contents of its unique archives on building, bridge construction, architecture, and railways. The library collection includes books and journals in Russian, French, English and German, as well as manuscripts, drawings, photographs, and draft documents concerning the construction of such diverse projects as highways and canals, bridges and cathedrals, railways and ports, public buildings and monuments. The library's archive of books includes many works of the 15th-18th centuries and, in particular, the 19th-early 20th centuries. The greater part of the library's original graphic works related to the 19th century and concern the construction of new buildings across the entire territory of the Russian empire.

The library of today's St Petersburg University of the Corps of Communications Engineers¹ may rightly be called the oldest scientific and technical library in Russia. The Corps and the Institute of the Corps of Communications Engineers were founded in November 1809, in accordance with a Manifesto signed by Tsar Alexander I. The Institute's role was to prepare highly skilled engineers for the construction of roads, bridges, and buildings. The institute was organised by A. Bétancourt along the lines of the Paris Ecole de Ponts et Chaussées. Two years later the Lycée was set up to train civil service officials. Both institutions were established as part of a government programme to educate the country's young people and attract into state service those specialists who had trained in Europe. Knowledgeable and experienced teachers were invited from Paris by Bétancourt. At the same time a skilfully selected library was required, in whose archives literature on the history of social, scientific, and cultural development would reside alongside specialist and technical literature, in line with the best educational traditions. The creation of the library was referred to specifically in the Supplement to the Manifesto: "The library should include outstanding works and journals on engineering science, as well as plans, maps, and drawings of all water and land-based communications."² These short lines established the principles according to which the archives of the future library were collected.

The first director of the Institute of the Corps of Communications Engineers, Augustin Augustinovich Bétancourt, was a renowned mechanical engineer and founder of a number of bridge and road-building schools in Paris and Madrid³. His appointment was the personal choice of the Tsar, who had enormous expectations of Bétancourt both as a teacher and as an engineer with great practical experience. It should be noted that these expectations were entirely justified. The Spanish engineer Bétancourt may be considered the father of the Russian higher technical school.⁴

The first teachers to be invited to the Institute by Bétancourt were the French engineers P.-D. Bazaine – a builder of bridges and buildings, and a future director of the Institute; G. Potie – a pupil of the famous Monge; and A. Fabr. In early 1820 these were joined by Lauré and Clayperson. At the same time the first books on mathematics, physics, mechanics, descriptive geometry, building design, and architecture were bought by the Russian ambassador in Paris, Prince Kurakin. The first books were received at the Institute in January 1810 and became the

foundation of the library archives. Today they represent not only our most precious relics from the past, but are useful aids for studying the history of science, technology and education⁵.

In the mid 1850s V. P. Sobolevsky, a director of the Institute and a great admirer of the library, to which he added diligently all his life, have witnessed the state of education in Paris and Berlin at first hand, could write the following with good reason: "The Ecole Nationale des Ponts et Chaussées... has a wonderful specialist library with which only the libraries of the Berlin Civil Engineering Academy and our own Institute can compete in terms of the wealth of materials for civil engineers"⁶. By this time the library's core collections, which have continued to be augmented to this day, had already been established. The Bridge Construction Collection occupies a notable place among them, comprising books, journals, drawings, plans, manuscripts, and picture postcards. Materials on Russian and foreign bridges are represented from antiquity to the present day.

The principles of bridge construction teaching in the Institute were established by A. Bétancourt, himself a brilliant builder of bridges. The proposed design for the Kamenoostrovsky Bridge across the Malaya Nevka River in St Petersburg – the first seven-arched bridge in Russia – is preserved in the Bétancourt Archive. The design is dated 1811. Bétancourt's collection is as varied in content as the life and activities of this multi-faceted man himself. The collection may be divided into a number of areas: manuscript and books on mechanics and steam engines; works on improving water and land communications in Russia; materials on the construction of buildings and bridges; and, finally, papers and reports casting light on Bétancourt's administrative and pedagogical activities. Of indisputable interest are drawings of dredgers and other plans by Bétancourt dating from the end of the 18th century, which were presented to the library in 1912 by the engineer V. Yu Rummel⁷.

The manuscript of Bétancourt's report "A New Mechanism for Improving the Sanitary Conditions of Seaports: A Proposal for Cleaning the Port of Kronstadt" is also preserved in the same archive, as well as copies of official papers on the construction of the dredger at the Izhorsky Factory and its use in the port of Kronstadt. These documents, numbering 141 pages and dated 1810-1820, were discovered by the engineer N. A. Ivanov in 1933 in the course of dismantling the archives of the former Department of Trading Ports. He was able to make copies which he presented to the library in 1948⁸. Among other works published by Bétancourt in his own lifetime, one book is of particular interest in the history of large-scale, wooden structures.

It was published in 1819 and contains a description of the construction of the Manege building in Moscow (the imperial riding school) (Figs 1a-b). Bétancourt spent only 15 years in Russia but without careful analysis of those years it is impossible to fully appreciate the development of Russian civil engineering traditions.

The legacy of P.-D Bazaine (1786-1838), who headed both the Institute and

DESCRIPTION
DE
LA SALLE D'EXERCICE

DE MOSCOU,

PAR M^r. DE BÉTANCOURT,

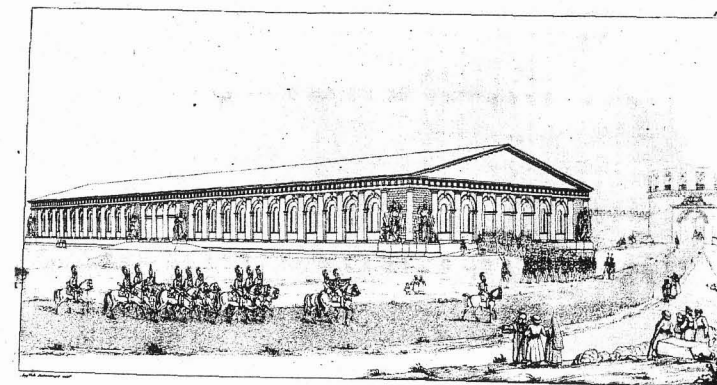
*Lieutenant - Général au Service de S. M. Impériale, Directeur - Général des
Bâtiments, Chevalier de l'Ordre de St. Alexandre, de l'Ordre
de St. Georges, Membre correspondant de l'Académie royale de Sciences de
Paris, etc.*



2687.

ST.-PETERSBOURG,
DE L'IMPRIMERIE DE P. A. ALEXANDRE PLECHART.

Fig 1a: Bétancourt, *Description de la Salle D'Exercice de Moscou* 91819). Title page showing the original library stamp of the Institute of the Corps of Communications Engineers Library.



VUE PERSPECTIVE DE LA SALLE D'EXERCICE A MOSCOU.

Fig 1b: Illustration of the Moscow Riding School, from Bétancourt's book.

the Committee for Building and Hydraulic Works 1824-1834, numbers some 600 designs, drawings, and plans, produced in Indian ink and watercolour (Fig. 2). The greater part of these designs date from 1816-1833. They include construction designs for the Odvodny Canal in St Petersburg (55 drawings); the unique Shlisselburg granite fortress (26 drawings); and numerous stone and cast-iron arched bridges, including those adjoining the Summer Gardens, the

suspension bridge at Ekaterinhof Park, the granite bridges by the Engineers Castle, and the reconstructed Kamenoostrovsky Bridge (Fig. 3). P.-D Bazaine participated in the development of the designs for the defence of St Petersburg from flooding (1825) and in design competitions for a whole range of public buildings.

The library contains unique materials concerning the construction of the Blagoveshchensky Bridge, the first permanent cast-iron, arched bridge across the River Neva, built by V. Kerbedz, a graduate of the Institute (1843-1850). Seven folders contain 146 drawings and plans charting the history of the design and construction of the bridge. Also of particular interest are designs and graphic drawings of bridges produced by the engineers W. von Traitteur,

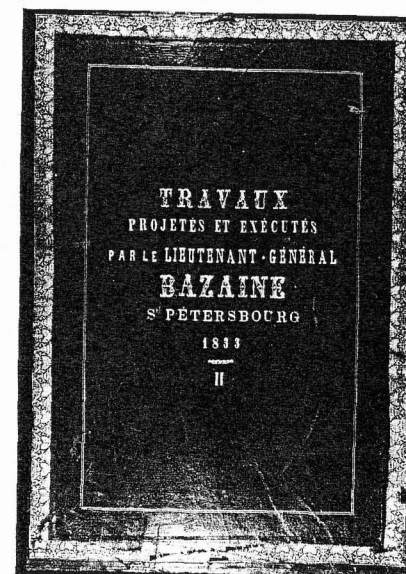


Fig 2: The cover of P.-D. Bazaine's second folio of drawings, comprising projects in St. Petersburg and Russia 1818-33.

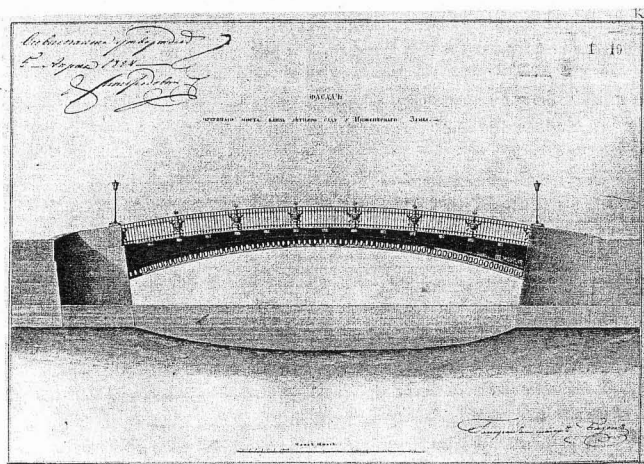


Fig 3: P.-D. Bazaine, drawing from a cast iron bridge over the Moyka River in St. Petersburg, 1824. The bridge was built in 1825.

D. Zhuravsky, N. Belelyubsky, L. Proskuryakov and G. Peredery. This list of names is not inclusive. The works cover a geographical area stretching from the rivers of the St Petersburg to the great rivers of Siberia.

The Bridge Collection includes extremely interesting materials on almost all the great bridges of the world, including those in England. The collection comprises books and journals, as well as reports by the Institute's teachers – in particular, G. Lamé – who were sent to England from St Petersburg to study and collect information for the purpose of devising a complete course of applied mechanics to be taught in the Institute of Communication⁹⁻¹¹ (Fig 4).

In 1964 the library received an unusual present from V. I. Chemena, a former pupil of the Institute: 18 albums of picture postcards depicting bridges from around the world. After graduating from the Institute in 1913, V. I. Chemena was sent to France and America for a year by the Academic Council of the Institute

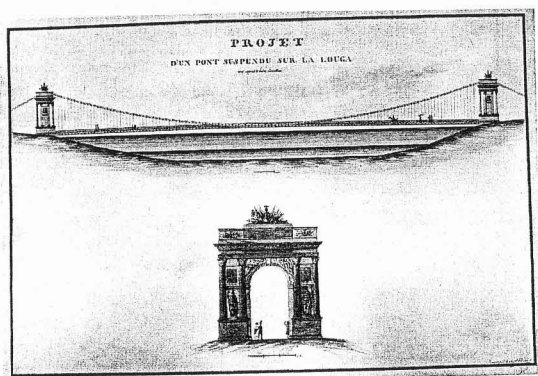


Fig 4: G. Lamé, drawing of a proposed suspension bridge of c.130m span over the Luga River west of St. Petersburg, 1825.

to complete his education. Throughout his long life V. I. Chemena built bridges and collected illustrations of them. In addition to picture postcards, the library acquired his manuscripts, in particular "Materials on the 'History of Bridge Construction'". This manuscript contains details of the most

important bridges of the world built between the beginning of the 19th century and 1917, including construction dates, names of builders, systems and dimensions of the bridges, and literature on each bridge.

Of the most important recent additions to this collection, Prof Dr A. L. Punin's doctoral thesis may be singled out¹². The content of Punin's thesis is far broader than its title implies and allows us to chart both the development of architectural forms and the influence of technical thought in the process of bridge construction. This five volume work is the foremost contemporary study of the history of Russian bridge construction. Unfortunately, the work remains unpublished to the present day.

In addition to works by Palladio, Vitruvius, and Piranesi, journals and old French and English encyclopaedias and reference works, the Building and Architectural Collection includes the August Montferrand Archive. The architect A Montferrand 1786-1858) was invited to work in Russia by Bétancourt (from 1816 onwards). After the architect's death, the entire archive from his offices – with the exception of his personal library – were transferred to the Map Depot, but were handed over to the Institute of Communications Engineers on government instructions in 1868. The architect's personal library was bought by the Institute from his heirs¹³. The library acquired 1115 sheets of first class drawings and designs, comprising 972 sheets on the reconstruction of the Kazan Cathedral; and 68 sheets on the construction of the equestrian statue of Nicholas I on Isaac's Square. But the jewel in the crown of the Architectural Collection is rightly considered to be the album of original drawings by C. Cameron (1730-1812). The album contains 115 sheets depicting vases, candelabra, goblets, plafonds, pilasters, and tripods. Towards the end of the album is an illustration of Stern's tombstone¹⁴. The album dates from 1760 and was probably acquired by the library before 1827.

From the beginning of the building of the railways – carried out literally by the Institute's teachers and graduates from the 1840s onwards – the library became an important collector and conservator of publications on railway building and operation. P. Melnikov's *Railways*, published in 1835, is the first printed book on railway theory. Its author graduated from the Institute in 1825 and was sent, together with N. O. Kraft, to Western Europe and America to study these countries' experience of railway engineering. After their return to Russia, they took an active part in the building of the St Petersburg-Moscow railroad.

The archive contains the two engineers' reports on these foreign trips, together with an album of watercolours, in which the history of the building of the St Petersburg-Moscow railroad is plotted in detail. The album contains 64 drawings.

For historians of technology, the "Gerstner File" is of particular interest, containing as it does material on the building of the first Russian railroad from St Petersburg to Pavlovsk. The building of the railroad was realised by the Czech engineer Gerstner in 1838. Gersner had come to Russia in 1835 and had been successful in obtaining Nicholas I's permission to build the first Russian railroad, having convinced the Tsar of the importance of this new means of transport.

By the end of the 19th century Russia possessed an extensive network of railways connecting Berlin and Warsaw with Vladivostock and China. The library contains unique materials on the history of the construction of each of these, including explanatory notes on their building and operation, albums containing photographs of the various stages in construction, guidebooks, and reports. It is worthwhile mentioning here the collection of materials commonly referred to as the Railway Collection, which remains insufficiently studied to this day. In 1868 the librarian A. Balandin began to collect methodically materials on the operation of the railways. The Railways Collection catalogue began publication in 1870, the last issue appearing in 1889. Thereafter the materials were included in the general catalogue. Of particular interest are the proceedings of the Railway Engineer Congresses, covering all aspects of work on the railways.

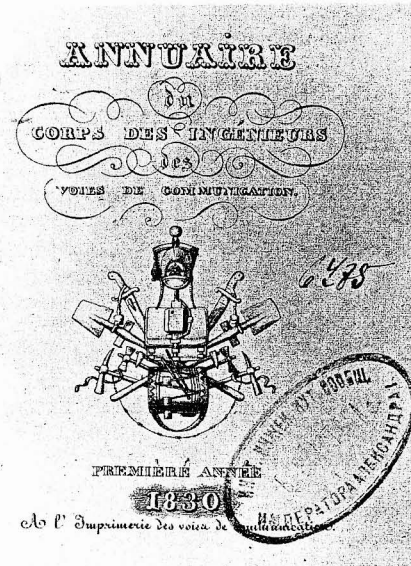


Fig 5: The first volume of the *Annuaire du Corps des Ingenieurs des Voies de Communication*, carrying the insignia of the Corps.

became an object of study for specialists researching the history of the development of technical education in Russia (and Europe). The archive includes curricula from 1813 onwards, photographs of teachers and students, plans for the development of the Institute, journals of the Institute's Council, and résumés on graduates who completed technical courses at the Institute between 1811-1930. It also contains some materials on the history of the Department for Communications, the Russian ministry responsible for the construction of highroads, bridges, and public buildings.

The library also possesses a Textbook Archive, including lithographic editions of the first lectures read by M. S. Ostrogradsky, P. N. Melnikov, B. Kleiperon, M. S. Volkov, N. I. Lipin, P. I. Sobko, and other teachers from the first 50 years of the Institute's existence¹⁵⁻¹⁷. These are a bibliographic rarity today.

The library's first catalogue has not survived, but from 1865 a printed systematic catalogue began to be issued and included all publications acquired by the library from its inception. From 1912-1926 annual bibliographic catalogues were published. In addition, the library possess alphabetical and systematic card catalogues. In 1961, to facilitate work with manuscripts I. V. Shklyar, a senior bibliographer, compiled a catalogue for the Manuscripts Archive, based on the printed catalogue¹⁸. The catalogue numbers 721 titles and includes both alphabetical indexes of people's names, anonymous

The library has in its keeping a complex set of the "Journal of the Ministry of Communications" (1826-1900) with two subject indexes. It was first published in 1826 and is an extremely important source for the study of the history of Russian building technology, the construction of bridges and buildings, and of the railways. The library possess an Archive of Russian and Foreign Journals on the construction of railways, bridges, and buildings, which includes more than 250,000 items. However, this archive is worthy of a separate article itself.

Of particular interest is the archive adjoining the manuscript section, but held separately with its own reference catalogue. This archive includes books, manuscripts, photographs, plans and drawings about the Institute of Communications Engineers from the date of its foundation (Fig 5). Throughout its almost 200 years of existence, the Institute itself, for obvious reasons,



Fig 6: Boris Gushchin, who became Director of the Library in 1912 and laid the foundations of the library's information and bibliographic services. He was arrested in 1937 and died in exile.

editions, and geographical names, as well as information on a number of authors. In 1977 I. V. Shklyar also compiled a bibliographical index on the "History and Architecture of Bridges". In recent years the library has acquired a number of valuable indexes for the Institute's most renowned academics (short biographies with a list of works). The library's scientific and technical information and bibliographical department has at its disposal an archive of publications on the construction and operation of bridges and railways. More than 200,000 readers consult the library annually, including specialists from Western Europe and America.

It is impossible to give a complete account of the content of the library's archives in such a short article. However, it is hoped that even a short description will allow the reader to judge the wealth of its collections and their place alongside other major European libraries specialising in civil engineering and the history of building technology¹⁹.

Translated by Diana Turner, with additional material kindly supplied by Sergey G. Fedorov.

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References

- 1 The Institute was founded in 1810 as the Institute of the Corps of Communications Engineers. Between 1824-1864 it was administered as a military college; in 1864 it was transformed into the Civil Institute of Communications Engineers. In 1930 it was renamed the Leningrad Institute of Railway Transport Engineers (LIIZhT). From 1993 it became the St Petersburg University of Communications (PGUPS).
- 2 *Polnoe sobranie zakonov Rossiiskoi imperii*, 1809, Resstrovyi no 23966.
- 3 Augustin de Bétancourt (b. 1st February 1758, Canary Islands; d. 14th July 1824, St Petersburg). Outstanding civil and mechanical engineer. Graduated from the School of St Isidor (1781) and the Academy of Fine Arts in Madrid. Continued his studies in France. Founder of the Corps and School of Road and Canal Engineers in Spain (1802). Served in Russia from 1808. One of the founders of the Corps of Communications Engineers and its Institute. First head of the Institute (1809-1824). Director (Minister) of Communications (1819-1822). Author of numerous innovative engineering designs.
- 4 A.N. Bogolyubovm A.A. *Betankur, 1758-1824* (Moscow 1969), pp.145-147.
- 5 *S.-Peterburgskii istoricheskii arkhiv*, archive 381, list 13, file 1.
- 6 V.P. Sobolevskii: *Nablyudeniya i zametki, sdelannye vo vremya trekhmesyachnogo puteshestviya po Germanii, Bel'gii i Frantsii v 1856 g.*, Manuscript, NTB PGUPS.
- 7 *Zhurnal Soveta instituta inzhenerov putei soobshcheniya imperatora Aleksandra I za 1913 god*, Issue I (1913).
- 8 *Zemlecherpal' naya mashina A Betankura: (Materialy arkhivnogo otdela torgovykh portov): SPB, 1810-1820.* Photocopies, NTB PGUPS.
- 9 G. Lamé, *Nablyudeniya otnositel' no stroitel' nogo iskusstva, sobrannye polkovnikom Lame vo vremya poezdki v Angliyu po prikazu imperatora Nikolaya I letom 1830 g: V5t.* Manuscript, NTB PGUPS.
- 10 P.P. Melnikov, S.V. Kerbedz, *Otchet o puteshestvii po Evrope V 1837 i 1838 gg: V 5 ch. S Prolozh. atlasa chertezhei*, Manuscript, NTB PGUPS.
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- 12 A.L. Punin, *Arkhitekura mostov: Evolyutsiya stilisticheskikh osobennostei ot antichnoi epokhi do nachala XX veka i arkhitekurno-khudozhestvennyye problemy sovremennogo*

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 15. E. Sokolovskii, *Pyatidesyatiletie Instituta i korpusa inzhenerov putei soobshcheniya: Ist. ocherk*, (1859), Manuscript, NTB PGUPS.
 16. S.M. Zhitkov, *Institut putei soobshcheniya imperatora Aleksandra I: Istor. ocherk*, (1889) Manuscript, NTB PGUPS.
 17. GA.M. Larionov, *Istoriya Institut putei soobshcheniya za pervoe stoletie, 1810-1910 (1910)* Manuscript, NTB PGUPS.
 18. I.V. Shklyar, *Rukopisnyi fond biblioteki LIIZhTa: Katalog* (1969) Manuscript, NTB PGUPS.
 19. A number of unique exhibits (medals, drawings etc) on the same theme are held in the collection of the Russian Museum of Rail Transport, the former Museum of the Institute of the Corps of Communications Engineers which was founded and developed at the same time as the library.