**Abstract.** During the 19th century, development of trade and transportation in Liepāja stimulated construction in the area on the north of the trading canal. There were only 16 houses in this territory in 1800 — mostly taverns or wayside inns, but in the late 19th century a well-designed territory that contained factories and apartment buildings for workers was already created, and now is known as Jaunliepāja (New Liepāja). The significance of the industrial heritage in Jaunliepāja has not been appreciated enough so far, and the planning of factories and architecture has not been studied in sufficient detail. After the devastating years of the Second World War and the reconstruction projects during the Soviet era, many 19th century industrial complexes are still well preserved in Jaunliepāja. Due to the changes in the economic system, the problem of utilization and preservation of the industrial heritage has become of great importance.

**Keywords:** factories, city development, structure planning.

I. Development of Liepāja in the First Half of the 19th Century

In the first half of the 19th century, Liepāja was known as an active site for bathing and craft. The supply roads surrounding Liepāja were in a very bad condition and were not suitable for trading business. Dirt roads to Grobiņa and Nīca were almost unusable; therefore, measures for improving their condition had to take place. The harbours of Klaipeda and Karalauči (at present, Kaliningrad) were already reachable by railway, thus promoting the development of these cities, but Liepāja’s trade relations were limited. In 1830, a railway through Rucava, Darbeni and Kretinga to Jurbarka was proposed [1, 16], but was not implemented. The city mainly developed in the territory to the south from the commercial port. Only after 1830, when a permanent wooden bridge across the canal was built, the transportation was improved. In Liepāja the first small production units were built. In 1833, Soerensen & Co Ltd. erected a horse-powered mill, which pressed linseed oil, produced dyes and refined grain [5, 91]. With financial support from the state, a road from Liepāja to Grobiņa was constructed and opened in 1841. The economy of Liepāja had gradually improved. In the early fifties of the 19th century on the south-western side of the canal, near the Pilot Tower, Eberhard Harmsen built a steam mill, a bone meal factory and a small factory of agricultural machines, but a little later—an iron foundry as well. The factories burned down in the winter of 1871 and were not restored by their owner [12, 5]. Further industrial enterprises were distributed in remote parts of the city to leave the seaside territory for developing a health resort area. Liepāja had overcome its isolation step by step and had become a trade city.

II. Formation of Planning and Building Structure of Jaunliepāja in the Middle of the 19th Century

Around the middle of the 19th century, railway transportation and trade evolved in Europe. The rapid development of industry had dramatically changed the planning of settlements and their building character, and had also contributed to environmental pollution. Cities systematically carried out large-scale and radical town planning improvements, turning special attention to tackling functional and aesthetic problems of the city environment, as well as its improvement. In 1857, 16 large-scale production enterprises and many small workshops operated in Liepāja [1, 18]. By this time, construction to the north of the trading canal was established only near the harbour (Figure 1). Activity of tradesmen near the harbour stimulated building and street network development. Businessman Leopold Meinhard, who had already owned an iron casting factory Meinhard & Co, built repair shops near the factory in 1862. Liepāja’s lighthouse built in 1866–1867 of cast iron plates produced at this company is still reminding of existence of this factory. The factory was closed in 1873 after a fire accident [12, 6].

**Fig. 1. Liepāja in 1848.** [10]

**Fig. 2. Liepāja in 1867.** [11]
Although the development of the territory was not systematic (Figure 2), a new city district with industrial enterprises was formed, now known as Jaunliepāja. Likewise in Liepāja, in the Estonian city of Parnu a new city district with industrial enterprises was formed in the remote territory on the right bank of the Parnu river.

III. SYSTEMATIC DEVELOPMENT OF JAUNLIEPĀJA AND BUILDING OF PRODUCTION UNITS AFTER RAILWAY FORMATION

In the second half of the 19th century, large-scale railway construction works took place in the Russian Empire, contributing to the emergence of many new cities. These cities were frequently composed of functionally distinct and independent parts, which developed as autonomous urban structures with diverse building types.

On 8th November 1860, the Saint Petersburg–Warsaw railway was opened. It crossed the eastern part of Latvia and went through the city of Dinaburg (at present, Daugavpils). The following year, the railway connected Dinaburg with Riga, but in 1866—with Vitebsk. During this time intensive development in the city of Dinaburg started to take place. To the east of the Great Suburb, at present — the heartland of the city, building of a new district, known as Jaunbūve, had begun. The regular street network of the area close to the railway, and the streets on both sides of the main road, then called Šosejas iela (Street), but now known as 18. Novembra iela, were skewed at an angle of approximately 45° (Figure 3). New industrial enterprises appeared in Jaunbūve as well.

In 1871, after a few years spent at the engineer office of the Dinaburg–Vitebsk railway, Paul Max Bertschy (1840–1911) came from Dinaburg to Liepāja and became a principal architect of the city. In the same year, a railway from Liepāja to Kaišadori (near Vilnius) was opened and, according to Bertschy’s project, a passenger railway station in Liepāja was built [1, 20]. During this time, Liepāja experienced the increased economic activity as well as increased trade turnover in the harbour. In 1876, the railway from Liepāja was extended to Romni. Exports were growing rapidly, and Liepāja established trade relations with Russia, Lithuania and Poland. Construction of factories began near the harbour and railway lines. Among the first ones to appear was the liquor factory of Edvard Grosh, built in 1874 on Aleksandra iela 4 (at present, Brīvības iela).

In the seventies of the 19th century, Jaunliepāja flourished. Its streets were laid out in a regular rectangular fashion. Two such building design sketches of Jaunliepāja with no dating and author’s signature have been preserved in the Bertschy Fund of Liepāja History Museum. They were likely developed by P. M. Bertschy. These sketches contain the layout of factories, residential and recreational areas, the church, Anna’s Marketplace and the main...
IV. Formation of Electric Tram and Development of Jaunliepāja at the End of the 19th Century

During the nineties of the 19th century, Liepāja experienced a new wave of development. Large-scale harbour reconstruction works and building of a naval fortress began. The network of railway tracks was significantly expanded (Figure 8). In 1894, the municipal council of Liepāja organized a competition for electric tram development. On 14th December 1896, a contract with the winner of the competition was signed – a company Continentale Gesellschaft für electrische Unternehmungen in Nürnberg won the rights to construct the electric tram and a power plant [16]. Territory for the power plant engine room, boiler house, office buildings, repair shop and tram depot were allocated at the intersection of Vakzāles and Baseina iela.

In the spring of 1899, construction of the power plant and a 10-km long electric tram line began [17], but in the evening of September 14th, the first test drive from the power plant along the Baseina to Ellīšas iela was performed. Starting from September 25th, a regular tram route was established: from the bridge of Commercial port along Vakzāles, Baseina, Ellīšas and Lazareva iela to Karosta (Naval Port), but later from the beginning of Vakzāles iela to the railway passenger terminal as well. Since October 14th, a tram began to run from Vakzāles iela along Suvorova iela up to railway crossings, but in November the line was extended across the Commercial Canal (Figure 8) and connected with the railway tracks built in Vecliepāja [17]. Newly established electric tram line provided service between Karosta, factories and residential areas in Jaunliepāja and the city centre.

Jaunliepāja had already become a major transportation and industrial area, and after the construction of the power plant it also became the city’s energy hub. The area adjacent to the railway with its supply railroads was a convenient site for building factories. In 1898, near the railway station an aniline dye factory Pfaff & Krulls was built, but in 1899, the Cast Iron Production Society founded the factory Pluton, spelled “Pluton”, on Lazareva iela 42 (Figure 8). It manufactured extruded and forged chisels, hammers, hooks, c-clamps and other metal products from cast iron and steel. Citizens knew this enterprise as the factory Pluto [12, 47, 48]. In 1900, the world-famous Sheffield steel making factory Saville & Co opened its branch on Lazareva iela 40 (Figure 8). It produced high quality steel for cast and tools [12, 47].
Numerous buildings of factories and warehouses in Jaunliepāja were built according to Bertschy’s projects. Some of them have been preserved in the Bertschy Fund in the Liepāja Museum of History and Art. This makes it possible to follow the development of planning and architecture of factories, something that was crucial to the architects of the time. Production units typically were formed as complexes, which occupied entire quarters. Most of the buildings were mostly laid out of red bricks. A generally accepted norm was to design buildings whose height was approximately equal to the width of the street. Consequently, the streetscape was formed like the interior spaces. Apartment buildings for workers were built in the vicinity of the factories. Facades of all buildings reflected the typical artistic composition techniques of eclecticism style—repletion of finishing details, unambiguity, uniformity and a steady rhythm of artistic composition. The industrial, residential and public buildings in the urban environment began to form an ensemble.

One of the first enterprises in Jaunliepāja that provides insight into the formation and growth of a production unit is the brewery Ramsay & Co on Kroņu iela 4/6. In 1877, it was established by the English engineer Robert Ramsay. Its construction site was chosen near grain warehouses at the harbour (Figure 9). After change of ownership, the brewery was managed by Andreas Dollinger. Company’s co-owner and contractor Johan Wilhelm Riege, in cooperation with the city architect of Liepāja P. M. Bertschy, created one of the biggest production units of Liepāja. This cluster was formed by industrial, office, and residential buildings. In the development plan of the brewery of 1904 (Figure 10), P. M. Bertschy proposed expansion of the existing ice-cellar (Figure 11 and 12), boiler house and office building, as well as erecting a new warehouse building, horse stand, ice-cellar, shed and an apartment building for workers. Residence of the company’s owner was built in the territory of the production unit as well [2]. Fragments of stained glass are still preserved in several windows of the building.

Facades of the ice-cellar building and warehouse (Figure 13) were designed in the so-called brick style – same as the facades of the grain warehouses next to the harbour, which rhythmically arranged small peep-hole windows, hid from the outside world, the treasures stored inside. “Brick style” that was particularly common in the architecture of the industrial buildings can be considered a formal variety of the eclecticism. Small window apertures with segmental arches in facades were arranged in regular rhythm. Brick masonry was varied by figurative cornices.
In 1939, brewery’s owners immigrated to Germany. Ruthless transformations during the Soviet times have substantially degraded the architectural quality of the building complex (Figure 14, 15 and 16). Near the red brick ice-cellar and warehouse buildings an incongruous multi-storey structure of white silicate bricks was erected. At present these buildings are abandoned.

Another characteristic example of an industrial building of the 1870s was a factory of ropes and straps at Aleksandra iela 55-61. In 1879, it was built by a German citizen August Kornhuber. Factory area was separated from city environment by very long blocks of production units (Figure 17).

In 1880, a merchant Löwenthal from Liepāja built a grain mill on the corner of Aleksandra and Tīrgus iela, but the Prussian businessman Siegfried Berend, in cooperation with a company Krakau und Hesse from Berlin, built a steam mill on Preču iela 64, next to the railway [13, 116]. Company Berend & Co built a compact six-storey steam mill building (Figure 18 and 20) to the Berlin’s architect Karl Hesse project (Figure 19). It was the largest such company in Kurzeme. Annually it processed from 12,000 to 15,000 tons of corn and produced flour, bran, pearl-barley and grits for export.

Complexes of industrial buildings were built within the area of one or more block. The layouts were freer as well as functionally and compositionally reasonable. In 1882, a German citizen Lois Bangert, who arrived in Liepāja from Saint Petersburg, built a tinplate production unit on Kaiju iela. Company used a 15-horsepower steam engine, which was brought from England. Other machines were constructed by Bangert himself [12, 18].

At the end of the 19th century, the industrial cityscape of Aleksandra, Lazareva and Vakūžes iela was formed. German businessmen Wilhelm and Adolf Böcker, A. Baubert, N. Kaufman and the Russian citizen Dmitri Schereschewsky established
On 16th August 1882, the Governor’s Secretariat of Kurzeme approved the construction project. D. Shereschewsky had already owned a small wire and nail factory and a rolling workshop in the town of Vileyka in Belarus, which was easily reachable along the railway of Liepāja–Romni. Its business partner was an iron rolling, wire and nail company Böcker & Co from Schalke in the land of Westphalia, which supplied the materials needed for rolling. In March of 1883, the construction of the first rolling workshop and six puddling furnaces was completed. In 1887, the building of the metallurgical company consisted of puddling, rolling, stretching, rinsing, tempering, galvanizing and nail producing units (Figure 21). In 1894, P. M. Bertschy developed a project of production unit expansion (Figure 22), but in 1897, a steel rolling workshop began to operate in the factory. In 1899, another project for extension was developed (Figure 23). In 1900, within its territory the company launched a direct current power station (Figure 25) whose capacity (930 kilowatts) by more than twice exceeded that of the city’s power station. The building of the company Böcker & Co consisted of parallel
Fig. 19. Project of the steam mill of „Berend & Co“. 1880. Architect K. Hesse. [13, 117]

Fig. 20. Steam mill of „Berend & Co“ (not preserved). [3, 147]

Fig. 21. „Böcker & Co“ factory. Fragment of plan of Liepāja. 1887. [8]

Fig. 22. Plan of the puddling, rolling, stretching, rinsing, tempering, galvanizing and nail producing units of „Böcker & Co“. Architect P. M. Bertschy. [6, 9]

Fig. 23. Plan of the wire–rolling and steel casting production units. 1899. [20]

Fig. 24. Industrial buildings of „Böcker & Co“ at the end of the 19th century. [6, 34]

Fig. 25. Power station of „Böcker & Co“ after 1912. Architect P. M. Bertschy. [14]
oblong buildings (Figure 24) with different frontal facades. Industrial buildings with high chimneys increasingly transformed the urban landscape.

In 1885, Constantin Strupp, an engineer from Liepāja, built a cast iron and forging factory “Vesuv” on Aleksandra iela 56 (Figure 26). It was the only mechanical engineering factory in the province of Kurzeme [12, 24]. In 1887, the production unit occupied an entire block among Aleksandra, Fabrikas, Mīlu and Ūdens iela (Figure 27). In 1899, the foundry and mechanical engineering department was completely destroyed by fire. In 1899, new production units were freely located on a plot of land near the Grobiņa highway [12, 25].

In 1886, a company Mariott & Seligmann opened an export slaughterhouse on Ziemeļaustrumu ostmalas 2, and Swedish manufacturers August Wicander and Karl August Larson from Finland opened a cork factory Wicander & Larson on Lazareva iela. It was a branch office for a company operating in Åbo city (in Finnish, Turku), Finland. The factory production units and office building that had a wide range of ornamental details (Figure 28) were built to P. M. Bertschy’s project. In 1893, the owners of the cork factory decided to extend it by adding an adjacent linoleum production unit [12, 39]. In May of 1895, P. M. Bertschy developed a project for elevating the existing factory building (Figure 30). The following year a building for the factory administrative premises and apartments was erected (Figure 29). The ionic pilasters and oak entrance door with metal forgings decorated the red-brick facade of the extraordinarily luxurious building. At the turn of the century, the cork and linoleum factory occupied two bocks. Buildings of different functions, which were organized in a compact line (Figure 31), formed an expressive ensemble.

In 1884, a fire broke out in the oil factory Kieler & Co on Sliežu iela 2, 4 and 6 (Figure 33) that was owned by a Danish businessman Alfred Kieler. It was necessary to renovate the enterprise. In 1888, office and production unit buildings were built to Bertschy’s project (Figure 34). Towers that created vertical accents of the building complex (Figure 35) together with the buildings along the perimeter of the territory (Figure 36)
Fig. 31. Building of the factory of „Wicander & Larson” on Lazareva iela. Architect P. M. Bertschy. [3, 147]

Fig. 32. Building of the factory of „Wicander & Larson”. Architect P. M. Bertschy. (Photo by Silvija Ozola, 2011)

Fig. 33. Plan of the oil factory „Kieler & Co” before the fire in 1887. [8]

Fig. 34. Buildings of the oil factory „Kieler & Co”. Architect P. M. Bertschy. [3, 152]

Fig. 35. Oil factory „Kieler & Co”. Architect P. M. Bertschy. View from Sliėžu iela. (Photo by Silvija Ozola)

Fig. 36. Buildings along the perimeter of the oil factory „Kieler & Co” in Lazareva iela. Architect P. M. Bertschy. (Photo by Silvija Ozola, 2009)

Fig. 37. Buildings of the aniline factory „Pfaff & Krulls” (not preserved). [3, 152]
formed a spatially balanced composition. The facade of the office building was decorated by black bricks.

From 1898 to 1900, an aniline factory Pfaff & Krulls was built to the north of the railroad crossing on Lazareva iela (Figure 37), but factories Pluto and Saville & Co – across the street (Figure 38 and 39). Consequently, the architecture of the industrial buildings completely determined the streetscape.

Two-storey wooden or brick residential buildings dominated on Vakzāles iela from the intersection with Suvorova iela up to the railway station. In 1899, the streetscape was complemented by the power station (Figure 40 and 41) and the tram depot building – a hall with a wooden roof structure (Figure 42). In 1900, near the station a state-owned Spirits Monopoly factory was built (Figure 43), and industrial buildings became active in streetscape of Vakzāles iela.

Factories built in Jaunliepāja in the second half of the 19th century are architecturally diverse. Individually designed industrial buildings built during the 1870s and 1880s were harmoniously incorporated into the urban environment. The “brick style” residential, public and industrial buildings in Jaunliepāja with their characteristic architectural vocabulary created a unique urban ensemble. Construction of transportation and energy facilities stimulated the development of industrial areas and led to changes in the city environment. Production units were no longer built in the vicinity of the port, but rather close to the energy sources. In the late 19th century, a great attention in planning of industrial enterprises was paid not only to the functional layout of buildings, but also to their architectural quality. After shutdown of the original industrial enterprises, many of the production complexes built in the 19th century remain abandoned nowadays, however they are significant elements of the cityscape of high cultural and historical value.
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Fig. 43. The state-owned Spirits Monopoly factory at Rīgas iela 63/65. (Photo by Silvija Ozola, 2008)
Silvija Ozola. Развитие промышленных предприятий и Новой Лиепаи в 19-м веке

Развитие торговли и транспорта в Лиепае в 19-м веке способствовало появлению застройки на территории к северу от торгового канала. Сформировалась территория с планомерной застройкой – заводы и кварталы жилых домов для рабочих, получившая название Новая Лиепая. Фабрики, построенные во второй половине 19-го века, характеризуются архитектурным разнообразием, которое было продиктовано спецификой производства и месторасположением в городе. Заводы способствовали развитию застройки в Новой Лиепае и гармонично вписались в городскую сеть. Производства больше не строили в окрестностях порта, а размещали их вблизи центров энергетики. На промышленных предприятиях всё большее значение приобретало функциональное размещение зданий, а не архитектурно-объёмная композиция застройки. Для новых и современных производственных технологий планировка и архитектура старинных зданий непригодна. В наши дни многие построенные в 19-м веке производственные комплексы стоят брошенными, однако как структурные элементы городской среды они своё значение не потеряли, и поэтому становится актуальным вопрос о сохранении и использовании индустриального наследия Новой Лиепаи.
Rūpniecības uzņēmumi un Jaunliepāja
19. gadsimta

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I. LIEPĀJAS ATTĪSTĪBA 19. GADSIMTA PIRMĀJĀ PUSE


Sarkanajā ķieģeļa tērptajām ledus pagrādē un noliktavas ēkām blakus no baltiem silikātķieģēļiem samūrēts ar tām nesaderīgus daudzstāvus apjoms. Ėkas šobrīd ir pamestas.


