

The Suffocating Secret of the Rabeneck Dynasty¹

An article by Alexander Poslykhalin from a Russian history website.



Not even local historians can always claim to know everything about the history of their region in all historical periods. The history of industrial enterprise at Shchelkovo during World War I, 1914-1918, is still a blind spot in local history of the Moscow Region. It was a time fraught with many dark secrets and terrifying puzzles, one of which we will try to illuminate here.

At the beginning of the war Shchelkovo was a large factory village. On the right bank of the Klyazma River, in Shchelkovo's industrial zone, there were four large and several medium-sized factories plus a school, a vocational college, a hospital, a pharmacy, and a bakery. On the main street of the settlement, which later became known as Sovietskaya, there was a tea-room, a butcher, several taverns and a lot of shops. In total, by 1911, there were 135 establishments in the industrial zone, with a further 80 on the left bank, in the village of Shchelkovo itself.

The largest industrial enterprises in Shchelkovo belonged to the Rabeneck family. The first factory was built in 1832 on the eastern side of Sobolevo by Ludwig Rabeneck (1791-1862), a German subject. The factory specialized in the dyeing of cotton yarn and printing cotton fabric. After Ludwig Rabeneck's death in 1862, the factory passed to his sons Louis (Leo) and Arthur who re-named the company *Ludwig Rabeneck Sons*. But following Arthur Rabeneck's suicide in 1864, the business was managed by Louis Rabeneck until 1879 when Ludwig's grandsons, Ludwig (Leo) and Edouard were old enough to take up management responsibilities, as Russian citizens and Moscow merchants of the first guild.

In 1870, Ludwig Rabeneck acquired new technologies from the bankrupt company of Swiss dye chemists, Binder and Böhme, also purchasing new production equipment from Germany. In 1874, a newly-built plant for the production of synthetic alizarin dye derived from anthracene was put into operation. Each year, the plant produced 100 tons of powdered dye. This represented a revolution in the technique of dyeing cotton fabric, not only accelerating and reducing the cost of production, but also putting the factory ahead of the competition. Five years later, in 1879, the private company *Ludwig Rabeneck Sons* was transformed into a joint-stock company *Partnership of Ludwig Rabeneck Manufactures in Moscow* with a fixed capital of 1.2 million Rubles. By 1896, the business passed fully into the

¹ This is a translation of a blog by A. Yu. Poslykhalin posted in December 2011 on Trojza https://trojza.blogspot.com/2011/12/blog-post_3008.html - more

hands of Ludwig and Edouard Rabeneck; Ludwig was in charge of the commercial aspects of the enterprise, while Edouard looked after production and technology.



Ludwig Rabeneck (1856-1928)
(1858-1945)



Edouard Rabeneck

Working conditions at the Rabeneck chemical plant were harsh. Production went on around the clock in a day and a night shift. The day shift started at 6 a.m. and with three breaks (30 minutes for breakfast, the same amount for “evening tea”, one hour for lunch) working until 8 p.m. The dense suffocating fumes from the chemical plant forced the workers to walk past the boilers with closed mouths in order to catch just a small amount of air. A health inspector examined the factory in 1884, writing: “the atmosphere during the inspection of the workshop was murderous, although, according to one worker, it is sometimes so bad that even he can't go near it.” The inspector called the maintenance of the production facilities “very primitive” and “certainly not appropriate to the size and nature of production.”

Alizarin production at that time was not only highly classified, but also associated with large international politics. According to the memoirs of a doctor of chemistry and honorary member of the Academy of Sciences of the USSR, Mikhail Ilyinsky (1856-1941), who in 1889-1898 worked as manager of the Rabeneck alizarin factory: “The reason for the liquidation of the Rabeneck's well-established alizarin factory was the conclusion of a new trade agreement with Germany at the end of the 1890s that was unfavourable to Russia, reducing duty on finished dyes, including alizarin, but increasing duty on raw materials. The annual balance sheet of the Rabenecks for 1898 showed a 25,000 Ruble loss on alizarin for the first time. This result was enough to close the plant. Having eliminated the Russian competition, foreign companies entered into an alizarin cartel and immediately raised prices”. The forced abandonment of the production of alizarin pushed the Rabeneck brothers to consider different types of chemical production. In 1894, not far from its two factories (cotton spinning and weaving, and dyeing and printing) a new chemical plant was opened, where for the first time



Courtyard of the Rabeneck factory at Shchelkovo, early 20C

in Russia the production of oleum (steaming sulfuric acid) and liquid sulfuric acid using contact oxidation was undertaken. Oleum was used to purify oil products, to produce superphosphate (mineral porcelain fertilizer) and to produce smokeless powder. Well-established relationships with German industrialists allowed the Rabenecks to purchase the necessary technical resources in Germany. But the innovative production technique, unique in Russia, couldn't generate quick profits for the company. The general economic recession of 1908-1910 had cut the revenues of the Ludwig Rabeneck companies by more than half. But on August 1, 1914, the Russian Empire entered World War I.



Assaut avec masque à gaz. Artist: J.B. Scott

By the spring of 1915, the mutual hatred and aggression of the largest industrial powers reached its climax and went beyond the bounds of any moral and ethical standards. Armed with the achievements of advanced science, the warring parties started to indulge their potential for mutual extermination.² They started a global chemical warfare. The first use of modern chemicals in combat was on April 22, 1915 near the town of Ypres (Belgium). German soldiers launched 168 tons of chlorine gas towards the French trenches. Within a few hours, between five and six thousand French troops had been overcome by gas.



Gassed. Artist: John Singer Sargent, 1918-1919.

On the Russian front, a chemical war began on May 31, 1915, when Germany first used chemical weapons against Russian troops near Warsaw, in the so-called Bolimov combat sector. The German commanders told their rank-and-file that the gas (xylyl bromide) was not fatal, causing only temporary loss of consciousness. But, according to a German defector, ordinary German soldiers were negative about the use of chemical weapons against their enemies. The testimonies of the defectors about the preparation of the chemical attack were ignored by the Russian command and were not communicated to the troops. According to the recollections of one survivor Russian soldiers:

*“Showed more surprise and curiosity than anxiety about the appearance of a gas cloud. Using a cloud of gas as cover, the Russian troops stormed the front trenches and even brought up reinforcements. Soon however the trenches, which were a veritable labyrinth, turned out to be filled with corpses and dying people”.*³

However, the resilience of the Russian soldiers exceeded any imaginable limits. In the first hours of the gas attack, 75% of the Russian soldiers in the first wave were poisoned, but remained fearlessly in action for another 20 hours, thanks to snipers, machine gun fire and artillery support. They were able to repel 5 major attacks of German troops over a stretch of some 12 kilometres! The first Russian gas masks, that had been urgently made in Moscow following an earlier attack near Iprom, were delivered on the evening of May 31, right after a chemical attack. The losses of Russian troops that day amounted to 9036 soldiers and officers, of whom 1183 died.

² Mikhailov V.S. Essays on the history of military industry. M., 1928.

³ Fedorov L.A. *Chemical weapons - war with one's own people*. T.I.M., 2009, 20.



Nikolai Nikolaevich Yanushkevich (1868-1918).

By June 1915, the chief of staff of the General Headquarters of the Russian Imperial Army N. N. Yanushkevich had telegraphed the Minister of War about the need to supply the Russian army with chemical weapons. But the Russian chemical industry of that time was not able to satisfy the requirements of the military. Most of the Russian chemical industry consisted of German chemical plants, and chemical engineering industry was completely unknown in Russia. Long before the war German industrialists had suppressed competition from Russian chemical enterprises - by 1910 they held a monopoly for supplying Russia with key military needs, such as benzene and toluene.⁴ Unlike France and Great Britain, Russia conducted no development of chemical weapons before the war. Even liquid chlorine was brought in from abroad before the war. In the autumn of 1915, the Russian government tried to obtain technology for the manufacture of chemical warfare agents from French industrialists, but they were refused.

In July 1915, the Russian government set up a "Commission for suffocating agents" that was soon merged with the Chemical Committee, charged with organizing the production of chemical weapons in Russia. On April 22, 1916, the Chemical Committee became the Main Artillery Directorate - a single center "for the procurement and storage of explosives, asphyxiation and incendiary means".⁵ The committee was led by an outstanding Russian chemist Vladimir Nikolaevich Ipatiev(1867-1952), who has left an interesting memoir of that time.⁶ Ipatiev recruited Joseph Frossar, a brilliant industrial chemist and textile dyeing specialist, to work on the Chemical Committee. Widely known among textile manufacturers before the war, Frossar and Ipatiev had both been responsible for the steaming sulfuric acid plant at the Rabeneck factory.⁷ Ipatiev instructed Frossar to organize military chemical production at factories around the Moscow region. In a family memoir Edouard Rabeneck describes the work of the factory under Frossar.⁸

⁴ Russian State Military Historical Archive [RGVIA F.20. Op. 9. D.94. L.124,125.](#)

⁵ RGVIA. F.504. Op. 17. D. 213, 11.

⁶ Ipatiev, V.N. *The Life of a Chemist*. New York, 1945.

⁷ Rabeneck L., "Cotton manufacture in and around Moscow in the time before the First World War - Part 1", *Renaissance* No 161, May 1965 Paris. 99.

⁸ <https://livesretold.co.uk/edouard-rabeneck>



Target shooting of the lower ranks of the 280th Sur Infantry Regiment in gas masks, 1916

According to data carefully collected by A.N. De-Lazari, an attempt to obtain phosgene (carbonic anhydride chloride) from private chemical enterprises in Russia, was unsuccessful due to the extremely high prices charged by industrialists and a lack of guarantees for timely delivery. Only in August 1915 did the Chemical Committee begin accelerated construction of state-owned phosgene plants in Ivanovo-Voznesensk, Moscow, Kazan, and at Perezdnyaya and Globino.⁹ But construction and commissioning of such plants took time, and there was no time.



Nikolaevich Ipatiev(1867-1952),

Rabeneck, E. A. "My Remembrances of the Historical Development of the Firm Ludwig Rabeneck and the Rabeneck Family in Moscow", Appendix 5 of *Rabenecks Moscow Manufacturers*, Moscow 2008

⁹ De-Lazari A.N. *Chemical weapons on the fronts of the World War 1914-1918*, Moscow, 2008. See [here](#) .

So naturally, the Rabeneck factory for the production of sulfuric acid, which also had experience in working with chlorine, attracted the attention of the Committee. In August, the factory received the first large military order for the production of phosgene and sulfuryl chloride. According to the Mikhailov, the Rabeneck chemical plant in Shchelkovo - the only one in Russia (from August 1915 to October 1, 1916) produced corrosive compounds such as sulfuryl chloride. This substance was used by the Russian army in the war of 1916-1918 in mixtures with other dangerous chemicals to generate smoke clouds, that had a choking effect on the enemy.¹⁰

In October 1915 The Rabeneck factory at Shchelkovo was the first in Russia to produce the asphyxiating and toxic substance, phosgene. Chemical science is accurate: at a concentration of 0.022 mg / l, a person dies after 30 minutes of constant exposure. In 50% of cases, poisoning by inhalation of 0.1 mg / l for 30-60 minutes leads to death. The remaining 50% of survivors are permanently disabled as a result of poisoning. A concentration of 1 mg / l with an exposure time of 5 minutes leads to death in 50-75% of cases. A concentration of 5 mg / L is fatal after 2-3 seconds.

At the Shchelkovo factory, E-30 grade gas balloons (30 pounds - 11.5 kg) were filled with the lethal gas in a liquid state. After that, they were sent to the front by rail through Moscow. Mines and artillery shells were also filled with gas. At the Shchelkovo factory there was a large military warehouse of such gas cylinders. From the summer of 1915 to October 1, 1916, 14,000 pounds of sulfuryl chloride and 18,000 pounds of phosgene were produced here.¹¹ The chemist M.A. Ilyinsky wrote: "After a number of improvements and expansions with the transition to pyrites, the oleum plant continued to operate until the liquidation of the Rabeneck company." Profits of the Ludwig Rabeneck Partnership increased sharply, reaching the incredible amount of 15,245,008 Rubles at that time.



¹⁰ Mikhailov (1928) op. cit.

¹¹ *ibid.*

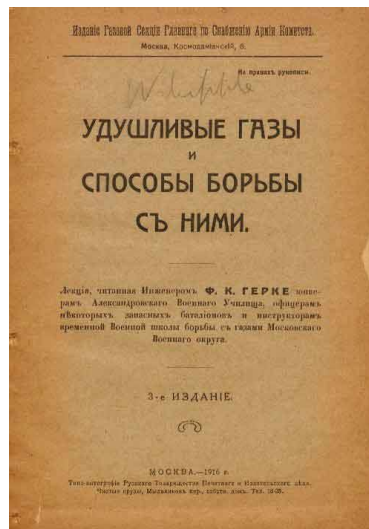
The war gave no pause for reflection on the moral and ethical aspects of using "asphyxiating agents." On October 12, also in 1915, Germans launched a gas attack against the Russians near the town of Smorgon in present-day Belarus. Painful memories of the consequences of this attack have been left by Countess Alexandra Tolstaya (1884-1979), the youngest daughter of the great Russian writer Leo Tolstoy, who served as a nurse at the front and was in charge of one of the hospitals near Smorgon. Countess Tolstaya wrote in her diary: "It was hard work in the hospital. The wards were filled with wounded, mostly suffering from gas poisoning. Fortunately, the staff and orderlies were untouched and we had enough masks for everyone. But the trees and grass from Smorgon to Molodechno, a distance of about 35 miles, had turned yellow, as if from a fire. / ... / It's impossible to forget what I saw and experienced during those terrible days. In fields you can see where the rye is flattened; you approach to see a man lying down, his face is reddish-brown, and he's breathing heavily. You lift him up and put him on a wagon; he's still talking, but by the time you reach the camp he's dead. No sooner has the first batch come in, off we go again ... The hospital is working day and night, and it's increasingly crowded. There are poisoned people on the floor and in the yard ... / ... / I've never experienced anything more terrible and inhuman in my life, the poisoning of hundreds, even thousands of people with this deadly poison. There is no escape. It penetrates everywhere, killing not only all living things, but also every blade of grass. And for what? How often, then and now, I remember my father."



Countess Alexandra Tolstaya (1884-1979)

For an hour and a half of the German attack near Smorgon, gas penetrated more than 20 kilometres into the Russian defence. According to eyewitness accounts that have miraculously survived, the Germans went on the attack in gas masks with a rifle in one hand and a club studded with nails, to finish off the poisoned ones in the other. Forty Russian officers and 2076 soldiers perished in the attack.

Meanwhile, the number of powers possessing chemical weapons was increasing. By mid-May 1916, the French army first used phosgene against German troops. From April 1916, gas attacks by the Germans became considered as conventional warfare. And in June 1916, Britain entered the chemical war. Russia was the last of the world powers to enter the chemical war. On March 21, 1916, in a battle north-east of Smorgon, the Russian army first used chemical shells, and on June 19 carried out the first gas launch. The Russian command used chloropicrin, the production of which was already established at seven factories in Russia. From August 1915 to October 1, 1916, 21,000 pounds of this toxic substance were produced by them.



Choking gases and ways to deal with them. Moscow, 1916.

The Russian chemical industry, despite loans and cash injections, didn't possess the technical capability to satisfy military demands. In preparation for the summer offensive of 1916, the Russian government ordered 2,500 tons of liquid chlorine and 1,666 tons of phosgene from the UK, but delivery was delayed. In the spring of 1916, production of E-30 cylinders was discontinued, and more capacious E-70 gas-emptying cylinders with a capacity of 70 pounds - 28 kg were delivered to the Rabeneck factory in Shchelkovo. In 1916, the Rabenecks, with 77 workers, produced and supplied 340 tons of sulfuryl chloride to the army. Secret data on the size of production and supply of phosgene is still not available.



In 1917 the February, then the October Revolution took place. Having received huge subsidies from the tsarist government for the production of poisonous gases for the front, Ludwig and Eduard Rabeneck certainly knew what 'smells like business'. In Germany, they were already considered traitors, in Russia they would be torn down by their own workers. In late 1917 - early 1918, many of the family emigrated to France. Here, moving away from business, Ludwig became one of the founders of the Éditions Russes de Musique in Paris.¹² Ludwig Rabeneck died on February 19, 1928 in Paris. Edouard died later in London, in 1945.

In 1918, the chemical factory of the Ludwig Rabeneck companies was nationalized. In February 1919, the IX department of the Artillery Committee of the Main Artillery Directorate, surveying chemical warfare agents in the Moscow region, discovered a large warehouse of charged cylinders E-30 and E-70 on the property of the former Rabeneck plant in Shchelkovo.¹³ In June of the same year, the Shchelkovo plant was assessed suitable for the speedy resumption of the production of toxic gases. Three production lines were discovered at the plant; for the production of sulfuryl chloride, sulfuric anhydride and chlorosulfonic acid methyl ester. The first was partially disassembled, but could be restarted "within 2-3 months, provided that the missing parts of the equipment can be delivered: valves, copper tubes, manometers." The potential output of the device was estimated at 50-60 pounds per day. The installation for the production of sulfur dioxide in the amount of 40-50 pounds per day was in good condition: "it can be put into operation immediately." Also in good condition was the unit for the production of methyl ester of chlorosulfate acid.¹⁴ Sulfuric anhydride was also produced, to create smoke screens that affected human mucous membranes, as did Methyl chlorosulfate, which had ingredients of sulfuryl chloride and methyl alcohol, and that produced a toxic tear gas effect used to produce mines and hand grenades. By 1930, Soviet engineers had completely re-built the Rabeneck Chemical Plant, significantly expanding the product range. It became a chemical plant of national importance. During the Second Five-Year Plan (1933-1937), more than 2,000 workers worked at the plant.

¹² Éditions Russes de Musique was founded in 1909 by Serge Koussevitsky. The Headquarters moved to Paris in 1920, after the revolution.

¹³ Federov (2009) op. cit.

¹⁴ VSNH op. cit. (4)



Shchelkovo on a map of 1925.

А Ю. Послыхалин, Dolgoprudny, Vodniki, 2011