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LOMONOSOV: SOME PAGES OF HIS BIOGRAPHY

“Recover and go, Russia. Shake away your doubts and fears, and joys, and being full of hope stand out in all your beauty, rejoice, rise high”

M.V. Lomonosov

Mikhail Vasilyevich Lomonosov (November 19, 1711 – April 4 (15) 1765) was born to a peasant family of Pomors, Vasiliy Dorofeyevich and Elena Ivanovna Lomonosovs in the village of Mishaninskaya, the Dvinskoi district of the Arkhangelsk province. The first documents that mention the Lomonosovs’ kin are dated from the 16th century, the time of Ivan the Terrible. The grandfather of the future scientist, Dorofey Leontyevich, and his father, Vasiliy Dorofeyevich, as the majority of Pomor peasants were engaged in grain-growing but their main work was fishing and hunting. The Lomonosovs had a medium income. Vasiliy Dorofeyevich was a strong-willed, enterprising person and an experienced seaman. He was among the first in the province who built and equipped a ship according to the European norms. The ship named “Chaika” (“Seagull”) was used to transport cargo along the coasts of the White Sea, the Arctic Ocean, and the River Northern Dvina. During his first years Mikhail stayed with his mother who took care of him. Data about his childhood was not preserved. Pomor children upbringing was very strict and they were taught to respect their elders. Pomors developed dexterity, strength and endurance in their children.

In 1720 Lomonosov’s mother died. Later his father re-married twice but the boy had bad relations with his stepmothers.

At the age of ten Mikhail began helping his father. In early spring they went fishing far away, to the waters of the Arctic Ocean (to the island of Novaya Zemlya and to Spitsberg), and not so far – to the Solovki Islands. The difficult sea voyages made Mikhail strong, developed his mind, power of observation, and enriched him with diverse knowledge. The young man learned navigation, sea-hunting, experienced storms in the ocean, observed polar ices, the rise and fall of tides and northern lights. He was also interested in whaling and salt-making industries. Having a love of knowledge Mikhail learned the way of living and customs of Nenets, Lopari and Komi-Zyryane. At the age of eleven-twelve Lomonosov learned to read and write, rewrote church books, read aloud “Psalmbook” and “Saints’ Lives”. His first teachers were his neighbour, Ivan Shubnyi,

1 A patronymic/father’s name
2 Pomors/Pomory are people that have been living for centuries on the White Sea coasts
3 Indigenous peoples of the Russian North
and the local deacon, Semyon Nikitich Sabelnikov. At the age of fourteen the young Pomor wrote in a beautiful handwriting without mistakes.

Mikhail got in touch for the first time with secular literature (“Grammar” by M. Smirnitskiy, “Arithmetic” by L. Magnitskiy and “Psalmbook” by S. Polotskiy) at his neighbor, Christofor Dudin’s home. Later Lomonosov called these books “the gates of his learning”.

Mikhail’s love for reading caused his stepmother to be dissatisfied and led to reproaches. The atmosphere at home was difficult. These family problems and the desire for knowledge prompted young Lomonosov to go to Moscow to continue his studies. In December 1730, after receiving his passport and three rubles borrowed from his neighbor, Foma Shubin, nineteen-year old Lomonosov left his parents’ home and went with a string of fish sledges to the capital.

After a three week journey the future scientist arrived in Moscow. He planned to start his studies at the Mathematics and Navigation School that was situated in the Sukharevskaya Tower. Reading, writing, arithmetic, geometry, trigonometry, navigation and astronomy were taught there. Lomonosov wanted to study Latin because all scientific works were written in that language. In January 1731 Mikhail applied to enter the Slavic-Greek-Latin Academy, a higher ecclesiastical educational establishment that taught future priests and state white-collar workers. Here he got a possibility to perfect his study of Latin. Lomonosov did not divulge his peasant origins and said that he was a nobleman’s son as peasants were not allowed to study at the academy.

In one year Lomonosov passed the programs of three academic years, learned reading and writing in Latin, studied Slavic grammar, the basis of history, geography and arithmetic. He read chronicles, religious, philosophical and mathematical books, was fond of Latin and Russian poetry. Although his classmates laughed at him as he was very tall and much older than they were (“such a blockhead had come to study”), in a short period of time Lomonosov became the best student in all subjects in spite of having financial difficulties.

He studied five years in the Slavic-Greek-Latin Academy. In November 1734 the rector of the academy got an order to sent 20 of the most talented students to continue their studies at the Academy of Science in St. Petersburg. By January 1, 1735 after thorough testing, 12 students were chosen and one of them was Mikhailo Lomonosov.

At the new educational establishment the gifted Pomor showed his great interest in sciences; he studied mathematics, experimental physics, chemistry and mineralogy. He independently studied the theory of versification. In St. Petersburg Lomonosov was introduced to new instruments and equipment for conducting research. In the academic bookshop he saw new books and journals.
In September 1736 along with D.I. Vinogradov (a future inventor of Russian china) and G.U. Raizer, Lomonosov was sent to Germany to study mining. At the University of Marburg Mikhail attended Professor U. Duizig’s lectures in theoretical chemistry and Professor Ch. Wolff’s lectures in mechanics, hydrostatic, theoretical physics, logics, aerometric and hydraulics. In addition to his studies of the German language, in May 1737, Lomonosov commenced lessons in French, painting, dancing and fencing. In his letters to Petersburg, Wolff wrote about the Russian students’ success in their studies, especially distinguishing Mikhail’s achievements.

In autumn 1738 Lomonosov wrote his first student work in physics - “About the turning of a solid into liquid depending on the movement of previous liquid” – which was well regarded by academics from Petersburg. In March 1739 he finished his dissertation in physics.

By the beginning of 1739 the Russian students ended their studies in Marburg. In summer 1739 they were sent to Freiberg to the famous specialist in mining, J. Henckel. The students studied mineralogy and metallurgy, visited mines and metallurgical plants where practical classes were held. Chemical research was conducted in one of the best laboratories in Europe.

In Freiburg, Lomonosov in addition to his studies in mining, metallurgy and chemistry, was fond of Russian versification. In autumn 1739, having learned about the Russian army’s victory over Turkey, he wrote “The Ode in honour of the capture of the fortress of Khotin” that made a radical change in Russian poetry. Later Mikhail prepared the scientific work “A Letter about the Rules of Russian Versification” in which he expressed his ideas about the reform of the Russian versification.

From May till September 1740 Lomonosov traveled in Germany. In May 1740 he arrived in Marburg. On May 26, 1740 he married Elizabeth Zilch, a brewer’s daughter. In June 1741, having received permission to leave the country, Mikhail arrived at the Academy of Science in St. Petersburg.

With Lomonosov’s arrival at the Academy a new period in the development of Russian science began. Later, historians called this period Lomonosov’s era. In these years (1741-1765), the scientist was engaged in compiling the Mineralogical Catalog, physical and chemical research, translating scientific articles from German into Russian and so on. In January 1742, Lomonosov became an adjunct.

In 1745 he began giving public lectures in physics and translated foreign scientists’ works in astronomy. The scientist presented his dissertation “About Metal Glitter” to the Academic Assembly. The work was highly praised. In summer 1745 Lomonosov became a Professor in Chemistry.
In the middle of 1746 the scientist received permission to build the first Russian scientific-educational chemical laboratory where commencing in 1748 he performed different experiments. Later he made a laboratory in his own house.

At the end of the 1740s Lomonosov started work on the investigation of Russian history. This endeavour resulted in his unique work, “Ancient Russian History”.

In 1751 a set of the scientist’s literary works was published.

In March 1751 for his great achievements in science, Lomonosov received the rank of College Adviser that gave him the right to hereditary nobility.

A bright page in Lomonosov’s biography is his pedagogical activity. Since 1742, after achieving the rank of adjunct, the scientist taught his students chemistry, physics, natural and mineral history and physical geography over the next 20 years. He was also engaged in the preparation of textbooks. In 1742 Lomonosov wrote the textbook, “The First Bases of Mining Science”; in 1743 – “A Brief Instruction in Rhetoric”; in 1745 he translated a textbook in physics from Latin to Russian.

The first Russian academic became the head of the Geography Department of the Academy of Science (1758), the head of the Academic University (1760) and developed documents that regulated their activity. Lomonosov was the author of the idea and initiator (together with Count I.I. Shuvalov) of establishing a university in Moscow (1755).

Mikhail Vasilyevich Lomonosov has a special place in the history of Russian and world science. The scientist was one of the most highly educated Russian people of the 18th century. His scientific interests were very broad and diverse. His works in physics, chemistry, astronomy, optics, geology, mineralogy and crystallography, technology, geography and meteorology, economics, history, literature and pedagogy became the foundation for development of these sciences. Lomonosov arranged astronomical and meteorological research; took part in preparations for geographical, geological, sea expeditions, the aim of which was to investigate the Northern Sea Way; worked on projects for reorganization of the Academy of Science in Petersburg. The discoveries made by Lomonosov as a scientist-encyclopedist enriched many branches of science.

In “The Survey of the most important discoveries with the help of which Mikhailo Lomonosov tried to enrich natural sciences” (1764), the scientist wrote about his nine discoveries:

1) the explanation of the reasons for warmth and coldness;
2) a mechanical explanation of the reasons for elasticity of the air;
3) the creation of physical and chemical bases of the theory of solutions;
4) the premises for an explanation of the phenomena that is happening in the bowels of the earth;

5) an explanation of the appearance of sudden frigidity and the origin of the northern lights;

6) the discovery of joining particles as the reason for many phenomena in nature;

7) the experimental proof of the change in position of the center of earth’s gravity;

8) instructions about the importance of the observations of phenomena in a soldered mercury barometer for meteorological issues;

9) the invention of a very sensitive “machine” that could hypothetically prove Lomonosov’s theory about the instability of the earth’s gravity.

The scientist laid the foundations of physical chemistry that was officially recognized 150 years later; he presented a theory about colour; discovered the atmosphere on the planet Venus; described the structure of the earth; explained the origin of many minerals; invented a number of optical instruments. Lomonosov was an active supporter of the exploration of the Northern Sea Way and Siberia; a founder of syllabic and tonic versification. He was a great poet of the 18th century; an author of fundamental philological works, an author introducing scientific terms into the Russian language. The scientist could speak thirty-one languages. Lomonosov revived mosaic art, was an artist of some outstanding mosaic pictures. Lomonosov was a member of the Academy of the Three Fines Arts, a member of the Academies of Science in Sweden and Bologna. Lomonosov was a brilliant man, ahead of his time in pursuit of knowledge that left Russia and the world a rich legacy of scientific insight and discovery.

The scientist was married to Elizabeth Zilch. They had three children. But the only child that survived was their daughter Elena (1749 – 1772). Lomonosov was buried at the Lazarevskoe cemetery of Alexander-Nevskiy Lavra in St. Petersburg.

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