



## Emergence and Development of Science Education and Bulgarian Schools

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**Abstract.** By the middle of the 15th century, literature in the Bulgarian lands began to gradually resume. Enlightenment activities were organized individually in some monasteries in the form of monastery schools. The purpose of the training is to provide writing, reading and a few arithmetic skills. Monastery school education is elementary and religious in nature.

Along with the economic changes, a class of traders and craftsmen was starting to emerge in the Bulgarian lands, who communicated not only within Bulgaria but also with Europe and the Asian markets and needed rational knowledge. This necessitates enrichment of the educational content and is one of the reasons for the creation of the so-called "municipal" monastery schools, which is a new stage in Bulgarian education.

In 1824 in Brasov, Romania, Peter Beron's famous "Fish Letter" appeared. This is the first secular book to expose natural science knowledge.

Recently, after the release of the Fish Primer Book, another great Bulgarian national revival person, Ivan Selimsky (1799-1867), established in his hometown of Sliven a "new" school of two levels, in the upper level of which he taught physics in Greek. He introduced the study of the so-called "positive" sciences and first taught physics in Bulgaria as a separate school subject.

The first class school was opened in 1846 in Koprivshitsa by Nayden Gerov.

By the time of Liberation, the first high schools were created, which were created on the basis of the existing class schools.

With the opening of Bulgarian class schools and the writing of the first Bulgarian textbook on physics, the modern development of teaching in this science began.

**Keywords:** cell school, mutual school, classroom school

### 1. EARLY SCIENCE INFORMATION

Already in the Middle Ages, the spread of Physics knowledge corresponding to the highest level of its time began in Bulgaria. The peak reached by Bulgarian natural science thought and literature during this period were the works "Heaven" and "Six Days" by John Exarch of Bulgaria, who lived and worked during the first half of Simeon's reign - at the end of the IX and the beginning of the X century. These were the first books written in the still "young" Cyrillic alphabet, which systematically present the teachings on world and man of the ancient philosophers, these being translated from the Greek originals. However, these are not the only works in medieval Bulgaria that provide data on the knowledge of physical sciences. Such information is also included by Simeon the Great himself in the famous encyclopaedic collection known as the "Simeon's Collection", written around 915. This collection has become very popular in the Slavic countries, which is proven by the 22 transcripts found so far in Russian and Serbian (Andreev, 2008).



**Fig. 1** Copy books.

The successor and continuer of the work of the great Preslav's writer, John Exarch, is Konstantin Kostenechki. He worked in the end of XIV and the beginning of XV century, i. e. almost five centuries after the time of John Exarch, on the border between the Middle Ages and the Renaissance in Europe. He has remained in history with the compilation entitled "Excerpts from Cosmography and Geography". This collection is of considerable interest for the history of Physics in Bulgaria. He speaks of the growing attention of more advanced

Bulgarians to secular and scientific knowledge, although for Bulgaria this was one of the turning points and the most tragic periods in its centuries-old history - since 1396 a new period of complete foreign subordination has come, which interrupted for a period of five centuries the cultural development of the country. For this reason, Bulgaria, along with a number of countries in the East, lags several centuries behind the pace of development and achievements of the bourgeois world (Andreev, 2008).

## **2. FIRST SCHOOLS**

After the Ottoman conquest, the educational system in the Bulgarian lands declined. Much of the old centres of education were destroyed. Some of the educated Bulgarians were killed, others - enslaved or forcibly deported, and third immigrated to Serbia, Wallachia, Ukraine. The Old Bulgarian literature and culture was partly preserved only in the surviving monasteries. It was not until the mid-15th century that literature began to gradually resume. Educational activities were organized in separate monasteries in the form of monastery schools. The training was intended to provide writing, reading and calculation skills, while textbooks were mainly church books. It is taught in Church Slavonic or Greek language. Monastery education is elementary and religious in nature.

The monastery schools play an important role in preserving literary and educational traditions. In the eighteenth century, monastery schools became even more widespread and by the middle of the century, in the territory of present-day Bulgaria, more than 100 monastery schools were functioning, among which the more famous ones were in Sofia, Kotel, Samokov, in the Etropole, Troyan and Rila Monasteries. Depending on the training of the teachers themselves, the children also study a little history, witty readings, literary works such as Christopher Zefarovich's *Stematography*, Paisii's *History*, the works of writers, grammatical works of Russian, Serbian and Greek origin.

The process of the emergence and consolidation of the class schools in Bulgaria as the second stage of the educational system is continuous and gradual. The beginning of this process was marked by the so-called "preparatory classes", which were opened in some of the mutual schools as early as the late 1820s and early 1830s. In these "classes", the more alert and advanced students studied individual educational subjects at a higher level, and were actually being prepared to become mutual teachers. (Borisov, 1988).

One of the most prominent scientists of the Bulgarian Renaissance is Dr. Peter Beron (1799-1871), who leaves novel footprints in many fields of knowledge, including in Physics. In 1824, in Brasov (Romania), he published his "Fish Primer book". This is the first secular book to present natural science knowledge. In librarian practice, it is called a Lighthouse Book because it has a fundamental role in the development of society - it marks the beginning of the secular school. This book rejects the old monastery educational system and faces life and scientific knowledge.

An important stage in the development of the Bulgarian educational process began in the 1830s with the establishment of new Bulgarian elementary schools where spoken Bulgarian was the language of teaching. Secular textbooks and materials were used such as Neofit Rilski's grammar, P. Beron's Fish Primer book, etc. Nayden Gerov also takes a worthy place among the most prominent Bulgarian enlighteners. He established in Koprivshitsa (1846) and Plovdiv (1850), and gradually in other settlements, the first independent class (secondary) schools.



**Fig. 2** The first class school in Koprivshitsa.

The first teacher in Physics in these schools was Nayden Gerov himself, followed by his student Yoakim Gruev and his brother Konstantin Gerov.

## **3. FIRST BULGARIAN PHYSICAL SCHOOLS**

An important place in the history of Physics in our country takes the first original textbook in Physics in Bulgarian language, written for the new schools by Naiden Gerov and entitled "Excerpts from Physics, Part one". It reflects the achievements of Physics until about the 1840s. The first part of the textbook was published in 1849, and the second, unfortunately, was not printed and is only known from his manuscript.

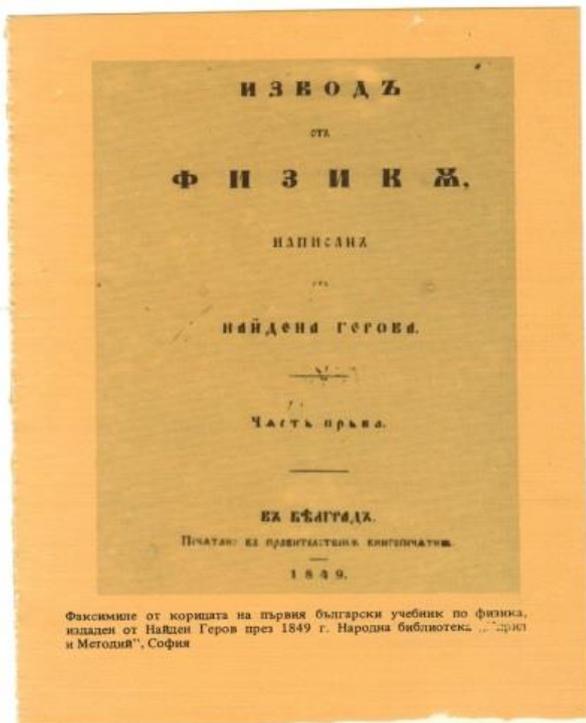
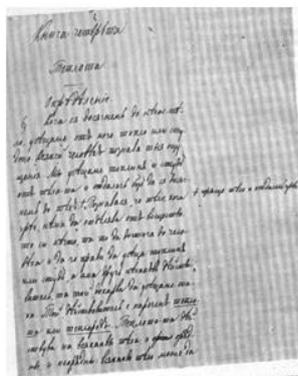


Fig. 3 The first Bulgarian textbook on physics.

Manuscript - unpublished



Contents:

- Heat – book 4,
- For the world – book 5,
- Magneism – book 6,
- Electricity – book 7

Basic methodology – observation and experience

Fig. 4 Second part of the textbook – manuscript.

In the beginning of 1835, Gabrovo School was opened, and Neofit Rilski (1793-1881) was its first teacher. He introduces the mutual teaching method and trains his students in a secular spirit. Considering that teaching should be put above all, Neofit Rilski compiled and published in 1835 the "Mutual Teaching Tables", used then as a guide on school education.

N. Rilski was the first to draft Disciplinary rules for the mutual school. It states what the student should do outside and inside the school, how to behave in front of the teacher and how to stay at

home. In 1836 he created a geographical globe, which was a revolution for the then state of education. It is displayed at the Rila Monastery Museum. Later, maps, atlases, dictionaries began to be drawn up for the needs of the schools.

A bold challenge against the Oriental educational tradition was the opening of Girls's new Bulgarian schools. In 1841, in the cell of the St. Nikolay's church in Pleven, Anastasia Dimitrova opened the first Bulgarian girls' school, maintained by the Bishop Agapii Vrachanski (approximately, 1790-1849), and she herself became the first secular woman teacher in Bulgaria. Immediately, the school was filled with girl students - about twenty girls from the town. Initially, they wrote letters and numbers in sandboxes, later they began to write with the slate-pencils on boards (panakidi) smeared with wax.

For almost 20 years after the publication of Naiden Gerov's Excerpts from Physics, there were no attempts to create a physics textbook. Some knowledge of astronomy and meteorology related to physics appears in other textbooks and journals of earth description and geography, e. g. Ivan Bogorov's "Journal of Science, Crafts and Trade".

In the late 1860s, the need for a complete Physics textbook in Bulgarian language grew. Then, for the purposes of the Plovdiv class school, which became a high school in 1868, Yoakim Gruev translated the then famous textbooks: "Experimental Physics" by A. Gano (1869), which was a relatively complete course in experimental physics, and "Physics for the Principal Schools" by D. Schubert (1872), in which the exposition contains quite a lot of experiments with descriptions, but without good explanations, without formulas and symbols, and was appropriate "for the lower classes" of the schools.

Also, worth mentioning is a textbook entitled "A Natural History for Getting to Know Nature First" which was intended for the first Bulgarian high school in Bolgrad (the administrative centre of the Bulgarian colonies in Bessarabia - Russia), written by Dr. D. Mutev, director of this high school. The textbook, published in 1869, gave knowledge about the atmosphere, about water in its various phase states, about winds, hydrostatics, and more.

Ivan Gyuzelev wrote and in 1874 printed the second in our country original Physics textbook entitled "A Guide to Physics", which is a complete course in experimental physics, with many com-

putational tasks, given with the solutions. It was intended for the needs of the Gabrovo School, which also became a high school. His second revised and supplemented edition was published in 1895.

From 1871 to 1876 I. Guzelev was a teacher in mathematics and physics at the Aprilov's High School in Gabrovo, and he was one of the authors of the school curriculum. He also introduced the active use of experiments in teaching physics and furnished the first study room, ordering the equipment for it from Austria. As Minister, I. Guzelev also creates a standard for a physics study room.

He was also one of the founders of high school physics education in Bulgaria, Minister of National Education (1880) and long-time chairman of the Supreme Court of Auditors.

Physics textbooks for the lower classes only appear after the Liberation. Among them is the textbook of Spas Vatsov – "Physics for the lower classes of high schools and class schools", published in Plovdiv in 1891.

These textbooks have a high scientific level at the time, having played an extremely positive role in the teaching and promotion of this fundamental science. They are few in number, but they are an expression of the efforts of the Bulgarian national enlighteners to create a new Bulgarian book and a new Bulgarian school, facing the needs of life (Taseva, 1964).

By the time of the Liberation, the first high schools were established based on the existing class schools. In 1859, the First Bulgarian High School, with first and second junior high school grades, was opened in Bolgrad (Bessarabia-Ukraine, the administrative centre of the Bulgarian colonies in Russia). The training was provided in two stages - a three-year first stage for the preparation of teachers and clerks, and a four-year upper course, the completion of which allows for admission to higher education. The classes have been gradually created over the years, with the last VII grade being created by Dr. Dimitar Mutev, who heads the Bolgrad High School a few months after its founding and remains its director until his death, playing an important role in making the High School a major centre of Bulgarian culture. He was considered the most educated Bulgarian of his time, having defended in Germany the first Bulgarian dissertation on Physics and Meteorology in 1842.

Physics was studied in V, VI and VII grades.

In the following years Plovdiv High School and Aprilov's High School in Gabrovo were opened, and in 1868 Y. Kovachev opened in Shtip the first Bulgarian Pedagogical School, which prepared teachers for the class schools.

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