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DIGITIZATION OF THE BOOK "PRINCIPLES OF PHYSICS" OF VUK MARINKOVIĆ

Abstract. In this paper we present digitization of a book "Principles of physics" ("Начела физике", Belgrade, 1851) written by Vuk Marinković, a prominent Serbian medical doctor and physicist from the middle of the XIX century. This relatively large book is considered as a first Serbian text-book on physics. It is interesting that it was one of the last books published in the old-Serbian language and script. Later text-books were written in modern Serbian in accordance with Vuk Karadžić's reform. The printed copy of this book belongs to the Serbian Academy of Sciences and Arts. Its digital copy is deposited in the Virtual Library of the Faculty of mathematics, elibrary.matf.bg.ac.rs.

Keywords: Vuk Marinković, digitized works, physics, XIX century.

Introduction

The Virtual Library of the Faculty of Mathematics in Belgrade (<http://elibrary.matf.bg.ac.rs>) was founded 15 years ago, see [2], [3] and [4], and it is one of the largest database of digitized texts in Serbia with free access. At the time of writing this article, it contains more than 4000 digitized items and several important collections, including digital copies of PhD theses of Serbian mathematicians and rare Serbian books - some of them dating the 18th century. This paper belongs to the series of articles on digitization of books contained in this library.

The general idea of this online database is to preserve in digital form the works in mathematical sciences and related subjects of Serbian scientists from the past. We consider it as an important activity in the area of the preservation of scientific and cultural heritage of the Serbian people. The other but not less important goal is to present these works to the general and scientific audience using the modern information technologies. This work is done by the support of the Faculty of Mathematics in Belgrade and projects - funds granted by the Serbian Ministry of Education, Science and Technological Development. It is recognized and supported in certain forms also by the other Serbian scientific and cultural institutions, particularly by the Mathematical Institute SASA, Serbian Academy of Sciences and Arts, University Library in Belgrade and the National Library. These institutions are in fact the main sources of the material: books, manuscripts and other writings that are digitized and placed in the Virtual Library. However, we consider as the most important the work of participants of the Digitization projects of the Faculty of Mathematics. Without their enthusiasm this library would not exist.



Др Вук Маринковић
(1807-1859)

In this occasion we shall present digitization of the book "Principles of physics" ("Načela fizike", Belgrade, 1851) written by Vuk Marinković, an outstanding Serbian medical doctor and physicist from the middle of the XIX century. Even if there are books in Physics (Atanasije Stojković) published almost a half a century before it, this large book is considered as a first Serbian text-book on physics. Several authors, see [1], [2] and [6], have already written a comprehensive biography of Vuk Marinković and gave it's amply reviews. So, we shall not enter deeply into the biography of Vuk Marinković, neither in his book. The main purpose of this article is to mark and announce this event, the digitization of Marinković's *Physics*.

Short biography of Vuk Marinković

Vuk Marinković was born in Novi Sad on January 5, 1808 (December 24, 1807, by the Julian calendar). He finished elementary school in Novi Sad and studied at the Gymnasium in Novi Sad and Jegra (Eger, Hungary). After that he went on studies of medicine at the Pest and Viennese University from 1826 to 1830. He defended the doctoral dissertation: *Dissertatio inauguralis medica de epilepsia*, at the Royal University of Pest on May 23, 1830, at age 23. Marinković then returned to Novi Sad where he starts private medical practice and worked there until the European revolution in 1848 which caught up Austrian Empire, also. He has enjoyed a great reputation among the citizens of his town. Even if Novi Sad at that time was not in Serbia, he was also known in Serbia as a good medical doctor and educated man. For example, in 1831 Miloš Obrenović offered him to work in the rank of court (knjaževski) physician in the town of Kragujevac. At that time, he began to interest in physics and devoted himself to the study this subject. His seriousness in this field is witnessed by his visit to Berlin in 1844 and 1947 where he attended the lectures of the famous Alexander von Humboldt. Vuk Marinkovic was married with Sofia, the daughter of wealthy Jovan Pavlović.

After the destruction of Novi Sad in the aftermath of the bombing, in June 1849 during the European Revolution 1848-1849, Vuk became virtually a homeless person, without a personal library and personal files which he lost during these events. It was

rather difficult for him to restore private medical practice, so he moved to Serbia. He was immediately offered there the position of physics professor at Lyceum, a forerunner of the Belgrade Higher School and the later Belgrade University. He accepted this position and remained there until August 1857 when he suddenly died.

He also taught chemistry until the school year 1853/54 when chemistry was given a status of an independent subject. Upon Marinković's arrival at Lyceum, the theoretical and experimental work is upgraded to a higher level, so Marinković is considered the founder of physics in Serbia. During his academic work in Belgrade he was twice elected for the rector of Lyceum.

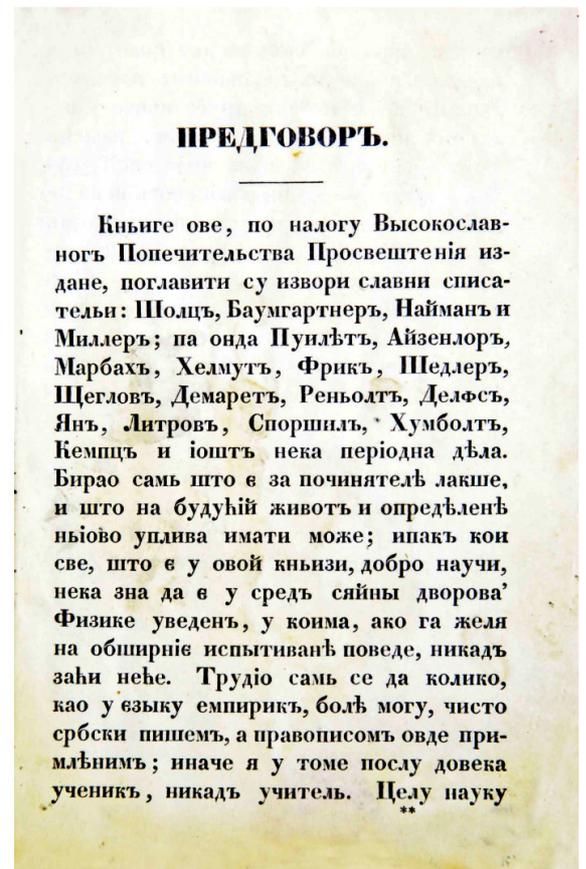
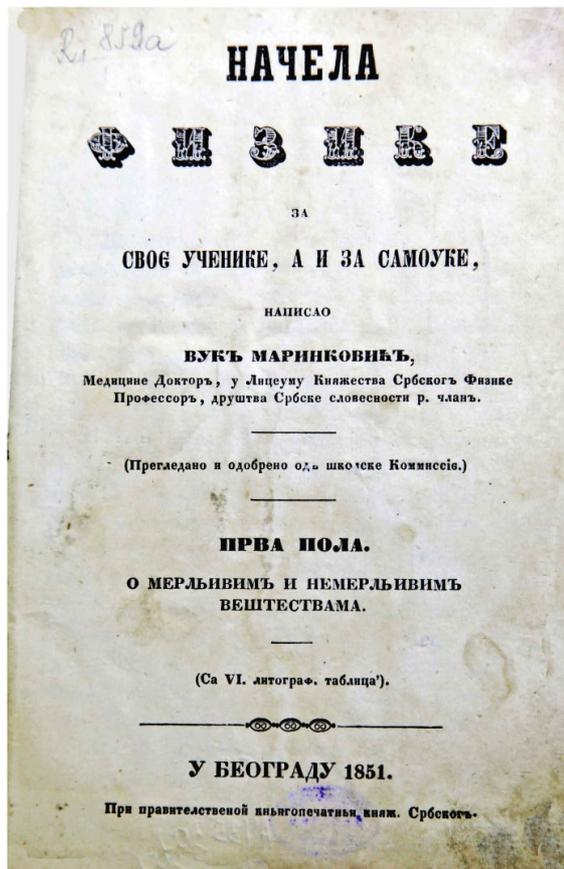
His main works are "Principles of Physics", Belgrade, 1851, 840 pages, "History of Nature" (*Јестествена повјесница*), Beograd, 1851. 493 pages and *Atlas* (1851). He also published his translation of Mochnik's geometry for the higher schools of the Principality of Serbia. He wrote all these books in Old Slavic-Serbian language and the script.

Начела физике (Principles of Physics)

Certainly the most important work of Vuk Marinković is his two-volume textbook *Principles of Physics*. However this is not the book only on physics but also covers many topics in chemistry, astronomy, physical geography, and meteorology. This is a rather large book, altogether (in both volumes) there are XI + 801 pages and several tables with drawings. In the writing of his book Marinković used works of then leading German and French authors: Scholz, Neuman, Müller and Baumgartner, Puile, Eisenlor, Shchilov, Derlor, Marbach, Helmut, Frik, Shoedler, Dermart, Reno, Delfs, Jan, Litrov, Sporishl, Humbolt and Kempic. The first volume discusses phenomena on "measurable and non-measurable matter" ("мерљивимъ и немерљивимъ вештествама"), while the second part is mainly on the phenomena "appearing on the sky and earth". The book is written in old Serbian. Vuk Karadžić linguistic reform came only a decade after the book was published.

The first volume covers some rudiments of mechanics and gravitation, then electricity, galvanism, light and magnetism. It is interesting that he considers and discusses "coldness" as a separate notion from heat. He also presents there in quite extensive manner many notions from chemistry, such as the basic physical and chemical properties of all then known chemical elements.

The second volume covers topics in astronomy, such as Kepler's laws, Sun and Moon eclipses, and then known "17 planets". Namely, he included in planets the greatest asteroids such as Vesta and Ceres. In the continuation he also discussed geomorphological features of the Earth's surface, such as mountains, deserts, oceans, caves, volcanos etc. In the final section *Meteorology* Marinković puts together of all of the sky events such as the astronomical meteors and meteorites, but also the atmospheric precipitation, lightnings and winds.



Cover page and Introduction

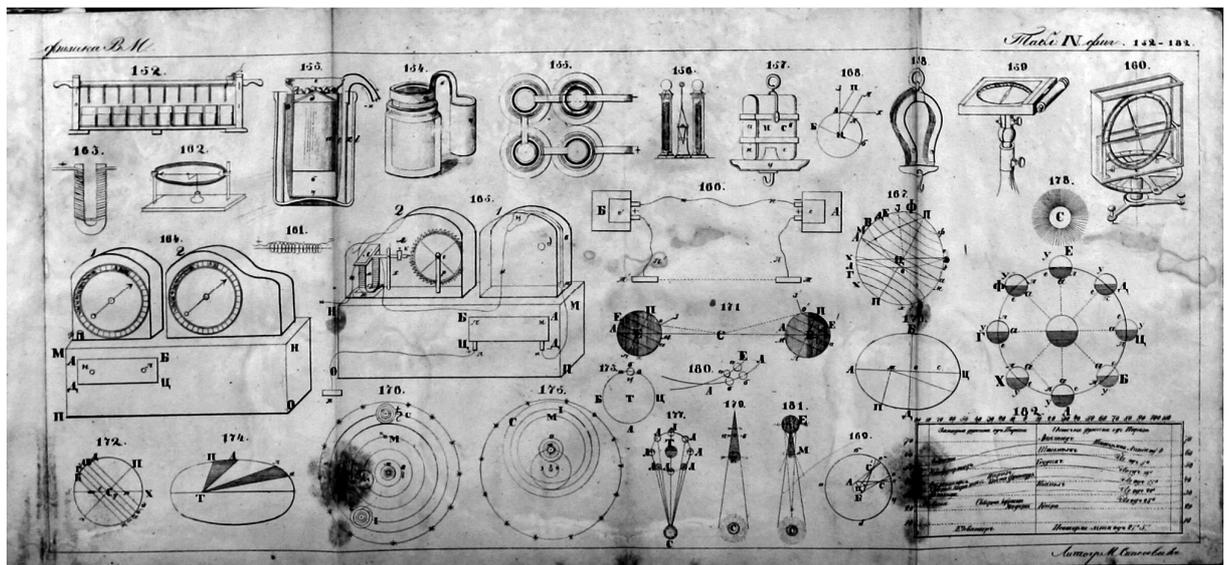


Table with drawings from the book

The book is written not only for students, but also for the general public. This is probably the reason why it does not rely much on mathematics. By style, it resembles an encyclopedia or a lexicon as it consists of numerous thematic short articles. These articles in most cases can be read independently. At the end of the book there are

several tables of drawings of some instruments or illustration of physical phenomena described or discussed in the book.

The book contains many interesting details for today's readers, for example, the explanation of the origin of terms of physics and chemistry (p. 5), but also the wider meaning of the word *meteor*. Here this word denotes any physical or meteorological phenomenon appearing in the atmosphere or on the sky.

It is interesting that he did not mention his predecessors and their books on physics, Orfelin and his *Eternal Calendar* (1783), nor three volume *Physics of Atanasije Stojković* published in the period 1800-1803.

Conclusion

Vuk Marinković is an important and an outstanding physician and the professor of Physics at the Belgrade Lyceum in the middle of the XIX century. It is considered that he wrote the first text-book on physics in Serbian. This book is recently digitized and now it is deposited in the Virtual Library of the Faculty of Mathematics in Belgrade. We believe that this book, now widely accessible in digital form will witness the level of studies of physics in Belgrade at that time.

Acknowledgment

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