MINING IN TECHNICAL FIELDS –ITS DEVELOPMENT PATH AND SCIENTIFIC FEATURES

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Abstract: *"If you take away the ability to dream, then one of the most powerful incentives that give rise to culture, art, science and the desire to fight for a wonderful future will disappear". But dreaming alone is not enough, in order to create one has to work, and this is possible if a person is educated, since the education system is the "backbone of civilization" and its role in modern society is constantly growing. The following article simply claims the given idea by discovering the area so called mining and its specificity. It is pointed out that via this direction man can meet almost all his financial needs. It's not news that mining has a power to change the country and the world as well. So there is a demand to study this field. The author mentions the history and development of this activity. And clarified the integration of mining with other subjects of the same type and its scientific preference.*

Keywords: *mining, development, history, physics, biology, space, geology, metallurgy, oil, gas, science, mineral deposits, natural resources.*

ГОРНОЕ ДЕЛО В ТЕХНИЧЕСКИХ ОБЛАСТЯХ - ПУТИ РАЗВИТИЯ И НАУЧНЫЕ ОСОБЕННОСТИ

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Аннотация*: «Если отнять способность мечтать, то исчезнет один из самых мощных стимулов, порождающих культуру, искусство, науку и желание бороться за прекрасное будущее». Но одних мечтаний недостаточно, чтобы творить, нужно работать, а это возможно, если человек образован, поскольку система образования является «опорой цивилизации» и ее роль в современном обществе постоянно возрастает. Данная статья утверждает эту идею, раскрывая область добычи полезных ископаемых и ее специфику. Отмечается, что с помощью этого направления человек может удовлетворить практически все свои финансовые потребности. Не новость, что горное дело может изменить страну и мир. Так что есть потребность в изучении этой области. Автор упоминает историю и развитие этой деятельности. И прояснил интеграцию горного дела с другими предметами того же типа и его научные свойства.*

Ключевые слова: *горное дело, развитие, история, физика, биология, космос, геология, металлургия, нефть, газ, наука, месторождения полезных ископаемых, природные ресурсы.*

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The history of mining is an important section of mining science. It is a specialized area of expertise that directly links mining science with philosophy. The study of the history of mining is associated with understanding the topical problems of our time and how similar problems were solved in the past, which allows you to revive forgotten fruitful ideas of the past and helps to search for new ideas and catalysts that stimulate their development. The study of the history of mining will undoubtedly have a great influence on the formation of the general theory of mining science. By finding out how the cardinal problems of mining have been solved over the centuries, historical research will contribute to the development of skills of creative analysis and self-assessment of complex problems of the development of mining science.

Now, in the age of physics, biology, space, mining science is often forgotten, sometimes simply denying its significance as a fruitful section of all science. The work of a large group of researchers done in order to solve "applied" problems in the field of mining sometimes simply "shocks" some scientific colleagues. Therefore, the discussion of the historical aspects of mining and mining science is of great importance for specialists of various profiles [1].

In order to see the prospects for the development of mining science, you need to know its history, the history of the creation and improvement of methods and means of developing mineral deposits, the history of the relationship between the development of mining science and the material and spiritual culture of society.

Academician V. I. Vernadsky in 1622 in his article "From the History of Ideas" wrote that the history of science should be critically compiled by each scientific generation, and not only because the reserves of our knowledge about the past are changing, but also because science itself, developing and creating new, and inevitably overestimates the old. "Each generation of scientific researchers seeks and finds in the history of science a reflection of the scientific trends of its time". To date, there are no special works devoted to the history of mining science in the literature. There are several publications on particular issues of the development of mining science. Among them, the works of A.A. Zvorykina [1], E.M. Faerman [2], D.I. Gordeeva [3], the series "Outstanding Workers of the Russian Mining Science", published in the fifties. A number of aspects of the history of mining are considered in the works of major mining scientists [1].

It is easy to see that in this small list of references, works on the history of the development of mining technology and the mining industry clearly prevail. In the meantime, the history of mining science as a branch of knowledge is interesting. In this work, related to the subject area, an attempt is made to trace the evolution of the main scientific problems that mining science solved in the course of the historical development of human society, to reveal the continuity in the history of the development of scientific thought and the emerging trends in its development.

What principles can be used as the basis for the periodization of the history of mining and mining science? *As we know, the periodization of historical development can be based on any chronological dates associated with major discoveries that have influenced the development of science; activities of prominent scientists; changes in the method of cognition; socio-economic system; stages of development of thinking; the connection of science with the development of technology with the fundamental sciences, etc.*

A historical analysis of the development of mining science can be based on each of these factors. In our attempt to study the history of the development of mining science, three periods are distinguished based on their qualitative difference in the content of the subject of science, the volume of factual material and the method of its generalization. These periods are compared with historical periods, which makes it possible to more or less clearly fix their chronological boundaries. The connection of mining science with historical epochs is especially clear, since it arose and developed as an applied science serving certain types of economic activities associated with the use of natural resources of the earth's interior, which are condition and material source of life for human society [1].

Direct requests from historically developing social practice stimulated the development of science; the methods of production activity replacing each other, undoubtedly, determined the content and nature of its development, the successive change of tasks. Of course, the boundaries in the development of science are not so clear, "blurred", which is quite a natural phenomenon. The first ancient period is most consistent with pre-capitalist formations, when theoretical ideas in the field of mining science developed extremely slowly and were based not so much on experience as on natural philosophical guesses associated with speculative and interpretation of natural phenomena. During this period, probably, mining science was not yet considered as a whole with other knowledge [2].

In the first period, three stages can be distinguished. The first is fixed by the Neolithic "cradle" of humanity and ends with the emergence of a slave system. It is known that already in the Neolithic, primitive age people did not confine themselves to collect useful minerals, rocks and ores on the surface, but began to extract them from the depths. In the Neolithic, Bronze and Iron Ages, siliceous mining appeared, and then copper, pewter, salt and iron mining. Their traces have been preserved in the form of holes, manholes, artificial wells and underground galleries. Long before the emergence of science, in ancient times, the accumulation of empirical ideas and knowledge about the subsoil, methods of searching for and extracting minerals, which took the most important place in the sum of knowledge of primitive man, began [2].

The beginning of the second stage is associated with the heyday of the slave states. In a number of countries then attempts were being made to make a materialistic understanding of the surrounding world, to create objective ideas about the Earth, its surface and depths. Materialist thinkers of that time turned to nature, trying to understand its laws. Their works contain elements of mining and geological knowledge. It is appropriate here to recall Aristotle, his student Theophrastus, who wrote the book "On Stones".

The practical needs of the era in the period under review required the expansion of mining. Slowly but surely, the factual material was accumulated about the methods of mining operations, about the means and methods of exploration for minerals. For three hundred years before the new era, mountain tools and mechanisms were described. At the turn of the epochs, Strabo first described the techniques of mining. Kai Pliny provides information on mining and mineralogy, Vetruvius left descriptions of construction and mining machines [3].

The third stage is associated with the Renaissance and covers the Middle Ages of world history.

In the works of the naturalist Georg Agricola (16th century), mining knowledge is defined as "mining art". Agricola expresses his views on the subject and tasks of mining art, describes a system of techniques and methods of exploration, extraction, and processing of minerals. Agricola considers mining to be synthetic: "Mining is extremely extensive" and "extremely useful and necessary for the human race." He says that those

working in this area need broad geological and mining knowledge - “a miner, in addition, must not be ignorant of many other arts and sciences. First of all, in philosophy, so that he could know the origin and nature of the underworld because thanks to this he will be able to find an easier and more convenient way to the bowels of the earth and get more abundant fruits from them".

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