

The Utilization of the Frantisek Posepny Geological Museum In Teaching The Geosciential And Mining Disciplines At The Faculty Of Mining And Geology At VSB - Technical University Of Ostrava

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Abstract – 13 fields of study programmes at the Faculty of Mining and Geology of V?B – Technical university of Ostrava are designated as geoscientific and mining disciplines. Institute of Geological Engineering ensures lectures whose content is connected with description of minerals, rocks, paleontological exhibits and deposits occurrences. The samples are arranged in thematic displays placed in the Geological Museum of the Frantisek Posepny Museum contains about 10 000 exposed and 60 000 deposited exhibits.

At present, study programmes at the Faculty of Mining and Geology of VSB-Technical University of Ostrava cover 16 and 3 fields of study in engineering and bachelor forms of study, respectively. Of them, 13 fields of study have in their study programmes subjects which can be altogether designated as geoscientific and mining disciplines. Both fields considered to be classic at the Faculty (such as Mining Engineering and Geological Engineering) and fields newly introduced (e.g. Geographic Information Systems, Economics and Management in the Field of Raw Materials, Environmental Engineering, Commercial Engineering, Geoscience and Mining Tourism) can be ranked among them. In all these above-mentioned fields as well as in other fields of study, it is the Institute of Geological Engineering that ensures lectures, whose content is very closely connected with the description of properties and characteristics of minerals, rocks, zoo- and phytopalaeontological exhibits and also with deposit occurrences of fuels and energy minerals, metalliferous and nonmetalliferous raw materials. These products of nature are arranged in thematic displays placed in the geological museum named after Frantisek Posepny, a professor of Vysoka skola banska in Pribram, who is known as the author of the famous textbook of economic geology *The Genesis of Ore Deposits* issued in New York in 1893.

Fundamental thematic displays intended for teaching contain about 10 000 exposed and 60 000 deposited exhibits. They are mineralogical, petrographical, zoopalaeontological, phytopalaeontological, historical-geological and regionally geological displays that are organically followed with the displays devoted to mineral raw materials and mineral resources. Those are divided

especially into the displays of genetic types of deposits of mineral raw materials, types of mineral raw materials of the Czech Republic, deposits of mineral raw materials of the Czech Republic. With reference to the importance of deposits of kaustobiolites and uranium for the economy of the Czech Republic, specialized displays were formed that deal in detail with kaustobiolite deposits of the Czech Republic, coal deposits of the Czech part of the Upper Silesian Basin (Ostrava-Karvina Coalfield) and the deposits of radioactive raw materials of the Czech Republic.

A history of this collection exhibited in the Geological Museum at present comes down to the last century. It is connected with Pribram as a foundation site of Vysoka skola banska and with well-known names, such as Kaspar, the count of Sternberk, F.X. Zippe, Johann Grimm and Frantisek Posepny. Their collections formed a foundation for the display of world's deposits of mineral raw materials containing many really unique exhibits from deposits often mined out today. It is Prof. Posepny's collection including almost 600 specimens from the Pribram ore district that can be considered to be the most famous mineral display in the world.

Studying these displays enables students, research workers and also amateurs of geological sciences to complete or confront their theoretical ideas and knowledge directly by means of samples of minerals and rocks, palaeontological specimens and those of mineral raw materials. What is characteristic of the collection is its integrity, when one sample can be used as an example of a mineral, an economic raw material, a component of the genetic display, deposits of the Czech Republic and the display of world's deposits. Let us try to show at least some concrete possibilities of the collection deposited in the Geological Museum, namely in the context of the present situation of the Czech Republic and VSB-Technical University of Ostrava.

The pedagogical goal of the utilization of precious displays of natural materials is firstly an effort to determine processes of origin and transformation of these materials under changing conditions of sedimentological, magmatic and metamorphic processes. However, the pedagogical process could not be successful if no theme concerning the utilization of these natural regularities by a man appeared here. Therefore, displays of materials generated on the basis

of natural substances that obtained thus a new utility value are installed in the Geological Museum too. It is a case of products related to modern technologies using rationally the skill, tradition and specific of craft work when manufacturing e.g. ceramic products or insulation matters.

An inseparable part of the proper displays is graphic documentation in a form of geological maps, sections and profiles of various scales ranging from very large to very detailed scales showing, for instance, a detailed documentation of mine workings. Many photos and drawings supplement this documentation. Recently the information value of the collection has been significantly enriched using the modern computer art. The visitor can choose, with the aid of the PC keyboard, a type of mineral raw material whose precise location will be illustrated by a luminary colour diode on the geological map of the Czech Republic at the scale 1:50 000. Simultaneously, other data on the deposit can be required. A brief description of geological conditions supported with a section, or a geological map and qualitative and quantitative characteristics of the mineral raw material in the deposit is prepared for the visitor. This information can be complemented with an overview of Czech and world reserves and the domestic and world production of the relevant mineral raw material. In the next period we suppose the processing of a similar light map of deposits of mineral raw materials of the world.

The Geological Museum is also a very suitable environment for the realization of special forms of lifelong education. One of them is the so-called "University of the 3rd Age" into which seniors of various professions with rich life experience have been included. In seminars, lectures and colloquia during the four semester special courses they obtain the knowledge of geosciential fields. Top teachers of the Faculty of Mining and Geology at VSB-Technical University of Ostrava conduct courses for persons showing interest.

The present researches in the field of natural sciences are, among other matters, characterized by a great improvement in the instrumental laboratory and computer art. This phenomenon brings new possibilities primarily in the sphere of diagnostics of natural objects. Tendencies to overvalue the role of technical tools at the expense of development of capabilities of observing phenomena and processes in nature and their interrelations can be seen. These tendencies are, at least partly, due to the fact that a very intensive process of exploitation damping at all ore deposits, the majority of coal deposits and part of nonmetalliferous deposits of the Czech Republic connected with the pressure on utilization of mineral raw materials in principle limit the sample base for research purposes that was formerly very broad. From this point of view, the displays of minerals and rocks in the Geological Museum represent the unique opportunity of studying the genesis of complicated natural materials. We attach importance to these issues, because the problems of environmental

protection and creation in relation to the utilization of the domestic mineral base can be professionally evaluated only on the basis of understanding the matter and energy flows that determined the present environment in the geological past.

The Geological Museum itself is a part of the campus of VSB-Technical University of Ostrava that is situated in Ostrava-Poruba. It is a satellite of the town of Ostrava, an important industrial and cultural centre of the Czech Republic, the metropolis of northeastern Moravia and Silesia. Trade routes led through the area of Ostrava from the Baltic to the Mediterranean Sea already in the earliest times. Hunters of mammoths at the present locality of Landek built the first permanent settlement 25000 years ago. A known testament of them is a little preserved woman statue cut out of hematite that is called Landek Venus. These first inhabitants of that region were also the first users of the most important mineral raw material in the Ostrava area - coal, whose seams outcrop just in the area of Landek. Since the second half of the 18th century, the extensive exploitation and utilization of coal changed markedly the initial Slavic settlement into the most industrial town of the Hapsburg monarchy at the turn of this century. Where extended fields, meadows and pastures surrounded by deep forests at the beginning of the 19th century, tens of head frames and chimneys of metallurgical and engineering works and other industrial plants grew. This, to a certain extent, unilateral industrial development climaxed in the period after World War II and entered into the history as a so-called steel conception of economic development. An extensive development of underground mining of hard coal for the purpose of energy generation and coking resulted in the formation of a specific type of landscape relief connected with undermining. Since 1989 a gradual damping of mining activity has taken place in connexion with restructuring the Czech economy linked with intensive reclamation of undermined areas as a part of the policy of marked improvement of the environment in the whole North Moravian industrial agglomeration.

The above-mentioned brief history of the Ostrava region is similar to the history of mining and metallurgical areas in Germany, the United Kingdom and the USA. Likewise in the above-presented countries, a gradual appraisal is under way in mining and metallurgical fields building objects that contributed specifically to the treasury of world technique and that are necessary to be therefore preserved, at least in a minimum possible degree, for the next generations. This intention is supported also by the European Council that sets itself as a goal to integrate co-operation between institutes taking care of technical relics and natural attractions and the towns in whose spheres of interest are these objects situated. Moreover, this effort is very positive because it contributes to the development of tourism in the region that is otherwise less attractive. Ostrava offers the visitor natural localities, such as above-mentioned Landek, examples of negative influences of

underground mining of coal on the landscape relief and simultaneously the successful reclamation of the area leading to its transformation into the area suitable for recreational or agricultural utilization. In addition, the visitor can see the Mining Museum with displays illustrating the development of technique for underground mining of coal seams in the Ostrava region. It is the Geological Museum that is an item in the list of these undoubtedly attractive localities. Its "coal part" keeps very detailed material and graphic documentation of properties and characteristics of coal seams and surrounding rocks of the Ostrava-Karviná Coalfield as a south part of the world-famous Upper Silesian Basin.

The development of tourism and primarily a growing proportion of purposeful tourism in the Czech Republic and adjacent countries initiated the introduction of a new field of three years' bachelor study "Geoscience and Mining Tourism" to the Faculty of Mining and Geology at VSB-Technical University of Ostrava; the reason being the effort to educate experts prepared for touristic practice who will be equipped, in addition to common knowledge of the worker concerned generally with tourism, with special knowledge, especially in the field of technical relics and significant geoscientific natural phenomena. Of course, active knowledge of at least two world languages is expected. Students are exceedingly interested in this field of study. Experts of different professions with many years' practical experience from visits to various regions of Europe and other countries of the world participated in the preparation of syllabi of this course. As for professions, they were above all geologists, mining and mechanical engineers, experts in energetics, lawyers and managers. In this year, the first students of this course will complete their study. The environment of the Geological Museum with all its displays supplemented by specially directed home and foreign trips gives the student good preconditions for finding his/her place in touristic practice.

Conclusion

The Frantisek Posepny Geological Museum as a part of the Faculty of Mining and Geology of VSB-Technical University of Ostrava is a place that, thanks to the direction of its displays, contributes significantly to the education of geological and mining engineers and the education of experts in geoscience and mining tourism. Moreover, its contribution to the education of general public from pupils to seniors is the considerable benefits. Last but not least, it is necessary to emphasize the research importance of its specialized displays.