

60th Anniversary of the Dionýz Štúr State Geological Institute (Geological Survey of Slovak Republic)

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The relationship between Earth sciences and the conditions of life on Earth is well known, even if we are not always fully aware of it these days. Our progenitors, significant scientific and political personalities of the past, however, realised the urgent need of scientific institutions for the development of the society and state. Among the first established professional institutions was also the State Geological Institute, founded on 15 May 1940.

First, let us remember now some of the occasions which preceded the establishment of the State Geological Institute. Since the beginning of the organised geological research in Slovakia, our science was always serving society, although its role has changed throughout the time. During the foundation of the Imperial Geological Institute in Vienna in 1849, the main focus was on the compilation of the first geological maps of the whole territory of the Austrian-Hungarian monarchy, including Slovakia. The maps were compiled, for instance, by Zejschner, Hauer, as well as by the first director of the Imperial Institute. In 1869, after the Austrian-Hungarian clearance, the geological exploration of Slovakia was undertaken by the Imperial Hungarian Geological Institute in Budapest (today Magyar Földtani Intézet), with the main task of the investigation of mineral deposits. This investigation is summarised in a very important monograph on the deposits of the whole territory of Hungary, written by K. Papp.

As early as two months after the origin of the Czechoslovakia, the commission of the Czech Academy of Sciences asked in a memorandum for a foundation of the Geological Survey (Geological Institute). This created an impulse for the decision of the Council of Ministers from 7. July 1919 about the foundation of the Geological Survey of Czechoslovakia in Prague, headed by Prof. Cyril Purkyně. Detailed geological mapping and exploration of the republic territory were the main tasks of the institute. Several great Czech geologists worked in Slovakia, and their work resulted in the new synthesis of the Western Carpathians structure, compiled by A. Matějka and D. Andrusov in 1931. Geological backgrounds were created for the localisation of the railway line Červená skála - Margecany, Banská Bystrica - Horná Štubňa, Jelenec dam, Sliač baths, as well as for the Mining factories in the Spišsko Gemerské rudohorie Mts. and for several other practically oriented geological investigations.

After the third meeting of the Carpatho-Balkan geological association, held in Slovakia, the ambitions for establishing an independent geological organisation increased also in Slovakia. This meeting was an important milestone in the geological research in Slovakia as well as in the whole Carpathians.

60 years ago, new ideas were not being accepted easily. In September 1935, in a memorandum about the necessity of accelerated geological research in Slovakia and Ruthenia, Prof. JUDr. Imrich Karvaš asked the Ministry of Economy of Slovakia to establish a geological institute. The lobbying for the establishment of the Geological Institute went also through the Slovak Mining District, based on the need of mining in Slovakia (exploitation of the new sources of raw materials). Although the leading Czech geologists of that time (J. Šuf, R. Kettner, Zoubek, Matějka, Koutek, Fiala and other) were working in Slovakia at that time, the need to create a large and organised geological institution was felt strongly. After the Mining and Forestry Academy had moved from Banská Štiavnica to Hungary in 1918, neither a university, nor other organisation existed in Slovakia that would educate geologists and concentrate geoscientists for the practical needs of mining. For this reason, a meeting of the Slovak Mining District in 1938 discussed these problems and assigned Prof. Andrusov to prepare a proposal of the guidelines and activity programme of the institute that would be established at the Technical University in Košice as an Institute for the Mineral Research of Slovakia. Prof. Andrusov was appointed as a head of the Institute.

As a consequence of the state - juridical changes, the Technical University was moved to Martin and later to Bratislava, which also meant that the institute could not develop its planned activity. Therefore, the endeavour for the establishment of the independent geological institute strengthened, mainly in the second half of the year 1939. The Commercial and Industrial Chamber, but also the Ministry of Commerce, Industry and Trade of the ČSR (Czechoslovak Republic) as well as Ministry of Transportation got involved. However, numerous organisations had quite different ideas about the institute orientation. Among them, for example, was the idea that this Institute should be focused on engineering geology. The Ministry

of Education and National Enlightenment, represented by Prof. E. Horniš, proposed an establishment of the institute based on the example of the Geological Institute in Prague (this opinion was also held by Prof. J. Volko-Starohorský). Finally, this proposal was accepted, and the law and government decree about the establishment of the Geological Institute were prepared. Prof. D. Andrusov and Dr. M. Kuthan also joined in the process of preparation. On 15 May 1940, the Slovak Assembly approved the Law No. 119, according to which the State Geological Institute was established by the Ministry of Education and National Enlightenment. The role of the institute was to organise systematic research of geology and mineral riches of the Slovak Republic.

Perhaps somewhat widely, I have described main events leading to the establishment of the Geological Institute. However, sources from the archives point out that many other additional actions lead its birth. I want to stress that need for this Institute was not only expressed by geologists but also by representatives of the economic sphere; thus reflecting a true social necessity for its creation.

For the successful realisation of the task, Prof. D. Andrusov first had to bring up a new generation of Slovak geologists. This generation included M. Mahel', B. Cambel, O. Fusán, J. Kamenický, J. Šalát, V. Zorkovský, B. Leško, J. Bystrický, L. Ivan, J. Jarkovský, J. Ilavský, J. Seneš, J. Kantor, J. Švagrovský, E. Brestenská, V. Kantorová and others. It is admirable what this generation of geologists has done for the evolution of geology of Slovakia. Their names, together with the name of their scientific leader, Prof. D. Andrusov, have been related to all the main geological research and exploration projects in numerous crucial areas of the Slovak economy. Especially after the World War II, when it was necessary to revitalise destroyed Slovak industry. Almost all the geologists took part in the exploration for mineral deposits, in order to provide new resources, mainly of ores and building raw materials. This trend existed about up to the end of the 1950s.

Meanwhile, in 1949, the State Geological Institute was assigned a new controlling government body, the State Planning Office, and it was re-named as the Slovak Central Geological Institution. In 1952, by the government act no. 196, a Geofond (Geological Archive) was also established, and in 1954, a branch of the Geofond was formed at the institute.

The first general Slovak geological conference has represented the first step towards the consolidation of the geology in the new organisation, as well as in its financial and material background. This also included moving of the institute to a new building to Patrónka (9. 11. 1953) and renaming of the institute to the Dionýz Štúr Institute of Geology (GÚDŠ). This was an important occasion, when the great Slovak geologist D. Štúr and his excellent work were memorialised. D. Štúr was a member of the Imperial Geological Institute in Vienna and became its director from 1885 until 1892. On 1 June 1965, the Dionýz Štúr Institute of Geology was detached from the

organisation of the Central Geological Institute and it became an independent institute for the basic geological investigation of Slovakia. At the same time the Geofond was detached from the GÚDŠ. It became a branch of the Prague's Geofond until 28 October 1968, when the Slovak Geological Office was established and the Geofond became an independent organisation.

It is also important to remember the origin of the government exploration companies in 1951: East Slovakian and West-Slovakian Ore Exploration, Geological Exploration of Raw Fuels (Coal Exploration) and Civil Engineering Geology. These institutions, together with Geophysics company with its head office in Brno, finally formed a spectrum of independent geological organisation in Slovakia. In the following years, the structure of geological activities changed again due to the establishment of two big exploration institutions, Engineering Geological and Hydrogeological Exploration (IGHP) and Geological Exploration (GP), from which the Slovak Geology was detached (the geological division of the GP) in the process of privatisation. In the next stage of privatisation, also this firm was converted to the share holding company - similarly to IGHP and Geophysics.

The previously mentioned reorganisation of Slovak geology in 1950's started the greatest boom of geological activity in the history of Slovak geological research. GÚDŠ was given a grant for the compilation of geological maps at 1 : 200 000 scale, which were published in a printed edition before 1964. The Central Institute of Geology in Prague and GÚDŠ were awarded the Republic Medal for this map edition. Later, the period of map compilation at 1 : 50 000 scale started, based on detail maps at 1 : 25 000 scale. This period will finish in the near future by the publication of these geological map series.

The geological investigation of the territory of SR was significantly shifted forward by the compilation of the geological maps. The mapping results were successfully presented at the 10th meeting of KBGA and other international events. The development of other geological disciplines was associated with the mapping. Particularly the metallogenetic research connected to the evaluation of mineral resources, development of hydrogeology, engineering geology and related geological research, serving the practical needs of the state economy.

However, after 1989, the role of geology in the society has been gradually, but very significantly changed, along with the changes in the economical system. The position of geology has changed within the framework of economical needs of the state and society. These changes also required changes in the management of the geology in Slovakia.

On 15 January 1996, the Geological Survey of Slovak Republic was established by the decision of the Ministry of the Environment, ceasing the existence of and merging the Dionýz Štúr Institute of Geology, the Geofond and the Slovak Geology. The Geological Survey was established according to the structure of the European geological surveys. The Geological Survey of SR was later again

Fig. 1 Ceremonial speech given by prof. RNDr. László Miklós, DrSc., the Minister of the Ministry of the Environment SR, on the occasion of the 60th Anniversary of the ŠGÚDŠ (GS SR) establishment.

In the front of the photo the directors of geological surveys of neighbouring countries.



Fig. 2 On the ceremonial occasion outstanding workers were appointed the Gold Medal of the Geological Institute. From the left to the right:

Academician O. Fusán, Academician B. Cambel, RNDr. O. Samuel, DrSc.



renamed, by the new decision of the Ministry of the Environment of SR from 26 April 2000, becoming valid on 1 May 2000, this time as the State Geological Institute of Dionýz Štúr,

I have touched only some of the significant milestones of the history of the Geological Institute and mentioned only some of the results of the Institute activity. Now a brief vision of the future, in the context of new tasks for the geology, with regard to domestic features and global trends.

The relation of the public to the Earth and to the abiotic nature is remarkably changing. One of the features of this change is the growing awareness that exploitation of natural sources has its limits. The contamination of

groundwater, erosion of the Earth surface, global warming, limitation of energy sources and mineral resources are outstanding issues, which the society perceives and pays an increasingly closer attention to.

In the past the significance of geology was seen mainly in its economic contribution. Geologists investigated the Earth so that it could provide raw materials for the industry. Recently, however, the tasks of the geology have diversified and the geology has come under strong economic pressure. The Earth sciences are under budgetary pressure not only in our country, but in all advanced countries. The restriction of the expenses for geology at present is connected with the fact that the traditional function of the Earth sciences - i. e. the localisation of raw

materials necessary for the industrial growth and national security - disappears. With the end of the cold war, also the call for the discovery of home sources of strategic mineral raw materials weakened.

At the threshold of a new social era, in the period of unavoidable decline of the geological sciences, quite a different approach to their role should be sought, in order to keep its position in the centre of the public life and at the service to the public interest and needs. Geologists not only have to recognise this change, but also have to provide new solutions for the future.

The fundamental task for geoscientists is not only to provide information about the Earth for public discussions, but also to take part in them. In order to have success as public scientists, geoscientists must be able to offer geological knowledge and results of their work to the whole society.

It is obvious that geoscientists alone cannot change the present-day situation in geology. They, however, can stimulate a progress in this direction by the education of students, as well as broad masses, to fulfil the required public role of the Earth scientists.

So, which aspects of geology have to change in order to meet the interests of the society needs?

- Compilation of the basic geological maps of the territory of the state should remain as the geological priority.

- Water becomes and will be an acute problem. Surface water, the quality of which progressively deteriorates, must be replaced by groundwater from water-bearing rock horizons. This is a key task for geology.

- Securing the food supply for intensely growing human population will require to protect present-day agricultural areas against their degradation as a consequence of salting and soil erosion. The geological institutes have to be in close co-operation with agricultural institutes and/or to adapt to a trend of the connection of both types of institutes and set up independent agro-geological organisations. At the universities, it is essential to devote greater part of the training programs to the properties of the Earth surface (soil, morphology). As the result of present-day practice, students know more about the Earth core than about the contact layer between the Earth and man.

- Air - monitoring of air pollution indicators. Contribution to the development of CO₂ sinks (especially near the industrial agglomerations) by the identification and preparation of suitable geological environment (allumosilicates, for instance, react with CO₂, producing calcite).

- Urban and environmental planning require profound investigation of geological hazards and reduction

of their influence on existing urban areas (radon hazard, landslides, soil erosion, geopathogenic zones, seismic zones, etc.).

- The search for the new energy sources of unrecoverable, but mainly recoverable nature, will remain among major requirements also in the 21st century, although an essentially higher proportion of solar energy is expected. Production of solar collectors, consisting of photovoltaic cells, however, requires a great amount of mineral raw materials.

- The problem of the search for new deposits of classical and new types of raw materials is and will remain among the top priorities.

- There will be an increasing interest in mineral raw materials that are suitable not only for economical exploitation and processing, but also that are ecologically friendly. For geology, it will be important not only to find the raw materials, but also to find out if they technologically suit the above mentioned requirements, and how easily they can be exploited and utilised.

- Palaeoclimatology becomes a very important branch of geology (paleontology). Probable changes of climatic conditions on Earth in the future may be predicted on the basis of the climate changes in the past.

- Because of the necessity to dispose of radioactive and other hazardous wastes in deep geological environment, the study of vertical and horizontal movements of crustal blocks becomes an acute task for structural geologists.

- Geomedicine is another new field of geology, which concentrates on the research into the unfavourable influence of geological factors on the human health, and also focuses on the effects of human activity connected to the utilisation of natural resources in the past, which frequently left behind areas acting as ecological bombs.

From this very brief outline of the main issues for the geology in the coming future, it can be summarised that for the permanently sustainable life conditions a balanced utilisation of water, air, soil, energy and mineral raw materials is extremely important. The geological sciences have the key for better understanding of this problem. However, to secure the implementation of the knowledge into the general culture of the nation, it requires better documentation of the geological knowledge, a change of the research orientation, monitoring, modelling of predicted situations and subsequently better understanding of natural phenomena.

I believe that the State Geological Institute is prepared for the challenge of the new geological tasks in the future.