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50 YEARS OF THE INSTITUTE OF MINERALOGY, GEOCHEMISTRY AND PETROGRAPHY OF THE ATTILA JÓZSEF UNIVERSITY AT SZEGED

GY. GRASSELLY

University education and research in geology and petrography in Szeged started in 1921 when, after World War I., József Ferenc University found its home in this city.

On reviewing the past fifty years, we can look back on a continuous development which was only interrupted and retarded by World War II., and which, after the War re-started from almost zero level to proceed towards an unprecedented achievement.

On the occasion of the 50th anniversary, we pay homage to our predecessors, the directors and co-workers of Institute, who not only began teaching and scientific

PROFESSOR DR. ZSIGMOND SZENTPÉTERY (1880—1952)
first director of the Institute, between 1921—1940

activity with their knowledge, energy and love of their field, but also established those foundations and means that are the basis for further activity and development even today.

Between 1921—1940, the Institute bore the name *Institute of Geology and Mineralogy*, and the members of the Institute achieved — under the leadership of the first director of the institute, PROF. DR. ZSIGMOND SZENTPÉTERY (1880—1952) — valuable results principally in the field of petrography and geology.

PROFESSOR SZENTPÉTERY, in his activity associated with Szeged, dealt mainly with the petrography and geology of the Bükk Mountains, and partly with those of the Börzsöny Mountains; he founded the petrographical and mineral collection of the Institute, and, in cooperation with other professors of the Faculty, founded the forerunner of Acta Mineralogica-Petrographica, the "*Acta Chemica, Mineralogica et Physica*", in which were published a great number of his and his co-workers' studies on the results of their research.

At that time the Institute had the equipment necessary to fulfil the requirements of education of mineralogy, geology, and — mainly descriptive — petrography. After PROFESSOR SZENTPÉTERY's death, his scientific activity was reviewed by ENDRE LENGYEL in 1952 [E. LENGYEL: A Reminiscence of Zsigmond Szentpétery, Földt. Közl., **82,** 113—118], including a detailed bibliography.

The academic year 1940/41 came as a turning-point in the life of the Institute. PROFESSOR SZENTPÉTERY transferred to the University of Kolozsvár, and the old institute gave birth to two new ones at Szeged: the *Institute of Geology and Palaeontology;* and the *Institute of Mineralogy and Petrography*, to the directorship of which SÁNDOR KOCH was appointed. He had already worked 23 years at the Collection of Minerals of the Hungarian National Museum, world-famous in its golden age.

The new director, PROFESSOR SÁNDOR KOCH brought with him not only his enormous knowledge and his love of mineralogy acquired at the Museum, but also his enthusiasm about science and about anything that could make human life more beautiful and free from care. The whole of his character and his personal magnetism make it understandable that he brought a new human atmosphere as well as a new point of view of scientific approach to the department, the conservation and further maintenance of which is an honorable duty of his followers.

The author of these lines began his career at the side and under the leadership of PROFESSOR KOCH in 1941, and understandably enough, he cannot and does not even want to write about this period of Institute with impersonal neutrality, because he recieved incentive both for his career and personal development from his predecessor, PROFESSOR KOCH.

The starting of education and research activity at the new, independent Institute of Mineralogy and Petrography needed significant reconstruction of the curriculum and of the range of research as well as of the supply of equipment. PROFESSOR KOCH did his best to continue petrographical research in accordance with the precept of the SZENTPÉTERY school, but the former mineralogical and petrographical research — mainly of descriptive character — was gradually replaced by the more modern mineralogical-geochemical trend.

At that time students had no access to Hungarian text-books on mineralogy and petrography, — as they have now— therefore, the first thing to do was to supply the students of the Institute with suitable lecture—notes, and to ensure the conditions necessary for an up-to-date education of mineralogy, crystallography, and petrog-

raphy. It took several years' efforts to establish all this and, when World War II. had come to an end, hardly anything of the achievements remained.

However, something remained that could not be damaged: the firm belief that education must be resumed, research must be continued and everything that was destroyed must be recreated. Thus, in the autumn of 1945, life of the Institute began

PROFESSOR DR. SÁNDOR KOCH (1896—),
director of the Institute between 1940—1968

again. Although there was no heating in the lecture hall, lecturers and students were enthusiastic, and their unselfish and generous cooperation was a great help to the Institute in recovering from the effects of war.

Following the time of reconstruction, the Institute has continually been developing, under slowly but steadily improving research conditions. These years the main emphasis in the field of research has been on studying minerals and their deposits in Hungary. The monograph "*The Minerals of Hungary*" by SÁNDOR KOCH [1966] is the first Hungarian work of its type, which, on the basis of SÁNDOR KOCH's and partly his co-workers' scientific activity of several decades, gives a general picture of the mineral resources and deposits in Hungary and, based on a unified genetic viewpoint, offers a great help to experts of both the present and the future.

It was those years, too, that manganese ore research started at the Institute directing the main attention to the Hungarian sedimentary manganese oxide ore deposits, then treating in general the thermal behaviour of various manganese oxides. Petrographic studies have also continued, especially by the research of the metamagmatites of the Mátra Mountains, and, beside the former approach of a rather descriptive nature, the genetic aspects have received more importance.

Significant development has been shown by the Mineral Collection of the Institute *(Fig. 1)*, as the old systematic collection has been renewed and largely supp-

lemented by the addition of PROFESSOR KOCH's private collection, the foundation of which he laid in his youth and which he was ceaselessly enriching all during his active service. In fact, PROF. KOCH's name is associated with the description of

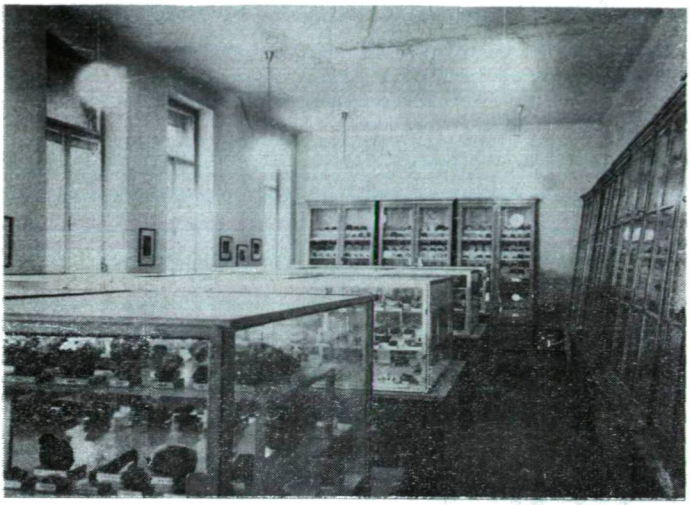

Fig. 1. The mineral collection of the Institute: the Koch-collection and the systematic mineral collection

fülöppite (3 PbS. 4 Sb_2S_3) from Baia Mare (Rumania), with that of a mineral — indicated as an unknown bismuth telluride by K. SZTRÓKAY — as *csiklovaite* (Bi_2TeS_2 from Nagybörzsöny, Hungary), and with the description of *mátraite* (ZnS 3 R-type from Gyöngyösoroszi, Hungary), as well as of *kiscellite* (a fossil resin from Mt. Remete, in the neighbourhood of Buda, Hungary).

The *Koch-collection* is a representative collection of the characteristic minerals of the once world-famous mineral occurrences of the Carpathian Basin, and, as such, the Mineral Collection of the Institute stands among the first in the country, presumably not as to its volume but as to the selection, beauty, and representative display of its samples. The petrographical collection and that of the raw-materials are smaller in size, but highly suitable for the purposes of education, and are constantly developing as well as the mineral collection, both mainly by exchange.

This period of the Institute is also associated with the initiation of the new periodical, the *Acta Mineralogica-Petrographica*. The first copy of the publication was issued in 1943, then, after an interruption caused by the war, it has been appearing year by year since 1948, at first in Hungarian, with abstracts in foreign languages, while later, almost exclusively in English. The publication was issued and edited by SÁNDOR KOCH until 1968. From 1968 on, it has been published under the editorship of the author of this reminiscence, who cooperated in editing the Acta during the preceeding 10 years as well.

In the past, the Acta Mineralogica-Petrographica used to serve almost exclusively as the publication of the members of the Institute, while in recent years, it has regularly included papers by foreign authors, too. The Business Meeting of the Working

Group on Manganese Formation of the International Association on the Genesis of Ore Deposits, held in Tokyo in 1970, accepted it as a semiofficial periodical of the Working Grup, accepting and including papers by the authors of the Working Group treating the field of manganese ore research, and summaries and reviews on the results of manganese ore research in differente countries.

The exchange of the Acta Mineralogica for other periodicals has been a great contribution to the collection of periodicals of the Institute, comparatively extensive today. We receive 120 periodicals from 24 countries, mainly through exchange *(Fig. 2)*, and to a smaller degree by subscription.

The volume of the library, too, is regularly developing, and the books most necessary for special research at the Institute are all at the researchers's disposal. The number of catalogued books makes more than 2000 volumes, and there is a collec-

Fig. 2. Part of the periodicals collection of the Institute

tion of several thousand reprints, the most important part of these being the collection of mineralogical articles related to mineral occurrences of the Carpathian Basin *(Fig. 3)*.

Due to the changes in the system of education, and in accordance with the requirements of practical life, the range of education and research has more and more shifted in the direction of geochemistry. This was expressed by the change of the name of the Institute in 1964. From that time on, the Institute has had the name *Institute of Mineralogy, Geochemistry and Petrography.*

In 1968 a change occurred in the leadership of the Institute. Since then the head has been the author of the present lines. PROFESSOR KOCH retired at the age of 73, in 1969, after 50 years of meritous educational and research work, leaving a rich and compelling heritage to his follower and to the whole of the Institute. A selected bibliography of his activity was published in the Acta Mineralogica-Petrographica [1966, **17,** p. 69—75].

PROFESSOR KOCH *is completing his 75th year at the time of the appearence of this volume of the Acta, and these lines are also intended to congratulate him and, first of all, to thank him for all he taught us, his disciples and co-workers. We, who*

were then beginners, were taught by him, by his personal precept even without words that education work is the first and foremost task of the University, and that a teacher is obliged by his profession to be concerned with the students, with the formation of

Fig. 3. Part of the library of the Institute

their character as well as their progress in their scientific work. He also impressed on us that besides knowing the new results in our own fields, we must also be acquainted with those imperishable values that human creative spirit attained in other fields, as in that of literature and art.

The consequence of these influences and impressions is that his former pupil has remained a disciple even if his close scientific activity has developed in quite a different direction from that of the teacher, who paved the way for his pupil with a helping hand.

Fig. 4. The lecture hall of the Institute with the collection displaying the utilizable rawmaterials of Hungary

From 1968 the Institute has undergone a significant reconstruction. The lecture halls *(Fig. 4)* and the laboratories badly needing innovation have been rebuilt with a considerable financial support of the University. About 1950 the "laboratory" still had the same appearance (seen in *Fig. 5*) as at the end of the 30ies, while now it has been replaced by up-to-date laboratories, an analytical and an experimental one as seen in *Figs. 6, 7*, an extra laboratory has been installed for the purposes of thermal research *(Fig. 8)*; we have established the X-ray and spectrographical laboratories and a room for the preparation of the material to be studied *(Fig. 9)*, as well as two smaller laboratories and an electrotechnical workroom.

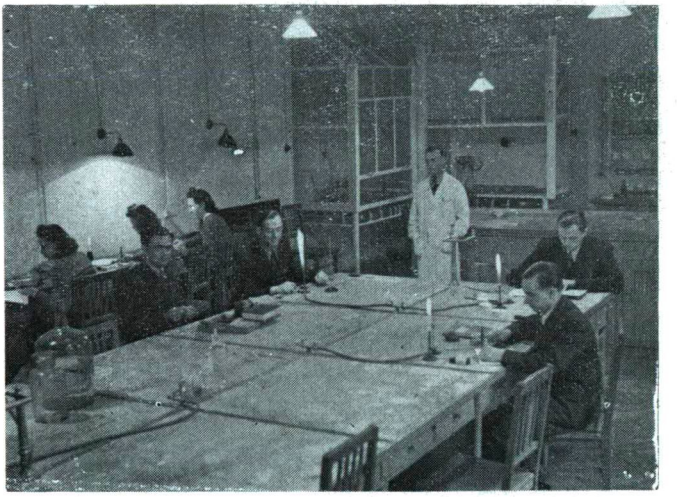

Fig. 5. „Laboratory" in the 1930ies

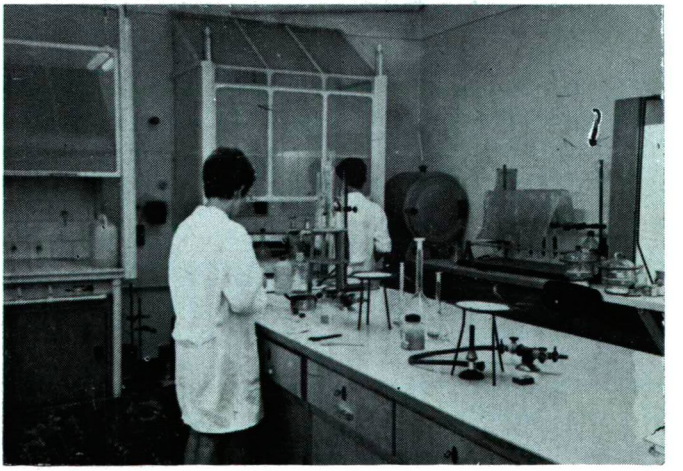

Fig. 6. The new analytical laboratory built in the place of the old one

All these reconstructions were mainly recquired by the change of education and research program in the direction of geochemistry and, in accordance with this, by the instrumental equipment developed from 1957 to a more and more noticeable

Fig. 7. The experimental laboratory established in the place of the old „laboratory"

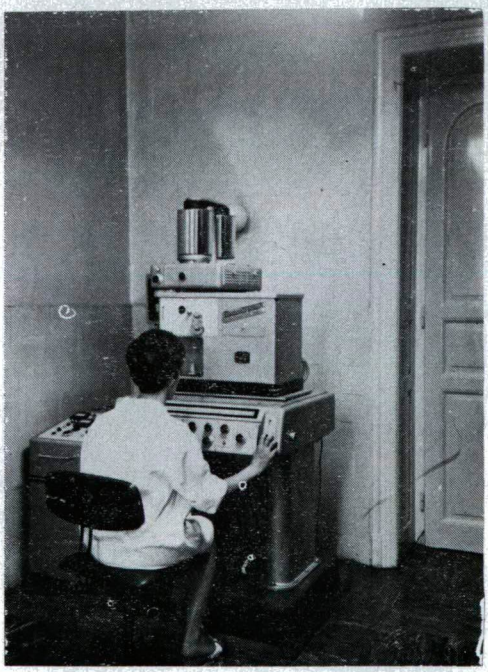

Fig. 8. „Derivatograph" for the simultaneous registration of T, TG, DTG and DTA curves, with programmed heating

degree. At present we have conditions for any possible research activities at the Institute ranging from spectrographical study of trace elements, X-ray and thermal studies to various instrumental experiments. At the same time, the reconstruction has ensured convenient working conditions for the researchers and students, this also being a non-negligable aspect.

The present tasks of the Institute in the field of education are quite wide in range. We offer lectures on subjects in accordance with the character of the Institute for students reading for a secondary school teachers' diploma in biology-chemistry, chemistry-physics, and also for those students of chemistry and physics not specializ-

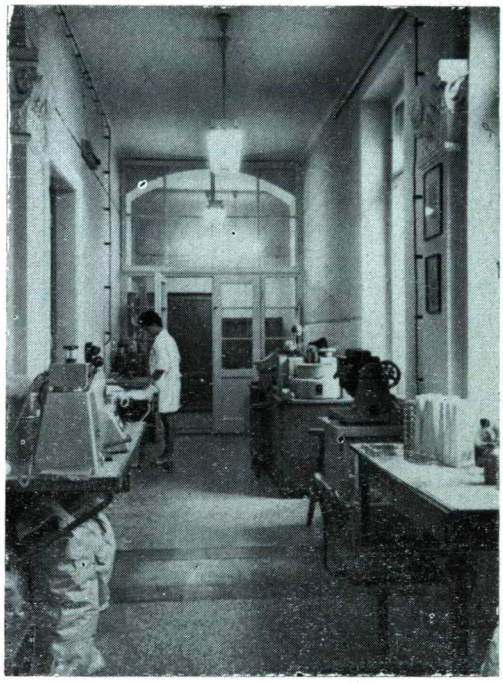

Fig. 9. Preparation room

ing in teaching. The lectures held regularly include those on mineralogy, crystal chemistry and petrography, together with the corresponding laboratory and field training.

Beside the obligatory lectures mentioned, the students can have a free choice of numerous other lectures dealing with special subjects, such as general geochemistry, organic geochemistry, mineral raw-materials in industry, research methods of geochemistry etc. Beyond these lectures, we regularly organize laboratory training for fifth-year students majoring in chemistry.

An important, though not the only, determining factor in the progress of the research activity of the Institute is the relation — recently become strong and close — between problems arising from the requirements of industry and practical life, and research at the Institute. The fact that in recent years rich hydrocarbon deposits

have been explored in the close vicinity of Szeged, has had an influence on the work of the Institute. Thus, one of the topics deals with the organic matter contents of sedimentary rocks, and with the carbonate and clay mineral contents of reservoir and non-reservoir sediments, and with the problem of the redox capacity of sedimentary rocks.

Another topic is given by the manganese ore research started earlier. In the foreground of research at present is the study of the role played by the various mangenese compounds in the migration of elements; by studying the adsorption characteristics of the different natural and artificial manganese compounds. Also associated with the research of manganese ore are the model experiments concerning, on the one hand, the solution and oxidation of manganese carbonate ores in Hungary and, on the other hand, the mechanism of the formation of manganosite.

The research of petrographical nature includes mainly that of the relation between ore formation and potassium metasomatism in the Mátra Mountains, as a continuation of earlier research of the metamagmatites of the Mátra Mountains.

We continue our activity in the hope that, during te next years, the Institute will not only maintain, but also develop all the results which the predecessors have achieved and which have also been contributed by the present co-workers of the Institute, and that for the young researchers of the Institute and all those engaging in this work later on we will be able to provide still better conditions than those we had when began our career; and we also hope that we will leave them a professional and intellectual heritage as good as the heritage we received from our predecessors.

PROF. DR. GYULA GRASSELLY
Head, Institute of Mineralogy,
Geochemistry and Petrography of the
Attila József University at Szeged
Táncsics M. u. 2., Szeged, Hungary