

Werner's first translator: Ferenc Benkő, Hungarian priest, mineralogist, professor

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Abstract

Ferenc Benkő (1745–1816), Hungarian priest of the Helvetic confession and college professor at Nagyenyed (Strassburg, Aiud), Hungary, was the first to prepare (1782) and publish (1784) a translation of Abraham Gottlob Werner's influential *Von der äusserlichen Kennzeichen der Fossilien* (1774). The Hungarian-language book was enlarged and completed by examples of Carpathian mineral localities, drawn both from literature and from the author's collecting trips. Benkő had studied mineralogy from Gmelin in Göttingen. His major achievements were publishing the first mineralogy textbook in Hungarian (*Magyar Minerologia*, 1786), founding one of the first public natural history museums in Hungary, and providing significant contributions to establish a Hungarian scientific language for the earth sciences.

Introduction

Abraham Gottlob Werner (1749–1817), professor of geology at the Mining Academy at Freiberg, Saxony, was probably the most influential geologist of his time¹. Based on the novel theoretical basis of the succession of rock formations – as deposited from the primeval ocean – he gave his students a solid background to practical work, and made geology a science². His superior lecturing skills attracted students to Freiberg from most countries of Europe, even from overseas, who then disseminated his teachings all over the world. His first handbook, on the identification of minerals by means of their external characteristics (*Von der äusserlichen Kennzeichen der Fossilien*³, 1774) written still as a student, won him the appointment as lecturer in mineralogy at Freiberg⁴. It was the first practical book systematically describing the then known minerals, rocks, and ores, offering keys for their recognition. Although frequently taken as the opposite⁵, this work was intended as an aid in identification, not as a treatise on

¹Ospovat, Alexander M.: Wernerian influences in the geological literature of Western Europe, in: Freiburger Forschungshefte C223 (1967), pp. 219–230, here p. 219.

²Ospovat, Note 1, p. 229.

³Werner, A. G. (1774): *Von der äusserlichen Kennzeichen der Fossilien*. Leipzig: Siegfried Crusius. Facsimile edition with English translation: *On the External Characters of Minerals*. Translated by A. V. Carozzi. University of Illinois Press, Urbana, 1962. Werner's work was largely based on J. K. Gehler's *De characteribus fossilium externis* (1757) (Laudan, Note 6, here p. 80).

⁴Guntau, Martin: *Abraham Gottlob Werner. Biographien hervorragender Naturwissenschaftler, Techniker und Mediziner* 75, 120 p. Teubner: Leipzig 1984.

classification⁶.

The book – from 1789 onwards – was translated to French and English⁷ (Tab. 1). An earlier, Hungarian translation of 1782 – unknown to Grunevald and Guntau, bibliographers of Werner – is described here, and its author, Ferenc Benkő⁸ is introduced to the modern scientific community in English the first time.

Göttingen and Hungary

Besides several colleges there was only a single university in Hungary in the 18th century, at Nagyszombat (Tyrnau, Trnava)⁹. This being Catholic, protestant students sought higher education abroad, outside the Habsburg Empire. Their destinations were the Low Countries, England, and Switzerland, later mostly Germany. Their choice heavily depended on the universities' offer of scholarships. The most popular places were Basel, Frankfurt am Oder, Berlin, Bremen, Erlangen, Frankfurt am Main, Halle, Heidelberg and Marburg¹⁰. Upon return to their homeland, the students occupied positions as priests, professors and doctors.

The university of Göttingen, founded relatively late (in 1734), was exceptional in putting an emphasis on law and political science instead of theology. This attracted members of the aristocracy. Göttingen's significance, however, was not in its representative character, but in radiating the ideas of the new humanism¹¹.

Göttingen was not the university which attracted the largest number of students from Hungary. It was Jena, where – at the end of the 18th century – Hungarian¹² students formed one-third of the membership of the newly founded Mineralogical Society¹³. Jena's 629 Hungarian students between 1760 and 1799 clearly supersede Göttingen's 285 Hungarian students between 1767–1808, however, it was not Jena, but Göttingen which offered a professorship to a Hungarian. Andreas Segner of Pozsony held the chair of physics from 1735 to 1755. While Jena clearly won in quantity, Göttingen was the major force in quality in

⁵E.g. Oldroyd, David R.: *Thinking About the Earth. A History of Ideas in Geology*. Athlone, London 1996, here p. 98.

⁶Laudan, Rachel: *From Mineralogy to Geology. The Foundations of a Science, 1650–1830*. The University of Chicago Press, Chicago 1987, here pp. 80–83. Greene, Mott T.: *Geology in the Nineteenth Century. Changing Views of a Changing World*. Cornell University Press, Ithaca, New York 1982, here p. 33.

⁷Grunevald, V.; Guntau, Martin: *Bibliographie der Arbeiten von Abraham Gottlob Werner und der Publikationen zu seinen wissenschaftlichen Auffassungen und seiner Person*, in: *Freiberger Forschungshefte C 223* (1967), 305–317, here pp. 310–311.

⁸Family name is the first and given name the second in Hungarian: Benkő Ferenc. We use the English order of names in this paper.

⁹Founded in 1635 by Cardinal Péter Pázmány in Nagyszombat, the university moved to Buda, the capital of Hungary, in 1777. See Sinkovics, István: *Az Eötvös Loránd Tudományegyetem története 1635–1985*. [History of Eötvös University. 1635–1985.] Budapest 1985. (In Hungarian with English summary)

¹⁰Kosáry, Domokos: *Művelődés a XVIII. századi Magyarországon*. [Culture in eighteenth-century Hungary.] 3rd edition. Akadémiai Kiadó, Budapest 1996. (In Hungarian). Here pp. 126–129.

¹¹Dümmerth, Dezső: *Göttingen und das geistige Leben in Ungarn*, in: *Filológiai Közöny 7/3–4* (1961), pp. 351–373 (in Hungarian), Suppl. 4–9 (in German), Budapest. Weigl, E.: *Schauplätze der deutschen Aufklärung. Ein Städterundgang*. Rowohlt, Reinbek bei Hamburg 1997. Here pp. 188–206.

¹²Here we use the word 'Hungarian' in the meaning of *Hungarus*, i.e. citizen of Hungary, involving students of Hungarian, German, Slovakian, Croatian, Romanian, etc. tongue.

¹³Csíky, Gábor: *The role of Hungarian naturalists in the activities of the 'Mineralogische Societät' of Jena and its effect on the development of geological sciences in Hungary*. (Data for history of Hungarian mineralogy), in: *Földtani Közöny 111* (1981), pp. 338–349, Budapest. (In Hungarian with English summary)

revitalization of the literary and cultural life of Hungary¹⁴.

Ferenc Benkő (1745–1816)

Ferenc Benkő was born on 4 January 1745 at Mátészalka, a small town in Szatmár county, eastern Hungary¹⁵. He studied at the Bethlen College at Nagyenyed (Strassburg, Aiud) in the province of Transylvania¹⁶ and was ordained a priest of the Helvetic confession. Before and after higher theological studies in Zürich¹⁷ he was private tutor to the sons of a wealthy mine entrepreneur, Ádám Ribitzei. Accompanying the two youth to German universities, he continued his studies at Göttingen from 1776. There he attended the mineralogical lectures of J. F. Gmelin. It was during his stay there that he translated Werner's *Von der äusserlichen Kennzeichen der Fossilien* in 1782 and published it under the title *A köveknek és értzeknek külsőmegeismertető jegyeikről* upon his return to his homeland in 1784.

First he was private tutor again at the houses of aristocrats and high government officials, then became a priest of the newly built Helvetic church at Nagyszeben (Hermannstadt, Sibiu). He also served the provincial government as censor of books for two years. At the parochial building Benkő assembled his mineral collection. The handbook *Magyar Minerologia* (1786) – another book faithfully following the Wernerian traits –, the first original mineralogical book in Hungarian, which he published still as a priest, served as a catalogue to the collection, specimens being marked by an asterisk. Upon the death of the professor of natural history and geography at the College at Nagyenyed, Mihály Galambosi, Benkő, the well-known naturalist, was offered the chair. He accepted the position in 1790, and delivered his inaugural speech in Hungarian, unusual at the time of Latin education.¹⁸

The college of Nagyenyed, founded by Prince Gábor Bethlen in 1627 was the major higher education institution in the eastern, Transylvanian part of Hungary in the sixteenth to eighteenth centuries. The dominant religion there being the Helvetic confession of protestantism, many of the professors, like Benkő, received their higher education from universities in Germany and in the Low Countries.

Benkő was professor of natural history, geography and German language of the College

¹⁴Dümmerth, Note 11.

¹⁵Benkő's biographers (first Baritz [Baritz, György: Benkő Ferencz élete. [Life of Ferenc Benkő.], in: Tudományos Gyűjtemény 7/12 (1917), pp. 112–117, Pest. (In Hungarian)], and subsequent authors, e.g. Szilády [Szilády, Zoltán: Benkő Ferencz, az első magyar mineralógus. [Ferenc Benkő, the first Hungarian mineralogist], in: Természettudományi Közlöny 43 (1911), pp. 256–267, Budapest (In Hungarian)] and Csíky [Csíky, Gábor: Benkő Ferenc, in: Nagy, Ferenc (ed.): Magyarok a természettudomány és a technika történetében. Életrajzi Lexikon A-tól Z-ig. [Hungarians in the History of Science and Technology. A Biographical Lexicon from A to Z.] Országos Műszaki Információs Központ és Könyvtár, Budapest 1992, pp. 52–53] give Magyarlápós as his birthplace. However, Benkő, in a letter to Kazinczy he refers to himself: 'I come from Máté-Szalka, Szatmár county' (Kazinczy levelezése [Kazinczy: Correspondence], Váczy János (ed.), 3 (1893), pp. 69–70).

¹⁶Transylvania, an autonomous province within the Kingdom of Hungary was inhabited by Hungarians, Saxonians (Germans), and Romanians, each having their own school system. The official language of Hungary was Latin, although Germanization was enforced by Joseph II von Habsburg between 1780 and 1790.

¹⁷Molnár-Hubbes, Erzsébet: Born Ignác kapcsolata Benkő Ferenczel. [Relation of Ignác Born to Ferenc Benkő], in: Born Ignác (1742–1791) születésének 250. évfordulójára rendezett emléktünnepség előadásai. [Lectures of the conference honouring the 250th anniversary of the birth of Ignác Born.] Miskolc 1992, pp. 50–51. (In Hungarian)

¹⁸Latin was the language of secondary and higher education, of public administration and jurisdiction well into the 19th century. Late enlightenment and early liberalism brought a gradual progress of Hungarian language from the early 19th century (Mészáros, István: Középszintű iskolánk kronológiája és topográfiája 996–1948. [Chronology and Topography of Secondary Schools in Hungary 996–1948.] Akadémiai Kiadó, Budapest 1988, here 66–73).

from 1790 until his death in 1816. Having interests in the first two subjects, he published textbooks only in mineralogy and geography. His significant private collection, used in classes, subsequently became part of the museum and curiosity cabinet of the College. Minerals, plants, animals and books amounted to ca. 12,000 items at Benkő's death. More than half of them were mineral, rock and fossilized animal specimens. The collection continued to serve teaching until its destruction during the battles of the War of Independence of 1848–49, when both the College and the town were sacked and burnt down¹⁹.

The core of the collection was established by a donation of Count Gergely Bethlen, who – upon his nomination as superintendent to the college –, donated his mineral collection of almost two thousand specimens to the college museum in care of Benkő²⁰. The Count requested that the museum would be open to the interested public for viewing, but the whole collection could be available for study only in the presence of Professor Benkő²¹.

There were a large number of collections in Hungary at the end of the 18th century²². The significance of Benkő's collection is in its availability to the public – it was one of the first public collections in Hungary²³ –, and in its use for daily teaching. In scientific value it was probably second only to the university collections at Pest, which served the education of medical students²⁴.

During his years in Nagyszében Benkő published an original textbook on systematic mineralogy. The *Magyar Minerologia, az az a' kövek 's értzek' tudománya* [Hungarian Mineralogy, i.e. Science of Rocks and Ores] was printed for the author at Kolozsvár in 1786. This was the first Hungarian-language textbook in the field.

Benkő's further books are a geography textbook series (*Magyar Geographia*), describing America, Africa, and Asia. An annual collection of miscellanea, published under the title *Parnasszusi időöltés* (Parnassian Pastimes) between 1793 and 1800 contains, among others, papers on natural history and on antiquities, and a description of his museum²⁵. His *Magyar Linneusz*, a textbook on systematic zoology, was never published²⁶.

¹⁹Vita, Zsigmond: Benkő Ferenc élete és munkássága. [Life and work of Ferenc Benkő], in: Benkő Ferenc: *Magyar Minerologia, az az a' kövek s értzek tudománya*. Facsimile edition, TÁT Rendező Iroda, Miskolc 1986, pp. XII–XXXIII. (In Hungarian). Csíky, Gábor: The origin and development of the natural scientific collection of the Bethlen Collegium Academicum, in: Vitális, György; Kecskeméti, Tibor (eds.): *Museums and Collections in the History of Mineralogy, Geology and Paleontology in Hungary*, in: *Annals of the History of Hungarian Geology*, Special Issue 3 (1991), pp. 423–439, Budapest.

²⁰Benkő, Ferenc: *Parnassusi időöltés*. 1796. Hetedik darab. Enyedi ritkaságok. [Parnassian Pastimes. 1796. Seventh Piece. Rarities of Enyed.] Kolozsváratt, Nyomtatt. Hochmeister Márton betűival és költségeivel 1800-ban: 1800b, [9], 2–98 p. (In Hungarian)

²¹Vita, Zsigmond: A nagyenyedi kollégium múzeumának kialakulása és fejlődése. [Foundation and development of the museum of Nagyenyed College] in: *Emlékkönyv Kelemen Lajos születésének nyolcvanadik évfordulójára. A Bolyai Tudományegyetem Kiadványai, Tanulmányok I* (1957), pp. 614–629. (In Hungarian)

²²Vitális, György; Kecskeméti, Tibor (eds.): *Museums and Collections in the History of Mineralogy, Geology and Paleontology in Hungary*, in: *Annals of the History of Hungarian Geology*, Special Issue 3, 439 p., Budapest 1991. Wilson, W. E.: The History of Mineral Collecting, 1530–1799. With notes on twelve hundred early mineral collectors, in: *The Mineralogical Record* 25/6 (1994), pp. 1–264, Tucson, Arizona.

²³Csíky, Note 15.

²⁴Papp, Gábor; Weiszbürg, Tamás: History of the mineral collection of the Eötvös Loránd University, Budapest, in: Vitális, György; Kecskeméti, Tibor (eds.): *Museums and Collections in the History of Mineralogy, Geology and Paleontology in Hungary*. in: *Annals of the History of Hungarian Geology*, Special Issue 3 (1991), pp. 115–133, Budapest.

²⁵Szinnyei, József: *Magyar írók élete és munkái*. Hornyánszky, Budapest 1891, Here I, col. 859. (In Hungarian). Csíky, Note 19.

²⁶Karl, J.: Benkő Ferenc *Magyar Linneusz*-áról. [On the *Magyar Linneusz* of Ferenc Benkő], in: *Természettudományi Közlöny* 51, Pótfüzet (1919), pp. 34–38, Budapest. (In Hungarian). Vita, Zsigmond: *A természet megismerésének útján*. [Learnings about nature], in: Vita, Zsigmond: *Tudománnyal és*

Benkő probably never left Transylvania after finishing his studies (except for a trip to Leipzig and Prague in 1813²⁷), although he travelled widely in the province. His published travel journal²⁸ shows that he collected the mostly mineral specimens himself. Exchange of specimens (he visited collectors and briefly reported on their collections²⁹, donations, and regular buying enriched his museum at Nagyszeben and at Nagyenyed. Among others, two collections for teaching, Werner's mineral (200 specimens for 24 Rhenish florins) and Voigt's rock collection (60 specimens for 16 Rhenish florins) were bought by the College³⁰. Probably these were the collections sold by the company 'Niederlage verkäufliche Mineralien' under the supervision of Werner³¹. Benkő's interest lay also in mines³² and in Roman inscriptions. He extended his enthusiasm for nature to his students on botanical excursions³³.

Teaching of natural history was introduced in Catholic secondary schools in 1777 by the royal order *Ratio Educationis* of Queen Maria Theresa, which established a centralised, state-subsidized school system separate from the church itself³⁴. Nagyenyed, although being Protestant, therefore lacking state support, a means of external interference, followed the example and professor Galambosi, predecessor of Benkő started to teach natural history already in 1778. The *Ratio Educationis* suggested establishing school collections, and Galambosi assembled one containing rock and ore specimens, which found its way into the college museum after the professor's death³⁵.

Despite his excellent knowledge of languages Benkő never published in any tongue other than Hungarian. The Enlightenment established the nations and national languages. At the time of the revival of Hungarian literature and birth of a movement to improve the language³⁶ – radiating from court circles in Vienna, where well-educated members of a noble royal guard acquired lasting literary fame –, Benkő helped to establish a Hungarian language for science. He was an active member of the Hungarian Philological Society of Transylvania³⁷.

Nagyenyed, although the most important school centre of Transylvania for Hungarians, was not particularly well-known in scientific circles. Benkő, being there alone as scientist, naturally relied on correspondence to keep him abreast of new developments in science. Hungarian students, e. g. Dániel Zejk in Göttingen, who attended Blumenbach's lectures,

cselekedettel.. Tanulmányok. Irodalmi könyvkiadó, Bukarest 1968, pp. 179–193, 295–296, here p. 189.

²⁷Szilády, Zoltán: Adalékok Benkő Ferenc életéhez. [Additions to the life of Ferenc Benkő], in: Irodalomtörténeti Közlemények 35 (1925), pp. 128–129, Budapest. (In Hungarian)

²⁸Benkő, Ferenc: Parnassusi idő tótés. 1794. Hatodik darab. Egy kis hazabéli utazás. Némely bányászatoknak le-írása, és a leg-ujjabb minerolog. systémáinak laistroma. III. részekben. [Parnassian Pastime. 1794. Sixth Piece. A Homeland Journey. Description of Mines, and Lists of the Latest Mineral Systems. III. parts.] Kolósváratt. Nyomttatt. Hochmeister Márton, betüivel, és költségével 1800-ban: 1800. here p. 4. (In Hungarian)

²⁹Benkő, Note 28, pp. 8–12.

³⁰Benkő, Note 20, pp. 91–92.

³¹Weber, W.; Massanek, A.: A. G. Werner's Geoscientific collections, in: Abraham Gottlob Werner (1749–1817) und seine Zeit, Internationales Symposium, Freiberg (1999), Preprint, 14 p. Here p. 2.

³²He visited mines in Ilmenau and in the Harz during his stay in Göttingen (Benkő, Note 28, pp. 35–36).

³³Vita, Note 26, p. 192.

³⁴Kontler, László: Millennium in Central Europe. A History of Hungary. Atlantis Publishing House, Budapest 1999, here pp. 211–212.

³⁵Benkő, Note 20, p. 4.

³⁶Kontler, Note 34, pp. 215–216.

³⁷Jancsó, Elemér: Az Erdélyi Magyar Nyelvművelő Társaság iratai. [Documents of the Transylvanian Hungarian Philological Society.] Akadémiai Könyvkiadó, Bukarest 1955, 447 p. (In Hungarian). Here p. 393.

informed him about the latest results in mineralogy³⁸. A report on the new development in mineral systematics – sent by Sámuel Gyarmathi, a friend then in Göttingen, –, was promptly published in *Parnassusi időöltés*³⁹. The specimen of the mineral *iglite* found by Esmark⁴⁰ during his mineralogical journey in Hungary, and described in 1798, found its way into the annales-type *Parnassusi időöltés* with the printmark 1800⁴¹.

The medical doctor and philologist Sámuel Gyarmathi, who was later elected member of the Göttingen Academy for his linguistic treatise on *Affinitas lingua hungaricae cum linguis fennicae*, supplied Benkő with books on mineralogy, and sent a 36-volume herbarium and a 400-specimen mineral collection to the College museum⁴².

Benkő was a corresponding member of the Mineralogical Society of Jena⁴³; his eventual correspondence with the members of Goethe's society⁴⁴ still awaits investigators.

The Magyar Werner

The translation is a 224-page, small quarto volume, called subsequently *Magyar Werner*⁴⁵ is dedicated to Ádám Ribitzei⁴⁶, the wealthy mining entrepreneur, Benkő's patron, whose sons he accompanied during their studies in Germany. The second dedication is to Mária Horváth, Ribitzei's wife, dated in Göttingen, August 1, 1782.

The Foreword gives details about alterations and extensions of the translator to the original work. Benkő especially enlarged the listing of localities, taking examples from Hungary known by personal experience, and taken from the books of learned authors.

The translator's additions are clearly distinguished from the original Wernerian text. A * indicates minor notes of Benkő's own, ** is the sign for remarks borrowed mostly from contemporary authors⁴⁷ (references are listed under §. 47, on p. 67).⁴⁸ *** indicates remarks

³⁸Benkő, Note 28, p. 74.

³⁹Benkő, Note 28, p. 69.

⁴⁰Esmark, Jens: Kurze Beschreibung einer mineralogischen Reise durch Ungarn, Siebenbürgen, und das Bannat, in: Neues Bergmännisches Journal 1 (1795), pp. 377–464; 2, pp. 1–105, Freiberg. Journal des Mines, 8 (1797–98), pp. 805–830. Esmark, Jens: Kurze Beschreibung einer mineralogische Reise durch Ungarn, Siebenbürgen und das Banat. Freyberg: 1798.

⁴¹Benkő, Note 28, p. 75.

⁴²Vita, Note 21, pp. 618–619.

⁴³Viczján, István: Tätigkeit von Domokos Teleki als Präsident der Jenaer Mineralogischen Societät – im Spiegel der zeitgenössischen Korrespondenz, in: Múzeumi Füzetek, Új Sorozat 7 (1998), pp. 3–19, Kolozsvár. (In Hungarian with German abstract). Here p. 170.

⁴⁴Salomon, J.: Die Sozietät für die gesamte Mineralogie zu Jena unter Goethe und Johann Georg Lenz, in: Mitteldeutsche Forschungen 95. Böhlau Verlag, Köln 1990.

⁴⁵Benkő, Ferenc: A Bányász Tudomány, és a Lipsiai Gazdaságról értekező, Tudós Társaság Nemes Tagjának Werner Ábrahám Urnak a Köveknek és Értzeknek Külső Megesmértető Jegyeikről Irott szép, és igen hasznos, Könyvetskéje, melyet, Hazájának, és a Tanuló Ifjuságnak, lehető Hasznára Magyarra fordított, és a két Magyar Hazabéli, s más Idegen Kő s Értz Nemekkel-is, a Példákban megbövitett, Benkő Ferentz. R. P. Göttingába, 1782. Esztendőbe. Kolosvárat, Nyomt. A Reform. Koll. Betűivel, 1784. Eszt. [8], 213, [2] p. [Beautiful and Very Useful Book of Mr. Abraham Werner, Noble Member of the Learned Society of Mining and Economy at Lipsia on the External Characters of Rocks and Ores, Translated to Hungarian by Ferenc Benkő, Priest of the Helvetic Confession, for the Possible Benefit of His Homeland and for the Studious Youth, Enlarged by Rock and Ore Species of the Two Hungarian and of Foreign Lands, in Göttingen, in 1782. At Kolozsvár, Printed at the Helvetic College, in the Year 1784.] (In Hungarian)

⁴⁶Deceased at the time of publication, murdered during the Horea peasant revolt in the autumn of 1784.

⁴⁷Köleséri, Samuelis: Auraria Romano Dacica. Cibin 1717. Born, Ignaz: Lithophylacium Bornianum, sive Index Fossilium quae collegit, et in Classes ac Ordines disposuit Ignatius S.R.I. Eques a Born. Gerle,

derived from Professor Leske at Leipzig. Further author's notes are in small print. The cited books represent a complete list of references to mineral localities in Transylvania up to Benkő's time.

Finally he promises the readers to publish his *Magyar Minerologia* soon.

In the Preface (On mineralogy in general) we find the first examples of Benkő's ingenuity in improving the Hungarian language. The late eighteenth and early nineteenth centuries were the time for the Reform Age in Hungary, when a widespread national movement attempted – and succeeded – in transforming the mother tongue into a suitable medium for modern communication. Numerically, the yield was some ten thousand words (most of them used today) which made the Hungarian language capable of playing a number of new functions. Above all, it created a kind of intellectual confidence by facilitating communication in the vernacular concerning all sorts of facts and relations in a changing world. Literature was foremost in importance among the relevant sorts of communication, for the new literary themes and style generated tastes, sensitivities and modes of conduct that were instrumental in the opening up of Hungarian society to modernity⁴⁹.

While most effort was exerted in the field of literature and philosophy, Benkő was one of the pioneers in making the Hungarian language suitable for scientific communication⁵⁰.

Besides finding new, Hungarian words Benkő established rules for the choice of words:

- the most customary ones,
- words of the best literary talents,
- the oldest words,
- words used in regions with the best science,
- words fitting best the nature of rocks.

He did not support the unconditional Magyarization of mineral names, which became a short-lived fashion in the first half of the 19th century⁵¹, using the well-established words of *asbest*, *rubin*, *spinell*, *auripigmentum*, *basált*, *gágát*, *tzinobrium*, *turmalin*⁵².

There are occasional remarks on specimens of his own, including the name of the donator (p. 68, footnote). These remarks will be developed into a full-fledged catalogue of his collection: in the *Magyar Minerologia* asterisks indicate the mineral species which Benkő owned in his collection at Nagyszeben.

Benkő's influence

Both the *Magyar Werner* and the *Magyar Minerologia* were published in a successful

Pragae 1772–1775. Vols. I–II. Born, Ignaz: Briefe über mineralogische Gegenstände auf seiner Reise durch das Temeswarer Bannat, Siebenbürgen, Ober- und Nieder-Hungarn, an der Herausgeber derselben, Joh. Jac. Ferber... geschrieben. Ferber, Frankfurt & Leipzig 1774, [12]. 228 p. Fichtel, Johann Ehrenreich: Beytrag zur Mineralgeschichte von Siebenbürgen. Nürnberg 1780, Benkő, J.: Transsilvania. Vindobona 1778. Fridvaldszky, J.: Minerologia magni principatus Transylvaniae. Claudiopoli 1767.

⁴⁸Benkő states that he checked all authors for mineral localities; however, he – and many contemporaries – omit Marsigli's *Danubius Pannonico-Mysicus*, a six folio volume treatise (Hagae-Amstelodami, 1726). This expensive work was available only in a few libraries of Europe.

⁴⁹Kontler, Note 34, p. 227.

⁵⁰Kázmér, Miklós: A magyar földtudományi szókincs eredete. [Origin of the Hungarian geological vocabulary], in: Karátson, Dávid (ed.): Pannon Enciklopédia. Magyarország földje. Budapest 1997, pp. 483–484. (In Hungarian). Kázmér, Miklós: Origin of Hungarian geological terminology and nomenclature, in: Földrajzi Közlemények, Budapest, in press. (In Hungarian with English abstract)

⁵¹An extreme example was Kováts: *Lexicon Mineralogicum Enneaglottum*, Trattner, Pesth 1822, offering about fifteen hundred newly created 'Magyar' words, almost none of which survived.

⁵²Fejér, Leontin: A magyar földtani szaknyelv kialakulásának vázlatos története. [Evolution of the language for geology in Hungary], in: Földtani Tudománytörténeti Évkönyv 7 (1979), pp. 127–152, Budapest. (In Hungarian)

age. The period from 1740 to 1790 – symbolised by the rule of the enlightened absolutist monarchs Maria Theresa and her son, Joseph II – was terminated by the French Revolution and the Napoleonic era. Control on intellectual life has tightened, leaders of a reformist movement were summarily executed, and several decades of unenlightened absolutism followed⁵³.

Benkő was respected by contemporary scientists and references to his *Magyar Minerologia* are found in their books, e.g. in the *Lexicon Mineralogicum* of Kováts⁵⁴. Domokos Teleki, the first president of the Mineralogische Societät of Jena⁵⁵, owned Benkő's books and arranged his collection according to its mineral system⁵⁶. Benkő was elected as corresponding member upon his proposal⁵⁷. The first two decades of the 19th century have seen the publication of several secondary-school natural history textbooks in Hungarian⁵⁸. Benkő's lasting influence should be checked in their vocabulary.

By the 1860's, when József Szabó, professor of mineralogy at the University of Budapest, an ardent advocate of Magyarization of terminology in science, published his textbook of mineralogy and articles on his linguistic concepts, Benkő was completely forgotten⁵⁹. There is not a single reference to his activity in Szabó's voluminous literary production⁶⁰. The library of the Department of Mineralogy did not have any copy at that time; the first volume was donated in 1950 by professor Sztróka⁶¹. The most comprehensive library of geology in Hungary, that of the Hungarian Geological Institute, had a copy of the *Magyar Werner* in 1911, but none of the *Magyar Minerologia*⁶². Other major university and research libraries in Budapest lack any copy⁶³.

We are not aware of the print run of any of Benkő's books. There were only thirty-eight subscribers to the *Magyar Minerologia*⁶⁴, and another fifty copies were sold through the correspondence of the literary organizer Kazinczy. The low number of copies sold – and survived –, the high esteem associated with the writer of the first Hungarian textbook on mineralogy by late twentieth-century science historians⁶⁵ yielded a reprint⁶⁶ for the

⁵³Kontler, Note 34, pp. 220–222.

⁵⁴Kováts, Note 51.

⁵⁵Viczián, István; Deé Nagy, Anikó: Domokos Teleki, der erste Präsident der Societät für die Gesamte Mineralogie zu Jena (1773–1798), in: Acta Mineralogica-Petrographica, Szeged, 38 (1997), pp. 165–173.

⁵⁶Viczián, Note 43, p. 4.

⁵⁷Vita, Note 19. Viczián, Note 43, p. 7. Probably his translating Werner did not play any role in the election for corresponding member as Vita supposed (Note 26): the *Magyar Werner* was published in 1784, while the Mineralogische Societät was founded in 1797.

⁵⁸Mészáros, István: A tankönyvkiadás története Magyarországon. [History of school textbook publishing in Hungary.] Tankönyvkiadó, Budapest 1989, 183 p.

⁵⁹Csíky, Gábor: Benkő Ferenc és a magyar mineralógia kezdetei. (Ferenc Benkő and the beginnings of mineralogy in Hungary.), in: Földtani Tudománytörténeti Évkönyv 11 (1988), pp. 213–236, Budapest. (In Hungarian with English abstract)

⁶⁰Vadász, Elemér: A mineralógia első erdélyi magyar oktatója. [The first Hungarian mineralogy lecturer in Transylvania], in: Magyar Tudományos Akadémia X. Osztályának Közleményei 1 (1967), pp. 187–197, Budapest. (In Hungarian)

⁶¹Weiszbürg Tamás: Benkő Ferenc ásványtani munkássága. [Ferenc Benkő, the mineralogist], in: Földtani Tudománytörténeti Évkönyv 11 (1988), pp. 237–245, Budapest. (In Hungarian), here p. 242.

⁶²Anonymous: A Magyar Kir. Földtani Intézet Könyvtárának betűrendes címjegyzéke. [Alphabetic title list of the library of the Hungarian Royal Geological Institute.] Budapest 1911, 488 p.

⁶³Vadász, Note 60.

⁶⁴Their list is to be found on the last page of the Preface to Benkő, Ferenc: *Magyar Minerologia*. Kolosvár 1786.

⁶⁵First by Koch, Sándor: *A magyar ásványtan története*. [History of Hungarian Mineralogy.] Akadémiai Kiadó, Budapest 1952, 118 p. Here 30–35.

bicentenary in 1986. Nine hundred copies – including sixty-four pages of essays⁶⁷, and sold for a then outrageous price of 200 forints –, were bought up by students, professionals, and the public in two weeks. The success of the two-hundred years old book is partly explained by the decades-long subjugation of national historical topics by then-ruling ideologies, and is a testimonial to what the high-level knowledge, keen observation, and enthusiastic descriptions of Ferenc Benkő means to our age.

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⁶⁶Szakáll, Sándor; Weiszbürg, Tamás (eds.): Benkő Ferenc: Magyar Minerologia, az az a kövek s értzek tudománya. Facsimile edition, TÁT Rendező Iroda, Miskolc 1986. [16] + 184 + LXIV p. (In Hungarian)

⁶⁷Vita, Note 19. Weiszbürg, Tamás: Mai szemmel a Magyar Minerológiáról. [The Magyar Minerologia today], pp. VIII–XI; Hajdú-Moharos József: A Magyar Minerologia helynevei. [Place names in the Magyar Minerologia.], pp. pp. XXXIV–LXIV, all three in: Benkő Ferenc: Magyar Minerologia, az az a kövek s értzek tudománya. Facsimile edition, TÁT Rendező Iroda, Miskolc 1986. (In Hungarian)

Year	Translator	Title	Publisher	Language
1774	Author: Werner	<i>Von der äusserlichen Kennzeichen der Fossilien</i>	Crusius, Leipzig	German
1784 ⁶⁸	Benkő Ferenc	<i>Köveknek és értzeknek külső megesmértető jegyeikről</i>	Helvetic College, Kolozsvár, Hungary	Hungarian
1785	–	<i>Von der äusserlichen Kennzeichen der Fossilien</i>	Trattner, Vienna, Austria	German
1790	Madame Guyton de Morveau	<i>Traité des caractères extérieurs des fossiles</i>	Onfroy, Dijon, France	French
1794	Berthout Vanberghem & Henri Struve	<i>Principes de minéralogie ou exposition succincte des caractères extérieurs des fossiles</i>	Paris, France	French
1795	Madame Guyton de Morveau	<i>Traité des caractères extérieurs des fossiles</i>	Walther, Dresden, Saxony	French
1805	Thomas Weaver	<i>A Treatise on the External Characters of Fossils</i>	Mahon, Dublin, Ireland	English
1962	A. V. Carozzi	<i>On the External Characters of Minerals</i>	University of Illinois Press, Urbana, Illinois, USA	English
1965		<i>Von der äusseren Kennzeichen der Fossilien</i>	Asher, Amsterdam, The Netherlands	German

⁶⁸There is an error in SZINNYEI (1891, Magyar Írók vol. I, col. 861), which introduced a ghost edition in many subsequent studies. SZINNYEI mistook Benkő's line on the title page: *Göttingába, 1782. Esztendőbe*. A careful reading of the title page makes it clear that it refers to the time and place where the translation was prepared. The printing was done in Kolozsvár in 1784.