Geogius Agricolas books throughout Transylvania

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Georgius Agricola is a world wide known humanist personality: a doctor, a philosopher, a paedagogist, a researcher of nature (minerals and mines), a metrologist, a politician, a musician. Georgius Agricola represents a humanistic model valid even today in European scientific culture, proving thus the everlasting values of humanism. In Romania (namely in Transylvania)[1], Agricola became known through the intermedium of some of his books in this part of Europa, starting from the 16th century. It is therefore natural to wonder what information Agricola had about the Romanian countries, and Transylvania. His works revealed that the information he had and used was only taken over from ancient writers: Dioskorides, Theophrastos, Plinius Secuncus Major, Ctesias Thimaeus etc. This information concerns metal resources (gold, silver, lead, aluminium, ferruos water etc.) from the antique territories, Thracia, Scythia, Dacia[2], the Carpathian Mountains.[3]

The existence of Agricola's books throughout Europe, the spreading of the ideas, the scientific an technical knoweledge disseminated by means of these books – draw the attention to the extremely significant relation between the history of book and the history of science, in the 16th century. The discovery of printing represented a turning point for the universe of values. Starting with the Renaissance, the main impulse of the cultural evolution became the printed matters. This is the reason why humanist scholars and printers got deaply involved in the effort of transferring ancient culture from manuscripts into the culture of printing. This was also the time when young Agricola spent three years in Italy (1524–26), in well known Renaissance centres: Bologna, Venezia, Padua. He studied then philosophy and medicine, improved his Greek, Latin, Hebrew, got acquainted with the new knowledge system of the universities, spread by means of the printing houses. More over Agricola took active part in the new cultural movement created around the publishing house of Aldus Manutius, of Venice. New researches[4] emphasized the collaboration of Agricola with Aldus printing house. After the death of its founder, Aldus Manutius Romanus (1515) during the same Century when the printing house was led by his father-in-law, Andreas Asulanus Torresanus – the Aldin Publishing House started a new publication programm of the ancient writers (Greek, Latin, Arab) whose texts were adapted from the ancient manuscripts. Such a programm was followed by all humanist printers of the 16th century. Agricola also collabarated at the printing of first edition of the Greek doctors' works of Antiquity, in Greek: the princeps edition Hippokrates[5], Venezia, 1526, as an editor (on the title page). He is also presumed to have collaborated with a group of english humanists (who studied in Padua), under the supervision of J. Battista Opizone, to the publication of Galenos' Work[6], 5 vols, Venezia, 1525.

Even if these editions had been criticized for some mistakes or the quality of the chosen manuscripts, they still represent the first printed edition belongin to these authors, being at the same time a base to be improved, for the future Greek-Latin editions of the 16th–17th centuries. They are extremely rare. All those years spent in Italy, the friendships and collaborations were of major importance for the formation of Agricola as humanist and scientists. The concequences are thus, absolutely positive. In his works, Agricola used the information from an-

tique writers, checking it by observation, even giving it an experimental ground and adding his own ideas and observation.

In 1530 Agricola had completed his first work on mining an minerals, for publication, Bermannus. He took it to Basel – the centre of European humanism in 16th century, namely to «Officina Frobeniana», a humanist Publishing House. «Officina Frobeniana» had unquestionable merits in the history of printing, by introducing the Aldine, Italica letter – in the German countries; it also gave a new dimension to publishing work, as Aldus. As a result of collaboration with great scholars, philologists, philosophers, artists (counsellors of the editor). *Officina Frobeniana* reconsidered the ancient values, returning them to the culture of printing; at the same time, it also tried to discover the humanist writings and valoes of the country.

Thus, Erasmus of Rotterdam, the friend and collaborator of Froben was among the first to understand the novelty and the unique character of Agricola's work, «Bermannus, sive de re metallica», the first work concerning mining, that had been written and published since antiquity. Erasmus praised and recommended the work for printing, in his «epistola dedicatoria», addressed to the brothers Andreas and Christopherus a Couritz, at the Basel edition, 1530. After the death of Johannes Frobenius, in 1527, the major part of Agricola's work was published by Hieronymus Frobenius (the son of Johann). Out of the 34 works written by Agricola, only 19 have been preserved; only 6 of these 19, existed in the collections of the Transylvanian libraries, in 20 copies (15 are printed an published in Basel, 8 of them Frobenien.[8] Others edoitions (possibly fake) are identical with the Frobenien editions.[9]

More than half of the material of the present study (11 copies) represents rare, precious 16th century editions, a fact proved by documentary sources Brunet[10] and Graesse[11]. Out of the edtions bublished during the live of the scientist, that of 1546 (existing in Aiud, Cluj, Tg. Mures)[12] gathered the results of his research works either in the field of mineralogy or in that of mining. All these results had been previously published. Thus, to the contentsof the books also belongs «Bermannus, sive de re metallica» ... first published in 1528, then in 1530. «De ortu et causis subterraneorum» had been published first in 1544, and represents the basis of physical geology. «De natura eorum»... was published in 1545, while he finished «De natura fossilium libri X» in 1546. In the last two works Agricola gives the first systematic and total description of minerals. It also deals with the econamic use of various minerals, as well as the spreading of desposits.[13] Later on, Agricola fulfilled his research, so that the xilographs illustrating his book, were also ready by the year of his death (1555). In 1556 «Officiana Frobenania» printed the princeps edition of his work, completed with information about mining, with extremely modern scientific documentation, illustrated in wood cut, by Basilius Wehring of Joachimsthal, under the title «De re metallica libri XII». In 1928, after 372 years this edition was translated from Latin into German; its value being considerably increased by the works through which Geothe, in the preface of the work praises the founder of mineralogy and geology. The edition of 1561 (kept in Cluj) in also a rare one; its 290 illustrations were created by Hans Brosamer and Hans Rudolph Manuel Deutsch.

Almost half of Agricola's books (6 editions, l0 copies) existing in Transylvanian towns represent in fact the same work, «De re metallica» (5 copies in Cluj[14], 2 in Sibiu[15], 2 in Tg. Mures[16], 1 in Aiud[17]). The most widely spread edition thoughout in the 17th century colloges, is that of Basel, 1657 (5 copies). It was published by Emanuel König; the edtition introduces

Agricola's impressions on Venice, where he had spent two years. The edition also includes the names (in Latin, Greek, German) of metals.

Besides the works on mineralogy and mining, there were also some others about measures and weights at Romans and Greeks. «De mensuribus et ponderibus Romanmorum et Graecorum lib. V» is to be found in Sibiu – in a Paris edtiotion (1533) belonging to Christianus Wechelus,[18] colligated with Encelius Christopherus «De re metallica», printed in 1557, two years after the death of Agricola. The author of this colligate illustates the concern of that humanist century for nature, namely the origins of metals and their use in medical science. The owner of the two colligates was the chief doctor of Sibiu, Andreas (1560), a fact that proves that European books were spread and known in Transylvania throughout the 16th century.

An extremly useful work for the 16th century Transylvanian society was «De peste libri tres» (2 editions, 2 copies) – 1554 and 1611 – both colligated with medical or natural science works, of the 16th and 17th centuries. This work was known only among Saxons in Sibiu, an important cultural centre for mediaval Transylvania, connected with Germany. The work might have been in the ancient library of the town, certyfied around 1300. This library together with the Dominican library were taken over by the library of the Saxon College in 1592, thus becoming the owner of one of the copies, which later on passed in the collections of baron Brukenthal.[19] During the second half of the 16th century there was an epidemic of plague all over Transylvania[20] and by 1530 it also reached Sibiu. In the same year, the chief doctor, Sebastian Pauschner printed the first medical book in Transylvania «advice against plague»[21] with the help of the typographer Lukas Trapoldner. It is therefore natural, that since 1554 and later on, Agricola's work about plague had been of great interest in Transylvania.

Owing to «Officina Frobeniana», Agricola aquired an important place in the history of book, book illustration and printing: that is why all the Transylvanian editions of the 16th century we own now, could be considered as preciouse and rare, that is bibliophile. At the same time , the scientific level of his research, his critical method of investication were an important step forward at the time and later on. Agricola is a reference point in the 16th century history of science, while his performance is valid even today.

The present of Agricola's books throughout Transylvania may be proved first by the mediaeval custom existing in Europe till the 18th century, namely peregrinatio academica. For over 600 years the young people from Transylvania attended foreign universities and travelled through all European cultural centers: When returning home they tried to bring the new ideas and concepts in the autochtonouse cultural life, preparing thus the way for national humenism, for Reform, Enlightenment and even Romanticism. All these young intellectuals were bibliophile; besides their graduation certificates they also brought home books[22] (in fact, a humanist attitidude, connected with the great amount of printings in the 16th century).

The present study illustrates such an attitude by mentioning the owners of Agricola's books: Exept the Saxons, who had the book about plague, some other possessors, identified in the 17th and 18th centuries are: Benedictus Arkosi[23] was professor at the Unitarian College in Cluj in 1636 and 1660; he had studied philosophy and medicine at Padua and Franeker, had travelled to Austria (Linz, Vienna). Aytai Michael / Ajtai Abód Mihaly /, studied at Franeker;

later he was professor at the Calvanist College in Aiud.[24] Pataki Samuel (1731–1804), professor at the Calvanist College in Cluj, in 1758. After 1746 he studied physics, mathesis, Greek and Arabian languages, theology, medicine at Leyden, Frankfurt an der Oder, Utrecht. All the professors donated their libraries to the college where they had studied and taught.

Our statistics proves that Agricola was present in the 17th and 18th century ... transylvanian society; his works became known owing to the Reform. Half of his Works (lo copies) were found in the Calvinist Colleges libraries in Transylvania (Aiud[26], Cluj, Sighet) and the Unitarian College library from Cluj[27]). The notes, underlinings on the texts of these books prove that were used for teaching natural sciences in the 17th and 18th century. Agricola's books brought into light a new science (almost unknown at the time) – mineralogy – representing important didactic «sources».

The Transylvanian intellectuals who had studied at prestigious European universities (Netherlands, England, Switzerland, Italy, Germany) and adopted the values of late humanism, became conscious of the value of science as an important element for progress. Education, instruction are the aims of Reform; the Calvanist princes who ruled over Transylvania for a century were deeply concerned with reorganizing education; they founded several schools (even for Romanians[28]), who though representing a majority were considered as («tolerated nation» in Transylvania29) colleges with university rank, libraries. Professors who taught in these colleges were under the influence of Descartes ideas, so they were mainly concerned by natural sciences while confessional tendencies became weaker.

During the 18th century, a century dominated by Linnee's ideas – the information contained in Agricola's works was used with practical purpose.Several works about terretorial mineralogy were published in Europe while mining and new technics developped. In Transylvania, «opus Agricolae» stimulated the appearance of the first autochtonous books about mining and minerals.

At the end of the 17th century, after the Karlowitz Peace (1699) Transylvania was included in the Habsburg Empire; in 1765 it became Great Principality, repressenting a real «Eldorado» of mining resources (precious stones, rare metals) for Vienna. The imperial administration was concerned with new modern technics preparing specialists for geological prospections[30] while at universities mineralogy and mining law were taught.

The counsellor and general inspector of mines, Samuel Köleséri (1663–1732) wrote «Auraria Romano-Dacica», Cibinii, Typis publicis, 1717, 243p., and Posonii et Cassoviae, 1780, dealing with gold mining in Transylvania from the Roman period till the Austrian domination. This work prefigurates the Enlightenment from an economic and cultural point of view. In fact, its author is an intermediary of the new cultural European trends in Transylvania[31]; he was at the same time a passionate traveller[32], a major figure of 18th century Transylvanian bibliophily.

At a time when a strong Counter-Reform tendency started, Catholicism became eager to reconquer its lost position after a century of Calvinist supremacy. Thus, Cluj became the centre of Counter-Reform; the Catholic Academy of Cluj (Academia Claudiopolitana S. J.) became the centre of the tendencies of 18th century. One of the professors of this Academy Johannes Fridvalszky[33] (1730–1786) was a well known scientist at the time; among his research[34]

domains, there were the minerals in Transylvania: «Dissertatio de natura ferri et ferrariis Hungariae et Transylvaniae» ... Claudiopoli, 1766, 21 f. & «Mineralogia Magni Principatus Transilvaniae» seu metalla, semimetalla, sulphura, lapides et aquae conscripta. Claudiopoli, Typis Academicis S. J., 1767, 206 p.

Mineralogic research in Transylvania was also favoured by the efforts of the Saxons from Sibiu. Their most important representative was Johann Ehrenreich Fichtel[35] counsellor at the Vienna Court, member of the Leipzig Mines Society (1781), member of the Berlin Natural Scienes Society (1775), founder of paleonthology in Transylvania. Let us mention some of his works: «Beytrag zur Mineralgeschichte von Siebenbürgen», Theil I–II, Nürnberg 1780; «Mineralogische Aufsätze», Wien 1794; «Mineralogische Bemerkungen von den Karpathen», Theil I–II, Wien 1791 etc.

The ideology of Enlightenment agreed with the spiritual values of humanism, even increasing their significance. This is true and was proved by the humanist model of Agricola who got involved in the history of science and technics in the 18th century in Europe and in Romania.

We cannot conclude without a homage paid to Agricola, to everlasting humanist concepts in scientific culture. Therefore, this is the spiritual message of the Chemnitz scholar over the centuries.

Footnotes

1 Transilvania = Siebenbürgen; historical Romanian province. Territory between the Eastern & Western Carpathians and Western Mountains. Transilvania was an important part of Dacia before the Roman conquest; the place where the Romanian people was born.

2 Dacia – the name of the territory inhabited by Geto-Dacian population, being almost the same territory later inhabited by the Romanians.

3 Agricola, Georgius: De re metallica ... Basileae, E. König, 1657, p. 18, 225, 254, 584, 648.

4 Bochini, Varani M. A.: Agricola and Italy. Geo Journal (London), vol. 32, nr. 2, 1994, p. 151–160.

5 Hippocrates: Opera omnia ... Venetiis, in aed. Aldi et Andr. Asulani soceri, 1526, in–fol. Brunet, II, 104; Renouard, A. A.: Annali delle edizioni Aldine. Bologna, Fiammengi, 1953, p. 101–102.

6 Galenos: Opera omnia, graece ... / Ediderunt Andr. Asulanus et J. B. Opizo /. Venetiis, in aedibus Aldi et Andreae Asulani soceri, 1525, in-fol., 5 vol. The work is at the Academic Library in Cluj.

7 First edition had appeared in 1528; La Grande encyclopédie, tome I, 1885, p. 884.

8 Dumitru, Silvia: Editii frobeniene existente in fondurile Bibliotecii Centrale Universitare din Cluj-Napoca. Biblioteca si cercetarea (Cluj), III, 1979, p. 116–125.

9 The 1546 edition, Wittenberga, is identical with the Froben edition, Basel 1561. Dumitru, Silvia: Carti de stiinta in secolele XVI-XVII in bibliotecile din Cluj-Napoca. Biblioteca si invatamantul (Cluj), VII, 1983, p. 57–63.

10 Brunet, J. Ch.: Manuel du libraire et de l'amateur de livres ... Tome I, Paris, 1842, coll. 112.

11 Graesse, J. G. Th.: Trésor de livres rares et précieux. Tome I, Dresde, 1859, p. 43.

12 Teleki Library in Tg. Mures was foundet by Teleki Samuel (1739–1822), chancellor of Transylvania.

13 Allgemeine Deutsche Biographie. Bd. I, Leipzig 1875, S. 143–144.

14 Cluj-Napoca = Claudiopolis, Klausenburg, Kolozsvár. Sidonia Puiu, Index locorum, Cluj, 1984, p. 63.

15 Sibiu = Cibinium, Contra Acincum, Hermanni Villa, Hermannstadt, Nagyszeben. Sidonia Puiu, op.cit., p. 211.

16 Tg. Mures = Agropolis, Markstadt, Neumarkt am Mures, Vásárhely, Marosvásárhely. Sidonia Puiu, op.cit., p. 228.

17 Aiud = Agnetinum, Enedinum, Gross-Enyed, Strassburg, Nagyenyed. Sidonia Puiu, op.cit., p. 13.

18 Graesse considers this Paris edition as being a copy of the first edition of Officina Frobeniana, Basel, 1533. It could be a pirate edition.

19 Biblioteca Muzeului Brukenthal din Sibiu. Bucuresti 1957, 35 p. The founder of this library was Samuel Brukenthal (1721–1803); german politician, governor of Transylvania

(1777–1787).

20 Istoria Romaniei, vol.II, Bucuresti 1962, p. 559.

21 Jakó, S.: Philobiblon transilvan. Bucuresti, Edit. Kriterion, 1977, p. 94. New historiographic data consider the printing of Sibiu as the only existing in that part of Europe in 1529/30.

22 Tonk, Sándor: Erdélyiek egyetemjárása a Közepkorban. Bukarest, Edit. Kriterion, 1979. Szabo M.; Tonk, S.: Erdélyiek egyetemjárása a korai ujkorban 1521–1700. Szeged 1992. Gömöri, György: Magyar peregrinusok a 17 századi Cambridgeben. Irodalomtörténeti közlemények, 89, 1985, p. 194–202.

23 Szinnyei, J.: Magyar irók élete és munkái, I köt., Budapest 1891, col. 249.

24 Idem, col. 93–94.

25 Idem, X. köt., col. 497; Török István: A kolozsvári Ev. Ref. Kollégium története. Kolozsvár 1905, I. köt., p. 61–67.

26 The Reformed Calvin College of Aiud was founded by Gabriel Bethlen in 1622; the same year another college was founded in Cluj. Bethlen Gabriel, Prince of Transylvania

(1613–1629), reformer; his policy was one of independence from the Habsburgs and the Turks. He took part in the Thirty Years War, on the side of the Protestants.

27 The Unitarian College in Cluj was founded in 1568 when Unitarian religion became widely spreat throughout Transylvania.

28 The Reform brings the Romanians the first cult books in their national language, «The Lutheran Catechism» of 1544, Sibiu.

29 Prodan, David: Supplex Libellus Valachorum. Din istoria formarii natiunii romane. Bucuresti, Edit. stiintifica, 1984, p. 102.

30 Neamtu, al.: Tehnica miniera din Transilvania in secolul XVIII. Anuarul Institutului de

Istorie si Arheologie din Cluj, XIV, 1971, p. 81–104. Neamtu, Al.: Premize pentru o istorie a stiintei si tehnicii românesti. In: Omagiu acad. Stefan Pascu. Cluj, 1974, p. 569–576.

31 Jakó, S.: Beiträge zu der Beziehung des Rumänischen kulturellen Lebens mit den Deutschen zur Aufklärung. Revue Roumaine d' Histoire, 1969, p. 673–686.

32 Jakó, S.: Legaturile bibliofile si stiintifice cu Tara Româneasca ale lui Köleséri Samuel. In: Philobiblon transilvan. Buc., Edit. Kriterion, 1977, p. 227–236. Köleséri studied and travelled to Leyden, Franeker, England (Cambridge). He also had cultural and scientific relations with Wallachia (the princes Constantin Brancoveanu and Nicolae Mavrocordat).

33 Csetri, Elek: Fridválsky János, a természettudományok hazai úttöröje. Korunk, 1965, p. 1521–1526. Szinnyei, J., op.cit., III. köt., col. 759–760.

34 Fridvalszky made also botanical, agronomical and epigraphical researches.

35 Allgemeine Deutsche Biographie. Bd. VI, S. 771.