

Contents

Acknowledgments	XI
List of Figures	XII
List of Tables	XX
Abbreviations	XXI
Introduction	1
1 Settlement Patterns and the Medieval Bohemian-Moravian Highlands	5
1.1 Early Medieval Prelude: Deforestation in the 10th and 11th Centuries	5
1.2 Colonisation of the Central Bohemian-Moravian Highlands in the 12th and 13th Centuries	6
2 Gold and Silver in the Heart of the Kingdom of Bohemia	8
2.1 Gold	8
2.2 On the Metallogenesis of Silver Ore Deposits	8
2.3 Silver, Lead or, More Accurately, Non-ferrous Metals?	9
3 Silver and Non-ferrous Metals Exploitation in Europe up to the 13th Century	11
3.1 The Oldest Documented Production of Silver and Non-ferrous Metals up to the Year 1000	11
3.2 Non-European Sources of Silver up to the Year 1000	12
3.3 The 11th Century: Mining Centres within and outside the Former Roman-Provincial Space	13
3.4 The 12th Century: Increasing Production in the Old Districts and the Mass Opening of New Deposits	13
4 Non-ferrous Metallurgy in the Přemyslid Domain until the 13th century	17
4.1 Non-ferrous Metallurgy in Early Medieval Central Settlements and Hillforts	17
4.2 Lead	17
4.3 Non-ferrous Metals on the Territory of the Přemyslids to the Very Beginning of Silver Mining	18
5 Periodisation of Medieval Exploitation of Precious Metals until the Accession of the Luxembourgers (1310)	20
5.1 The Obscure Origins of Silver Mining and the Question of the <i>Argentaria super Mzea</i>	20
5.2 Placer Mining of Gold in the 12th and Early 13th Century	21
5.3 Indications of Silver Mining in the 1230s and 1240s	21

5.4	<i>Ingentes divicias ex auri et argenti fodinis: Ore Mountains or Bohemian-Moravian Highlands?</i>	23
5.5	Changes in the Second Half of the Reign of Ottokar II and the Central Ore Mountains	24
5.6	The So-called “Bad Years” and the Question of the Beginnings of Ore Mining in Kutná Hora	25
5.7	From the End of the 13th Century to the Reign of John the Blind	26
6	Gold Exploitation: a Prelude to Silver Mining	27
6.1	Medieval Gold Exploitation until the 13th Century	27
6.2	Presumably Medieval Remains of Gold Exploitation Near Humpolec	27
6.3	Medieval Gold Placer at Česká Bělá	27
6.4	The Gold Placer on the Pstružný Stream Near Kejžlice?	28
6.5	The Gold Placer on the Perlový Stream Near Květinov	28
6.6	Brtnice and Horský Streams: Placer Mining and Gold Ore Mill	28
6.7	Gold as Part of the <i>Regalia</i>	29
6.8	The Significance of Gold Exploitation	29
7	Exploitation and Smelting of Iron Ores vs. Silver Mining	31
7.1	Diverse but Imbalanced Research in Europe	31
7.2	General Features of the Iron Production Transformations in Medieval Bohemia	32
7.3	North-West Bohemia: from Lowlands up to the Mountains	32
7.4	Iron Ores and smelters on Bohemian-Moravian Highlands	33
7.5	Summarising the Methods and Organisation of Work on the Eve of the “Silver Rush”	34
8	Organisation of Silver and Mint Production in the Late Přemyslid Period	36
8.1	A Little about Trade, Economy and Coinage at the Beginning of the 13th Century	36
8.2	Oldest Mining Regulations in Medieval Europe	36
8.3	Legal Principles in Czech Lands: Minting, Royal Prerogative and Royalty, Tithes from Mines	37
8.4	<i>Magistri Monetae or Monetarii</i>	38
8.5	<i>Urburarii</i>	39
9	General Characteristics of Mining Areas	41
9.1	Medieval Mines in Documents	41
9.2	The Ideal Concept of Silver Mines in the 13th Century According to Documents	41
9.3	Examples of Excavated or Archaeologically Prospected and Surveyed Mining Sites	42
9.4	Mining Sites and Their Spatial Relationship to Towns	45

10	Remains of Mining and Placer-Mining	46
10.1	Formation of Shafts and Heaps in the Landscape Relief	46
10.2	Ore Exploitation and Prospecting	46
10.3	Placer and Gold Soft-Mining	46
10.4	Underground Mining	47
10.5	Poor Knowledge of Czech Mining Archaeology about Underground Mines of the Middle Ages	48
10.6	Recognition of Historical Mine Measurements in Spatial Shaft Formations?	48
10.7	Mining Tools	49
11	Primary Ore Processing	51
11.1	Remains of Processing Facilities and Related Water Management Workings in the Landscape	51
11.2	Ore Crushing and Sorting	51
11.3	Hydraulic Ore Mills and Water Wheels in the 13th Century	52
11.4	Grinding Stones: the Core of the Ore Mills	57
11.5	Ore Washing and Gravity Separation	58
12	Evidence of Metallurgy of Silver-Bearing Ores	61
12.1	Smelting Places	61
12.2	Evidence of Silver-Bearing Polymetallic Ore Metallurgy	63
12.3	Real Archaeological Evidence of Metallurgical Installations	64
13	Scorification, Cupellation and Assaying	70
13.1	Lead: Pigs and Ingots	70
13.2	Litharge Cakes: Cupellation or Assaying?	71
13.3	Metallurgical Ceramics	72
13.4	Metallurgy of Common Non-ferrous Metals	73
13.5	Scales and Weights	73
13.6	Touchstones at Medieval Mining and Metallurgical Sites	74
14	Status of Smelters in the Kingdom of Bohemia before <i>Ius regale montanorum</i>?	75
14.1	Nothing but Hypotheses	75
14.2	The Royal Charter of January 12th, 1270, for Jihlava	75
14.3	The Birth of the Great Mining District of the Royal Town of Jihlava?	77
15	Problematic Evidence on the Product of Silver Mines and Smelters	78
15.1	Numismatics, Archaeologists and Historians Did Not Speak in Unison about Hacksilver	78
15.2	Marks of Silver in the Documents of 11th to 13th Centuries	79
15.3	Weighted Marks of Silver Based on the Bohemian or Prague Pound in Charters	80

15.4	Weighted Silver Means Scales and Weights, but ...	80
15.5	<i>Examinatum</i> and <i>Purum Argentum</i> in Transactions of the 12th and 13th Centuries	81
15.6	<i>Examinatum</i> and <i>Purum Argentum</i> as a Technological Category	82
15.7	Interpretation of References to Payments According to Written Sources	82
15.8	Summary	83
16	The Question of Forges and Blacksmiths at the Mines	86
16.1	Blacksmiths at the Mines in the <i>Ius regale montanorum</i> of 1300	86
16.2	How to Recognise Them	86
16.3	Excavations of Forges and Hearths	87
16.4	The Question of Fuels	88
17	Mining Settlements	90
17.1	The Phenomenon of Settlements of Medieval Mining and Metallurgical Communities	90
17.2	Mines with Settlements According to Surveys and Deeds: the Case of Havlíčkův Brod Ore District	90
17.3	Mining Settlements According to Non-destructive Surveys: the Vyskytná Site	91
17.4	Small Castles or Keeps as an Integral Part of the Mining Areas	92
17.5	Building Structures in the 13th-Century-Mining Settlement Areas	92
17.6	Digest of Material World of Medieval Mining Communities	97
18	The Communal and Spatial Infrastructure of Mining Settlements	102
18.1	Mining Settlements in 13th- and 14th-Century Documents: Ideal Model and Reality	102
18.2	Enclosed Mining Areas: Fortifications or Symbolic Statutory Boundaries?	102
18.3	Social Status of the Inhabitants of Mining Settlements According to Written Documents	103
18.4	Spiritual Governance of Mining Settlements and the Establishment of Churches or Chapels	104
19	Subsistence, Provisioning, Economy, and the Market in Mining Communities	106
19.1	The Topic of Historical Evidence Concerning Subsistence and Provisioning	106
19.2	Cereals: the Archaeological and Archaeobotanical Evidence	106

19.3	The Mining Settlement Inhabitants Were Not Growers but Exclusive Consumers	107
19.4	Medieval Mining Settlements and Archaeozoology	108
19.5	The Presence of Animals and the Topic of On-Site Animal Husbandry	109
19.6	Time of Life and Transformations of Mining Settlements: Almost Insoluble Questions	109
19.7	Burghers as the Holders of Mining Concessions, Offices, and Agricultural Land around the Mines	110
20	Impact of Ore Mining on the Landscape and Environment	111
20.1	General Remarks	111
20.2	Considerations on the Forest Transformations in the Highlands	111
20.3	Transformations of Vegetation in Alluvial Records from the Vicinity of Mining Sites	112
20.4	Local Heavy Metals Toxicity in the Alluvia	112
20.5	Stream and River Water as a Flotation Medium and Energy Source	113
20.6	When the Forests Had to Give Way to the Miners	114
	Conclusion	116
	Bibliography	119
	Index of Persons	151
	Index of Sites	153
	Illustrations	158