

Contents

1.	Preface	1
2.	Introduction	4
3.	Transdanubian Mid-Mountains	10
3.1	Stratigraphy	10
3.1.1	The Palaeozoic structure along Lakes Balaton and Velence	11
3.1.1.1	The pre-Permian sequence	11
3.1.1.2	The Permian sequence in the Balaton Upland	20
3.1.2	The Mesozoic of the Transdanubian Mid-Mountains	22
3.1.2.1	Triassic sequences	22
3.1.2.2	Jurassic sequences	47
3.1.2.3	Cretaceous sequences	60
3.2	Tectonics of Transdanubicum	75
3.2.1	Bakony Mountain	75
3.2.2	Vértes Mountain	82
3.2.3	Gerecse Mountain	83
3.2.4	Pilis Range and Buda Hills	84
3.2.5	The nappe issue in the Transdanubian Mid-Mountains	87
3.2.6	The role of lateral movements	90
3.2.7	Fault structures along the SE margin of the Mid-Mountains	94
3.2.8	Summary of tectonic events in Transdanubicum	95
4.	Igal Unit	97
4.1	Stratigraphy	97
4.2	Tectonics	99
5.	Alpine Unit	100
5.1	The Penninic windows	100
5.2	Lower Austroalpine in the Sopron Hills	105
5.3	Graz-type Palaeozoic in the basement of the Little Plain	108
5.4	Tectonic problems in the Alpine units	109
6.	Vepor Unit	112
7.	The NE-Hungarian Mountains	114
7.1	Stratigraphy in the Bükk Unit	114
7.1.1	Palaeozoic	114
7.1.1.1	Széndrő Hills	116
7.1.1.2	Uppony Range	118

7.1.3	Palaeozoic of the Bükk Mountain	122
7.1.2	Mesozoic of the Bükk Mountain	129
7.1.2.1	Triassic of the Parautochthonous	129
7.1.2.2	Triassic of the Kisfennsík Nappe	134
7.1.2.3	Jurassic of the Bükk Mountain	134
7.1.2.4	Senonian in the Uppony Range	136
7.2	Stratigraphy in der Rudabánya Range and Aggtelek Karst	137
7.2.1	Summary of the stratigraphic sequence	138
7.2.2	Detailed remarks on the formations	140
7.2.3	Palaeogeographical reconstructions	150
7.3	Tectonics in the Bükk-Gemerides realm	156
7.3.1	General considerations	156
7.3.2	Nappe stacking in the Bükk Mtn. and Southern Gemerides	160
7.3.3	Interior tectonics of the NE-Hungarian mountain units	166
7.3.4	Tertiary tectonic movements	168
8.	Tisia (Tisza) Unit	170
8.1	Stratigraphy	170
8.1.1	Polymetamorphic Crystalline Complex	171
8.1.2	Békés Unit	178
8.1.3	Mecsek Unit	181
8.1.3.1	Palaeozoic	183
8.1.3.2	Mesozoic	186
8.1.3.3	Sequences in the Great Plain basement	199
8.1.4	Villány Unit	199
8.1.4.1	Villány Range	200
8.1.4.2	Great Plain	204
8.1.5	Zemplén Unit	206
8.1.6	The Flysch Trough	207
8.2	Palaeogeographical relationships of Tisia	209
8.3	Tectonics of Tisia	214
8.3.1	Pre-Alpine metamorphism and tectonics	214
8.3.2	Alpidic metamorphism and tectonics	215
8.3.2.1	Mecsek Mountain	216
8.3.2.2	Villány Range	221
8.3.2.3	The Tisia microplate in the basement of the Great Plain	221
8.3.3	Metamorphism in the Zemplén Unit	223
9.	The Cenozoic in Hungary	224
9.1	Stratigraphy of the Tertiary	224
9.1.1	Palaeogene	225
9.1.1.1	The Eocene of Transdanubicum	226
9.1.1.1.1	Bakony and Vértes Mountains and Zala Basin	226
9.1.1.1.2	NE-Transdanubia	232
9.1.1.1.3	Fauna and flora of the Eocene	237
9.1.1.2	Oligocene sequences	241
9.1.2	Neogene	249
9.1.2.1	The pre-Pannonian Miocene	252

9.1.2.1.1	Eggenburgian	252
9.1.2.1.2	Ottnangian	256
9.1.2.1.3	Karpatian	256
9.1.2.1.4	Badenian	260
9.1.2.1.5	Sarmatian	264
9.1.2.2	Pannonian	267
9.1.2.2.1	Great Hungarian Plain	270
9.1.2.2.2	Transdanubian Basins	275
9.1.2.2.3	Peripherial and intramontane basins	276
9.1.2.2.4	Fauna and flora of the Pannonian	279
9.2	The Quaternary	283
9.2.1	Great Hungarian Plain	286
9.2.2	Little Hungarian Plain	295
9.2.3	Western and Southern Transdanubia	296
9.2.4	The Lake Balaton	296
9.2.5	Quaternary sediments in the mountains and along their fringes	297
9.2.6	Fauna and flora of the Quaternary	303
10.	Tectonics of the basin areas	310
10.1	Palaeogene basins	310
10.2	Neogene basins	312
11.	Magmatism	322
11.1	Events prior to the Variscan Orogeny	322
11.2	Acidic plutonism and volcanism of the Variscan cycle	323
11.3	Basic-intermediate volcanism during the Triassic	323
11.4	Ophiolitic magmatites in NE-Hungary	324
11.5	Basic-alkaline volcanism on Tisia during the Cretaceous	327
11.6	Cretaceous subvolcanic rocks in the TMM	328
11.7	The ophiolitic suites of the Alpine Unit	328
11.8	The andesite volcanism of the Eocene	329
11.9	The acidic-intermediate volcanism of the Miocene	330
11.9.1	Course of events and genesis of the magma	330
11.9.2	The individual members of the volcanic mountain chain	333
11.10	The basalt-volcanism of the Pannonian	340
12.	General outline of tectonic events and palinspastic reconstructions	344
12.1	Summary of the course of tectonic events	344
12.1.1	Pre-Variscan events	344
12.1.2	Variscan events	345
12.1.3	Alpidic development	345
12.2	Geotectonical conceptions	347
12.2.1	Introduction and historical overview	347
12.2.2	The origin of the microplates	350
12.2.3	Palaeomagnetic data and plate rotations	354
12.2.4	Geodynamics of plate movements	357
12.2.5	Extension and subsidence process during the Neogene	370
12.3	Neotectonics and heat flow	375
13.	Natural resources	378

13.1	Ores	379
13.1.1	Nonferrous metals	379
13.1.2	Iron-manganese-titanium ores	382
13.1.3	Uranium	383
13.1.4	Bauxite	385
13.2	Sources of energy	391
13.2.1	Crude oil and gas	391
13.2.2	Coal	397
13.2.2.1	Black coal	397
13.2.2.2	Brown coal	398
13.2.3	Geothermal energy and thermal water	401
13.3	Nonmetallic raw materials	404
	Literature References	407
	Geographical Names	447
	Stratigraphical names and major tectonic units and structures	455
	Appendix	463