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Lizards (Reptilia:Sauria) from the Lower Miocene locality Dolnice (Bohemia, Czechoslovakia)

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ABSTRACT

An account of the forms belonging to Sauria, that were found at the Lower Miocene (Ottnangian) locality Dolnice (West Bohemia, Czechoslovakia) is given in the present paper. Fossil material from this locality is mostly represented by disarticulated bones, mainly those bearing teeth. Only rarely additional skeletal elements have been found. The nature of the material influenced the possibility of its determination. Nevertheless, the material yielded further informations on *Chamaeleo caroliquarti* Moody and Roček 1980, and confirmed the presence of representatives of the family *Cordylidae* not only in the Palaeogene, but also in the Neogene of Europe (new genus and species *Palaeocordylus bohemicus* is described, and the findings from the Eocene of Geiseltal and the Oligocene of Quercy are discussed). As for the family *Lacertidae*, the presence of the genus *Lacerta* was ascertained, and new genera and species, viz. *Amblyolacerta dolnicensis* and *Miolacerta tenuis* are described. The fossil material available suggests that the Dolnice herpetofauna comprised a comparatively large number of species belonging to the family *Anguidae*. However, both uniform dentition and morphology of the tooth bearing bones allow only approximative assignment to the genera *Ophisaurus* and *Pseudopus*. Also the assignment of some part of the material to *Ophisaurus spinari* is considered tentative only. Rather surprising is the ascertainment of the forms belonging to the genus *Xestops* which is the first record of this genus from the Miocene. Moreover, also one species belonging to the family *Amphisbaenidae* (*Omoiotyphlops gracilis* n. sp.) was found in Dolnice, which is the first finding of the amphisbaenid material in the European Tertiary, comprising next to vertebrae also other skeletal elements. Concluding are remarks on the relations of the Dolnice herpetofauna with those from other regions of the European Tertiary.

Following is the list of ascertained Dolnice herpetofauna: *Chamaeleo caroliquarti* Moody and Roček, 1980; *Palaeocordylus bohemicus* gen. et sp. nov.; *Lacerta* sp.; *Miolacerta tenuis* gen. et sp. nov.; *Amblyolacerta dolnicensis* gen. et sp. nov.; one form of *Lacertidae* belonging to an uncertain genus; *Ophisaurus* cf. *spinari* Klembara, 1979; two different forms belonging to the genus *Ophisaurus*; one form belonging to the genus *Pseudopus*; one form which can be considered closely related to the genus *Xestops;* two different forms of *Anguidae* belonging to an uncertain subfamily; one form with close morphological relations with *Scincidae*; *Omoiotyphlops gracilis* sp. nov.; three forms belonging to an uncertain infraorder.

INTRODUCTION

The material described in this paper was found in the locality Dolniec (Ottnangian) near the town Cheb (West Bohemia, Czechoslovakia). Next to a large number of mammals (e.g. Fejfar 1972a), some birds (Švec 1980, 1981), frogs (Špinar 1978) and fishes, this locality yielded also a large quantity of material of reptiles only partly published till now (Klembara 1979, 1981; Moody and Roček 1980). The main features of this fossil material are its fragmentary nature, as the bones are mostly disarticulated and rarely complete, and also its selective nature (vertebrae and tooth bearing bones are prevailing, while frontals, parietals and pterygoids are scarce in the determinable material, and majority of other bones is completely lacking). The material of such a limited informational value is difficult to compare with the published data on the osteology of both recent and fossil species. This situation required some preparatory studies of the morphology and variation of the corresponding elements in closely related recent species (Roček 1980a, b). The list of consulted recent osteological material is given below. It belongs to the private collections of Dr. J. Klembara (CK) and Dr. V. Seichert (CS), collection of the Department of Herpetology, Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn (ZFMK), collections of the Laboratoire d'anatomie comparée (AC MNHN), Laboratoire des Reptiles et Amphibiens (LRA MNHN), and of the Institut de Paléontologie (IP MNHN), Muséum national d'Histoire naturelle, Paris, furthemore National Museum, Prague (NM P), and Department of Palaeontology, Charles University, Prague (DP FNSP). Comparative fossil material was studied in the collections of the Institut de Paléontologie, Paris, Laboratoire de paléontologie des vertébrés et de paléontologie humaine, Université Paris VI, and that of Geiseltalmuseum, Halle/Saale. For allowing me to study this material I am indebted to Dr. W. Böhme (Bonn), Dr. J. P. Gasc (Paris), Dr. H. Haubold (Halle/Saale), Dr. I. Heráň (Prague), Dr. J. Klembara (Prague), Dr. J. C. Rage (Paris), and Dr. V. Seichert (Prague). Special thanks are due to Dr. W. Böhme and Dr. J. C. Rage, who not only provided me with comparative material but who supplied me with many helpful and constructive comments on the first draft as well. I also wish to express my thanks to Dr. Ch. Klaver (Groningen) who kindly improved the English text. J. Blom, Dr. J. Krhovský, and J. Kulich took the SEM photographs.

METHODS

Considering the nature of the material, it was necessary to exploit all existing characters, taking into account both individual and ontogenetic variation in them. The relative individual age was deduced not only from absolute size, but in the case of tooth bearing bones also from the tooth position counts (which is getting higher with increasing age; see e.g. Edmund 1969, Roček 1980a, b). From this fact it also follows that the number of tooth positions is not good diagnostic character (cf. e.g. Edmund 1960, 1969; Siebenrock 1892). Another criterion of the relative age used in the present paper is the length of the tooth replacement waves (in aged specimens these waves include higher number of tooth positions and they are more irregular; Roček 1980a). In some anguids where the teeth in the posterior section of the tooth row become permanent, the degree of their abrasion was used as a criterion of the relative age. The determination of the relative age of an animal is rather important, as it allows to compare the specimens of approximately the same ontogenetic level, which enables to eliminate the negative influence of ontogenetic variation. The extent of the individual variation was studied on the large series of the closely related recent material (for instance in the case of *Lacertidae*). As this was, however, not always possible, the conclusions concerning the systematics were done with theoretical presupposition of the individual variation range.

Photographs were taken by SEM Jeol.

LIST OF CONSULTED CONTEMPORANEOUS MATERIAL

For abbreviations see Introduction. As for species belonging to the genera *Lacerta*, *Algyroides* and *Psammodromus*, proposed nomenclatoric changes by Arnold (1973) are accepted.

1. *Acanthodactylus boskianus* - DP FNSP 6511
2. *A. erythrurus* - ZFMK uncatalogued
3. *A. scutellatus* - DP FNSP 6485
4. *Acontias meleagris meleagris* - LRA MNHN Sc 2
5. *Algyroides nigropunctatus* - DP FNSP 6488
6. *A. fitzingeri* - AC MNHN 1922–73; 1912–474; 1912–473
7. *Ameiva ameiva* - DP FNSP 6510; ZFMK 21640; 21641
8. *A. plei* - LRA MNHN Te 1
9. *A. surinamensis* - LRA MNHN Te 2
10. *A. undulata* - LRA MNHN Te 3
11. *Amphisbaena alba* - LRA MNHN Am 1; Am 2; Am 3; Am 6; AC MNHN 1883–1845; 1 specimen without coll. number
12. *A. darwini* - LRA MNHN Am 4
13. *Anguis fragilis* - AC MNHN 1930–126; IP MNHN DP 22; NMP 23141; CK (4 specimens without coll. number); CS (1 specimen without coll. number); AC MNHN 1965–148; 1888–143; 1888–183; 1966–192; 1920–98
14. *Blanus cinereus* AC MNHN (1 specimen without coll. number); ZFMK uncatalogued
15. *B. strauchi* - ZFMK 26573
16. *Chalcides tridactylus* - AC MNHN 1888–127
17. *C. linneatus* - AC MNHN 1938–112
18. *C. ocellatus ocellatus* - DP FNSP 6481; AC MNHN 1913–515
19. *Chamaeleo chamaeleon* - DP FNSP 6322; 6323; 6427; LRA MNHN Ch 3; Ch 4; NMP K6 16/60/5752 (4 specimens); 5738–43 (6 specimens); F7 1903 (13 specimens); 5727; 5729; 5732–37 (6 specimens); F5 1905 (13 specimens); 5717 (3 specimens); 2 specimens without coll. number
20. *C. calyptratus* - LRA MNHN Ch 1
21. *C. pumillus* - NMP 5760–5764 (10 specimens)
22. *C. senegallensis* - NMP (6 specimens without coll. number)
23. *C. verrucosus* - LRA MNHN Ch 2
24. *C. xenorhinus* - NMP 5756
25. *C. zeylanicus* - NMP (2 specimens without coll. number)
26. *Cordylus giganteus* - DP FNSP 6513; AC MNHN 1906–214; 1944–18; 1964–53; 6472
27. *C. cordylus* - AC MNHN 1869–878; IP MNHN (1 specimen without coll. number)
28. *Diploglossus fasciatus* - IP MNHN (1 specimen without coll. number)

29. *Elgaria caerulea* - LRA MNHN An 4
30. *Eremias arguta* - DP FNSP 6487
31. *E. argenta* - AC MNHN 1944—168
32. *E. guttulata* - AC MNHN 1942—32
33. *Eublepharus macularius* - DP FNSP 6492
34. *Eumeces algeriensis* - AC MNHN 1886 -343
35. *E. schneideri* - DP FNSP 6512
36. *E. inexpectatus* - CK (without coll. number)
37. *Eumeces* sp. - LRA MNHN Sc. 3; Sc 4
38. *Euprepes* sp. - LRA MNHN Sc 5
39. *Gallotia galloti* - DP FNSP 6497; ZFMK 50
40. *Gerrhonotus multicarinatus* - DP FNSP 6509; ZFMK 106; AC MNHN 1942—24
41. *G. imbricatus* - IP MNHN (1 specimen without coll. number); 1904—495; LRA MNHN An 1
42. *G. deppii* - IP MNHN (1 specimen without coll. number)
43. *G. morcleti* - LRA MNHN An 2; An 3
44. *Gerrhosaurus major* - AC MNHN 1969—26
45. *Heloderma suspectum* - AC MNHN 1966—100
46. *Lacerta cappadocica* - ZFMK (1 specimen without coll. number)
47. *L. trilineata* juv. - DP FNSP 6479
48. *L. dugesii* - DP FNSP 6494
49. *L. perscipillata* - DP FNSP 6496
50. *L. monticola* - DP FNSP 6500
51. *L. trilineata* - DP FNSP 6502
52. *L. danfordi* - DP FNSP 6490
53. *L. schreiberi* - DP FNSP 6508
54. *L. laevis* - DP FNSP 6483
55. *L. saxicola* - DP FNSP 6484
56. *L. lepida* - LRA MNHN La 3; La 2; La 1; AC MNHN 1913—106; A 5321; 1883—1884 (2 different specimens labeled with the same number); 1892—316; 1887—871; 1887—478; 1941—224; 1887—545; 1887—864; 1922—326; 1964—139; 1887—859; 1943—135; 1964—141; 1964—137; 1964—138; 1943—135; NMP 23590; 23183
57. *L. viridis* - NMP 14/60: 10; 23668; 23596; 23592; 23607; 23609; 14/60: 13; 14/60: 2; 14/60: 3; 14/60: 16; 23599; AC MNHN 1888—135; 1938—101; 1887—813; 1876—556
58. *L. agilis* - DP FNSP 6460; AC MNHN 1938—49; NMP 53657
59. *Latastia longicaudata* - DP FNSP 6491
60. *Lepidosternon* sp. - LRA MNHN Am 5
61. *Liolemus* sp. - ZFMK uncatalogued
62. *Lygosoma* sp. - AC MNHN 1883—1832
63. *Monopelthis guentheri* - AC MNHN 1942—40
64. *Ophiodes striatus* - IP MNHN (1 specimen without coll. number); AC MNHN 1943—142; 1887—893
65. *Ophisaurus attenuatus* - CK (2 specimens without coll. number)
66. *O. harti* - IP MNHN (1 specimen without coll. number)
67. *O. koellikeri* - CK (1 specimen without coll. number)
68. *O. ventralis* - AC MNHN 1887—900; IP MNHN (1 specimen without coll. number); CK (3 specimens without coll. number)
69. *Ophisops elegans* - DP FNSP 6447
70. *Platysaurus guttatus* - NMP (1 specimen without coll. number)
71. *Podarcis erhardii* - DP FNSP 6503
72. *P. hispanica* - DP FNSP 6501
73. *P. melisselensis* - DP FNSP 6504

74. *P. muralis* - DP FNSP 6495; AC MNHN (1 specimen without coll. number)
75. *P. peloponnesiaca* - DP FNSP 6506; ZFMK 710
76. *P. pityusensis* - DP FNSP 6486
77. *P. sicula* - DP FNSP 6499
78. *P. sicula cettii* - DP FNSP 6515
79. *P. taurica* - DP FNSP 6498
80. *P. tiliguerta* - DP FNSP 6482
81. *Psammodromus algirus* - DP FNSP 6489; 6505
82. *Pseudocordylus macrolepidotus* - IP MNHN (2 specimens without coll. number)
83. *Pseudopus apodus* - IP MNHN 1912 - 534; DP 397; CS (1 specimen without coll. number); DP FNSP 6448; AC MNHN 1966—101; 1883 - 1821; NMP 23583; 22069; 22070; 22071; CK (6 specimens without coll. number)
84. *Ptyodactylus hasselquisti* juv. - ZFMK 72
85. *Sceloporus magister* - ZFMK uncatalogued
86. *Scincus scincus* - AC MNHN 1891—634; 1883—1843
87. *S. officinalis* - AC MNHN 1966—296
88. *Tarentola mauritanica* - AC MNHN 1900—125; 1942—26
89. *Trachelopty chus madagascariensis* - IP MNHN (uncatalogued)
90. *Trigonophis weigmanni elegans* - DP FNSP 6480
91. *Typhlops braminus* - NMP 23585
92. *Zonosaurus laticaudatus* - ZFMK 7256
93. *Z. madagascariensis* - LRA MNHN Ge 1 (2 specimens); AC MNHN 1942—51
94. *Z. ornatus* - LRA MNHN Ge 2
95. *Z. capensis* - AC MNHN 1887—853

SYSTEMATIC PART

Order Squamata Oppel, 1811
Suborder Sauria Macartney, 1802
Infraorder Iguania Cuvier, 1817
Family Chamaeleonidae Gray, 1827
Chamaeleo caroliquarti Moody and Roček, 1980
Infraorder Scincomorpha Camp, 1923
Superfamily Cordyloidea Fitzinger, 1826
Family Cordylidae Mertens, 1937
Palaeocordylus bohemicus gen. et sp. nov.
Superfamily Lacertoidea Gill, 1886
Family Lacertidae Bonaparte, 1831
Lacerta sp.
Miolacerta tenuis gen. et sp. nov.
Amblyolacerta dolnicensis gen. et sp. nov.
Gen. indet.
Infraorder Anguimorpha Fürbringer, 1900
Superfamily Anguioidea Fitzinger, 1826
Family Anguidae Gray, 1825
Subfamily Anguinae Boulenger, 1889
Ophisaurus cf. *spinari* Klembara, 1979
Ophisaurus sp. I
Ophisaurus sp. II
Pseudopus sp.
Subfamily Glyptosaurinae Marsh, 1877
cf. *Xestops* sp.
Subfamily uncertain
Gen. indet. I
Gen indet. II
cf. Family Scincidae Gray, 1825
Infraorder Amphisbaenidae Gray, 1844
Family Amphisbaenidae Gray, 1825
Subfamily Crythiosaurinae Vanzolini, 1951

Genus *Omoiotyphlops* Rochebrune, 1884

Omoiotyphlops gracilis sp. nov.

Infraorder uncertain

Family indet. I

Family indet. II

Family indet. III

Family Chamaeleonidae Gray, 1827

Genus *Chamaeleo* Laurenti, 1768

Chamaeleo caroliquarti Moody and Roček, 1980

(Pl. I, fig. 1)

1980 — *Chamaeleo caroliquarti* sp. nov. - Moody, S., Roček, Z.: *Chamaeleo caroliquarti* etc., p. 86, fig. 1 B, Pls. I, II, III/1, 2

Material: DP FNSP 113 - section of tooth bearing bone with two teeth; DP FNSP 226 (Pl. 1, fig. 1) - almost complete right postorbital; DP FNSP 279 - section of tooth bearing bone with two teeth; DP FNSP 512 - posterior section of tooth bearing bone with three teeth; DP FNSP 3867 - section of tooth bearing bone with two teeth; DP FNSP 3869 - posterior section of tooth bearing bone with two teeth; DP FNSP 4316 - section of right maxilla with four teeth.

Description:* The tooth bearing bones correspond to those described by Moody and Roček (1980). The bone forming the posterodorsal margin of the orbit and termed generally postorbital (Romer 1956: 123) is nearly complete. The dorsal outer surface of the bone is smooth, and its lateral margin bears tubercles which only dorsal to the orbit are arranged into the row. This row bordering orbit continues onto the lateral outer surface of the bone, slightly diverging from the orbital margin. Besides, also some other similar outgrowths occur on this part of the surface. That part of the bone surface exposed into the orbit is pierced by several larger openings and numerous smaller ones. Moreover, more or less deep grooves parallel with the orbital margin are present. The most anterior section of the bony crest borne by the posterodorsal process is preserved, although the process itself is broken away. The inner surface of the bone is smooth and concave. There is a distinct groove-like facet for the contact with the jugal.

Chamaeleo caroliquarti differs from the closest species *Chamaeleo chamaeleon* mainly by the arrangement of the tooth-like outgrowths on the outer surface of the bone, as they reach also the lateral surface, and their distribution is more irregular (see pl. I, fig. 1).

Note: Hecht and Hoffstetter (1962: 3—5) described bones bearing tricuspid teeth from the Upper Paleocene (Upper Landenian) of Belgium (Dormaal). They considered them the rests of an agamid lizard, probably *Tinosaurus*. However, the authors mentioned the important fact that the anterior caniniform pleurodont teeth are lacking in these specimens like in chameleons. According to these authors the material could not have been referred to chameleons, as the fragment of maxilla No 8737

* For terminology see text figs 1—3.

suggested that the intermaxilla had to be normally developed in this animal, while it is considerably reduced in chameleons.

Family Cordylidae Mertens, 1937

Palaeocordylus gen. nov.

(Pl. I, figs 2–5; Pl. II, III)

Derivatio nominis: palaeos - old; *Cordylus* - name of the contemporaneous species.
Species typica: *Palaeocordylus bohemicus* sp. nov.

Diagnosis: same as in type-species.

Comparison: Meckel's groove on the dentary is widely opened, as the margin of the lamina horizontalis does not extend over it (cf. *Cordylus, Pseudocordylus*), and is comparatively deep up to the anterior tip of the bone (cf. *Cordylus, Zonosaurus, Tracheloptychus*). The contacting facets on the medial surface of the crista ventralis and on the margin of the lamina horizontalis are very distinct and indicating that the splenial reached much farther anteriorly, up to the level of the nineth tooth position (cf. *Cordylus, Zonosaurus, Tracheloptychus, Pseudocordylus*). The lamina horizontalis reaches the level of the posterior margin of the most posterior tooth (cf. *Cordylus, Zonosaurus*), the sulcus dentalis being closed posteriorly by the basis of this tooth (cf. *Tracheloptychus*). The crista dentalis runs out by rather long non-toothed process posterior to the end of the tooth row (cf. *Zonosaurus, Cordylus*). In lingual aspect the basal part of the teeth within the posterior section of the tooth row is wider than that part above the crista dentalis (cf. *Cordylus, Zonosaurus, Tracheloptychus*). On the maxilla the facet for attachment of the ectopterygoid to the margin of the lamina horizontalis is situated considerably posteriorly, so its anterior margin is placed at the level of the last but one tooth position (cf. *Cordylus, Pseudocordylus*). The orifice of the canalis nervi alveolaris superioris is situated at the level of the fifth tooth position counted from behind (cf. *Pseudocordylus, Cordylus*). The posterior wall of the fenestra exonarina is flat, not concave, and passes onto the outer maxillary surface by a very indistinct and widely rounded ridge (cf. *Pseudocordylus, Zonosaurus, Cordylus*). On the outer surface of the maxilla there is a distinct depression close to the orbit (cf. *Pseudocordylus, Cordylus, Zonosaurus*). The part of the outer surface between the fenestra exonarina and the orbit is thickened and sculptured; there is a distinct boundary between this sculptured area and the smooth stripe bordering the crista dentalis (cf. *Pseudocordylus, Tracheloptychus*). Moreover, *Palaeocordylus* differs from *Tracheloptychus* by its bigger size and by the fact that only very rarely some teeth tend to be bicuspid. On the intermaxilla there is a long and slender processus nasalis (cf. *Pseudocordylus, Cordylus*), and a very thin and not constantly present bridge over the canal for the nervus alveolaris superior (cf. *Pseudo-*

cordylus, Cordylus). This canal opens by the only orifice onto the anterior surface of the bone (cf. *Pseudocordylus, Cordylus*). Both processus maxillares very distinctly project laterally (cf. *Pseudocordylus, Cordylus, Zonosaurus*). The ventral surface of the horizontal lamina of the intermaxilla along the tooth bases does not form the sulcus dentalis (cf. *Pseudocordylus, Cordylus, Zonosaurus*). There is a distinct notch on the margin of this lamina in the mid-line (cf. *Pseudocordylus, Cordylus, Zonosaurus, Tracheloptychus*). The outer surface in the area of the basis of the processus nasalis is smooth, without any depression (cf. *Pseudocordylus*).

Palaeocordylus gen. nov. differs from *Pseudolacerta* in following characters: judging by the extent of contacting facets the splenial reached up to the level of the nineth tooth position, while in *Pseudolacerta* only to the level of the thirteenth position. Meckel's groove is widely opened medially and ventrally, while in *Pseudolacerta* by the narrower slit directed ventromedially, because the margin of the lamina horizontalis partially extend over this groove. The groove in its anterior course approaches the margin of the crista ventralis where it turns dorsomedially, and reaches up to the anterior tip of the dentary. In *Pseudolacerta* this groove is terminated on the margin of the crista ventralis, without reaching the surface below the symphysis. The sulcus dentalis is distinct and deep, while in *Pseudolacerta* there is a horizontal platform instead. The rounded margin of the lamina horizontalis gradually becomes thinner posteriorwards, while in *Pseudolacerta* this is approximately of the same thickness in almost whole its course, and it abruptly becomes thin at the level of the last but one tooth position. The dentary runs out posteriorwards by the relatively long non-toothed part, while in *Pseudolacerta* the margin of the bone is situated closely behind the most posterior tooth position where it contacts the coronoid.

Palaeocordylus bohemicus sp. nov.

(Pl. I, figs 2 - 5; Pl. II, III)

Derivatio nominis: bohemicus - Czech

Locus typicus: Dolnice near Cheb, West Bohemia, Czechoslovakia

Stratum typicum: Ottnangian, Dolnice layers 1 and 2,* Lower Miocene

Holotypus: DP FNSP 97 (Pl. I, figs 2 - 5) - section of the left dentary with its most posterior part broken away, 19 tooth positions, length 14.8 mm.

Paratypi: DP FNSP 20 - anterior section of the left dentary with 11 tooth positions, length 7.6 mm; DP FNSP 57 (Pl. II, figs 1, 2) - section of the dentary with 2 teeth, length 5.1 mm; DP FNSP 71 - section of the right maxilla with 6 teeth from the medial part of the tooth row, longest diameter 6.6 mm; DP FNSP 86 - anterior section of the left maxilla with 4 teeth, length 4.8 mm; DP FNSP 100 - anterior section of the right dentary with 12 tooth positions, length 9.3 mm; DP FNSP 114 (Pl. III, figs 1 - 3) - intermaxilla with 4 teeth, right processus maxillaris broken away, length 7.4 mm; DP FNSP 119 (Pl. II, fig. 3; pl. III, fig. 5) - anterior section of the right dentary, symphysis broken away, 10 tooth positions, length 9.3 mm; DP FNSP 216 - posterior section

* Dolnice layers 1 and 2 correspond to layers 7343 and 7335 respectively (see Klembara, 1981: 123).

of the left dentary with 1 tooth in the last but one tooth position, length 10.7 mm; DP FNSP 294 (Pl. II, fig. 4) - section of the right dentary with 2 posterior-most teeth; DP FNSP 3798 - anterior section of the right dentary with 14 tooth positions, length 11.2 mm; DP FNSP 3802 - section of the left maxilla with 9 posterior-most teeth, length 10.2 mm; DP FNSP 3804 - posterior section of the left dentary with 4 teeth, the tooth in the posterior-most position is lacking, posterior part of the bone broken away, length 8.8 mm.

Material: dentaries DP FNSP 22, 49, 56, 85 (Pl. III, fig. 4), 87, 3776, 3803, 3806, 3836, 3839, 3842, 3845, 3854; maxillae DP FNSP 3796, 3805. Following specimens are referred to this form with certain doubts caused by the fragmentary nature of the material: dentaries DP FNSP 40, 92, 268, 3779, 3815, 3840, 3848, 3856, 4350; maxillae DP FNSP 126, 232, 3792; section of the tooth bearing bone DP FNSP 91.

Diagnosis: The splenial reaches anteriorly up to the level of the nineth tooth position, this being reflected also by the extent of the corresponding facet on the dentary. Meckel's groove is deep and widely opened up to its termination very close to the anterior tip of the dentary. There is a relatively long non-toothed part of the dentary posterior to the last tooth position. The anterior margin of the contacting facet for the ectopterygoid on the lamina horizontalis maxillae is situated at the level of the last but one tooth position. The margin of the fenestra exonarina is widely rounded. The processus nasalis intermaxillae is long and slender, and both processus maxillares intermaxillae are projecting far laterally. A distinct median notch on the margin of the lamina horizontalis intermaxillae is present.

Description: Dentary - Lamina horizontalis is rather robust with rounded margin, and it gradually becomes thiner towards posterior. At the level of the most posterior three tooth positions it is very thin, with the facet for the splenial situated on its ventral surface. It is abruptly terminated at the level of the posterior margin of the most posterior tooth. Farther posteriorly the medial surface of the mandible is already formed by the splenial. In the extent of the posterior tooth positions this lamina gives out ventrally very thin ventrally directed partition which separates the area of the attachment of the splenial from the dorsal part of Meckel's groove. The ventral surface of this lamina forms the roof of Meckel's groove and is approximately flat or slightly vaulted in medio-lateral direction, posterior to the level of the eighth position; thus it forms approximately right angle with the outer wall of the dentary. In several specimens the lower margin of the dentary can be slightly turned medially, as well as the margin of the lamina horizontalis ventrally; consequently Meckel's groove opens by a wide slit medioventrally. Because the course of Meckel's groove is straight while dentary is bent mediodorsally in its anterior section, the former approaches closely the lower margin of the dentary at the level of 5—6th tooth positions (Pl. I, fig. 2). Here it turns abruptly mediodorsally and terminates close to the swollen margin of the bone which takes part in forming the symphysis. From the level of 8—9 th tooth position posteriorly there is a well defined facet for the splenial on the medioventral margin of the lamina horizontalis, which tends to be deeper and wider posteriorwards. From the same level towards posterior there is also similar facet for the splenial on the medial surface of the crista ventralis. This also gradually becomes wider posteriorly. The area between lower margins of the tooth

bases and the margin of the lamina horizontalis is narrow but distinctly depressed, so that well developed sulcus dentalis is formed (Pl. II, fig. 3). It runs up to the last but one tooth position and is closed on its end by the base of the most posterior tooth.

On the outer surface of the dentary there is a row of foramina pro rami alveolarium inferiorum reaching the count of 7. Anteriorly this row turns below the symphysis. Accidentaly also other openings may occur either of the same size or even larger. Mentioned row of the openings is situated approximately in the half distance between the crista dentalis and crista ventralis (if viewed dentary in lateral aspect, not in the ventrolateral one), farther posteriorly it rather approaches the crista dentalis. The crista dentalis itself is mostly straight, sometimes however it can be distorted by a sag in an extent of several tooth positions. In such a case also tooth row is correspondingly folded. The crista dentalis continues behind the posterior tooth position though only as a gradually lowering ridge. At the level of the last tooth position and posterior to it the crista can be rather declined laterally which is responsible for the shallow depression on the outer surface of the dentary.

Maxilla - There is the sulcus dentalis similar to that on the dentary. It reaches the level of the posterior margin of the most posterior tooth. The rounded margin of the horizontal lamina passes posteriorly by the oblique and rather sharp edge at the level of the last but one tooth position into the facet for the attachment of the ectopterygoid. The foramen for the entering of the nervus alveolaris superior is at the level of the fifth tooth position from behind. Between the crista dentalis and the orbital margin there is a distinct depression on the outer surface of the bone. This depression becomes gradually more shallow anteriorly, however, it is well distinguishable even at the level of the middle of the tooth row. This area of the outer maxillar surface is comparatively smooth, and it is pierced only by a row of foramina pro rami nervorum alveolarium superiorum running parallel with the crista dentalis up to the margin of the fenestra exonarina. This smooth marginal stripe dorsally passes abruptly into the thickened and sculptured part of the surface. The outer surface of the maxilla passes into the posterior wall of the fenestra exonarina only by an indistinct and widely rounded ridge. This posterior wall of the fenestra exonarina is pierced by an opening.

Intermaxilla (Pl. III, figs 1—3) - The processus nasalis is conspicuously long and slender. The ratio of the length of the processus maxillaris (measured from the most lateral tip of the bone to the section of the mid-line with the anterior margin of the bone) to the length of the processus nasalis (measured between the most anterior and the most posterior tips of the bone in the mid-line) is at least 2.5 (the intermaxillar index). There is a distinct triangular facet for attachment of the maxilla, with its apex reaching the base of the processus nasalis, on the dorsal surface of the processus maxillaris. Close to the base of the processus nasalis there is also posteriorly directed opening for the nervus alveolaris superior which after passing through very short canal runs out by a single orifice onto the anterior surface of the bone. In dorsal aspect both openings are separated only by a very tiny bridge which can even lack in some specimens, so that only a deep and narrow notch is present (Pl. III, fig. 1).

The mentioned bridge is a section of the lateral margin of the processus nasalis, and laterally it passes into the anterior margin of the described facet for the maxilla. Most of the lateral margin of the processus nasalis is occupied by a narrow and long facet for the attachment of the nasal. In the area of the anterior end of this facet the lateral margin of the processus nasalis runs out by an indistinct outgrowth. There is a narrow slit on the outer surface of the processus nasalis in some specimens, however, not in the extent of the whole length of this process. Except of this, the outer surface of the bone is smooth. There is a narrow and rounded median ridge on the inner surface of the processus nasalis, which becomes broader in the direction to the base of the processus, and separates here the orifices of both canales pro nervi alveolares superiores. A small ridge bordering the facet for attachment of the nasal, and indicating the course of the inner surface of this bone, joins the mentioned median ridge obliquely. Furthermore, a broad horizontal lamina occurs on the inner surface of the intermaxilla (the palatine portion of praemaxilla sensu Jollie 1960: 26), similar to that in the maxilla. Laterally its dorsal surface passes by an edge into the triangular facet for attachment of the maxilla, and its free posterior margin is interrupted by a notch in the mid-line. The margin of this notch is turned ventrally. The other parts of the ventral surface of this horizontal lamina is flat, not forming the sulcus dentalis. The part of the bone bearing the teeth is similar to those in maxilla and dentary.

Dentition - Teeth are pleurodont, robust, close each other (the average distance between them is approximately one half of the tooth diameter at the level of the crista dentalis; Pl. I, fig. 5). The tooth base is more or less swollen lingually, ventral to the level of the crista dentalis (Pl. I, fig. 4; pl. II, figs 2, 3). The tooth crown is blunt (rarely slightly tricuspid in posterior teeth; see e.g. DP FNSP 3806), with mostly distinct radial striation on the lingual surface (Pl. III, fig. 5), that reaches ventrally the level of the crista dentalis. This striated area is both anteriorly and posteriorly bordered by oblique ridges which begin indistinctly below the tip of the tooth on the anterolabial and posterolabial parts of the tooth surface, and run down onto the anterolingual and posterolingual parts of the surface without joining one another on the lingual surface (Pl. II, fig. 1). If the striation is well developed it can be present in lesser extent also on the labial surface (Pl. II, fig. 4). In some specimens some teeth (esp. those belonging to the anterior section of the tooth row; see DP FNSP 20) can be slightly bicuspid. The teeth overtop the crista dentalis only by 1/4—1/6 of the height of the dentary at the level of the twelveth tooth position (if viewed in the lateral aspect). In the inner aspect the whole tooth height represents approximately the half distance between the crista dentalis and crista ventralis at the level of the twelveth position. The teeth of the posterior section of the tooth row are low, very robust, with widely blunt crowns. They can be close of each other, and are of irregular size. In other specimens the posterior teeth are very low, blunt, only very slightly overtoping the crista dentalis, and not arranged into one row (Pl. II, fig. 4). The tooth replacement is in the typical lacertid method, with the waves of replacement affecting even and odd positions separately. The walls of teeth are rather thick, consequently the tooth cavity is restricted. The intermaxilla bears the odd number of teeth (the

odd tooth standing in the mid-line). In the investigated specimens the total count of the intermaxillary teeth was 9.

The dentary DP FNSP 3799 represents the morphotype which basically is conform with that of *Palaeocordylus bohemicus* except for the fact that the lower surface of the horizontal lamina runs out by a thin, ventrally directed wall, and that the crista ventralis is turned medially. Consequently Meckel's groove is almost closed and is opened only by a narrow slit directed ventrally in the mid-section of the dentary. The outer surface of these structures partially closing Meckel's groove is arranged in the single plain which serves as the contacting surface for the attachment of the splenial. Teeth are close one another, only slightly overtoping the crista dentalis. It is impossible to decide on the basis of such a material limited in number whether an independent form is concerned or only an extreme variant of *Palaeocordylus bohemicus*.

Fragment of maxilla DP FNSP 4318 displays also some undoubtedly cordylid characters, its identity with *Palaeocordylus bohemicus* being rather uncertain too.

Discussion: Filhol (1877: 489) described two forms from the phosphorites of Quercy (France) which he referred to the genus *Lacerta*. The first of them was *Lacerta mucronata* (op. cit.: 489, fig. 424*). Filhol referred to this form numerous mandibulae found in the locality Lamandine-Haute. Among the diagnostic characters he mentined (p. 489): »... les premières dents antérieures sont très-fortes, isolées et divergentes. La première est portée directement en avant et separée des suivantes par un espace libre. En arrière de cette sorte de barre viennent deux autres dents également isolées, dont le sommet est dirigé en haut et en arrière. Un espace d'un millimètre les sépare du reste de la série dentaire, qui comprend onze dents. L'une d'entre elles est brisée sur l'echantillon que je décris. L'obliquité postérieure des dents est d'autant moindre que l'on se rapproche davantage de l'extrémité du bord alvéolaire. Les derniers organites sont verticaux«. Also another form from the same locality, *Lacerta lamandini*, was described by Filhol (1877: 489—490; fig. 421**). He mentioned in the description that as for the morphology of its dentary and the nature of the dentition it is very close to the contemporaneous *Lacerta ocellata* (= *L. lepida*) from which, however, it differs (op. cit.: 489—490): »Mais les dernières dents sont fort différentes et ne me paraissent pas permettre ce rapprochement (with *L. lepida*, Z. R.). Sur le fossile on voit que les derniers organites sont très-forts, très-développés, tandis que ce sont ceux qui constituent la partion médiane de la série dentaire qui le sont plus sur le Lacerta ocellata. Les dernières dents du Lacerta Lamandini ont en elles quelque chose qui rappelle un peu les caractères des dents moyennes des Plestiodon. Je

* It is necessary to point out that in Filhol's paper there are many inacurracies and mistakes. In the text dealing with the description of *Lacerta mucronata* on p. 489 it is stated that the picture of this species is on fig. 423. However, in the figure explanations on p. 558 it is stated that fig. 423 represents »*Lacerta ocellata*, contemporaneous species«. Most probably the holotype described by Filhol is depicted in fig. 424.

** Although in the list of figures on p. 558 the explanation to fig. 421 is lacking, the designation is correct in this case which is possible to ascertain on the basis of comparison with the holotype IP MNHN 1903—20.

considérerai comme un individu jeune, ou une varété provenant de cette espèce . . .«. Hoffstetter suggested (1942b: 239) that the specimen figured by Kuhn (1940, pl. X/3) under the name *Proiguana europaeana* is most probably conspecific with *Lacerta mucronata*. De Stefano (1903: 413) created the completely independent genus *Pseudolacerta* on the basis of the material considered *Lacerta mucronata* by Filhol. Hoffstetter (1942b: 239), after having studied the material of *Lacerta mucronata* from Filhol's collection (the holotype was lost in the meantime), and of the holotype of *Lacerta lamandini* (IP MNHN 1903—20) stated that both forms are identical in numerous characters, while they differ in the same characters from the genus *Lacerta* (p. 239): »... un bord inférieur presque rectiligne, et non largement arqué comme celui de Lacerta. Le sulcus Meckeli, visible sur la face interne est très étroit et ses bords sont presque contigus. Le splénial est peu développé vers l'avant«. These facts led Hoffstetter to the conclusion that both *L. mucronata* Filhol and *L. lamandini* Filhol are conspecific. Moreover, on the basis of the differences against *Lacerta* he referred this form to the genus *Pseudolacerta* De Stefano, as a species *Pseudolacerta lamandini*. He also was the first who suggested (op. cit.: 240) that *Pseudolacerta* has much closer relations to the family Zonuridae (= Cordylidae) than to Lacertidae. It concerns not only characters on the mandible but also those on vertebrae. To outline rather complicated history, the synonymy of *Pseudolacerta lamandini* (Filhol, 1877) is given below:

1877 — *Lacerta mucronata*, Nob. - Filhol, H., Recherches sur les Phosphorites du Quercy, p. 489, fig. 424

1877 — *Lacerta Lamandini*, Nob. - Filhol, H., Recherches sur les Phosphorites du Quercy, pp. 489—490, fig. 421

1888 — *Lacerta lamandini*, Filhol. - Lydekker, R., Catalogue of the fossil Reptilia etc., p. 287

1893 — *L. mucronata* Filhol - Zittel, K. A., Traité de Paléontologie, p. 600

1893 — *L. Lamandini* Filhol - Zittel, K. A., Traité de Paléontologie, p. 600

1903 — *Lacerta Lamandini* Filhol. - De Stefano, G., I Sauri del Quercy etc., pp. 412—413

1903 — *Pseudolacerta mucronata* Filhol sp. - De Stefano, G., I Sauri del Quercy etc., pp. 413—414

1940 — ? *Proiguana europaeana* Filh. - Kuhn, O., Die Placosauriden und Anguiden aus dem mittleren Eozän des Geiseltales, pl. X/3

1942 — *Pseudolacerta lamandini* (H. Filhol 1877) - Hoffstetter, R., Sur les restes de Sauria du Nummulitique européen etc., p. 239

1970 — *Pseudolacerta lamandini* (Filhol) - Ginsburg, L., Les reptiles fossiles. In: Traité de Zoologie, fig. 868

The comparison of *Pseudolacerta lamandini* holotype with the specimen GMH 13369 of the Geiseltalmuseum Halle, labelled »*Proiguana europaea*, Quercy, Oligozän, Bach-Lot, 1914« (see also Kuhn 1940, pl. X/3) is limited only to the labial side of the

dentary, where only very few diagnostic characters occur. Both forms are identical in the elongated shape of the dentary, and in the fact that the row of the foramina pro rami alveolarium inferiorum is situated much closer to the ventral margin of the dentary. Both forms, however, differ from one another in the tooth position counts (*Pseudolacerta lamandini* 23, the form from the Geiseltalmuseum at least 29), and in the fact that there is a distinct depression on the outer surface of the dentary of the form from the Geiseltalmuseum (well visible on the fig. X/3 of the cited Kuhn's paper), while in *Pseudolacerta* there is only slight depression on the anterior half of the dentary. Obviously two different forms are concerned which are rather close as for the bone morphology but which differ considerably in the number of tooth positions. It is not possible to explain the difference in the latter character (6 tooth positions) only by a different age of compared specimens. The problem of identity of both forms remains therefore open.

Contrary to this, both forms are undoubtedly belonging among the cordylids. As for *Pseudolacerta lamandini*, the evidences supporting this view are as follows: the morphology of Meckel's groove, dentary-splenial relations, the shape of coronoid, and tooth crown striation. The assignment of the Geiseltal form to the cordylids can be judged especially by the distinct distortion of the processus retroarticularis medially, which is an important character of the cordylids. This character is not visible in Kuhn's figure (1940, pl. X/3) however, it is well visible on the specimen.

Besides the mentioned material there is also right mandible labelled »XLII/234 ?*Eolacerta robusta*« in the Geiseltalmuseum in Halle. This material displays following characters: (1) There is a delicate radial striation bordered by oblique ridges on the lingual side of the tooth crowns. (2) Meckel's groove is widely opened anterior to the splenial; farther anteriorly it turns abruptly dorsomedially and is terminated close to the tip of the dentary below the symphysis. (3) The splenial reaches up to the level of the 6—7th teeth. (4) The lamina horizontalis maintains the constant width up to the level of the posterior tooth positions. (5) The total tooth positions count is 28 –29. (6) The bases of adjacent teeth are close each other. (7) The sulcus dentalis is not developed, there is a flat surface instead. (8) The lingual profile of tooth bases below the level of the crista dentalis is straight, not convex. (9) The longitudinal axis of the tooth is perpendicular to the crista dentalis. It follows however from the comparison with the type specimen of *Eolacerta robusta* (GMH 4141) that both species are not conspecific. Moreover, this mandible differs distinctly from all other material of the Geiseltalmuseum collections. Obviously after the characters 1, 2 and 9 this mandible may be also referred to the cordylids. However, it differs from *Palaeocordylus bohemicus* by its bigger size, the straight profile of the lingual tooth surface, the blunt tip of the tooth (which is clearly visible in labial aspect), and that the sulcus dentalis is lacking.

It may be concluded that during the Eocene, Oligocene and Miocene there were also cordylids represented in the herpetofauna of Europe. Besides *Palaeocordylus bohemicus* from the Lower Miocene of central Europe it concerns also *Pseudolacerta lamandini* and closely related form from Quercy (apparently of Oligocene age; howe-

ver Dr. J. C. Rage in his new material obtained from Quercy found *Pseudolacerta* only in Upper Eocene sediments but not in Oligocene ones - see Crochet, Hartenberger, Rage, Sigé, Sudre, and Vianey-Liaud, 1981; Bonis, Crochet, Rage, Sigé, Sudre, and Vianey-Liaud, 1973). Further it concerns the form labelled XLIII/234 from the Middle Eocene of Geiseltal, and after Hecht and Hoffstetter (1962: 6) also undescribed form from the Eocene of Belgium. According to Hoffstetter (1967) cordylids were possibly present within the region of contemporaneous Europe already since the Lower Cretaceous (Purbeckian) with the genera *Paramacellodus, Saurillus* and *Pseudosaurillus*. In the contemporaneous European herpetofauna they are completely lacking and are restricted to the Africa and Madagascar.

Regarding the scarce material which gives the evidence of the existence of *Palaeocordylus bohemicus*, and because of very limited possibilities of comparison with other fossil cordylids, one can suggest only very tentatively the phylogenetic and systematic position of this form. It is only possible to deduce from the comparison with contemporaneous representatives that *Palaeocordylus bohemicus* maintained some undoubtedly archaic features (e.g. the vestiges of the division of the intermaxilla into the paired praemaxillae - the deep median notch on the margin of the horizontal lamina, and median split on the outer surface of the processus nasalis) which do not persist in extant forms.

Family Lacertidae Bonaparte 1831

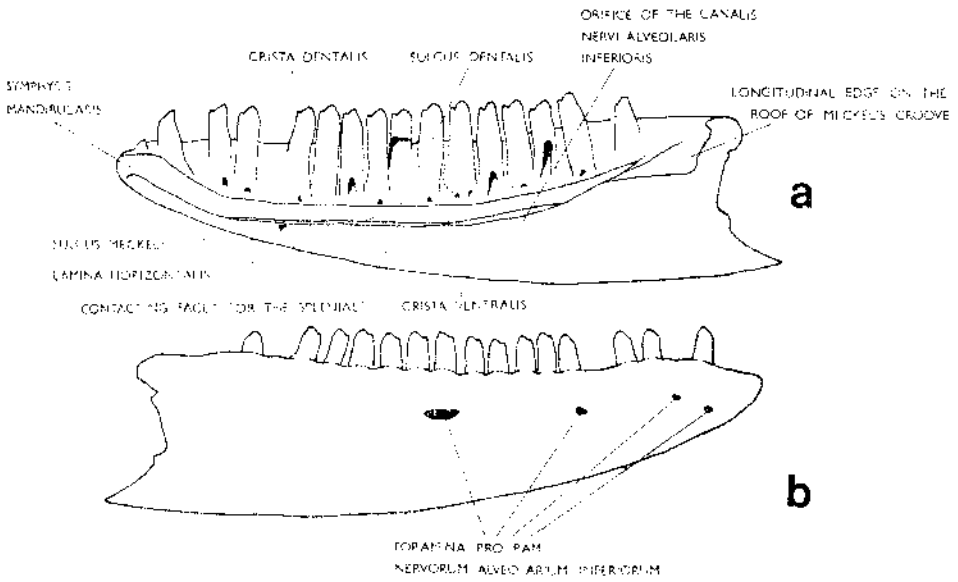
Lacerta sp.

(Pl. IV, V, figs 1—3)

Material: **Dentaries DP FNSP** 1, 3 (Pl. IV, fig. 1), 5, 7 (Pl. IV, figs 2, 3), 11, 14, 15, 16, 17, 25, 27, 28, 30, 33, 50, 51, 63, 73, 77, 82, 83, 94, 214, 236, 265, 514, 3772, 3775, 3780, 3787, 3800, 3824, 3849, 3851, 3857, 3895, 4368; **maxillae DP FNSP** 24, 43, 74 (Pl. V, fig. 1), 52, 81, 98 (Pl. IV, fig. 5), 124 (Pl. IV, fig. 4), 1473, 3795, 3843, 3852, 3860, 4311; **pelvis DP FNSP** 449 (Pl. V, fig. 2); **pterygoid DP FNSP** 4320 (Pl. V, fig. 3). The assignment of the following material is only tentative because of its fragmentar nature: **dentaries DP FNSP** 12, 21, 23, 29, 38, 44, 47, 58, 62, 65, 68, 76, 88, 89, 90, 222, 242, 244, 245, 296, 518, 3778, 3784, 3789, 3790, 3810, 3822, 3827, 3828, 3830, 3834, 3835, 3876, 4305, 4309; **maxillae DP FNSP** 32, 70, 72, 3818, 3855, 3884, 4307.

Description: Dentary - In lingual aspect remarkable structure is the horizontal lamina which is rounded and bordering the sulcus dentalis. Approximately at the level of 4—7th tooth positions the margin of this lamina turns anteromedially and runs out in a blunt outgrowth which together with the corresponding outgrowth of the opposite dentary takes part in the formation of the posterior part of the symphysis mandibularis. The ventral surface of the dentary adjoining symphysis is almost horizontal so that Meckel's groove which is exposed ventromedially in the middle section of the dentary opens ventrally close to the symphysis (Pl. IV, fig. 2). This groove is

very distinct and is terminated abruptly very close to the anterior margin of the bone. The ventral margin of this groove represents also the ventral margin of the bone (crista ventralis). Posteriorly the lamina horizontalis tapers and becomes narrower; at the level of the posterior tooth positions it is only a thin plate. The orifice of the canalis nervi alveolaris inferioris is at the level of the 15—21th tooth positions, its

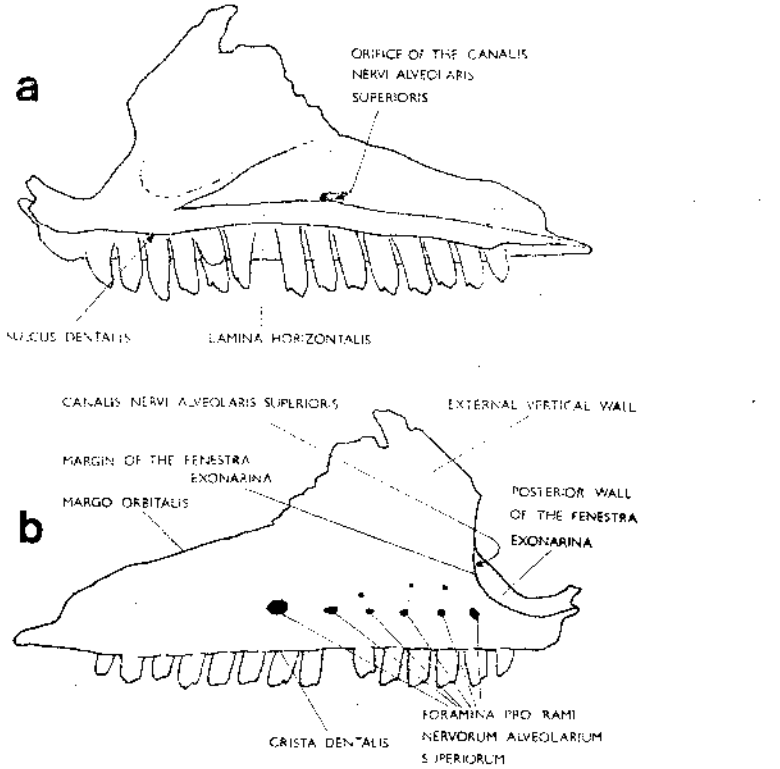


1. Generalized lacertoid dentary in inner (a) and outer (b) views to explain the terminology used in the text.

location being thus fairly variable. The roof of Meckel's groove forms a short longitudinal edge, at the level of the most posterior tooth position; the edge, however, does not continue anteriorly toward the opening of the canalis nervi alveolaris inferioris.

The labial surface of the dentary is almost smooth, with five foramina pro rami nervorum alveolarium inferiorum whose horizontal diameter is almost equal to the anterior-posterior diameter of a tooth at the level of the crista dentalis. In the vast majority of specimens the openings are at the same level, with the exception of the foremost opening which lies a little more ventrally. Rare anomalies concern both number and position of the openings: The ramification of the nerve inside the jaw results in multiplication of the openings, so instead of a single opening two smaller openings occur, being close to each other. In the specimen DP FNSP 3775 a thin partition divides a single opening, suggesting a division into two openings. A total number of openings on the labial surface of the dentary can thus reach as many as seven (therefore, it is not a reliable distinguishing character in reptiles, as already Fejérváry-Langh 1921 stated). The crista dentalis is always slightly vaulted at the site of the corresponding tooth.

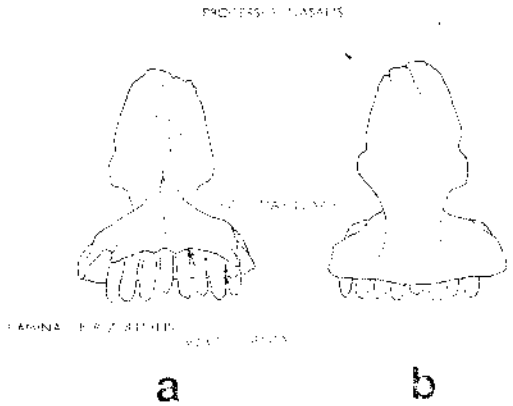
Maxilla (Pl. IV, figs 4, 5; Pl. V, fig. 1) - Inner view reveals a conspicuous, thin lamina horizontalis which forms a part of the palate. The shape of its free margin cannot be determined because it was broken off in all specimens examined. The sulcus dentalis is formed along attachment of the tooth bases to the lamina. The external vertical wall of the maxilla is terminated ventrally by the crista dentalis which is always slightly vaulted at the site of attachment of the tooth, just like in case of the dentary. The margin of the fenestra exonarina is rounded, arched, and forms together with the crista dentalis a relatively sharp point (Pl. V, fig. 1). The part of the maxillar surface which forms the posteroventral wall of the fenestra exonarina is slightly depressed and displays an opening for the nervus alveolaris superior. The margo orbitalis, at least a certain stretch of it, seems to be utterly straight, and a relatively sharp edge forms its margin. Between the margo orbitalis and the crista dentalis there is a distinct depression on the outer surface of the maxilla. It continues anteriorly, becomes shallower and disappears at the margin of the fenestra exonarina. This elongated depression displays a row of six foramens on the ventral part of the surface. The diameter of most of them corresponds to that of a tooth at the level of the crista



2. Generalized lacertoid maxilla in inner (a) and outer (b) views to explain terminology used in the text.

dentalis. However, some (additional ?) openings are much smaller. In addition to the mentioned row of the openings, the smaller one sporadically occur dorsally from the row, especially in the vicinity of the fenestra exonarina. The outer surface of the maxilla is covered with tiny grooves between the orbit and the fenestra exonarina. The grooves divide this part into irregular fields. In old specimens this sculptured part is very distinct, and the surface of the shield-like fields is covered with irregular little pits.

The dorsal part of the maxilla has not been preserved. As for the inner surface, the area formed by the lamina horizontalis and the vertical external wall of the maxilla is anteriorly demarcated by a lamina which is prominent medially and forms posterior wall of the fenestra exonarina. This wall is attached to the lamina horizontalis approximately at the level of the 4th tooth position. It is not vertical but slants posterodorsally from the above mentioned site at the margin of the lamina horizontalis, in accordance with the fenestra exonarina. A similar ridge which, however, is prominent posteromedially (Pl. IV, figs 4, 5), begins at the dorsal surface of the lamina horizontalis approximately at the level of the 7th tooth position and, gradually getting lower, continues to the inner surface of the vertical wall of the maxilla where it disappears entirely. A canal passes in the maxilla at the level of the attachment of the lamina horizontalis to the vertical wall. This canal opens posteriorly, analogically to the canalis pro nervus alveolaris inferioris in the case of the dentary. In ventral aspect it is possible to observe a distinct S-like bent of the tooth row, usually occurring in forms with a narrow nasal region of the skull.



3. Generalized lacertoid intermaxilla in inner (a) and outer (b) views to explain the terminology used in the text.

Dentition - The teeth are typically pleurodont. Of the teeth on the dentary, those closest to the symphysis (1st—3rd tooth positions) are bent out anteriorly (prodontia). On the 3rd to 5th position the teeth are terminated asymmetrically (tips are close to the posterior margins of teeth if viewed lingually). On all posterior positions

teeth are more or less bicuspid, the main cusp being conical and blunt. In the most posterior teeth the main cusp is shifted toward the vertical axis of a tooth. This situation suggests the development of a tricuspid tooth. With the exception of the foremost teeth, the vertical axis of a tooth is perpendicular to the crista dentalis or inclines only slightly posteriorwards. The teeth are either straight or slightly arched, with the convex surface directed anteriorly. The lingual profile also is straight or slightly vaulted, and the teeth are cylindrical in lingual aspect. The bases of the anterior and middle teeth begin on the bottom of the sulcus dentalis and are relatively distant from the free margin of the lamina horizontalis; the bases of the posterior teeth however begin close to the dentary-splenial suture (the sulcus dentalis being entirely filled with tooth bases). The part of the tooth protruding above the crista dentalis in a fully functional tooth without a sign of a resorption in the case of teeth in the middle of the tooth row represents a little more than 2/5 of the entire tooth height.

Besides, another morphotype occurs in the material studied, differing from the above described type by distinct vaulting of the lingual profile of a tooth (the sulcus dentalis thus is very narrow, especially in teeth of the middle of the tooth row). In addition, max. 1/4 of the total tooth height protrudes above the crista dentalis. The bicuspidity is less expressed, and the size is greater than that of the previous morphotype. The last mentined two characters might suggest the older age. For details see p. 29.

Pterygoid (Pl. V, fig. 3) - A short dentate mound is conspicuous on the ventral surface. Teeth form approximately a single row which however is not straight. Three middle teeth are the largest. The lateral margin of the processus palatinus and the anterior margin of the processus maxillaris are approximately perpendicular to each other and join each other in a regular arch. A distinct and sharp ridge passes posteromedially from the anterior margin of the processus maxillaris. A deep depression occurs between the ridge and the dentate mound. The ridge continues as a slightly prominent but sharp edge as far as the medial margin of the bone. Similarly sharp but medially directed edge represents the medial margin of the pterygoid, anteriorly from the half of the length of the dentate mound. On the dorsal surface of the bone a sharp but not very prominent ridge passes, whose position and direction corresponds to that on the ventral surface. It continues posteriorwards as far as the posterior branch of the pterygoid. The medial margin of the central part of the bone forms a rounded mound. The surface between this mound and the ridge is depressed, similarly to the ventral side. A ridge passes from the lateral margin of the processus palatinus into the mentioned depression where it gradually disappears. Another ridge passes along the dorsal surface of the processus maxillaris and joins the ridge on the surface of the ramus posterior. The total size of the fragment matches to the length of the skull (the distance of the foramen magnum from the foremost tip of the intermaxilla) of approximately 37 mm (based on the proportions in *Lacerta lepida*).

Pelvis (Pl. V, fig. 2) - On the dorsal side of the ilium a distinctly prominent process

occurs at the level of acetabular margin. It does not continue as an edge toward the anterior tip of the ilium. An oblique groove occurs at the base of the process, on the dorsolateral surface of the ilium. A relatively deep notch lies between the process and the acetabular part of the pelvis. The acetabulum is egg-shaped, its point being directed toward the base of the ischium. The margin of the acetabulum is highest near the base of the pubis and the ischium. The surface of the ischial base is pierced by an opening.

Discussion: Several fossils have been referred to the genus *Lacerta* and to the circle of its close relatives in the past. In 1851 Lartet described (pp. 39—40) several findings from the locality Sansan (Gers, France) under the names *Lacerta sansaniensis, L. ponsortiana, L. bifidentata, L. philippiana* and *Lacerta? ambigua*. However, their descriptions are entirely insufficient and type material was lost. Of these forms only *Lacerta bifidentata* was mentioned later with some doubts (De Stefano 1903: 43). Some time later *Lacerta rottensis* and *L. pulla* were described (Meyer 1856: 828—829; 1860: 74—78, figs. 2—3, 4—8). Also these forms have been only sporadically mentioned in the later literature (Hoernes 1884: 482; Zittel 1893: 600; De Stefano 1903: 413), and modern authors do not mention them at all (see e.g. Hoffstetter 1962: 255). *Lacerta rottensis* has been considered by Nopcza (1908: 37) a member of Anguidae. Similar cases are also *Lacerta eocena* described by Owen (1884) from the Eocene of the locality Kyson (Suffolk, England), *Lacerta ruscinensis* described by Depéret (1890: 168, pl. XVIII/10—14) from the Pliocene of Rousillon (France), *Lacerta fossilis* and *L. antiqua* (Pomel 1853: 127—128) from the Tertiary localities Cournon, Bréche de Coudes and Neschers (France), and *Lacerta crassidens* from the Pliocene of the surroundings of Issoire (France) (Gervais 1859: 455, pl. 64/9—10). Filhol (1877: 489—490, figs. 424, 421) described *Lacerta mucronata* and *L. lamandini* which, however, are recently considered single species *Pseudolacerta lamandini* (Filhol, 1877) having the relations to the cordylids (Hoffstetter 1942b: 239—240; 1962b: 254; Ginsburg 1970: 1241—1242; see also p. 21 of this paper). The genus *Plesiolacerta* Hoffstetter, 1942 was originally described on the basis of dentaries and maxillae as *Iguana europaeana* (Filhol 1877: 487—488, figs. 430—433). Hoffstetter (1942b: 238) studying Filhol's type specimens of *Iguana europaeana* and other specimens from Filhol's collection stated that these tooth bearing bones (and also specimens published by Kuhn 1940, Pl. IX/8, 9; Pl. X/6, and Zittel 1911, fig. 343) have very close relations to *Lacerta lepida*. However, vertebrae assigned by Hoffstetter to this Filhol's fossil form *(I. europaeana)* differs from those in *Lacerta lepida*. Hoffstetter (l. cit.) came to the conclusion that the shape of the vertebra is a character in which the mentioned fossil form from Quercy is identical with the form from the Upper Eocene (Lower Oligocene) of the locality Hordwell (Hampshire, England) (Lydekker 1888: 280), which was determined formerly as *Placosaurus margariticeps* Gervais, 1876, and deposited in British Museum (Natural History) under the coll. number 32840. Thus, on the basis of conformity in the structure of vertebrae Hoffstetter established the new genus and new species (1942b: 238): »... la présence d'un zygosphène dans les vertèbres dorsales, sacrées et caudales,

me parait avoir une valeur suffisante pour justifier la création d'un genre nouveau«. However, the mentioned author gave no evidence why he referred the dentaries and maxillae from Filhol's collection to the same form as vertebrae described by him as *Plesiolacerta lydekkeri*. To outline the situation the synonymy of *Plesiolacerta lydekkeri* Hoffstetter, 1942 is given below:

1877 — *Iguana europeana*, Nob. - Filhol, H., Recherches sur les Phosphorites du Quercy etc., pp. 487—488, figs 430—433

1877 — *Proiguana europeana*, H. Filh. - Filhol, H., Recherches sur les Phosphorites du Quercy etc., p. 558

partim 1888 — *Placosaurus margariticeps* (Gervais) - Lydekker, R., Catalogue of the fossil Reptilia and Amphibia etc., Part I., p. 280

1911 — *Iguana europaea* Filhol - Zittel, K. A., Grundzüge der Paläontologie, II. Abt., Vertebrata, fig. 343

1940 — *Lacerta mucronata* Filh. - Kuhn, O., Die Placosauriden und Anguiden aus den mittleren Eozähn des Geiseltales, Taf. IX/8, 9, Taf. X/6

1942 — *Plesiolacerta lydekkeri* gen. et sp. nov. - Hoffstetter, R., Sur les restes du Nummulitique européen etc., p. 238

Iguana europeana and *Proiguana europeana* are referred by Filhol to the same specimen.

Hoffstetter (1942b: 238—239) also suggested that the genus *Eolacerta* described by Nöth (1940: 441—457, figs 1/1a, 1b, II—VIII) from the Middle Eocene of Geiseltal might be identical with the genus *Plesiolacerta*.

Gervais (1859) mentioned fossil material assigned by him to *Lacerta ocellata (= L. lepida)*. Bolkay (1913: 223) described the findings of the bones from the Upper Miocene (Pannonian) of Hungary which he referred to the contemporaneous species *Lacerta viridis*. Hecht and Hoffstetter (1962: 5—6) mentioned great number of bone fragments (incl. dentaries) from the locality Dormaal (Belgium; this locality is of the Lower Eocene age according to Godinot, Broin, Buffetaut, Rage, and Russell, 1978) which, according to both authors, resemble contemporaneous *Lacerta lepida*. Moreover Hecht and Hoffstetter suggested close relations of this material to *Plesiolacerta*. From the Tongrien (Lower Oligocene) of Belgium these authors described also great number of dentaries which suggest the existence of smaller members of the family Lacertidae. After the brief description (op. cit.: 22) it is possible to suppose this material to be *Lacerta*. Most recently Sanchíz (1980: 112) mentioned two morphotypes of *Lacerta* sp. from the Pleistocene of Asturias (Spain).

To complete this review it is necessary to state that Mertens (1942: 331—334, fig. 1) described a fossil giant lizard from Canary Islands (unfortunately the finding was not exactly determined as for its stratigraphical position, and might be of Subrecent age) which are referred also to the genus *Lacerta* under the name *L. goliath*. Similar material, also from Canary Islands, was described by Bravo (1953: 23—26, fig. 14, Pl. IX) under the name *Lacerta maxima*. The occurrence of *L. maxima* on

the Canary Islands was confirmed by Marrero Rodriguez and Garcia Cruz (1977). Gasc (1971) considered *Lacerta goliath* and *L. maxima* single species. Kotsakis (1977: 217—219) also described a big specimen of *Lacerta* from the Pleistocene sediments of Sicilia, besides some other material of the same locality, the latter being referred to *Lacerta viridis*. Another similar specimen, from Malta, were studied by Böhme and Zammit-Maempel (1982). It is worthy of note that both latter authors consider *L. melitensis* Mertens 1942 as nomen nudum.

The occurrence of several morphotypes in the material from Dolnice would suggest that several different species belonging to the genus *Lacerta* would be concerned (cf. also Sanchiz 1980: 112). Following facts contradict this view: (1) The mentioned morphotypes occur in the specimens of different age; (2) Differences are limited only to the dentition, not to the morphology of the bone; (3) It is possible to find transitions between the morphotypes; (4) Characters in question display fairly wide range of variation in related contemporaneous species. For all these reasons it is possible that only a single species is concerned. However, also the opposite view could be accepted, that larger number of independent species of the genus *Lacerta* would be supposed in Dolnice fauna, according to the analogy with the situation concerning extant *Lacerta* species (this is supported also by the specimen DP FNSP 94 which displays predominance of the characters of the morphotype 1, but relatively old specimen is concerned according to the length of the wave of the tooth replacement). Moreover, in related contemporaneous species the variation ranges of the osteological characters fairly coincide, despite otherwise distinguishable forms are concerned (cf. Klemmer 1957).

It seems that the detailed morphology of the pterygoid displays no valuable diagnostic characters, as it considerably changes in the course of the ontogeny. For instance *Lacerta lepida* smaller specimens lack any distinct ridges on the pterygoid, while in bigger ones these ridges are well developed. Also pterygoidal teeth, their count, and even their presence may be fairly different, if different ontogenetic stages are concerned. That is why Boulenger's (1920: 42) statement that typical feature of the genus *Lacerta* is the constant presence of the pterygoidal teeth is rather doubtful also for the reason that same author gives some exceptions from this rule (teeth are lacking in *Lacerta oxycephala, Centromastix echinata, Podarcis perscipilata;* op. cit.: 320, 333, 336; both latter forms were referred formerly also to *Lacerta*).*)

Beside the comparison of the Dolnice form with the contemporaneous Lacertidae, also with fossil lacertid *Plesiolacerta lydekkeri* has been carried out. The latter was based on the numerous material from Filhol's collection labelled as *Plesiolacerta lydekkeri* (IP MNHN 1893-11, or without coll. number), furthermore on the material from the same locality designated as *Proiguana* (IP MNHN 1903-20), and on Filhol's holotype of *Iguana europeana* (IP MNHN 1903-20). *Plesiolacerta lydekkeri* differs from the Dolnice material in following characters: (1) It is much bigger (the dentary

* The variation of pterygoid teeth between and within species of *Lacerta* are discussed by Klemmer (1957).

length reaches up to 25 mm, the maxillar length is almost 20 mm; however only section of the maxilla bearing 11 tooth positions which served to Filhol as the holotype of *Iguana europeana* reaches 18 mm - see Filhol 1877, figs. 430, 431). (2) Meckel's groove opens ventromedially also in the region of the symphysis, not ventrally as in *Lacerta*. (3) The posteroventral wall of the fenestra exonarina is deeply concave. (4) The ridge running on the dorsal surface of the lamina horizontalis maxillae is comparatively poorly developed, and is terminated medially on the free margin of the lamina at the level of the 4th tooth position. (5) The medial margin of the posterior wall of the fenestra exonarina is situated at the level of the 1st tooth position.

The other fossil forms of *Lacerta* listed above either are not preserved or it is impossible to identify them again, so they represent mostly nomina dubia. In some published forms the material is still available but the cranial part of the skeleton is lacking which also makes the comparison impossible.

Remark: First doubtless Lacertidae occurred in Europe in Eocene. According to Hoffstetter (1962b: 255) modern forms occur in Europe since Aquitanian.

Miolacerta gen. nov.

(Pl. VI, figs 5–7; Pl. VII, figs 1–5)

Derivatio nominis: Mio - refers to the Miocene
Species typica: *Miolacerta tenuis* sp. nov.

Diagnosis: same as in type-species.

Comparison: The posterior termination of the lamina horizontalis, the posterior termination of the low edge on the roof of Meckel's groove, the absence of a facet for the attachment of the coronoid on the outer surface of the dentary, and the general proportions of the dentary distinguish this genus from *Lacerta*. Distinctly tricuspid teeth and the morphology of the posterior part of the dentary distinguish it from the genus *Ophisops*. Tricuspid teeth, larger size, greater width of the posterior part of the dentary resulting in the rounded and inconspicuous crista dentalis distinguish it from the genus *Algyroides*. Smaller size of the facet for the splenial, tricuspid teeth, dentary more slender, and the more ventral position of Meckel's groove distinguish it from the genus *Eremias*. A more precise determination of the systematic position is not possible.

Miolacerta tenuis sp. nov.

(Pl. VI, figs 5–7; Pl. VII, figs 1–5)

Derivatio nominis: tenuis - slender.
Locus typicus: Dolnice near Cheb, west Bohemia, Czechoslovakia
Stratum typicum: Ottnangian, Dolnice layers 1 and 2, Lower Miocene.

Holotypus: DP FNSP 3785 (Pl. VII. figs 1, 4) - section of the left dentary with 14 anterior tooth positions, length 4.5 mm.

Paratypi: DP FNSP 3791 - section of the posterior part of the right dentary with 7 tooth positions, length 4.1 mm; DP FNSP 4315 (Pl. VI, fig. 5) - section of the posterior part of the left dentary with 3 hind-most tooth positions, length 4.1 mm.

Material: DP FNSP 54, 55, 69, 75 (Pl. VII, figs 2, 3), 78, 130, 240 (Pl. VI, figs 6, 7; Pl. VII, fig. 5), 243, 3811, 3847, 3850, 3868, 3873, 3910.

Diagnosis: The presence of the small edge on the roof of Meckel's groove (Pl. VI, fig. 5) in the extent of the posterior tooth positions justifies a classification with the family Lacertidae. The posterior termination of the lamina horizontalis is at the level of the posterior-most tooth position. The lamina horizontalis is very thin in this extent. Behind the most posterior tooth position a low longitudinal edge on the roof of Meckel's groove represents the inner wall of the dentary where the lamina horizontalis is absent. Teeth (except of anterior ones) are distinctly tricuspid. A facet for the attachment of the coronoid on the outer surface of the dentary is absent. Dentary is very slender.

Description: The dentary is very slender, elongated bone. The lamina horizontalis is developed as a relatively massive mound which, at the level of the 4th to 12th tooth positions reaches approximately one third of the bone height. In this section the lamina horizontalis is approximately equally wide, while it gradually becomes narrower in the posterior direction and becomes only a thin plate. It is thinner also in the symphysal area. The dorsal surface of the lamina horizontalis is slightly depressed along the tooth bases, forming thus the sulcus dentalis. The lamina is terminated posteriorly close to the base of the most posterior tooth. Meckel's groove is exposed ventromedially in its entire extent. A distinct facet for the attachment of the splenial is developed on the ventral surface of the lamina horizontalis, beginning approximately at the level of the 11th tooth position. Meckel's groove, viewed ventrally, is not parallel with the margin of the lamina horizontalis, but almost straight, directed to the most anterior tip of the dentary. The outer surface of the bone is smooth, with a row of foramina for the rami nervi alveolaris inferioris. These openings are approximately at the same level with the exception of the most anterior one which is distinctly lower. The posterior part of the bone is considerably wide, so that the crista dentalis gradually becomes a widely rounded and little prominent mound. Anteriorly, however, the crista dentalis is represented by a sharp edge, always distinctly vaulted at the site of the attachment of a tooth. Posterior to the hindmost tooth position the dentary projects only to a distance that equals the extent of the last two tooth positions. A low longitudinal edge is formed on the roof of Meckel's groove, beneath the most posterior three tooth positions (Pl. VI, fig. 5). This edge represents the inner wall of the dentary behind the last position where the lamina horizontalis is absent. The edge is terminated in a relatively abrupt arch, and its margin joins the crista dentalis. The foramen for the nervus alveolaris inferior occurs approximately at the level of the 4th tooth position from behind.

Maxilla - Only small fragment is available, suggesting that there is a distinct depression on the outer surface of the bone anterior to the orbit.

Dentition (Pl. VII, figs 4, 5) - The teeth are slender and cylindrical. In the 1st to 6th tooth position they are declined forward or are perpendicular to the crista dentalis, if viewed lingually. Beginning approximately with the 7th tooth position they are bent posteriorly (the inclination, however, can be different in some posterior teeth). The most anterior teeth have simply rounded cusps, posteriorly they become bicuspid and approximately from the 11th tooth position they are developed as tricuspid teeth. The posterior cusps of the most anterior tricuspid teeth are only slightly indicated, the most posterior teeth however are already symmetrically tricuspid. The profile of the lingual side of a tooth is slightly convex. The distance between the adjacent teeth approximately equals half of the width of a tooth at the level of the crista dentalis. More than one third of the entire height of a tooth is exposed above the level of the crista dentalis.

Remark: Material DP FNSP 95, 3807, 3862 and 3870 is very close to the just described species, differing from it only in the shape of a tooth whose lingual profile is concave. Due to the small number and fragmentary nature of this material it is not possible to decide whether only a morphologic variant or an independent form is concerned.

Amblyolacerta gen. nov.

(Pl. VII, fig. 6; Pl. VIII, figs 1, 2)

Derivatio nominis: amblý(s) (Greek) - blunt, obtuse; refers to the shape of the teeth.
Species typica: *Amblyolacerta dolnicensis* sp. nov.

Diagnosis: same as in the type-species.

Comparison: The edge on the roof of Meckel's groove is common with the genus *Lacerta, Miolacerta,* and *Plesiolacerta.* The edge is much less developed than in the family Cordylidae where a perpendicular longitudinal and distinctly prominent partition is formed. Moreover, no massive and rounded lamina horizontalis is developed, as is the case in the representatives of the family Cordylidae, but only a thin plate, forming simultaneously the medial margin of the roof of Meckel's groove. Besides, the posterior part of the dentary does not project in a massive, posterodorsally directed outgrowth which takes part in the formation of the anterior margin of the coronoid process as is the case with cordylids, but the crista dentalis terminates behind the last tooth position in a blunt process which does not reach farther than the level equalling the extent of only the last two tooth positions.

The perpendicular edge on the roof of Meckel's groove does not continue anteriorly up to the orifice of the canalis nervi alveolaris inferioris, which distinguishes the described form from the genera *Pseudeumeces* Hoffstetter, and *Dracaenosaurus*

Gervais.*) Most of the specimens of the genus *Pseudeumeces* has more massive teeth, but the variation in the shape is rather great in this form, so that some specimens can agree with *Amblyolacerta* in this respect. *Dracaenosaurus* has, in addition to the above mentioned edge on the roof of Meckel's groove, also an obviously smaller number of tooth positions, and the tooth in the most posterior tooth position is the largest one. Moreover, the dentary in *Dracaenosaurus* is elongated posteriorly, forming a fairly large toothless part projecting behind the hindmost tooth position.

Amblyolacerta dolnicensis sp. nov.

(Pl. VII, fig. 6; Pl. VIII, figs 1, 2)

Derivatio nominis: Dolnice - the site of excavations.

Locus typicus: Dolnice near Cheb, west Bohemia, Czechoslovakia.

Stratum typicum: Ottnangian, Dolnice layers 1 and 2, Lower Miocene.

Holotypus: DP FNSP 4820 (Pl. VII, fig. 6) - section of the right maxilla with 8 tooth positions, length 11.8 mm.

Paratypi: DP FNSP 46 (Pl. VIII, fig. 2) - section of the maxilla with 7 posterior tooth positions, length 7.3 mm; DP FNSP 3809 - section of the dentary with 4 posterior tooth positions, length 4.7 mm; DP FNSP 3837 (Pl. VIII, fig. 1) - section of the dentary with 4 posterior tooth positions, length 9.1 mm.

Material: DP FNSP 3864, 4328. Rather doubtful is the specimen DP FNSP 1485.

Diagnosis: The morphology of the posterior part of the dentary explicitly distinguishes this form from all representatives of the families Anguidae and Scincidae. Teeth are widely blunt. The roof of Meckel's groove at the level of posterior tooth positions projects in a longitudinal, ventrally directed edge which, however, does not continue in the anterior direction. The crista dentalis is terminated posterior to the hindmost tooth position with a blunt process which does not reach farther than the level corresponding to the extent of only the last two tooth positions. On the outer surface of the posterior part of the dentary a distinct facet for the attachment of the coronoid occurs, which is a specific character of the family Lacertidae.

Description: Dentary**) - It is impossible to distinguish the border between the outer surface of the dentary and the labial surface of the tooth crowns in the site of tooth position (Pl. VIII, fig. 2). The dentary, if viewed laterally, terminates in a widely rounded outgrowth which, however, has a distinct depression on its outer surface. The depression reaches anteriorly as far as the level of the last but one tooth position, and serves as an articular facet for the attachment of the coronoid.

* The type specimen of *Dracaenosaurus* is deposited in the British Museum (Nat. Hist.), coll. number 27594 (Lydekker 1888: 288). The material deposited in the collections of the Laboratoire de Paléontologie des Vertébrés, Université Paris VI, and of the Institut de Paléontologie, Muséum National d'Histoire Naturelle, Paris, coming from the localities Cournon and Coderet (Auvergne, France) was used for comparison.

** Unfortunately, after having done the description, the most posterior teeth and the longitudinal edge on the roof of Meckel's groove were broken off during the process of taking SEM photographs of the most completely preserved dentary DP FNSP 3837.

Although the posterior part of the dentary is restricted to a mere fragment there is no doubt about the considerably anterior position of the orifice of the canalis nervi alveolaris inferioris. The last tooth position is bordered lingually and posteriorly by an inconspicuous small edge. The roof of Meckel's groove which undoubtedly was widely opened in the posterior part of the dentary, bears a perpendicular, ventrally prominent longitudinal edge posterior to the level of the hindmost tooth position.

Maxilla - The tooth bases reach as far as the margin of the lamina horizontalis. In some sections the margin of the lamina slightly turns ventrally, so that the sulcus dentalis is indicated. The dorsal surface of the lamina horizontalis is not horizontal; instead it slants a little ventromedially. This allows for the transition to the inner surface of the perpendicular wall of the maxilla to be a gradual arch (at least it can be stated with certainty about the posterior section of the maxilla, behind the level of the canalis nervi alveolaris superioris orifice). The mentioned orifice (Pl. VII, fig. 6) is directed posteriorly and is situated approximately at the level of the 5th tooth position from behind. The surface of the lamina horizontalis is perceptibly indentated at this level. The inferior part of the outer surface of the bone is flat, eventually slightly depressed, with a row of openings for the rami nervi alveolaris superioris. The border between the outer surface of the maxilla and the labial surface of the tooth crowns is almost imperceptible in the teeth which are situated close to the crista dentalis (Pl. VIII, fig. 2); in the more medially shifted teeth (see the description of the dentition) the crista dentalis is a widely rounded mound.

Dentition - If viewed lingually, the teeth are equally wide concerning their bases and crowns. They are pleurodont, and their upper termination is widely blunt, without any indication of a sharp edge. The lingual side of a tooth is virtually straight. The teeth lie close to each other and their upper sections are only slightly protruding above the margin of the bone. The tooth row on the section of the maxilla DP FNSP 4328 displays a conspicuous break - while the teeth in the anterior tooth positions gradually receded medially from the crista dentalis and became lower in an anterior to posterior sequence, the most posterior tooth from the series consequently not overtoping the crista dentalis, the teeth in the posterior tooth positions, beginning with 5th position from behind, were closely attached to the margin of the bone. This anomaly however was not found in other specimens. The teeth in the posterior section of the tooth row are equally wide (the height/width ratio is about 2 : 1 in the largest tooth which is situated in the 5th position from behind; specimen DP FNSP 4328); the teeth become gradually narrower in the anterior section. The tips of the hindmost teeth in the tooth row are approximately at the same level (on the maxilla) but, as the lamina horizontalis slants postero-ventrally, their height gradually becomes smaller, and in the most posterior tooth it equals to their width. On the other hand, the teeth in the last tooth positions on the dentary have been preserved only as minute rudiments. However, this feature cannot be assumed to be characteristic of this form. The bases of some teeth have been resorbed from the lingual side and the tooth replacement wave seems to affect the even and odd tooth positions separately.

Discussion: Despite rather limited material, constant characters (the tooth shape, the mode of attachment of the coronoid to the dentary, the widely opened Meckel's groove, the edge on the roof of Meckel's groove) justify the description of a new species. The mentioned features as an entirety unanimously class this species within the range of the lacertid lineage represented by *Pseudeumeces* and *Dracaenosaurus*. There is no doubt about their assignement to Lacertidae (Hoffstetter 1944: 549); the characteristic dentition however, distinguishes them from all other fossil and contemporaneous representatives of the family. Hoffstetter (1962b: 255) cousiders these species an independent lineage that has not survived until Recent time. It can be assumed that this lineage can be justifiably classified as a subfamily, and that it was represented by a great number of genera during the Oligocene and Miocene of Europe. This assumption is based on the fact that, beside *Dracaenosaurus* found so far only at the Limagne localities (Lydekker 1888: 288), and localities Cournon (Upper Oligocene) and Coderet (Oligocene-Miocene boundary) in Auvergne, France, and *Pseudeumeces* found in the Upper Oligocene of Quercy (France), a large amount of material has been found, similar to the above genera in basic characters but without being identical. This material comes from the localities in the region of Quercy (Rigal-Jouet - Uppermost Middle Oligocene, Peche-Desse - - Upper Oligocene, Péche-du-Fraysse - Upper Oligocene), and from the Upper Oligocene of the locality Cournon (Auvergne, France). All the material is deposited in the collections of the Laboratoire de Paléontologie des Vertebrés, Université Paris VI. The left dentary deposited in the British Museum (Nat. Hist.), coll. number R. 377 (Lydekker 1888, fig. 63) can also be classified as related to the above genera, this statement being justified by the presence of the widely opened Meckel's groove and the typical facet for the attachment of the coronoid to the outer surface of the bone.

Gen. indet.

(Pl. VIII, fig. 3)

Material: DP FNSP 3773

Description: Fragment of the dentary with 9 tooth positions of the middle section of the tooth row. The dentary is slender, the lamina horizontalis is represented by a massive rounded mound. The dorsal surface of the lamina is flat, without sulcus dentalis. The ventral surface of the lamina projects in an edge which forms the margin of Meckel's groove. The crista ventralis is directed ventro-medially; consequently Meckel's groove also opens in this direction. The foramina pro rami nervi alveolaris inferioris on the outer surface of the dentary are fairly large - their anterior-posterior diameter equals a width of two teeth at the level of the crista dentalis.

Dentition - The teeth are cylindrical, termiated with a blunt tip, some of them with an indication of bicuspidity. Their longitudinal axes are perpendicular to the crista dentalis. In anterior teeth, more than one third of the entire tooth height is exposed above the crista dentalis, in the posterior ones it is less. The distance between adjacent teeth varies, in most cases it equals half of the width of the neighbouring teeth. The tooth replacement wave afflicts even and odd positions separately, one such a wave extending within a section with 10 positions.

Discussion: According to the proportions of the dentary and the shape of the teeth, a form within the range of the genus *Ophisops* might be concerned.

Family Anguidae Gray, 1825

Subfamily Anguinae Boulenger, 1889

Ophisaurus cf. *spinari* Klembara, 1979

(Pl. VIII, figs 4—6; IX; X, figs 1, 2)

1979 — *Ophisaurus spinari* n. sp. - Klembara, J., Neue Funde der Gattungen Ophisaurus und Anguis etc., pp. 164—165, Taf. I, Fig. 2, Taf. II, Fig. 2

1981 — *Ophisaurus spinari* Klembara, 1979 - Klembara, J., Beitrag zur Kenntnis der Subfamilie Anguinae etc., pp. 121—168, Abb. 1; Taf. II, Fig. 1

Material: dentaries DP FNSP 79, 80 (Pl. VIII, figs 5, 6), 99, 121, 122 (Pl. VIII, fig. 4), 123 (Pl. IX, figs 1, 2; X, fig. 1), 128, 246, 290, 3774, 3788, 3874, 3896, 3911; maxillae DP FNSP 9, 64, 117, 120 (Pl. IX, fig. 3), 125 (Pl. IX, figs 4, 5), 127, perhaps also 19, 41 and 3871; pterygoids DP FNSP 1558, 1550 (Pl. X, fig. 2), 1512, 1518, perhaps also 1551.

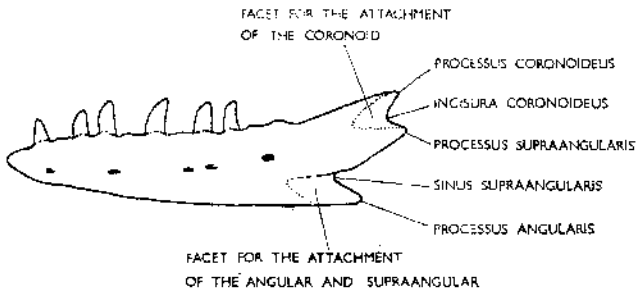
Description:*) The specimens considerably vary in size. Some of them are comparatively big (e.g. dentaries DP FNSP 122, 128, 3788 reaching almost 10 mm).

Dentary - The crista splenialis is the most ventral margin of the bone; consequently Meckel's groove opens lateroventrally. This is very characteristic for this material. In the medial aspect Meckel's groove is visible only close to its anterior end beneath the symphysis. The sulcus dentalis is not developed. The crista splenialis is terminated anteriorly by a conspicuous postero-medially directed outgrowth which forms posterior part of the symphysal margin. This outgrowth is well visible in the dorsal view. Posteriorly the crista splenialis is terminated by a distinct pointed outgrowth called spina splenialis, at the level of the 4th—5th tooth positions. The spina splenialis forms anterior margin of the foramen called by Meszoely (1970, fig. 4) »anterior inferior alveolar foramen«. Posterior to this site, up to the level of the last tooth position, the medial margin of the dentary is formed by a thin ledge. Its margin is rounded in the extent of the mentioned foramen, however, it becomes acute

* The bone terminology follows that of Fejérváry-Lángh (1923, figs 10, 11, 20, 21, 24, 25).

farther posteriorly (carina coronoidea sensu Fejérváry-Lángh 1923, fig. 25). In this section it can be even divided into the two parallel edges which enable more firm attachment of the coronoid. Posterior to the hindmost tooth position the dentary runs off in a comparatively short (its length corresponds approximately to the extent of the two most posterior tooth positions), posterodorsally directed, rounded outgrowth called processus coronoideus. Both the carina coronoidea and the crista dentalis join one another in the tip of this process.

A row of the foramina pro rami nervi alveolaris inferioris (the total number as many as 6) is situated in the mid-level of the outer surface of the dentary. The crista dentalis is represented by a sharp edge. The edge may be irregularly corrugated in the lateral view. Another distinct projection called processus supraangularis (see text fig. 4) occurs ventrally from the processus coronoideus, reaching approximately the same level as the latter. The posterior margin of the dentary between the two projections forms a notch (incisura coronoidea); here the outer surface of the dentary



4. Generalized anguioid dentary in outer view to explain the terminology of the posterior part of the bone.

is slanting, forming thus a facet for the attachment of the coronoid (and perhaps of a part of the supraangular). Ventrally from the processus supraangularis the margin of the dentary passes as a concave arch (sinus supraangularis) toward the crista ventralis, namely, to its posterior termination. This termination forms an outgrowth processus angularis which, however, is not sharply pointed like that in the extant forms. Dorsally from the processus angularis, the margin of the sinus supraangularis becomes thin due to a distinct depression, thus forming a facet for the attachment of the supraangular and angular. The facet for the attachment of the splenial begins on the ventral surface of the crista splenialis, approximately at the level of the 7th tooth position. A similar but much narrower facet is on the crista ventralis. The facet for the splenial on the crista ventralis may also pass on the ventral part of the outer surface of the dentary, as an elongated and variously distinct depression. The orifice of the canalis nervi alveolaris inferioris which is directed posteriorly, is at the level of the 3th—4th tooth position from behind.

Maxilla - The lamina horizontalis is a very thin plate with a smooth surface; the orifice of the canalis nervi alveolaris superioris is situated at the level of the

6th—7th tooth position from behind (cases exist where this opening is doubled). The margin of the lamina is widely concave (at the deepest point it can closely approach the tooth bases), so that the lamina is wide at both its anterior and posterior ends. At the anterior end it projects as a relatively sharp point directed antero-medially; from this site the anterior margin of the maxilla (which is identical with the anterior margin of the lamina horizontalis in this area) passes arch-like toward the anterior process of the crista dentalis. This arch-like margin takes part in the formation of the so-called praemaxillar foramen (sensu Meszoely 1970, fig. 2D). Posteriorly the margin of the lamina passes as a slightly concave arch from the widest part of it to the most posterior process of the maxilla. Near the site where it joins the crista dentalis, this edge grows wider and forms an attachment facet for the ectopterygoid; the facet reaches as far as the most posterior point of the maxilla. The dorsal surface of the lamina horizontalis is depressed in this posterior section, forming a groove along the attachment to the vertical wall of the bone.

The outer surface of the maxilla is smooth; only near the crista dentalis there is a row of foramina for the rami nervi alveolaris superioris. The number of these openings can be as many as seven, and they can be of various size. The outer surface of the maxilla passes as a relatively distinct but rounded ridge into the part that forms the postero-ventral wall of the fenestra exonarina. The wall of this fenestra is separated from the dorsal surface of the lamina horizontalis by a relatively sharp edge; within this edge the foramen pro nervus alveolaris superior is situated. When viewed laterally, the margin of the fenestra exonarina is a deeply concave regular arch. On the other hand, the margin directed toward the orbit is sharply bent, and passes then straightly up to the most posterior point of the maxilla.

Dentition - The teeth are subpleurodont, relatively low, in the lingual view mostly only about 1/3 of their height is exposed above the crista dentalis. They have a shape of slightly bent slender cones, so that their rather blunt cusps are directed posteriorly, sometimes even posteromedially. In some cases however, their bases may be fairly wide. A base usually is rimmed by a well discernible band of the bone of attachment whose surface is slightly wrinkled. One or more foramens lie on the lower margin of this bend; the main of them is directed postero-medially. The upper part of a tooth exposed above the level of the crista dentalis seems to have an inconspicuous rounded ridge on the anterior surface (Pl. X, fig. 1). The total number of the tooth positions on the dentary is 14—15, while it was not possible to ascertain the number of the positions on the maxilla.

Pterygoid - In ventral aspect (Pl. X, fig. 2) a ventrally directed sharp edge is conspicuously prominent on the lateral margin of the central part (a similar edge is also on the dorsal surface). A dentigerous mound is situated close to the medial margin of this part, continuing posteriorly as a rounded ridge whose course bends a little near the base of the posterior branch. A distinct, rounded, dorso-ventrally flattened process lies at the point of the bent. Some specimens, however, lack the process in this characteristic form. Besides the already mentioned edge near the lateral margin of the central part, a distinct but small depression occurs on the dorsal side, clos

to the base of the posterior branch. The depression continues along the surface posteriorly as a shallow groove.

Comparison: From *Anguis fragilis* and *Ophisaurus koellikeri* which are closest to the described species in the morphology of the dentary, the described material is distinguished by a higher number of tooth positions (14—15, while it is max. 11 in *Anguis fragilis* and 12—13 in *Ophisaurus koellikeri*). Furthermore, the processus coronoideus in the described material does not exceed the level of the last tooth position more than the extent of the last tooth positions; the processus angularis is only slightly prominent; the spina splenialis is approximately at the level of the 4th—5th tooth position from behind.

Unlike *Ophisaurus attenuatus* and *O. ventralis* the fully developed specimens of the described species have conical, pointed teeth without the longitudinal striation. Young specimens of *Ophisaurus attenuatus* are very close to the described form in the tooth morphology but have a higher number of tooth positions (17), and their processus coronoidei and processus angulares are more prominent (the latter, moreover, may be doubled). Unlike *Anguis*, the pterygoid bears teeth; unlike *Anguis* and *Ophisaurus harti*, the lateral margin of the central part of the pterygoid displays a ventrally prominent sharp edge.

Discussion: Connections with the species described by Klembara (1979, 1981), i.e. *Ophisaurus fejfari, Ophisaurus spinari, Ophisaurus* (?) *robustus*, were sought by the means of morphometrical methods. The mentined species had been described mostly on the basis of the parietals. Consequently, the size relations of parietals and tooth bearing bones are the only clue for determining the material consisting of dentaries, maxillae and intermaxillae. The ratio LtP : LD (LtP - the width of the parietal at the level where the lateral margins of the processus supratemporales begin to be divergent; LD - the length of the dentary) in contemporaneous representatives available *(O. koellikeri, O. attenuatus, O. ventralis, O. harti)* varies between 0.31 and 0.53, the average value being 0.44. However, this ratio apparently fairly varies during the ontogeny - in a juvenile specimen of *O. attenuatus* it was 0.50, while in an adult specimen 0.31. LtP in Klembara's material of *Ophisaurus spinari* moved within the variation ranges 3.2 - (4.1) - 5.7 mm. Thus, if we use 4.1 mm as the average width of the parietal and employ the indexes obtained in extant material we can suppose that the length of the dentary in *O. spinari* should approximately be 9 mm. The above described material roughly corresponds this value. However, due to the fact that size variation ranges considerably coincide in the contemporaneous representatives of the genus *Ophisaurus* which must be also supposed in fossil forms, the assignment of the described material to *O. spinari* can be only tentative.

Two morphotypes of dentaries can be distinguished in the above described material differing however only in size. It is difficult to decide about the other characters whether a real morphological difference between two forms is concerned or whether they are only variants within the variation ranges of a single species. It is interesting that also parietals of *Ophisaurus spinari* can be divided into the two size groups.

For further discussion see p. 42.

Ophisaurus sp. I

(Pl. X, fig. 3)

Material: Dentary DP FNSP 3844

Description: The sulcus dentalis is not developed. The posterior part of the crista splenialis terminates with the spina splenialis which is situated approximately at the level of the 5th—6th tooth positions. The carina coronoidea is more or less rounded and posteriorly it divides into the two sharp edges at the level of the most posterior tooth position. These two little edges demarcate a facet for the attachment of the coronoid. The processus coronoideus is a massive, not very prominent outgrowth, exceeding only slightly the level of the processus supraangularis, which is similarly massive. The margin of the dentary between the two processes forms a notch whose margin also is a robust rounded edge. When viewed from outer side, this margin is conspicuously slanting; the slanting forms a facet for the attachment of the coronoid. The ventral margin of the processus supraangularis is also massive and rounded, passes anteriorly and gradually disappears on the ventrolateral surface of the bone. A minute edge separates from the ventral surface of the processus supraangularis, forming the margin of the orifice of the canalis nervi alveolaris inferioris which is situated at the level of the 3th—4th tooth positions from behind. The minute edge, however, does not pass directly to the processus angularis but projects in another, even tinier process which simultaneously forms the posterior termination of the rounded edge which separates the margin of the above mentioned canal from Meckel's groove. The outer surface near this margin is again slanted, enabling thus the attachment of the supraangular. Longitudinal lips rim the margins of Meckel's groove, consequently there is only a narrow slot left, directed ventrally. Margins of the slot are flat, forming thus the facet for the attachment of the splenial.

Dentition - The posterior teeth are represented by low cones with relatively wide bases and blunt tips directed postero-medially. The upper part of a tooth is only slightly exposed above the level of the crista dentalis.

Ophisaurus sp. II

(Pl. X, figs 4, 5)

Material: Dentaries DP FNSP 1472 (Pl. X, fig. 5), 3864 (Pl. X, fig. 4); probably also 84.

Description: The crista dentalis terminates on the processus coronoideus, almost immediately posterior to the hindmost tooth position. The edge that continues behind the level of the spina splenialis posteriorly is not directed toward the point of the processus coronoideus, instead it joins the margin of the incisura coronoidea. The processus supraangularis does not reach the level of the processus coronoideus.

The incisura coronoidea is accompanied on the outer surface by a distinct triangular depression serving as a facet for the attachment of the coronoid. The ventral margin of the processus supraangularis continues on the outer surface of the bone as a rounded edge. A depression is situated ventrally from this edge, serving as a facet for the attachment of the supraangular. Meckel's groove is very deep and opened only through narrow slot directed ventrally (similar to *O. harti*). The orifice of the canalis pro nervus alveolaris inferior is situated at the level of the 3rd tooth position from behind.

Dentition - The teeth have relatively wide conical bases, the parts exposed above the crista dentalis have a shape of slender cones, with blunt tips directed posteromedially. A conspicuous foramen is situated on the lingual side of the base, in the tooth axis. The tooth bases lie close to each other.

Discussion: Undoubtedly a representative of the genus *Ophisaurus* is concerned. The nature of posterior termination of the carina coronoidea suggests a possible relation to *O. ventralis*. Material published by Klembara 1981 (Pl. III, figs 1, 2) is probably conform with this form.

Remark: The fragment of the intermaxilla DP FNSP 4308 also indisputably belongs to the representative of the genus *Ophisaurus*; the evidence is given by the characteristic edges on the dorsal surface of the processus maxillares and by the remainder of the configuration of the palatal part of the bone.

Discussion of the *Ophisaurus* forms

Lartet (1851: 40) described *Anguis ? Laurillardi*; even the very scanty description indicates that the form would be related to the genus *Ophisaurus*. Another insufficiently supported species has been *Ophisaurus moguntinus,* published without any description by Boettger (1875: 32), originally under the generic name *Pseudopus*. In 1885 Hilgendorf described an anguid lizard (1885: 358—376, Pl. XV, XVI/14—32), whom he called *Propseudopus fraasi*. Gerhardt (1903: 67, figs 1—5) described *Ophisaurus ulmensis* from the Lower Miocene of Germany; the original specimen is deposited in Geiseltalmuseum, Halle. In the same time De Stefano (1903: 400, Pl. IX, figs 2, 5, 10) described another species called by him *Propseudopus Cayluxi*.* Fejérváry-Lángh (1923: 141—178) thoroughly described the species mentioned under different names above, which she called *Ophisaurus moguntinus,* considering all above mentioned species (incl. *Anguis ? Bibronianus* Lartet 1851) its synonyms (op. cit.: 124—141). At the same time she gave thorough description of *Ophisaurus pannonicus* (op. cit.: 178—214), first published by Kormos (1911: 17, fig. 19). *Ophisaurus novorossicus* Alexejev 1912, *Ophisaurus intermedius* Bolkay 1913, and a part of the material described by Bolkay under the name *Varanus deserticolus* (Bolkay 1913: 222—223, fig. 2), are considered by her its synonyms. *Ophisaurus polgardensis* Kormos (Nopcza 1926: 146) is an invalid name. Kuhn (1940: 476—477, Pl. X/7) described a species from the Middle Eocene of Geiseltal which he called *Parapseudopus hallensis*; today it is

* In these historical reviews original names are respected.

also held for a representative of the genus *Ophisaurus* (Meszoely and Haubold 1975: 36—42). Only on the basis of vertebrae was described *Ophisaurus canadensis* from the Miocene of Canada (Holman 1970: 1318—1320). As will be shown below (p. 40), anguid vertebrae display considerably high degree of morphologic variation, and consequently the mentioned form should be verified by the findings of the additional material. The finds of some forms surviving until the recent times (*O. ventralis, O. attenuatus;* see Auffenberg 1955, Etheridge 1961) were reported from North America. Klembara (1979: 163—166, Pl. I, II; 1981: 125—130, figs 1, 2 A,B, Taf. II, fig. 1 described on the basis of the material from Dolnice *Ophisaurus fejfari* and *O. spinari*. The form originally assigned by him to the genus *Anguis* (*A. robustus*: 1979: 165—166, Pl. III/1, IV/1) according to him seems to be also *Ophisaurus* (Klembara 1981: 130—132). He also holds the view that *Ophisaurus apodus, O. pannonicus* and *O. moguntinus* represent an evolutionary line independent on the lineage of *Ophisaurus,* and consequently the mentioned forms should be included into the re-established genus *Pseudopus* (Klembara 1979: 166—168; 1982: 138—142, 151—157). The finds of material belonging to the genus *Ophisaurus* have been reported from many other sites in Europe (e.g. Bachmayer and Młynarski 1977); some of them, however, only on the basis of vertebrae and/or epidermal scutes (Kühn 1952: Meszoely and Ford 1976; Rage 1978: 205; Rage and Ford 1980: 50).

It is very difficult to draw conclusions about the systematic assignment on the basis of only tooth bearing bones. Of the contemporaneous species it is *Ophisaurus koellikeri* and in some respects also *O. attenuatus* and *O. ventralis* which resemble most the material described above and assigned to *O.* cf. *spinari*. Similarly *O. harti,* as for the shape of its teeth, is in close relation with the form represented here by the dentary DP FNSP 3844 (the shape of the dentary however being much more robust in this fossil form, and differing in many detailed characters). The dentaries DP FNSP 1472, 3864, and probably also 84 have closest morphological relations to *Ophisaurus ventralis*. Of the fossil species those assigned by Klembara to the genus *Pseudopus* (i.e. *P. moguntinus* and *P. pannonicus*) are easily distinguishable from this material, mainly owing to the nature of the dentition. *Ophisaurus hallensis* also differs from the described forms; its part of a tooth exposed above the crista dentalis has a shape of an asymmetrical posteriorly bent cone, as it can be judged by the situation in the type specimen's maxilla (GMH 4038) (only the anterior section of the left dentary from the outer side is visible, thus the morphology of the teeth is not perceptible in this case). Meszoely and Haubold (1975: 39) give 11 as a total number of teeth on the dentary in *Ophisaurus hallensis*.

Thus it can be stated that the material of tooth bearing bones described above very probably belongs to the species described by Klembara. The possibility of more precise determination by the means of morphometrical methods however is very limited (see p. 39); therefore for definite conclusions we must wait until complete skeletons will be found.

Pseudopus sp.

(*Pl. X, fig. 6*; *Pl. XI, figs* 1 - 3)

Material: DP FNSP 218, 896

Description: Maxilla - There is a shallow but distinct longitudinal depression parallel with the tooth row on the outer surface of the bone, between the orbit and the crista dentalis. The latter in its posterior part is represented by a widely rounded mound. Teeth (except for the two most posterior ones) are attached to the lingual surface of this mound.

Dentition - Teeth of the posterior section of the tooth row are blunt, but their crowns have a sign of the cutting edge declined slightly medially. There is a distinct striation on both the labial and lingual surfaces of the crown below the top of the tooth (Pl. XI, fig. 3). The distance between the teeth rather vary (see Pl. XI, figs 1, 2). It seems that the size of teeth generally decrease in the anterior to posterior sequence in this part of the tooth row, however, the smallest tooth is the last but one.

Discussion: The teeth of the posterior part of the tooth row rather resemble those in aged specimens of *Pseudopus apodus* (Roček 1980b). The morphology of the posterior section of the maxilla, namely the shape of the crista dentalis and the longitudinal depression, suggests that the form from Dolnice is not conspecific with *P. apodus*.

Remark: The posterior part of the mandible (DP FNSP 896) corresponds by its basic features with the similar material published by Klembara (1981: 136–137, Taf. IV, figs 1, 2). However, contrary to his statement that (l. cit.): »Dieses Stück ist mit dem Äquivalentteil von *P. apodus* im wesentlichen identisch« it is possible to find some differences against *P. apodus*. The shape of the facet for the articulation with the quadratum (fovea oss. articul. pro condylo mand. ossis quadrati sensu Fejérváry-Lángh 1923, fig. 21), the presence of the one or even more foramens between the fossa Meckeli and processus quadratus ossis supraangularis, are the most important among the other details. The generic assignment seems to be correct, but the species *P. apodus* cannot be concerned.

In following text the different morphotypes of vertebrae undoubtedly belonging to representatives of Anguidae are described. Some of them are referred to *Ophisaurus* sp., however, it is not possible to ascertain which of the forms described as *Ophisaurus* sp. I and *Ophisaurus* sp. II above (see pp. 46 and 50) might be concerned.

Trunk vertebrae

MORPHOTYPE I (cf. *Ophisaurus* sp.) (Pl. XI, figs 4, 5; Pl. XII, figs 1, 2).

Material: DP FNSP 1187, 1209, 1210, 1234, 1240, 1242, 1246, 1292, 1293, 1306, 1309, 1314, 1409, 1410, 1412, 1416, 1417, 1420, 1423, 1425, 1426, 1429, 1442, 1445, 1455, 1456, 1460, 3928, 3941, 3944, 3942, 3949, 3946, 3955, 3960, 3958, 3963, 3965, 3968, 3973, 3992, 3997, 4001, 4007, 4010, 4015, 4024, 4019, 4027

Description:* The centrum is flattened; the margin of the cotyle slightly projects over the level of the otherwise flat ventral surface of the centrum. Only an indistinct mound can stretch in the mid-line from the margin of the cotyle (it is always less developed than in the morphotype V). The foramina subcentralia are relatively small, situated close to the mid-line. The ventral surface of the centrum is separated from the lateral wall of the vertebra by a well discernible but rounded ridge which stretches from the posterior margin of the synapophysis to the lateral margin of the condyle, and is either straight or slightly concave. This ridge rather vary in its course; both can be parallel in the short section close to the condyle so that the condition found in *Anguis* is slightly indicated, or they can diverge immediately from the condyle. In all cases the centrum has a triangular shape in the ventral view.

In the lateral aspect, a conspicuous depression is visible on the surface of vertebra; it is demarcated ventrally with the above mentioned rounded ridge which laterally sets a limit to the ventral surface of the centrum; dorsally it is demarcated by another rounded ridge which connects the prezygapophyses and postzygapophyses. The anterior border is formed by the synapophysis and the posterior one by a rounded ridge passing from the lateral margin of the condyle to the posterior margin of the postzygapophysis. The synapophysis is an egg-shaped elevation whose narrower end is directed dorsally; laterally it is prominent as far as the level of the prezygapophysal margin.

When viewed dorsally, the prezygapophyses and postzygapophyses reach laterally approximately the same level. The prezygapophysis bears an oval articular facet on its surface, which slants medio-dorsally. The posterior margin of the prezygapophysis widens in a conspicuous process; a small articular facet, closely contiguous with the synapophysis, is situated on the latero-ventral surface of the process. The facet served for the contact with the postero-dorsal projection of the rib (Hoffstetter and Gasc 1969). This articular facet may be slightly prominent above the level of the prezygapophysal surface. The articular facet on the postzygapophysis is almost circular and directed ventrolaterally. All over the length of the dorsal surface of the vertebra a sharp edge projects; it forms a point close to the anterior margin and in the whole extent of the posterior half of the vertebra it projects as the processus spinosus, keel-shaped and with a straight margin. This margin forms a small point on the anterior

* For bone terminology see Hoffstetter and Gasc (1969).

end; the posterior end almost reaches the level of the posterior end of the postzygapophyses.

Some vertebrae slightly differ from this basic scheme. These variations concern the anterior-posterior extent of the processus spinosus, the prominence of the edge on the dorsal surface of the vertebra, the degree of development of the articular facet for the attachment of the processus posterodorsalis of the rib, the prominence of the synapophyses (they can laterally exceed the level of the prezygapophyses), the prominence of the cotyle margins over the level of the other parts of the ventral surface of the vertebra, the mode of the mutual connection of the ridges passing down from the prezygapophysis and postzygapophysis (they can fuse directly without an interruption or they do not resume contact with each other), the size of a vertebra, the surface details of the ventral surface of a vertebra (instead of the conspicuous mound passing down from the margin of the cotyle an elongated pit can be present in the mid-line - DP FNSP 1292, or a shallow depression - DP FNSP 3928), the prominence and the course of the ridge separating the lateral surface of the vertebra from the ventral surface, the demarcation of the synapophysis (it can be complemented by an edge). The fragment of the vertebra DP FNSP 4015 is conspicuous by a sharp border between the centrum and the condyle which is wider in the ventral view.

MORPHOTYPE II (Pl. XII, fig. 3)

Material: DP FNSP 1286, 1287, 1299, 1313, 1315, 1418, 1454, 3961

Description: The morphology of these vertebrae is within the variability range of the morphotype I; the dorsal margin of the processus spinosus however is shorter, and the edge passing along the mid-line on the dorsal surface becomes gradually blunt in the anterior direction. Besides, these vertebrae are only about half the size when compared with the morphotype I.

MORPHOTYPE III

Material: DP FNSP 1308, 1415, 1487, 3934, 3943, 3948, 4006, 4013, 4015

Description: This material differs from the previous morphotypes in a conspicuously flat ventral surface of the centrum in both longitudinal and transversal directions. The margin of the cotyle is almost at the same level with this surface. The vertebrae of this type are of various size, the smallest have the size of the type I, the largest (DP FNSP 1487) reach the length 5.4 mm (measured from the ventral margin of the cotyle to the tip of the condyle).

MORPHOTYPE IV (Pl. XII, fig. 5)

Material: DP FNSP 3951, 4017

Description: These vertebrae resemble the previous type in the basic features, but the ventral surface of the centrum is not only flat but slightly depressed. In the

vertebra DP FNSP 3951 the synapophyses in the ventral view present a widening of the ventral surface of the vertebra, without being distinctly differentiated from this surface.

MORPHOTYPE V (cf. *Ophisaurus* sp.) (Pl. XII, fig. 7)

Material: DP FNSP 1214, 1450, 3937, 4016

Description: Vertebrae correspond in their size to the largest vertebrae of the morphotype III. A well discernible longitudinal mound passes from the prominent margin of the cotyle along the ventral surface of the centrum; laterally from it conspicuous depression can be situated (DP FNSP 4016). The mound can project as a sharp edge, reaching on the posterior end above the surface of the condyle (DP FNSP 3937). In other respects the morphology is within the variation range of the type I.

MORPHOTYPE VI (Pl. XII, fig. 6)

Material: DP FNSP 1310

Description: The basic morphology is within the variation range of the type I, but the ventral surface of the body is conspicuously flat with the exception of the cotyle margins which are elevated above the surface. The deep sagittal grooves pass along almost the entire length of the ventral surface.

Discussion: The presented morphotypes of the trunk anguid vertebrae indicate a conspicuous abundance of this group in the herpetofauna of Dolnice. Probably also the variational deviations from the basic morphological schemes of the individual morphotypes indicate the presence of further species. This view, however, cannot be confirmed without a more thorough knowledge about the variability of the anguid vertebrae. Some vertebrae of the morphotype I conspicuously resemble the vertebrae of *Ophisaurus ventralis*. The vertebrae of the morphotype V resemble by the longitudinal mound on the ventral surface of the centrum the vertebrae of *Ophisaurus harti*. The morphotype II corresponds by its size to the contemporaneous genus *Anguis* but is distinguished from it by the triangular shape of the vertebral body. These conclusions, however, are very superficial because the material very probably includes also the species belonging to the genus *Xestops*, as indicated by the material of tooth bearing bones (see below, p. 51). To distinguish the vertebrae of *Ophisaurus* from those of *Xestops* is very difficult, and the findings of isolated vertebrae are often published without mentioning the diagnostic characters in comparison with those of another form (Rage and Sen 1976: 128—129; Rage 1978: 204, 205). An attempt to find criteria distinguishing between isolated vertebrae of *Ophisaurus* and *Xestops* was carried out by Mazin (1978: 11—15). According to him, the ratio of the height to the width of a cotyle would be the relatively most reliable criterion; in *Xestops* (= *Placosaurus*) the height equals approximately 51 % of the width, in *Ophisaurus*

only about 42 %. The centrum in *Ophisaurus* should thus be flatter than that in *Xestops*. Moreover, he concluded that the larger vertebrae belong to the representatives of the genus *Xestops* (= *Placosaurus*) while all smaller vertebrae belong to the genus *Ophisaurus*. If, however, the review of the European species belonging to this genus is correct (Meszoely, Estes and Haubold 1978), then according to the material from Geiseltal even those forms should belong to the genus *Xestops* whose size corresponds to at least some representatives of the genus *Ophisaurus*.

From this reasons the anguid vertebrae from Dolnice can be held for material which, at present, cannot be classified more precisely.

Caudal vertebrae

MORPHOTYPE I (Pl. XII, figs 8, 9)

Material: DP FNSP 1307, 1333, 1424, 1446, 3919, 3925, 3972, 3977, 3989

Description: Tiny vertebrae (the posterior part behind the autotomic septum measures about 3 mm). The centrum is flattened. A pair of the hemapophyses is developed close to the margin of the condylar surface, at the transition of the ventral to the lateral surface. The dorsal surface of the posterior part of the vertebra is conspicuously concave in the longitudinal direction, posteriorly it projects as the processus spinosus, directed postero-dorsally. The dorsal surface of the posterior part of the vertebra is gradually elevated also anteriorly, toward the margin of the autotomic septum, where a keel is signed in the mid-line. The keel, however, does not project into a dorsal paraseptal apophysis (sensu Hoffstetter and Gasc 1969: 271) at the margin of the autotomic septum. Between this keel and the processus spinosus the dorsal surface of the posterior part of the vertebra is regularly convex. The postzygapophyses are tiny, widened a little only at the level of the articular facets, laterally only slightly exceeding the level of the lateral walls of the posterior part of the vertebra. Close to the autotomic septum slender processus transversi project laterally. The anterior surfaces of their bases are rounded, indicating that there was an opening between this and the anterior parts of the transverse process.

The anterior part of the vertebra represents only about 1/5 of the entire length of the vertebra in the dorsal view. The posterior margin of the prezygapophyses reaches as far as the autotomic septum. The dorsal side is regularly convex, without any keel. The anterior margin of the vertebra passes as a straight edge from the most anterior margin of the prezygapophysis to the mid-line where it meets a similarly shaped edge of the opposite side. Thus it is not concave. This anterior margin of the dorsal side of the vertebra reaches farther anteriorly than the margins of the cotyle. A transverse process is developed on the anterior part of the caudal vertebra at the

place corresponding to the synapophysis of the trunk vertebra; the process fuses with the transverse process of the posterior part of the vertebra, leaving only a small opening at the level of the autotomic septum. The ventral surface of the centrum is convex in this part, so that the foramina subcentralia are directed latero-ventrally. Even in the case where the caudal vertebra is complete, i.e. its anterior and posterior parts are united, the autotomic septum is discernible as a fine furrow on the ventral surface. The course of the septum is irregular in details, however, it is always convex posteriorly in the mid-line on the ventral side.

MORPHOTYPE II (Pl. XII, fig. 4)

Material: DP FNSP 1241, 1303, 1305, 1335, 1363, 1449, 1452, 1453, 3918, 3952, 3995, 3996

Description: This type does not differ from the previous one neither in size nor in basic morphology; however, the anterior margin of the dorsal surface is slightly concave and does not reach the level of the cotyle margin anteriorly. On the posterior margin of the anterior part of the vertebra a dorsal paraseptal apophysis is situated; it has a shape of a spine, sometimes flattened antero-posteriorly.

The posterior part of the vertebra is constricted in the middle of its length, so that the postzygapophyses are fairly prominent laterally. The conspicuous processus spinosus is developed posteriorly. The base of the transverse process is very wide and is pierced by an opening. There is no trace of the autotomic septum in the vertebrae whose both anterior and posterior parts have been preserved. Instead, transverse edge is situated on the dorsal surface, passing from the posterior margin of the prezygapophysis to the dorsal paraseptal apophysis.

MORPHOTYPE III

Material: DP FNSP 1251, 3939

Description: The anterior part of the vertebra is of approximately equal size as is the case with two previous morphotypes; however, the transverse process is long and slender, and its posterior rounded margin indicates that the opening in the base of this process was long and slot-like. The dorsal margin of the cotyle is deeply concave, the anterior margin of the dorsal surface of the vertebra is, unlike both previous types, slightly convex anteriorly. The dorsal paraseptal apophysis is developed in the shape of a pointed spine flattened transversally. The part of the vertebra posterior to the autotomic septum has not been preserved.

MORPHOTYPE IV

Material: DP FNSP 1244, 1289

Description: The vertebrae correspond the above morphotypes in size, the anterior margin of the dorsal surface of the vertebra between the bases of both prezygapophyses being almost straight, as well as the dorsal margin of the cotyle which

fairly extends the level of the former. The posterior margin of the dorsal surface of the vertebra is rimmed by a dorsally directed sharp edge, from which an inconspicuous dorsal paraseptal apophysis slightly projects in the mid-line. The part of the vertebra posterior to the autotomic septum has not been preserved.

MORPHOTYPE V

Material: DP FNSP 354, probably also 3933, 3950

Description: The vertebrae are larger than in the previous types (the distance between the ventral margins of the cotyle and the condyle is approximately 5 mm). The hemapophyses begin at the posterior margin of the base of the processus transversus as a gradually hightening rounded ridges; the posterior end of the ridge reaches as far as the margin of the condyle. The autotomic septum laterally leads into an opening which is situated within the base of the processus transversus. The autotomic septum continues farther laterally behind this opening toward the point of the above mentioned process; it is well discernible on both the dorsal and the ventral sides of the process.

If the fragment DP FNSP 3933 belongs to this morphotype, the anterior margin of the dorsal surface of the vertebra is concave, similarly to the dorsal margin of the cotyle; however, it does not reach this level. The posterior margin of the anterior part of the vertebra is paralleled by a sharp, dorsally directed edge which in the mid-line projects in the dorsal paraseptal apophysis.

MORPHOTYPE VI

Material: DP FNSP 4002

Description: The length of the centrum (measured as in the previous type) is approximately 4.3 mm, the anterior and posterior parts are firmly fused. The hemapophyses form long sagittal edges on the ventral surface; in the posterior direction the edges become gradually more prominent. Medially near their bases shallow but well discernible grooves are situated. The margins of the cotyle extend cornet-wise. The autotomic septum can be discerned on the ventral surface only near the bases of the processus transversi; it is quite obliterated medially. In the dorsal view the middle part of the vertebra is fairly constricted, so that the prezygapophyses and postzygapophyses are considerably prominent laterally. The middle part of the vertebra is rounded on the dorsal side but a massive processus spinosus projects posteriorly. An expressive keel is prominent close to the autotomic septum. This keel passes anteriorly as far as the anterior margin of the vertebra, being equally high in its entire course. The anterior margin of the dorsal surface of the vertebra does not reach the level of the anterior margin of the cotyle, and is almost straight. A transverse mound is developed on the dorsal surface, at the site of the autotomic septum; the mound tapers medially and disappears altogether. The posterior margins of the prezygapophyses pass down to the dorsolateral surface of the vertebra as gradually lowering

and in the end disappearing mounds. The processus transversi are broken off close to their bases, so that it cannot be ascertained to what extent an opening within them was developed.

MORPHOTYPE VII

Material: DP FNSP 1212, 1215, 1439, 3923

Description: The vertebrae are of the same size as in the morphotype V (the length of the centrum about 5.1 mm); however, they differ from it in the more slender base of the processus transversus; no opening is developed in its base, instead, there is a pit-like depression on both the dorsal and ventral sides of it. The anterior margin of the dorsal surface of the vertebra is straight, extending the level of the anterior margin of the cotyle. A conspicuous dorsal paraseptal apophysis is developed on the dorsal surface; otherwise the dorsal surface of the vertebra is more or less rounded. The processus spinosus is broken off.

The vertebrae DP FNSP 1215 and 1439 are morphologically identical but are longer and possess a well developed opening within the base of the processus transversus.

MORPHOTYPE VIII

Material: DP FNSP 3945

Description: The size is roughly the same as in the morphotype V. The anterior part of the vertebra bears an inexpressive keel on its dorsal surface; the keel projects as the dorsal paraseptal apophysis toward the autotomic septum. At the site of the apophysis the autotomic septum is convex anteriorly; this reflects in the isolated anterior part of the vertebra as an expressive notch. The posterior margin of the anterior part of the vertebra is between the dorsal paraseptal apophysis and the posterior margins of the prezygapophyses paralleled by a conspicuously high and sharp edge. The foramina subcentralia are well developed on the ventral surface of the vertebra. The posterior part of the vertebra has not been preserved.

Discussion: The morphotype I roughly corresponds to *Anguis* by its size, but it differs from *Anguis* in less prominent postzygapophyses and in the lack of the dorsal paraseptal apophysis. The anterior eight caudal vertebrae (posterior to two sacral vertebrae) in *Anguis* have, when viewed dorsally, the shape of the trunk vertebrae (with the exception of the processus transversi whose shape is different), without any sign of a division in a posterior and anterior parts. This division is perceptible only on the 9th and the following caudal vertebrae, but is already in the 9th vertebra fully functionally developed, so that the vertebra can split into the anterior and posterior parts in the autotomic septum. Thus in *Anguis* the septum is never developed in the more or less obliterated state which enables the preservation of a complete vertebra. Consequently, we can suppose that none of the vertebrae that have been preserved

in the complete state belong to a representative of a genus *Anguis*. This holds for the types I and II. The types III and IV seem to stand closest to the vertebrae of *Anguis*, if we suppose certain individual variability explaining the differences in morphological details. Similarly to *Anguis*, *Ophisaurus harti* also possesses fully functional caudal vertebrae from the 7th vertebra on (disregarding two sacral vertebrae), while the anterior caudal vertebrae resemble the trunk ones. None of the vertebrae preserved as a complete unit cannot thus belong to a form closely related to this species of *Ophisaurus*. Besides, the edge passing down from the processus spinosus reaches in *O. harti* as far as the dorsal paraseptal apophysis, and the ventral hemapophyses are lacking.

The morphotype VI resembles a little the vertebra assigned by Rage (1978, fig. 2 B) to *Placosaurus* (= *Xestops*). Like in the case with the trunk vertebrae the precise diagnosis is not possible for the present due to the insufficiently studied variation of the vertebrae in *Xestops* and *Ophisaurus*.

It is also necessary to point out that two or more morphotypes could belong to a single species (differences between the proportions of the anterior and posterior caudal vertebrae should be taken into consideration).

Subfamily Glyptosaurinae Marsh, 1877

cf. *Xestops* sp.

(Pl. XIII, fig. 5; XIV; Pl. XV, figs 1, 3, 5)

Material: dentaries DP FNSP 18, 39, 48, 60, 3781, 3783, 3794, 3859; maxillae DP FNSP 129, 212, 219, 3813, 3819, 3821, 3831, 3914, 4306; intermaxillae DP FNSP 194, 195, 345, 1552, 3814, 3878; furthermore section of the tooth bearing bone DP FNSP 277, and with certain doubts also material DP FNSP 37, 96, 224, 1396, 3829, 3841.

Description: The dentary is a very slender bone, especially in its anterior part. The crista splenialis is represented by a rounded ridge. It is not possible to ascertain whether its posterior end is formed by the spina splenialis (the material is mangled). Meckel's groove is exposed ventro-laterally in its anterior part (only in the area of the symphysis it can be observed medially), ventro-medially behind the level of the posterior end of the crista splenialis. A row of conspicuous foramens is situated on the outer surface of the dentary, approximately in the middle of its height; their orifices are directed anteriorly. A deep triangular facet for the attachment of the supraangular lies on the postero-ventral part of the outer surface. The processus coronoideus and the processus supraangularis are developed. The incisura coronoidea between the two displays an expressive but not very large facet for the attachment of the coronoid on the outer surface. The foramen for the canalis nervi alveolaris inferioris was situated at the level of the 4th—5th tooth positions from behind.

Maxilla - A row of relatively large openings for the rami nervi alveolaris superioris

is situated on the labial surface of the maxilla. The crista dentalis is straight, and can have an expressive band of the bone of attachment at the site of attachment of each tooth; this band is distinctly separated from both the labial surface of the tooth crown and the outer surface of the bone. It can however be substituted by a distinct vaulting of the crista dentalis in some specimens. If viewed ventrally, the anterior end of the maxilla is formed by two processes (Pl. XIV, fig. 1) - a lateral one which is rounded and passes into the crista dentalis, and whose ventro-medial surface represents the facet for the attachment of the intermaxilla (see below the description of the triangular facet on the intermaxilla); and a medial one, whose medial margin passes into the margin of the lamina horizontalis. The longitudinal axes of both processes are parallel and a wide oval notch is situated between them indicating a large intermaxillar foramen. A distinct edge passes from the lateral margin of this foramen obliquely to the margin of the lamina horizontalis; the bone is deeply depressed between the edge and the tooth bases. A blunt ridge is situated on the dorsal surface of the medial process; it passes postero-dorsally and closely above the orifice of the canalis nervi alveolaris superioris joins the anterior margin of the vertical part of the maxilla. This margin represents also the margin of the fenestra exonarina. The ventral and postero-ventral margins of the fenestra exonarina are widely arched. A blunt ridge passes from the margin of the lamina horizontalis along its dorsal surface postero-laterally; it terminates on the inner surface of the vertical part of the maxilla. The margin of the lamina horizontalis is sharp. The orifice of the canalis nervi alveolaris superioris opens perpendicularly onto the dorsal surface of the lamina horizontalis.

Intermaxilla - Several intermaxillae have been preserved in the material from Dolnice, which owing to their proportions, triangular facets on the maxillar processes, and shape of the teeth can be assigned to the genus *Xestops*. The processus nasalis is narrow at its base and widens proximally. The dorsal side of the maxillar processes is flat and passes into the anterior surface of the bone through a distinct but blunt ridge. This ridge becomes sharper laterally and changes into an expressive flat process. A similar outgrowth forms the lateral end of the crista dentalis. Between the two processes a deep triangular depression is situated, serving for the attachment of the anterior end of the maxilla. The dorsal surface of the maxillar processes projects dorsally as a thin lamina horizontalis. The lamina horizontalis does not display a sulcus dentalis on the ventral surface. Only above the median tooth position it projects in a ventrally directed process which forms the inferior termination of the inner surface of the processus nasalis (Pl. XIV, fig. 4). A distinct median groove is on the inner surface of the processus nasalis in some specimens. The outer surface of the intermaxilla is smooth; only on the processus nasalis there is an inexpressive sculpture indicated.

Dentition - The teeth are pleurodont, tapering only slightly toward their tips, so that the tips in the majority of cases are blunt. Sometimes an inexpressive cutting edge can be developed on the tip; the edge can project point-wise. The longitudinal axis of a tooth is slightly bent so that the tip is directed posteriorly. In the majority

of cases, an opening is situated at the base of a tooth. The bases of adjacent teeth almost touch each other, so that only a narrow gap is left between them. The lingual side of a tooth base is slightly convex, and convergent furrows are indicated under the tip. The specimen 3831 displays an anomaly - three teeth are attached at the site of a single tooth position. Consequently, their longitudinal axes diverge (similar condition can be found in the holotype *Xestops weigelti* - GMH 4027). Seven tooth positions have been ascertained on the intermaxilla, with the odd tooth position situated in the mid-line.

Discussion: Three morphotypes* can be easily distinguished in the above mentioned material. They differ in their absolute size, in the shape of teeth, and in some details of the bone morphology. This might indicate a presence of more than one species. The material, however, is at present so much limited that we cannot more than suppose such state of affairs.

The classing with the genus *Xestops* was done on the basis of comparison with the type material of *Xestops weigelti* from the Middle Eocene of Geiseltal (GMH 4027). This Geiseltal material was originally described by Kuhn (1940: 469—471) as *Placosauriops*, but Meszoely, Estes and Haubold (1978: 1961—1962) transferred all this material to the genus *Xestops*.

Subfamily uncertain

Gen. indet. I

(Pl. XV, figs 2, 4)

Material: DP FNSP 4, 45, 67, 1395, 3801 (Pl. XV, fig. 2), 3820, 3823, 3858, 3866, 4308, 4312 (Pl. XV, fig. 4); probably also 35, 3786, 3816.

Description: Dentary - The processus coronoideus and processus supraangularis are very distinct, the outer surface of the bone in the extent of the incisura coronoidea is depressed, forming thus a distinct facet for the attachment of the coronoid. The inferior margin of the processus supraangularis is elongated anteriorly as a rounded ridge passing along the outer surface of the dentary and disappearing close to the ventral margin of the bone. Below the ridge a fairly depressed facet for the attachment of the supraangular is situated. Meckel's groove is exposed ventrally even in the section under the symphysis, so that it is not visible from the medial side.

Maxilla - The lamina horizontalis is very thin and the orifice of the canalis nervi alveolaris superioris opens perpendicularly onto the dorsal surface at the level of the 4th—5th tooth positions from behind. The lamina horizontalis is widest at this area. It tapers posteriorly, so that it is close under the base of the tooth at the level of the last but one tooth position. At the posterior end of the maxilla the lamina

* Morphotype I: DP FNSP 37, 48, 60, 1396, 3781, 3783, 3819, 3829, 3831, 3841, 3794.
Morphotype II: DP FNSP 129, 224, 277, 3859.
Morphotype III: DP FNSP 18, 39, 96, 212, 219, 3813, 3821.

horizontalis joins the crista dentalis, forming thus a blunt point. Closely before its posterior end the lamina horizontalis widens and forms an oval and depressed facet for the attachment of the ectopterygoid. This facet is much better developed in the specimen DP FNSP 3801 than in the specimen DP FNSP 4342. A more or less developed groove is situated in the area where the dorsal surface of the lamina horizontalis is attached to the vertical wall of the maxilla.

Dentition - The lingual profile of a tooth is almost straight. Only about 1/4—1/3 of the total height of a tooth is exposed above the level of the crista dentalis. The tooth is terminated by a blunt cone slightly declined postero-medially. Delicate radial striation is discernible on the surface of some teeth.

Discussion: This material is very fragmentary, so it is very difficult to estimate its precise systematic position. Owing to the fact that certain shape differences exist between the anterior and posterior sections of the tooth row, the fragment with the posterior part of the tooth row (DP FNSP 4312), for instance, might be assigned to the genus *Xestops*. The position of the orifice of the canalis nervi alveolaris superioris which opens perpendicularly onto the dorsal sufrace of the lamina horizontalis supports this view.

Subfamily uncertain

Gen. indet. II

(Pl. XVI, fig. 1)

Material: DP FNSP 93

Description: Maxilla - The margin of the lamina horizontalis passes in its anterior part antero-ventrally toward the anterior end of the crista dentalis. The anterior end of the maxilla terminates in a rounded outgrowth. An oval, slightly depressed and anteroventrally situated facet for the attachment of the processus maxillaris intermaxillae is situated on the surface of the outgrowth. Unlike *Ophisaurus, Xestops* (Meszoely, Estes and Haubold 1978, fig. 3B), *Pancelosaurus* (Meszoely 1970: 106), and *Diploglossus* (Meszoely op. cit., figs 2 D, 7 C) only one process is developed instead of two. An overhanging edge passing along the dorsal surface of the lamina horizontalis begins on the margin of the lamina at the level of the 4th tooth position, and the margin of the lamina horizontalis slightly projects pointwise. The part of the maxillar surface forming the postero-ventral wall of the fenestra exonarina passes to the dorsal surface of the lamina horizontalis through only a very inconspicuous and rounded ridge. The openings for the rami nervi alveolaris inferioris on the outer surface of the bone are fairly large and directed slightly anteriorly.

Dentition - The teeth are massive, their crowns being flattened linguo-labially, so that a not very distinct edge is formed. The tips of the teeth are directed slightly medially.

cf. Family Scincidae Gray, 1825

(Pl. XVI, fig. 2)

Material: DP FNSP 59 (perhaps also 61)

Description: Maxilla - The postero-ventral part of the margin of the fenestra exonarina is represented by a blunt ridge which distinctly separates the outer surface of the bone from the postero-ventral wall of the fenestra exonarina. The latter is conspicuously depressed. The lamina horizontalis begins at the anterior end of the maxilla, and at the level of the first two tooth positions it forms the medial margin of the postero-ventral wall of the fenestra exonarina. A distinct and sharp edge deflects from it at the level of the 2nd—3rd tooth position and joins the posterior margin of the fenestra exonarina. The prominence of this edge results in a deep depression on the posterior part of the wall of the fenestra exonarina, at the site of the opening through which the nervus alveolaris superior emerges. Another, smaller edge deflects from the margin of the lamina horizontalis at the level of the 4th tooth position; it begins, however, only as a mere bending of the lamina horizontalis and becomes expressive only in the course of the transition onto the inner surface of the vertical wall of the maxilla. The foramens for the emergence of the rami nervi alveolaris superioris are relatively large, their width exceeding their height; they exceed the width of a tooth at the site of attachment of the crista dentalis.

Dentition - The teeth are robust, cylindrical in the lingual view, with blunt rounded tips.

Discussion: A representative of the family Scincidae, related to the genus *Lygosoma* might be concerned.

Family Amphisbaenidae Gray, 1825

Subfamily Crythiosaurinae Vanzolini, 1951

Genus *Omoiotyphlops* Rochebrune, 1884

Omoiotyphlops gracilis sp. nov.

(Pl. XVI, figs 3—7)

Derivatio nominis: gracilis (lat.) - slender
Locus typicus: Dolnice near Cheb, west Bohemia, Czechoslovakia
Stratum typicum: Ottnangian, Dolnice layers 1 and 2, Lower Miocene
Holotypus: DP FNSP 3771 (Pl. XVI, fig. 3) - almost complete right dentary, length 3.5 mm.

Paratypi: DP FNSP 8 (Pl. XVI, fig. 4) - almost complete left dentary, length 3.5 mm; DP FNSP 1317 (Pl. XVI, fig. 5) - trunk vertebra; DP FNSP 1336 (Pl. XVI, fig. 6) - trunk vertebra; DP FNSP 1364 (Pl. XVI, fig. 7) - anterior trunk vertebra; DP FNSP 3793 - almost complete left dentary, teeth at the most posterior two positions broken off, length 3.4 mm.

Material: vertebrae DP FNSP 1235, 1247, 1252, 1254, 1255, 1249, 1288, 1290, 1291, 1294, 1296, 1295, 1298, 1300, 1301, 1302, 1304, 1319, 1332, 1334, 1337, 1389, 1401, 1404, 1405, 1428, 1448, 1457, 3920, 3953, 3976, 3985, 3993, 3994, 3999.

Diagnosis: Small amphisbaenid (length of the dentary 3.5 mm). The crista splenialis in its posterior part very inconspicuous (consequently also the sulcus dentalis is not developed in this section). Well developed coronoid process is present posterior to the hindmost tooth position; its length corresponds approximately to the extent of three posterior tooth positions. On the top of the processus coronoideus there is characteristic, medially directed small outgrowth. Teeth are subpleurodont. The total number of tooth positions is eight. Teeth are conical, slightly bent posteriorly. The gap between two adjacent teeth is approximately half of the tooth diameter, at the level of the crista dentalis, if seen in lingual aspect. The centrum is flattened dorso-ventrally. The transition of the ventral to the lateral surfaces of the vertebra lacks any distinct ridges. In ventral aspect, the lateral margins of the centrum are parallel. The processus spinosus is lacking; there is a sign of keel instead, however, this keel is in the anterior or middle part of the vertebra, not in the posterior one where in other forms the processus spinosus is developed.

Comparison: *Omoiotyphlops priscus* Rochebrune 1884 differs from the described form in its greater size; its vertebrae (IP MNHN 1903—20) are 2.6 mm long in the mid-line of the dorsal side, the length of the centrum from the ventral margin of the cotyle to the most posterior part of the condyle is 2.3 mm (comp. the description of vertebrae). The general morphology in both species is however very similar.

Hitherto unpublished material from the locality Mas-de-Got, Quercy, France (Middle Oligocene), deposited in the Laboratoire de Paléontologie des Vertebrés, Université Paris VI, differs from the described species in several regards: (1) Its size is greater. (2) All teeth in a tooth row are of approximately equal size and proportions. (3) The teeth have blunt cusps. (4) The tooth bases are close to each other. (5) The processus coronoideus is relatively small in comparison with other parts of the dentary. (6) The dentary is much more massive. (8) The vertebrae of this form are within the morphological variation ranges of *Omoiotyphlops gracilis* sp. nov. but much larger.

Hitherto unpublished material from the locality Pech-Desse, Quercy, France (Upper Oligocene) which is also deposited in the Laboratoire de Paléontologie des Vertebrés, Université Paris VI, differs from the described species in the following features: (1) Meckel's groove is lacking in the anterior part of the dentary. (2) The crista splenialis is only slightly prominent. (3) The size is greater. (4) The teeth are of approximately equal size and lie close to each other.

Description: Dentary (Pl. XVI, figs 3, 4) - In lingual view a blunt crista splenialis is conspicuous. Medially it demarcates a narrow sulcus dentalis, running closely

along the tooth bases. The crista splenialis tapers posteriorly and becomes less prominent, therefore, the sulcus dentalis also becomes shallower. The crista splenialis terminates posteriorly in a narrow point close to the posterior margin of the medial surface of the bone. On the ventral surface of the anterior part of the crista splenialis there is an obliquely situated symphysal facet; the upper margin of the crista splenialis is markedly elevated in this area, so that the sulcus dentalis is very deep here. Meckel's groove is relatively deep and is well perceptible as far as the very anterior end of the bone. The crista ventralis projects ventrally into a blunt process at the level of the 3rd tooth position (thus close to the posterior margin of the symphysal facet). This outgrowth is well discernible from both medial and lateral views. Meckel's groove runs posteriorly, parallel with the crista ventralis. From the level of the last but one tooth position it opens also medially, because the crista splenialis is directed postero-dorsally, following the tooth bases. A relatively flat facet for the attachment of the splenial lies between the posterior part of the crista splenialis and the roof of Meckel's groove. The crista dentalis is slightly arched, but it bends more sharply posterior to the last tooth position and terminates in a massive coronoid process whose length is approximately equal to the extent of the last three tooth positions. The apex of the processus coronoideus projects medially as a slightly prominent but characteristic process. Analogically to the crista dentalis which runs off in the processus coronoideus, the crista ventralis runs off in a similar process which, however, was broken off in all specimens. The posterior margin of the dentary between both processes is slightly concave on the outer surface, deeply concave on the inner surface. A fairly large opening for the entrance of the nervus alveolaris inferior is situated between the posterior margins of the outer and inner surfaces. Three openings for the rami nervi alveolaris inferioris, facing anteriorly, occur on the outer surface of the bone; the most anterior of them is the largest.

Dentition - The teeth are subpleurodont. The number of the tooth positions is eight, the largest teeth occurring at the middle tooth positions. The teeth are conical with either sharp or blunt cusps declined postero-medially. In some specimens the sudden break of the longitudinal tooth axis is very conspicuous (DP FNSP 3793). Anterior teeth are a little more slender than the posterior ones. The gap between two adjacent teeth approximately equals a half of the width of a tooth at the level of the crista dentalis. In the bone of attachment there is a single small foramen close to the base of each tooth. Despite the small number of tooth positions some teeth may differ from this basic morphological scheme in connection with the individual age of tooth and with its position in the tooth row.

Trunk vertebrae (Pl. XVI, figs 5—7) - The centrum is conspicuously flattened dorso-ventrally, therefore the ventral surface is only slightly convex. The transition of the ventral into the lateral surfaces is gradual, no ridges are developed on the centrum. In ventral view the lateral margins of the centrum are parallel. A pair of the foramina subcentralia is situated at the border of the ventral and lateral surfaces, closely behind the posterior margins of the synapophyses. Another, mostly smaller

foramen occurs on either of the lateral walls of the vertebra. The dorsal wall of the vertebra lacks the processus spinosus. The posterior part of the dorsal surface is regularly rounded, while the anterior part displays a sign of a keel. In more anterior vertebrae this keel lies in the middle of the centrum length and both anterior and posterior parts of the surface are rounded. Anterior margin of neural arch is either regularly convex or runs off in a point reaching the level of the lateral margin of the cotyle. Posterior margin of neural arch is concave, either arched or pointed. Prezygapophyses, viewed dorsally, have a shape of regular lobes whose margins do not form any conspicuous processes. Convex articular facets are more or less developed on their ventral surfaces. If the articular facets are developed, they are separated from oval hemisphaeric synapophyses by grooves following the margins of prezygapophyses and, in dorsal view, extending beyond the level of these margins. The synapophyses are oval, their longitudinal axes are perpendicular to the longitudinal axes of the vertebrae. The articular facets of the postzygapophyses are ellipsoid and flat. The total length of a vertebra is approximately 1.7 mm.

The anterior vertebrae are considerably shortened antero-posteriorly, the keel on the dorsal surface is developed also in posterior halves of the vertebrae and may project in blunt outgrowth close to the posterior margin of the vertebra; in some cases this outgrowth may be divided fork-like into two blunt saggital ridges. The dorsal surface of the vertebra is strikingly concave in lateral view. The ridges forming the lateral margins of the postzygapophysis and prezygapophysis approach each other and, in very short vertebrae, may fuse. Slightly divergent ridges pass from the foramina subcentralia to lateral margins of the condyles on the ventral surface. A more or less marked mound occurs sometimes in the mid-line on the ventral surface of the vertebra. A rather conspicuous protuberance is situated near the margin of the cotyle, ventrally to the synapophysis. The most anterior vertebrae (Pl. XVI, fig. 7) bear the hook-like hypapophyses.

Discussion: The comparison with *Amphisbaena fulliginosa, A. heterozonata, A. darwini, A. alba, Ancylocranium ionidesi, Cadea palirostrata, Bipes biporus, Blanus cinereus, B. strauchi, Bronia* sp., *Leposternon boulengeri, Monopeltis guentheri, Rhineura floridana, Agamodon anguliceps*, and *Trogonophis* sp. (coll. IP MNHN, AC MNHN and ZFMK) ascertained that *Omoiotyphlops gracilis* can be classed within the range of the genus *Blanus (B. cinereus, B. strauchi)* from which it differs only in smaller size. If certain individual variation is assumed, all studied material can be considered belonging to a single species.

Fossil representatives of the group are known from the phosphorites of Quercy, France, from where however only a single form *Omoiotyphlops* (Rochebrune 1884: 152) has been described so far. It is depicted in the same paper (op. cit., Pl. II/2, 2a) under the name *Typhlops edwardsi*. Originally it was assigned to the family Typhlopidae, but Hoffstetter (1942a: 24) classed it as a representative of the family Amphisbaenidae.

According to Hoffstetter (1942a: 25; 1955: 640), the representatives of the amphisbaenids are known also from other French localities: Euzet-les-Bains, Gard (Ludian),

St.-Gérard-le-Puy, Allier, and Nassiet, Landes (Stampian), Limagne (Aquitanian), la Grive-St-Alban, Isère, and Sansan, Gers (Vindobonian).

The vertebrae of the described species were compared with the holotype of *Omoiotyphlops priscus*, which is represented by 5 articulated trunk vertebrae (IP MNHN 1903—20). It was ascertained that the material from Dolnice does not reach half the size of the species from Quercy (with the exception of the vertebra DP FNSP 1254 which exceeds the average size of other material from Dolnice, being nevertheless much smaller than that of *Omoiotyphlops priscus* and differing from it by the marked keel on the dorsal side of the vertebra).

From the comparison of the described species with *Omoiotyphlops priscus* Rochebrune 1884, and with the hitherto unpublished material from the phosphorites of Quercy (see Comparison) follows that these species may be related to each other, but *O. gracilis* is much smaller. The characters on the dentary, however, indicate greater differences, and it is questionable whether these differences can be sufficiently expressed only at the specific level. Anyway, the presence of at least two different species of the family Amphisbaenidae is indicated in the Palaeogene of Europe.

Family indet. I

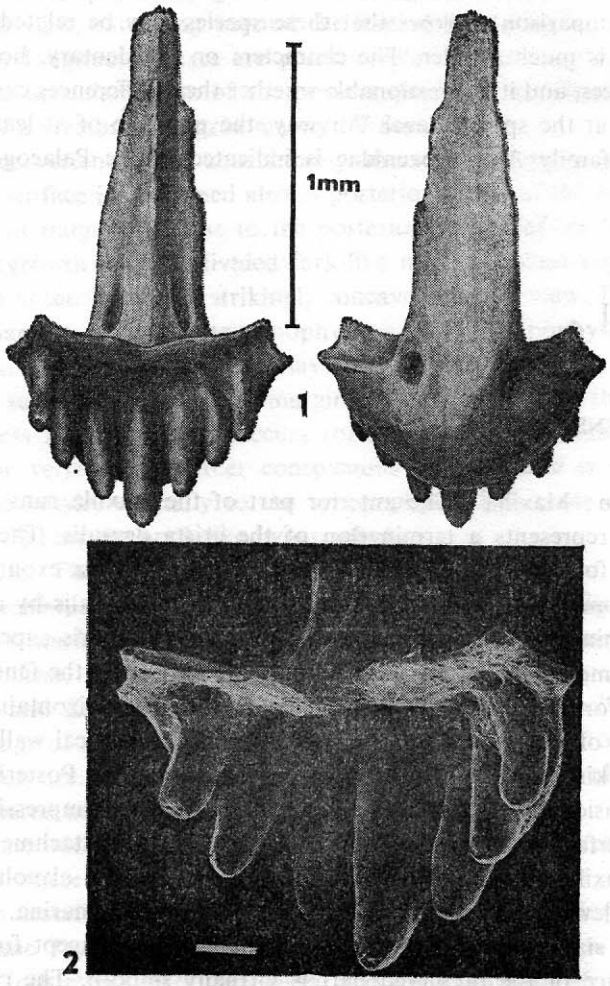
Material: DP FNSP 213

Description: Maxilla - The anterior part of the maxilla runs off in a simple process which represents a termination of the crista dentalis. The dorsal surface of the process forms the postero-ventral wall of the fenestra exonarina. This wall is separated from the dorsal surface of the lamina horizontalis by a blunt ridge in which the opening for the emergence of the nervus alveolaris superior is situated. The ridge becomes sharper only when joining the margin of the fenestra exonarina. Another ridge formed on the dorsal surface of the lamina horizontalis is conspicuous only at the site of transition to the inner surface of the vertical wall of the maxilla; it is entirely lacking at the margin of the lamina horizontalis. Posterior to this ridge, however, a considerable depression is situated creating an impression of a groove on the dorsal surface of the lamina horizontalis, at the site of attachment to the vertical wall of the maxilla. A row of openings for the rami nervi alveolaris inferioris is situated at the level of the ventral margin of the fenestra exonarina. These foramens are of various size, their orifices are directed anteriorly. Except for the openings, the outer surface of the preserved part is virtually smooth. The crista dentalis is distinctly vaulted at the site of attachment of each tooth, and this part of the bone is separated from the labial surface of each tooth by only an inconspicuous furrow.

Dentition - The teeth are cylindrical in the lingual view, widening only at the

bases. They are close to each other, so that their bases almost fuse in their bottom parts. A tiny foramen is in the bottom part of each tooth. The termination of a tooth is strongly asymmetrical - the posterior margin projects point-wise, while the anterior one is terminated by an arch. However, no cutting edge is developed on the teeth. Convergent striation is slightly developed under the upper termination of a tooth.

Discussion: The shape of the tooth termination slightly resembles that of *Gerrhonotus scincicauda* (see also Camp 1923, fig. H); this, however, is not conclusive even for a family assignment.



5. 1 Family indet. II (DP FNSP 317). Intermaxilla in inner and outer aspects. Drawings by I. Kolebaba. 2 Family indet. II (DP FNSP 317). Ventral part of the intermaxilla in inner and slightly lateral aspect, to show the lingual profile of the teeth. The line is 0.1 mm.

Family indet. II

(Text fig. 5)

Material: DP FNSP 317

Description: Intermaxilla - The size of this element (the distance between either points of the processus maxillares is 1 mm only) indicates that very small animal must be concerned. There is a triangular facet on the dorsal surface of the maxillar process, which is separated by only very indistinct ridge from the dorsal surface of the lamina horizontalis. The processus nasalis tapers by slight indentations towards its tip, and its base is pierced by a big canal on either side. There is an obtuse keel on the inner surface of the processus nasalis. The lamina horizontalis is comparatively thin, its margin not having any distinct irregularities.

Dentition - The number of tooth positions is 7. The teeth are almost cylindrical in lingual view, with blunt crowns. A distinct foramen is developed in the base of each tooth (this base being covered by the bone of attachment). Teeth are close to each other.

Discussion: According to the character of the dentition, a representative of anguids might be concerned.

Family indet. III

(Text fig. 6)

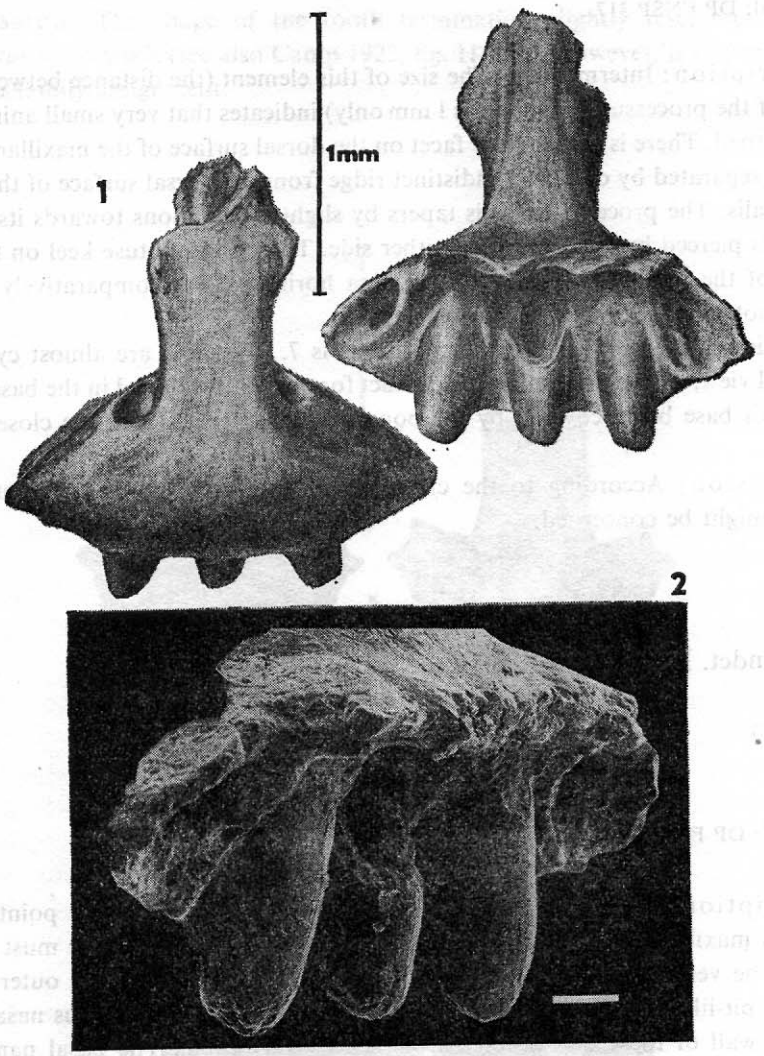
Material: DP FNSP 196

Description: Intermaxilla - Its size (the distance between either points of the processus maxillares is about 1.5 mm) suggests that very small lizard must be concerned. The ventral part of the bone is considerably robust. On the outer surface there is a pit-like depression on either side of the base of the processus nasalis. The posterior wall of these depressions is pierced by tiny canal. The basal part of the processus nasalis is slender, and bears a flat triangular outgrowth on its either side. The outer surface of the bone is rounded and smooth. It is impossible to distinguish any facet on the dorso-lateral surface of the processus maxillaris. The inner surface of the processus nasalis passes indistinctly into the dorsal surface of the lamina horizontalis.

Dentition - Teeth are pleurodont and bluntly terminated. Their total count is 5.

Discussion: If the hollow within the odd tooth situated in the mid-line is the

consequence of the natural tooth resorption (which is supported by the lack of both teeth in the remaining odd tooth positions), the method of the tooth replacement could exclude this form from Anguidae.



6. 1 Family indet. III (DP FNSP 196). Ventral part of the intermaxilla in outer and inner aspects. Drawings by I. Kolebaba. 2 Family indet. III (DP FNSP 196). Ventral part of the intermaxilla in inner and slightly lateral aspect. The line is 0.1 mm.

RELATIONS OF DOLNICE LIZARD HERPETOFAUNA

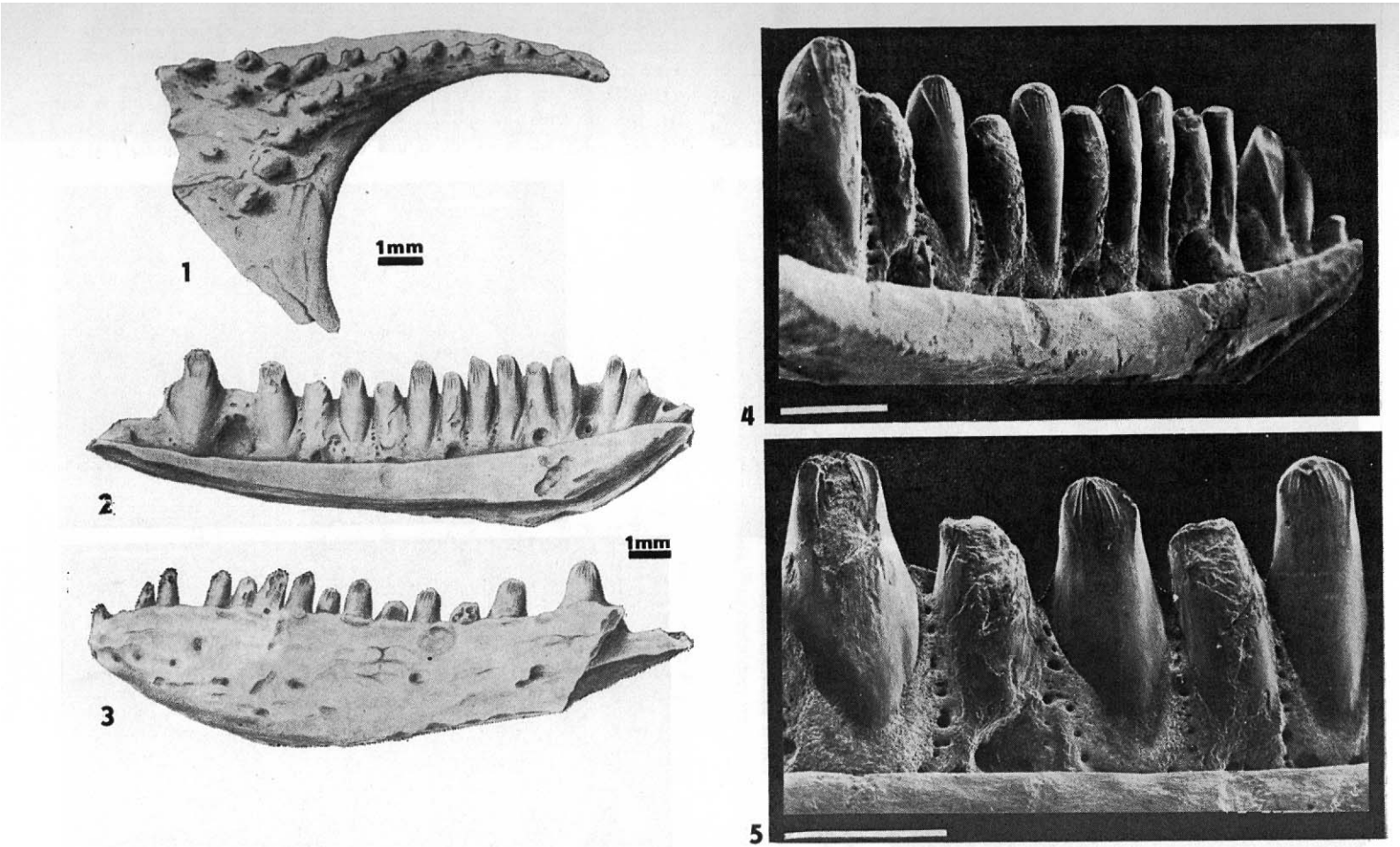
Even though the Dolnice herpetofauna only starts to be studied at the present time, and the systematic review of the lizard forms given in this paper is not by far definitive, it is possible already to draw some general conclusions. First of all it is possible to state that Anguidae has been a very succesful group during the Tertiary. This concerns not only the Lower Miocene of Dolnice, but also the Eocene and Oligocene of Quercy, and the Middle Eocene of Geiseltal. During the Pliocene period anguids considerably decreased in the number of their taxa (only *Ophisaurus pannonicus* was found in the Upper Pliocene of Rębielice Królewskie I in Poland; Młynarski 1964, Bachmayer and Młynarski 1977: 289), and undoubtedly the majority of them disappeared from central Europe owing to the climate changes (the mentioned *O. pannonicus* being the most resistent of them, because it was found still in the Pleistocene sediments (Günz-Mindel) of central Poland (Bachmayer and Młynarski op. cit.: 296)]. Obviously also *Pseudopus* died out in central Europe, surviving only in the Balcan penninsula by the form *P. apodus*. This form, however, is not conspecific with the form found in the Lower Miocene of central Europe. Another form surviving in central Europe (next to *O. pannonicus* which, however, died out during the Pleistocene) might be *Anguis*; its contemporaneous form *Anguis fragilis* reaches up to Scandinavia (Petzold 1971, fig. 14) which serves as evidence of its strong resistence against low temperatures. On the other hand it is possible that *Anguis* invaded central and northern Europe relatively recently (cf. Voipio 1962). Unfortunately, the scarce information on the fossil *Anguis* does not allow any more precise conclusions concerning this genus.

Contrary to anguids, Lacertidae still maintain an important position within the herpetofauna of Europe, and it is possible to agree with Hoffstetter (1962b: 255) that already in the Lower Miocene the European lacertids were constituted approximately at the present-day state. However, another lineage of Lacertidae, characterized by blunt teeth and common in Europe until the Lower Miocene *(Pseudeumeces, Dracaenosaurus, Amblyolacerta)* did not survive by neither of its representatives. This lineage of lacertids, together with cordylids, illustrate best the connections and relations of the Lower Miocene fauna of Dolnice with the Eocene and Oligocene faunas of Quercy, and the Middle Eocene fauna of Geiseltal. These relations are supported also by the paleogeography. The three regions of Europe mentioned were connected

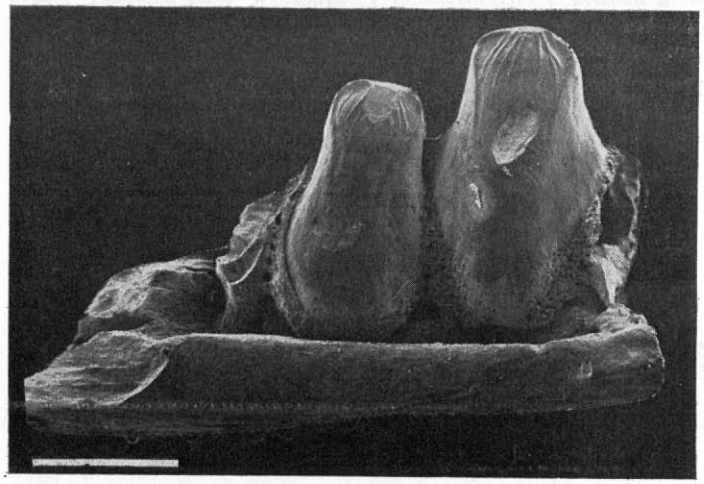
with each other during the Eocene-Miocene period, with only a relative short interruption in the Middle Oligocene by the so-called Rhine break (Cícha 1970, fig. 2; Brzobohatý 1981, fig. 1; Cavelier 1979, fig. 5). However, Dolnice and Geiseltal were in permanent mutual contact throughout this period. This explains the great similarity of the three herpetofaunas mentioned.

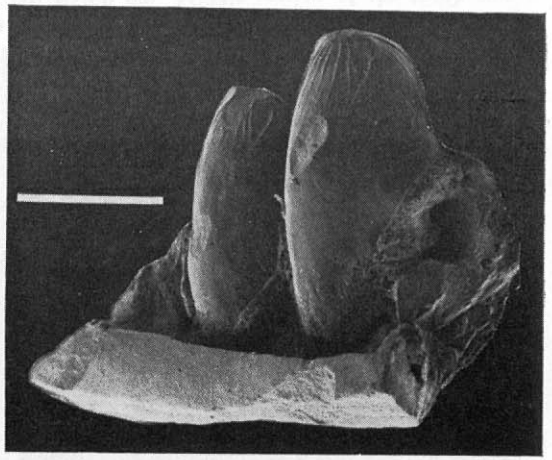
Amphisbaenids and chamaeleons are too scarce both in material and in occurence so it is not possible to use them as indicators of the relationships of the different European herpetofaunas. One can only conclude, as is in the case of anguids, that the climatic changes during the Pleistocene forced them to withdraw into the Mediterranean area.

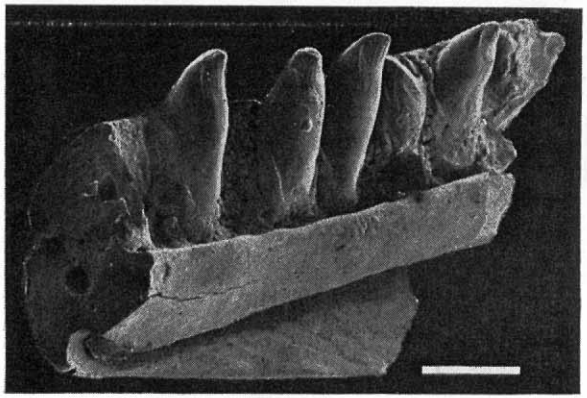
A very interesting problem is that concerning cordylids. Hoffstetter (1967) found already in the Upper Jurassic of Purbeck Beds (England) several representatives of Cordyloidea *(Paramacellodus, Saurillus, Pseudosaurillus)*. This means that at least during the Jurassic-Miocene period cordylids have been inhabitants also of northern hemisphere, namely of Europe. What caused their total extintion in the most of their areal remains obscure. Nowadays they are confined to Africa (the most northern point of distribution is Sudan) and Madagascar. The composition of the Upper Jurassic herpetofauna of England also suggests that this assemblage could contain some forms belonging among the ancestors of the Tertiary European lizards, as with the exceptions of the short-time interruptions the region of England has been connected with Europe (Casey 1973, fig. 3; Neale 1973, fig. 1).

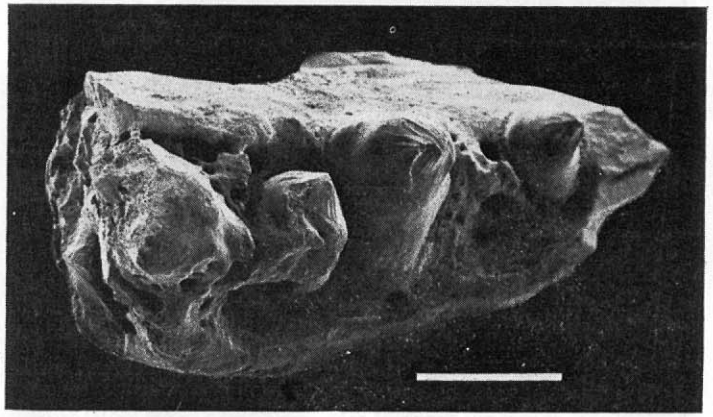


Pl. I. 1 *Chamaeleo caroliquarti* Moody et Roček, 1980 (DP FNSP 226). Right postorbital in lateral aspect. Drawing by author. 2 *Palaeocordylus bohemicus* n. gen. n. sp., holotype (DP FNSP 97). Left dentary in lingual aspect. Drawing by I. Kolebaba. 3 *Palaeocordylus bohemicus* n. gen. n. sp., holotype (DP FNSP 97). Left dentary in labial aspect. Drawing by I. Kolebaba. 4 *Palaeocordylus bohemicus* n. gen. n. sp., holotype (DP FNSP 97). Left dentary in posterolingual aspect to show the lingual profile of the teeth. The line is 1 mm. 5 *Palaeocordylus bohemicus* n. gen. n. sp., holotype (DP FNSP 97). Middle section of the tooth row in lingual aspect. The line is 1 mm.

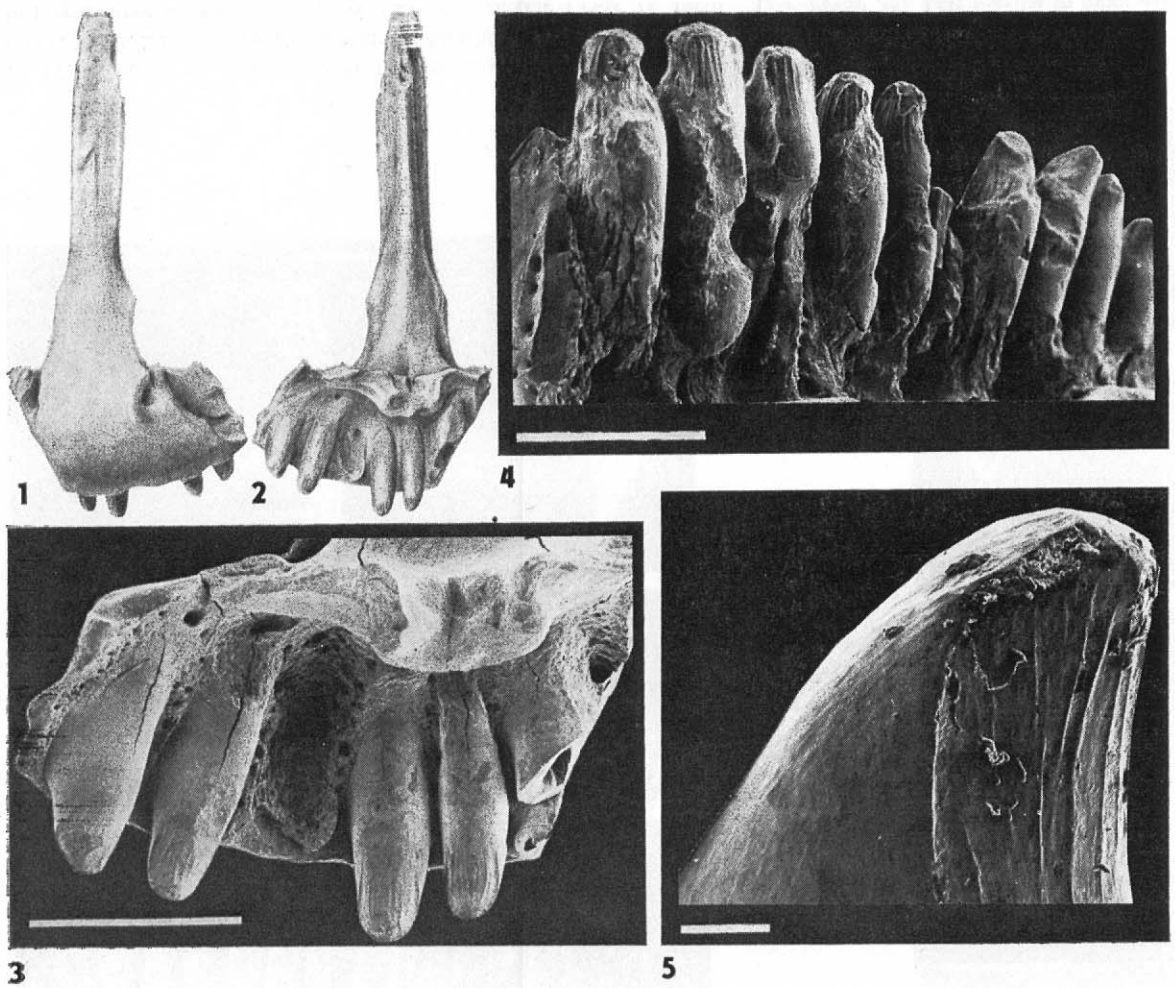




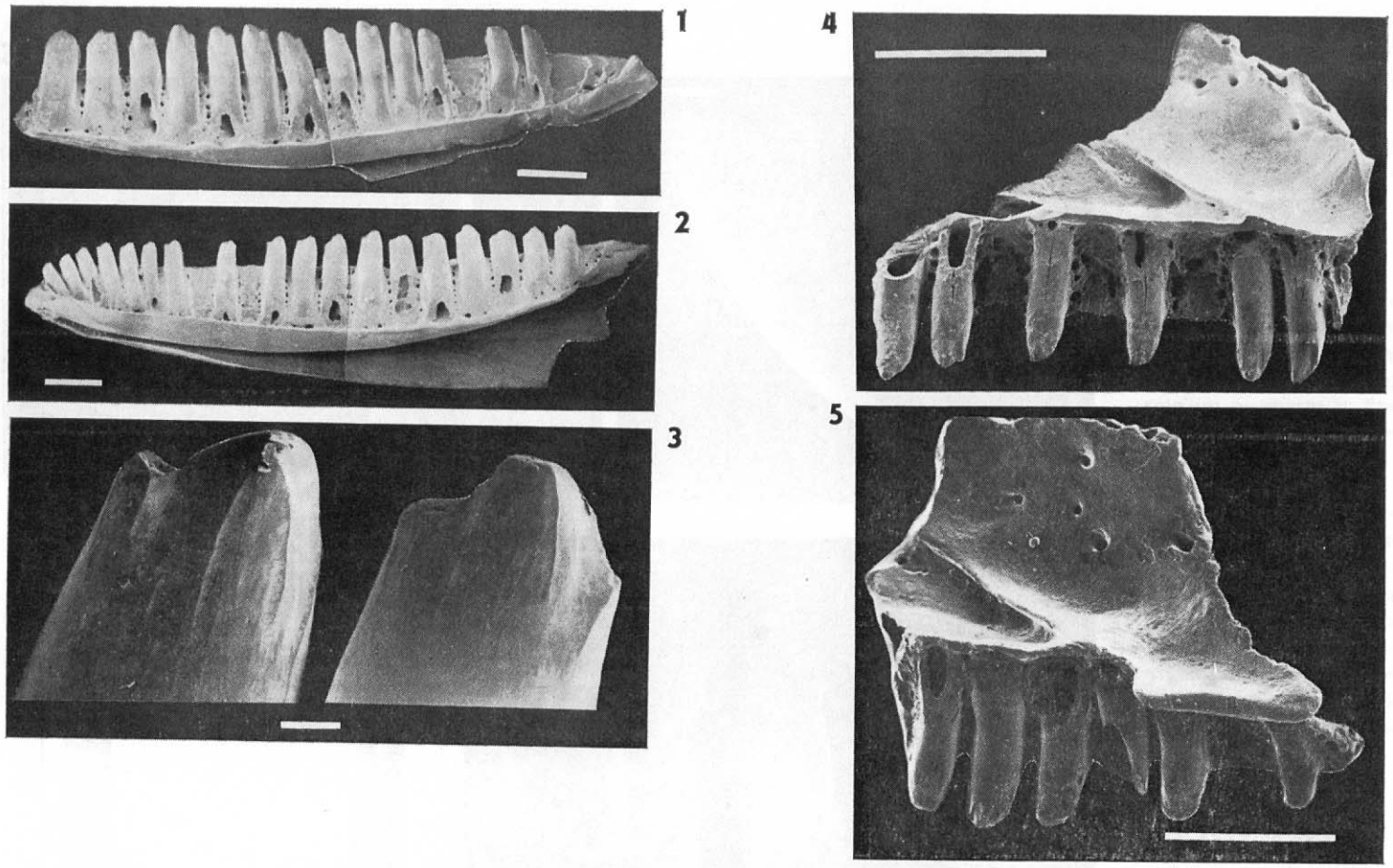




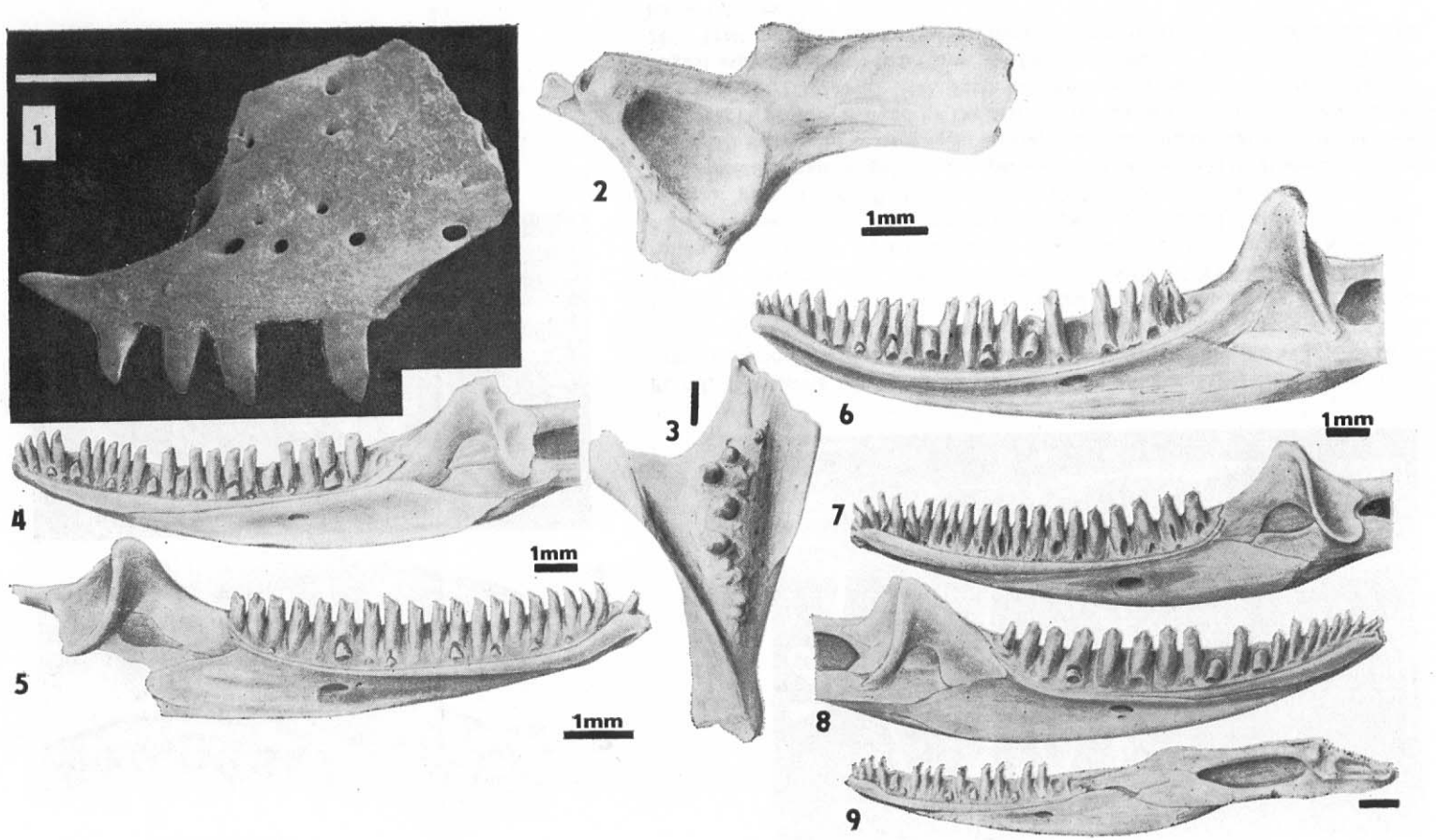
Pl. II. 1 *Palaeocordylus bohemicus* n. gen. n. sp., paratype (DP FNSP 57). Teeth of the posterior section of the tooth row in lingual aspect. The line is 1 mm. 2 *Palaeocordylus bohemicus* n. gen. n. sp., paratype (DP FNSP 57). Teeth of the posterior section of the tooth row in anterolingual aspect. The line is 1 mm. 3 *Palaeocordylus bohemicus* n. gen. n. sp., paratype (DP FNSP 119). Medial section of the right dentary in anterolingual and slightly dorsal aspect to show the shape of Meckel's groove, sulcus dentalis, and the position of the canalis pro nervus alveolaris inferior. The line is 1 mm. 4 *Palaeocordylus bohemicus* n. gen. n. sp., paratype (DP FNSP 294). Posterior section of the tooth row in anterolinguodorsal aspect. The line is 1 mm.



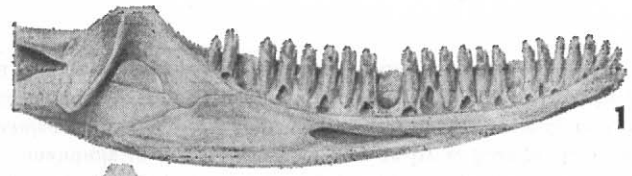
Pl. III. 1 *Palaeocordylus bohemicus* n. gen. n. sp., paratype (DP FNSP 114). Intermaxilla in outer aspect. Drawing by I. Kolebaba. 2 *Palaeocordylus bohemicus* n. gen. n. sp., paratype (DP FNSP 114). Intermaxilla in inner aspect. Drawing by I. Kolebaba. 3 *Palaeocordylus bohemicus* n. gen. n. sp., paratype (DP FNSP 114). Part of intermaxilla in inner aspect. The line is 1 mm. 4 *Palaeocordylus bohemicus* n. gen. n. sp., (DP FNSP 85). The tooth row of the left dentary in posterolingual aspect. The line is 1 mm. 5 *Palaeocordylus bohemicus* n. gen. n. sp., paratype (DP FNSP 119). Tooth from the middle section of the tooth row in anterolingual aspect. The line is 0.1 mm.



Pl. IV. 1 *Lacerta* sp. (DP FNSP 3). Left dentary in lingual aspect. The line is 1 mm. 2 *Lacerta* sp. (DP FNSP 7). Almost complete right dentary in lingual aspect. The line is 1 mm. 3 *Lacerta* sp. (DP FNSP 7). Teeth from the middle (left) and from the posterior (right) sections of the tooth row in lingual aspect. The line is 0.1 mm. 4 *Lacerta* sp. (DP FNSP 124). Left maxilla in inner aspect. The line is 1 mm. 5 *Lacerta* sp. (DP FNSP 98). Left maxilla in inner aspect. The line is 1 mm.



Pl. V. 1 *Lacerta* sp. (DP FNSP 74). Left maxilla in outer view. The line is 1 mm. 2 *Lacerta* sp. (DP FNSP 449). Central part of pelvis in right view. Drawing by author. 3 *Lacerta* sp. (DP FNSP 4320). Central part of the right pterygoid. Drawing by author. 4 *Podarcis sicula* ♂, contemporaneous species (DP FNSP osteol. coll. 6499). Anterior part of the right mandible in lingual aspect. Drawing by I. Kolebaba. 5 *Podarcis hispanica* ♂, contemporaneous species (DP FNSP osteol. coll. 6501). Anterior part of the left mandible in lingual aspect. Drawing by I. Kolebaba. 6 *Lacerta trilineata* major ♀, contemporaneous species (DP FNSP osteol. coll. 6502). Anterior part of the right mandible in lingual aspect. Drawing by I. Kolebaba. 7 *Gallotia galloti*, contemporaneous species (DP FNSP osteol. coll. 6497). Anterior part of the right mandible in lingual aspect. Drawing by I. Kolebaba. 8 *Lacerta dugesii* ♂, contemporaneous species (DP FNSP osteol. coll. 6494). Anterior part of the left mandible in inner aspect. Drawing by I. Kolebaba. 9 *Podarcis muralis* ♂, contemporaneous species (DP FNSP osteol. coll. 6495). Right mandible in inner aspect. Note the lack of coronoid process. Drawing by I. Kolebaba.



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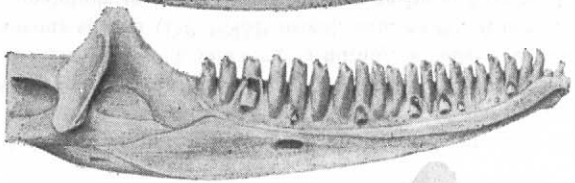

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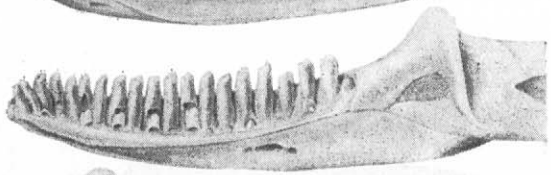

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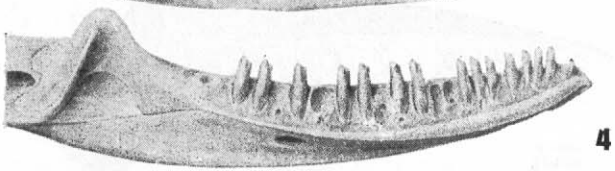

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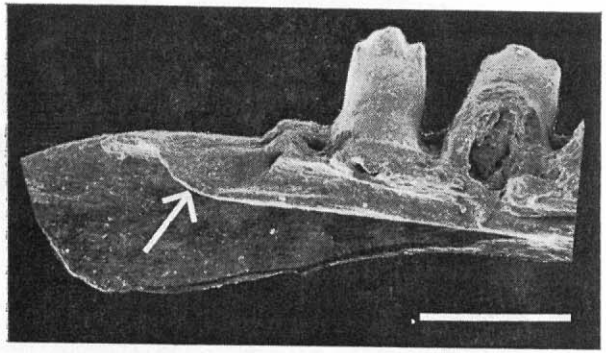

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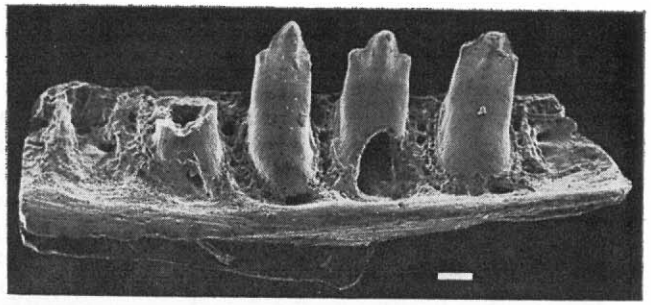

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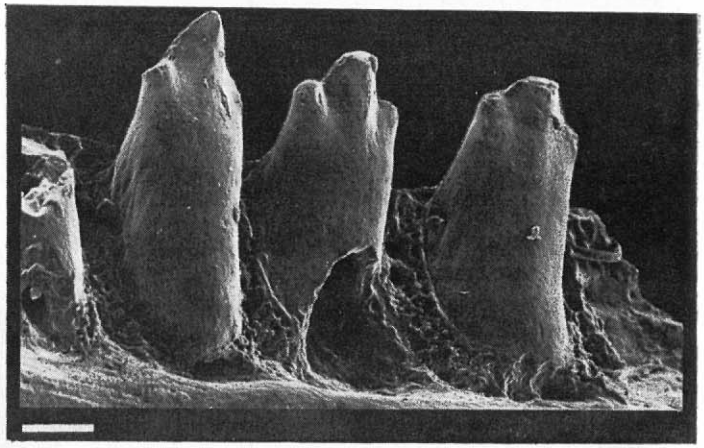

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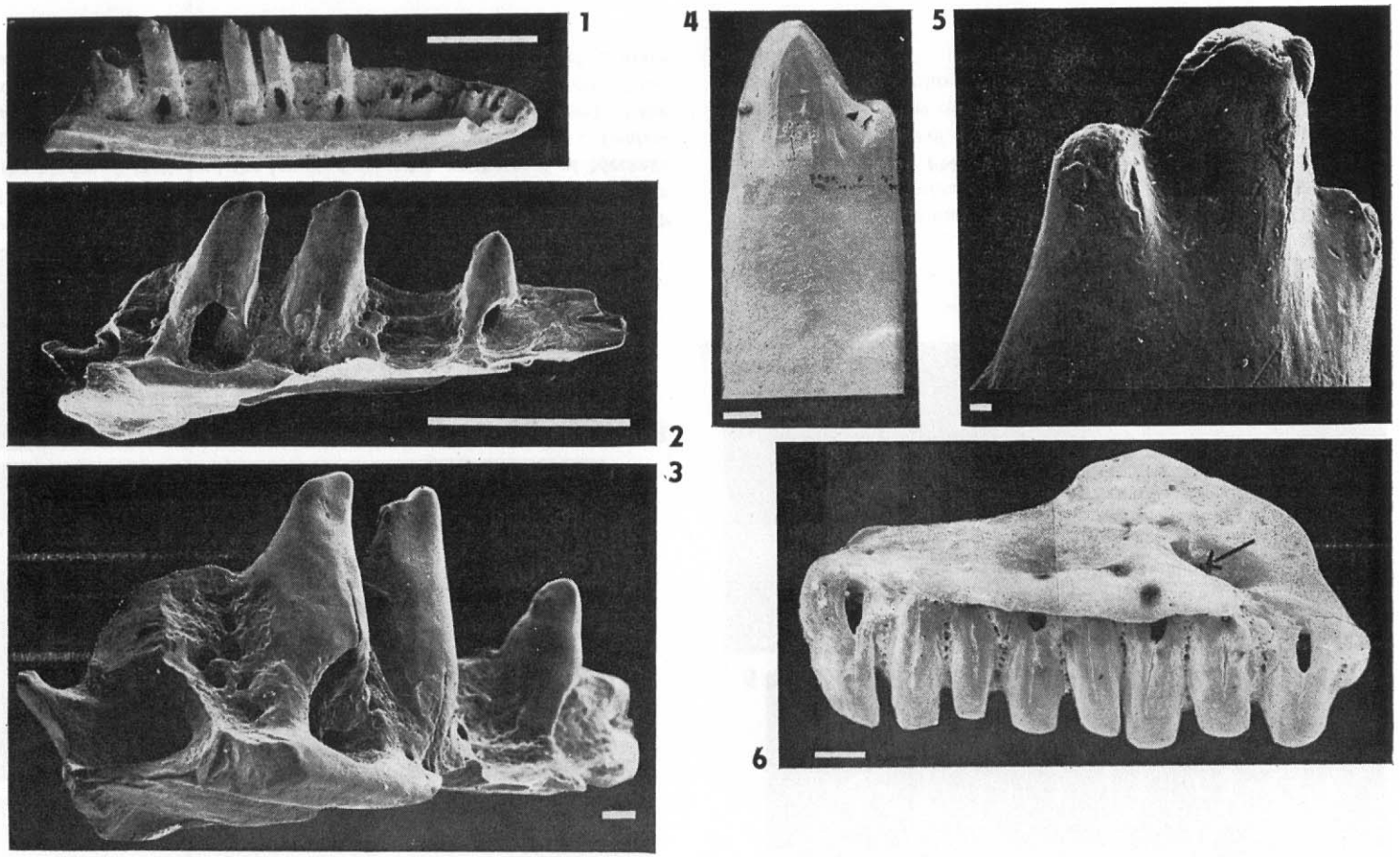
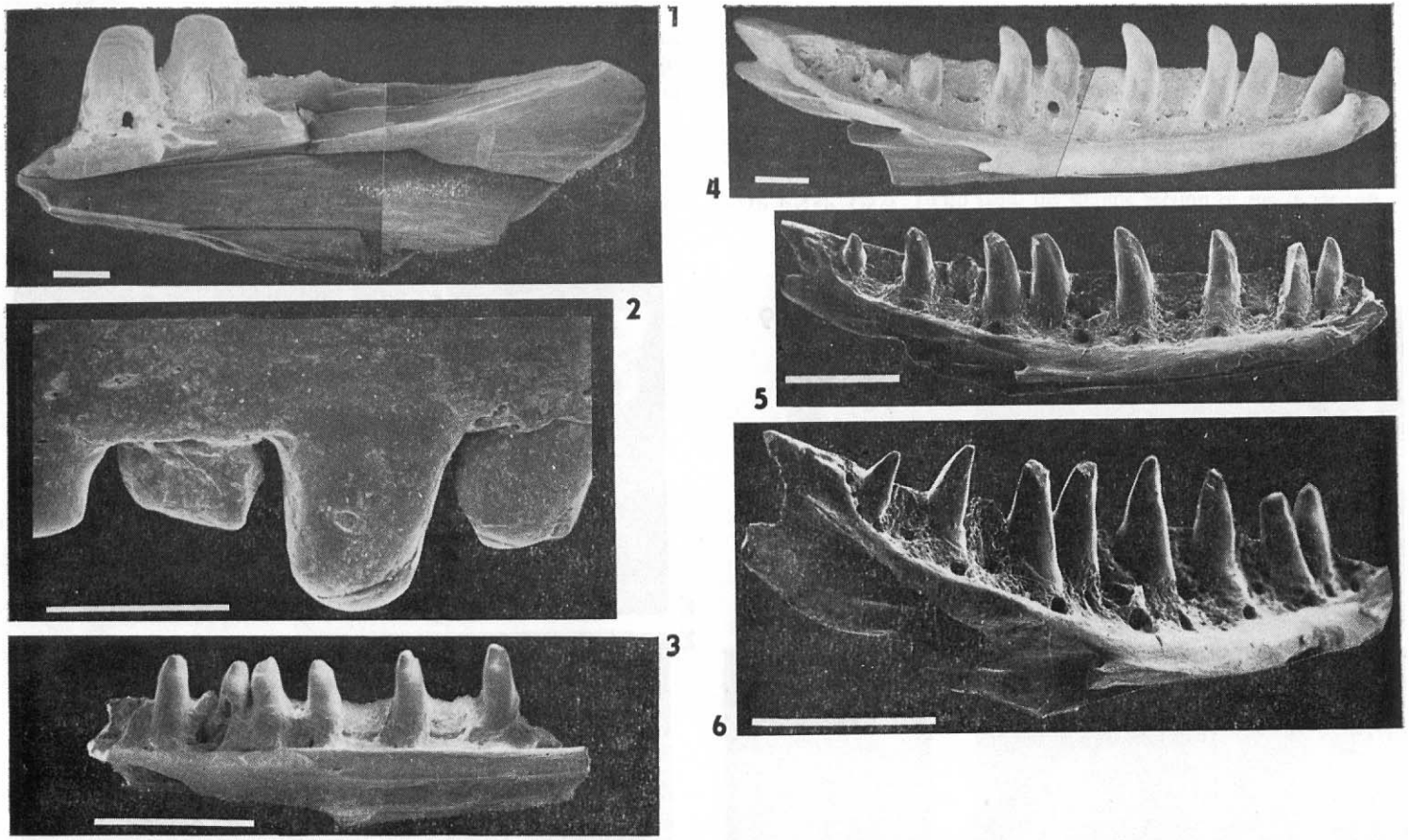
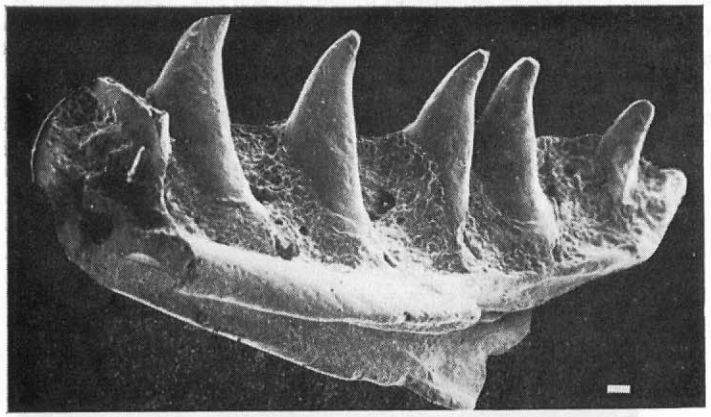
Pl. VI. 1 *Podarcis taurica* ♂, contemporaneous species (DP FNSP osteol. coll. 6498). Anterior part of the left mandible in lingual aspect. Drawing by I. Kolebaba. 2 *Podarcis erhardii* ♂, contemporaneous species (DP FNSP osteol. coll, 6503). Anterior part of the left mandible in lingual aspect. Drawing by I. Kolebaba. 3 *Lacerta perscipillata* ♂, contemporaneous species (DP FNSP osteol. coll. 6496). Anterior part of the right mandible in lingual aspect. Drawing by I. Kolebaba. 4 *Lacerta monticola* ♂, contemporaneous species (DP FNSP osteol. coll. 6500). Anterior part of the left mandible in lingual aspect. Drawing by I. Kolebaba. 5 *Miolacerta tenuis* n. gen. n. sp., paratype (DP FNSP 4315). Posterior section of the left dentary in ventrolingual aspect. Note the longitudinal edge on the roof of Meckel's groove, marked by the arrow. The line is 1 mm. 6 *Miolacerta* tenuis n. gen. n. sp., (DP FNSP 240). Teeth of the posterior part of the right dentary in lingual aspect. The line is 0.1 mm. 7 *Miolacerta tenuis* n. gen. n. sp., (DP FNSP 240). Teeth of the posterior part of the right dentary in anterolingual aspect. The line is 0.1 mm.

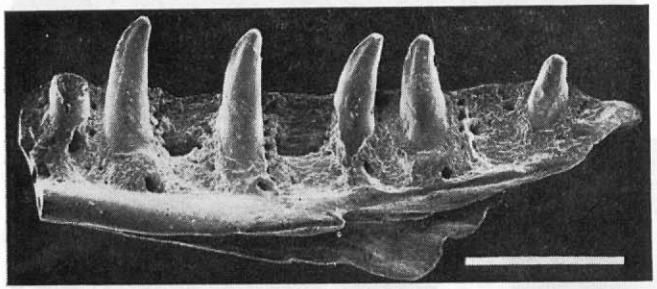


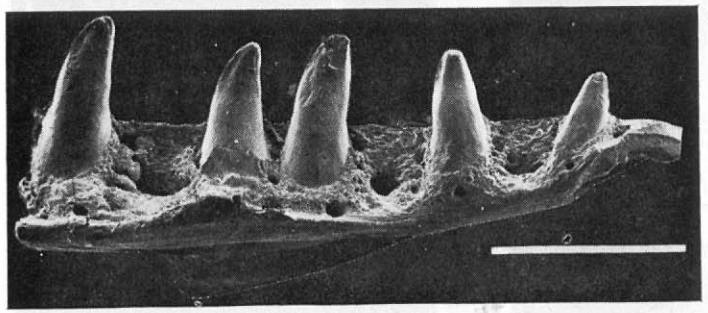
Pl. VII. 1 *Miolacerta tenuis* n. gen. n. sp., holotype (DP FNSP 3785). Anterior part of the left dentary in lingual aspect. The line is 1 mm. 2 *Miolacerta tenuis* n. gen. n. sp., (DP FNSP 75). Teeth of the posterior section of the tooth row in lingual aspect. The line is 1 mm. 3 *Miolacerta tenuis* n. gen. n. sp., (DP FNSP 75). Teeth of the posterior section of the tooth row in anterolingual aspect to show the lingual profile of the teeth. The line is 0.1 mm. 4 *Miolacerta tenuis* n. gen. n. sp., holotype (DP FNSP 3785). Tooth from the middle section of the tooth row in lingual aspect. The line is 0.1 mm. 5 *Miolacerta tenuis* n. gen. n. sp., (DP FNSP 240). Upper part of the tooth from the posterior section of the tooth row in anterolingual aspect. The line is 0.01 mm. 6 *Amblyolacerta dolnicensis* n. gen. n. sp., holotype (DP FNSP 4820). Right maxilla in inner aspect. The orifice of the canalis pro nervus alveolaris superior is marked by the arrow. The line is 1 mm.

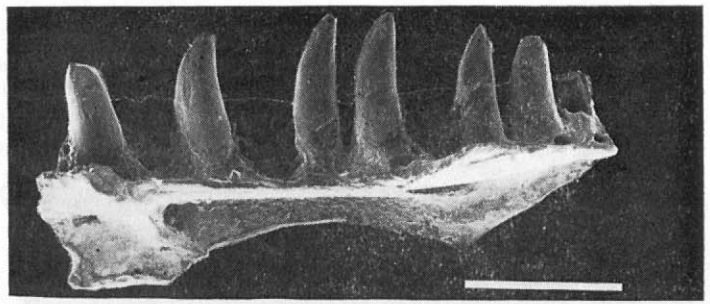


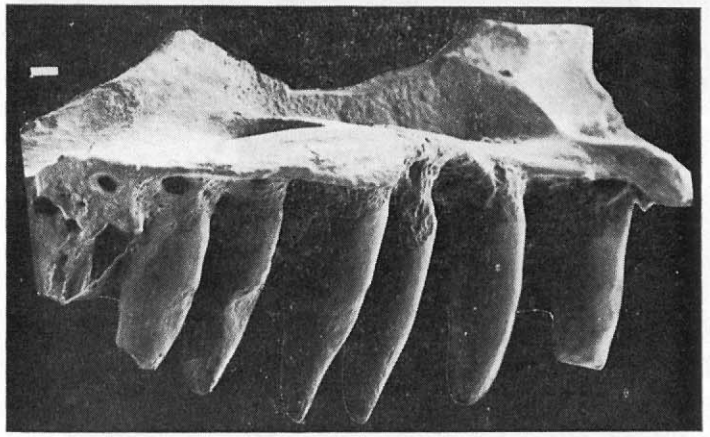
Pl. VIII. 1 *Amblyolacerta dolnicensis* n. gen. n. sp., paratype (DP FNSP 3837). Posterior section of the right dentary in ventrolingual aspect (the hindmost teeth and the longitudinal edge on the roof of Meckel's groove were broken off; see footnote p. 33.) The line is 1 mm. 2 *Amblyolacerta dolnicensis* n. gen. n. sp., paratype (DP FNSP 46). Teeth of the middle section of the tooth row in labial aspect. The line is 1 mm. 3 *Lacertidae* gen. indet. (DP FNSP 3773). Middle section of the left dentary in lingual aspect. The line is 1 mm. 4 *Ophisaurus* cf. *spinari* (DP FNSP 122). Complete left dentary in lingual aspect. The line is 1 mm. 5 *Ophisaurus* cf. *spinari* (DP FNSP 80). Left dentary in lingual aspect. The line is 1 mm. 6 *Ophisaurus* cf. *spinari* (DP FNSP 80). Left dentary in posterolingual aspect to show the lingual profile of the teeth, positions of Meckel's groove and orifice of the canalis pro nervus alveolaris inferior. The line is 1 mm.



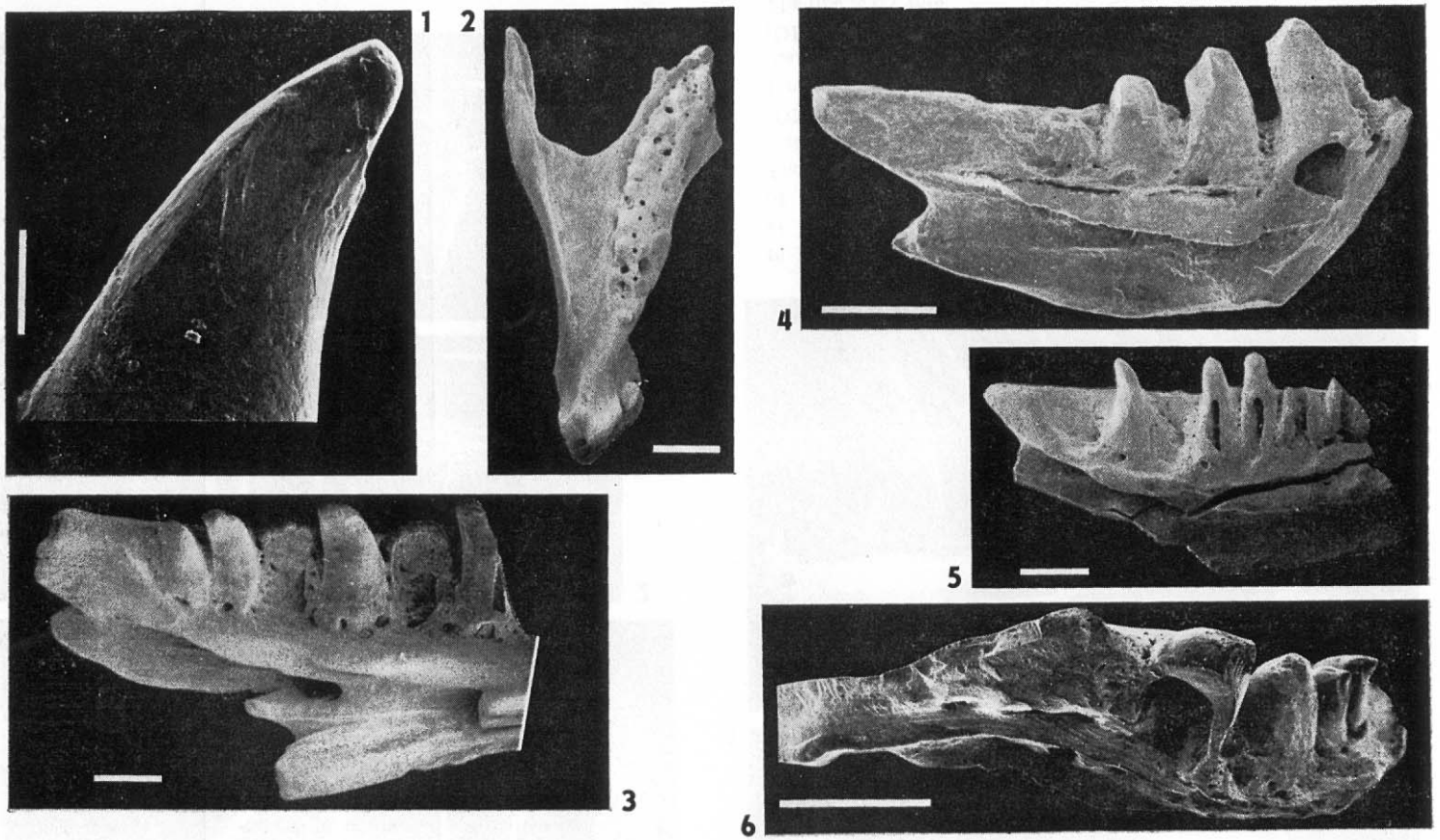




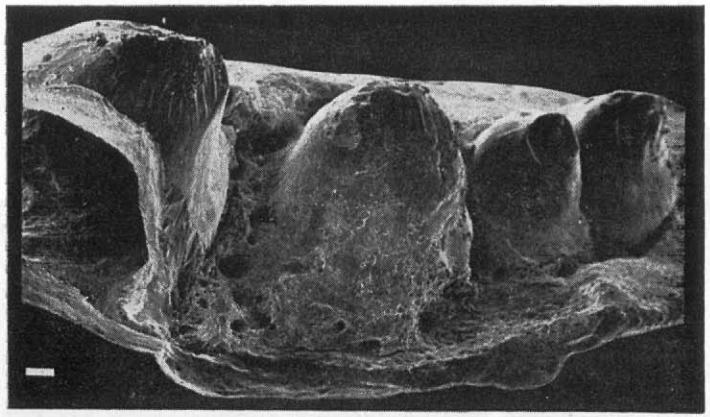


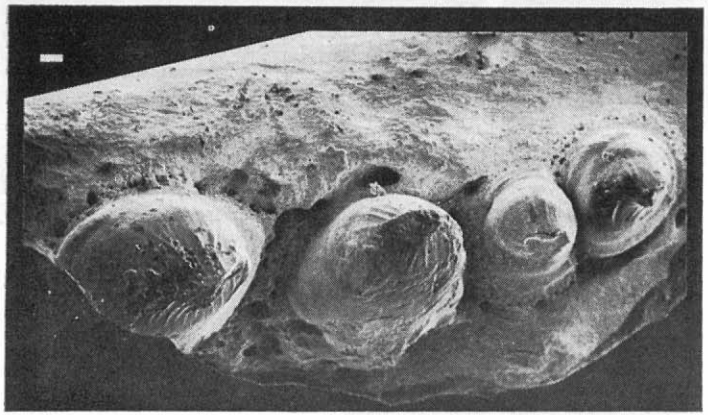


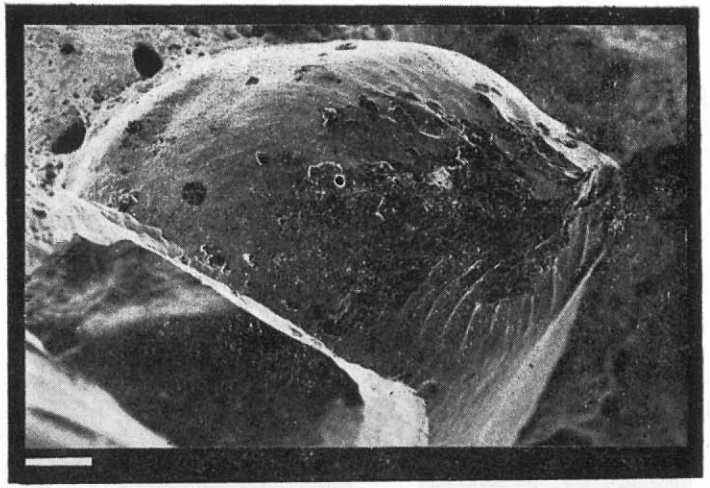
Pl. IX. 1 *Ophisaurus* cf. *spinari* (DP FNSP 123). Posterior section of the right dentary in anterolingual aspect, to show the position of Meckel's groove and the canalis pro nervus alveolaris inferior. The line is 0.1 mm. 2 *Ophisaurus* cf. *spinari* (DP FNSP 123). Posterior section of the right dentary. The line is 1 mm. 3 *Ophisaurus* cf. *spinari* (DP FNSP 120). Posterior section of the left maxilla. The line is 1 mm. 4 *Ophisaurus* cf. *spinari* (DP FNSP 125). Section of the left maxilla in lingual aspect. The line is 1 mm. 5 *Ophisaurus* cf. *spinari* (DP FNSP 125). Section of the left maxilla in posterolingual aspect. The line is 0.1 mm.

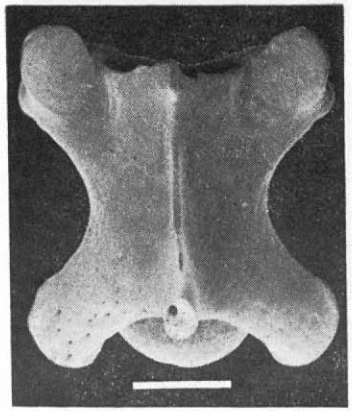


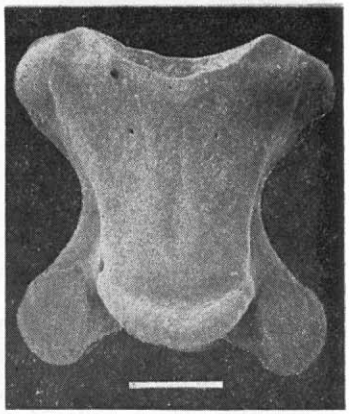
Pl. X. 1 *Ophisaurus* cf. *spinari* (DP FNSP 123). Upper part of a tooth from the middle of the tooth row. Note the slight crista on the anterior surface. The line is 0.1 mm. 2 *Ophisaurus* cf. *spinari* (DP FNSP 1550). Central part of the right pterygoid in ventral view. The line is 1 mm. 3 *Ophisaurus* sp. I (DP FNSP 3844). Posterior part of the left dentary in lingual aspect. The line is 1 mm. 4 *Ophisaurus* sp. II (DP FNSP 3864). Posterior part of the left dentary in lingual aspect. The line is 1 mm. 5 *Ophisaurus* sp. III (DP FNSP 1472). Posterior part of the left dentary in lingual aspect. The line is 1 mm. 6 *Pseudopus* sp. (DP FNSP 218). Posterior section of the tooth row in anterolingual and slightly dorsal aspect. The line is 1 mm.



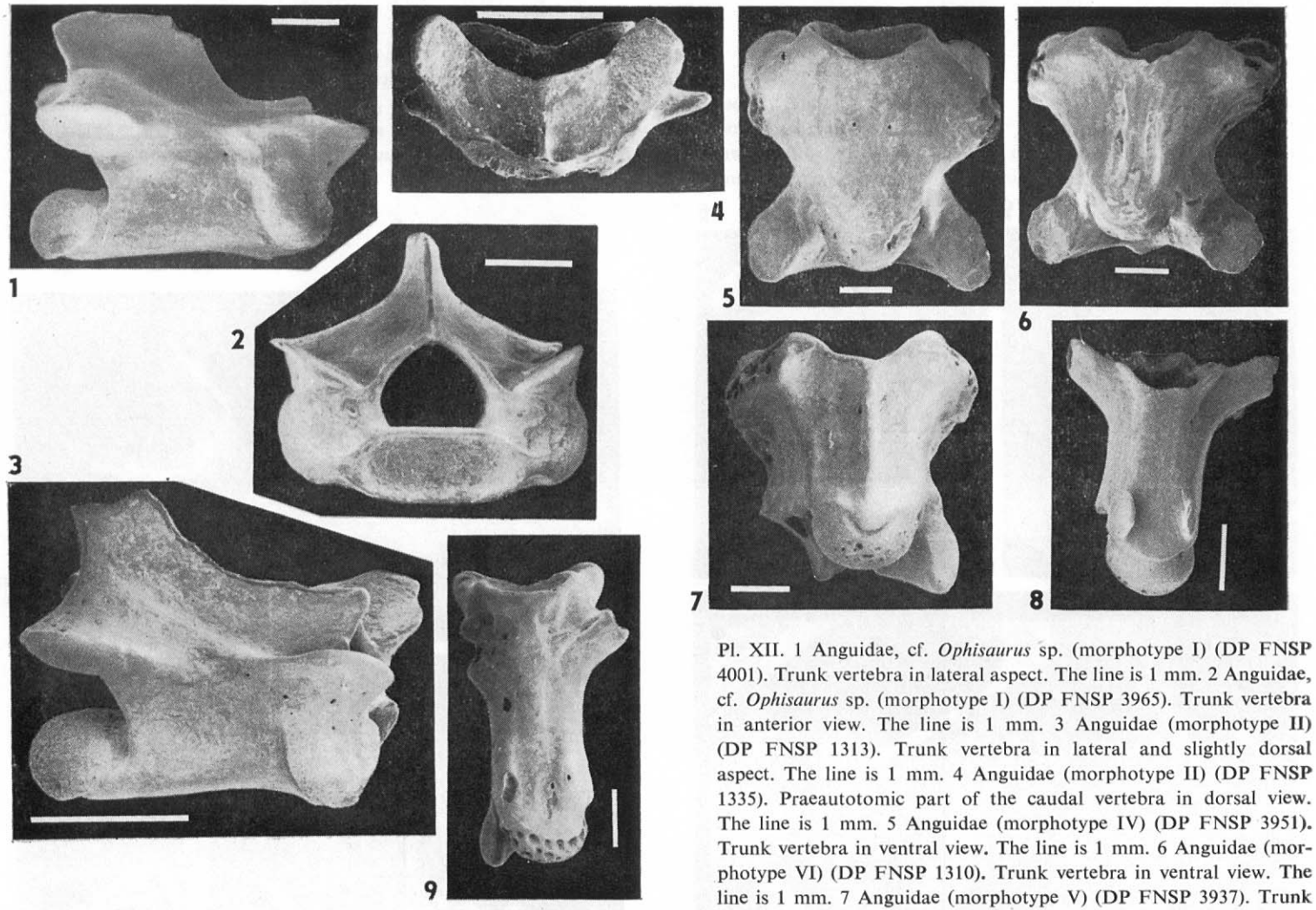




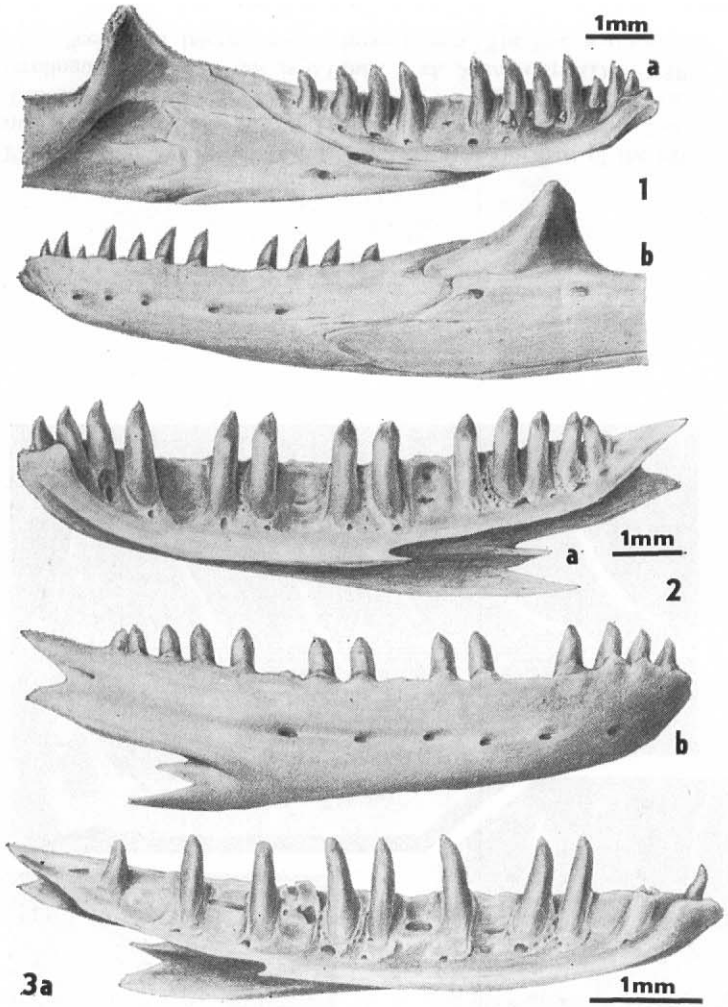


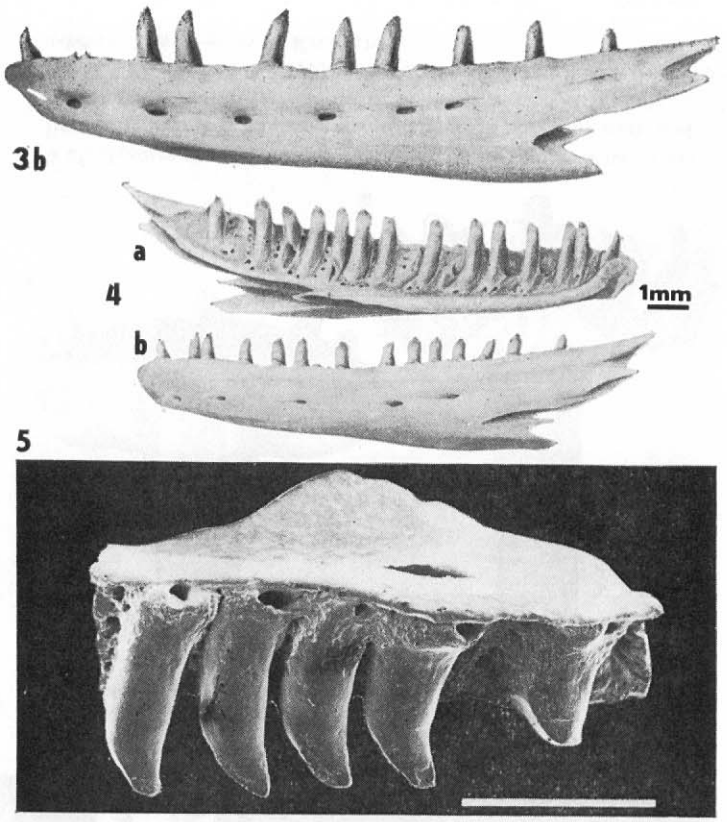


Pl. XI. 1 *Pseudopus* sp. (DP FNSP 218). The posterior section of the tooth row in dorsolingual aspect. The line is 0.1 mm. 2 *Pseudopus* sp. (DP FNSP 218). Posterior section of the tooth row in occlusal view. The line is 0.1 mm. 3 *Pseudopus* sp. (DP FNSP 218). Tooth from the posterior section of the tooth row in occlusal aspect. The line is 0.1 mm. 4 Anguidae, cf. *Ophisaurus* sp. (morphotype I) (DP FNSP 3965). Trunk vertebra in dorsal view. The line is 1 mm. 5 Anguidae, cf. *Ophisaurus* sp. (morphotype I) (DP FNSP 3965). Trunk vertebra in ventral view. The line is 1 mm.

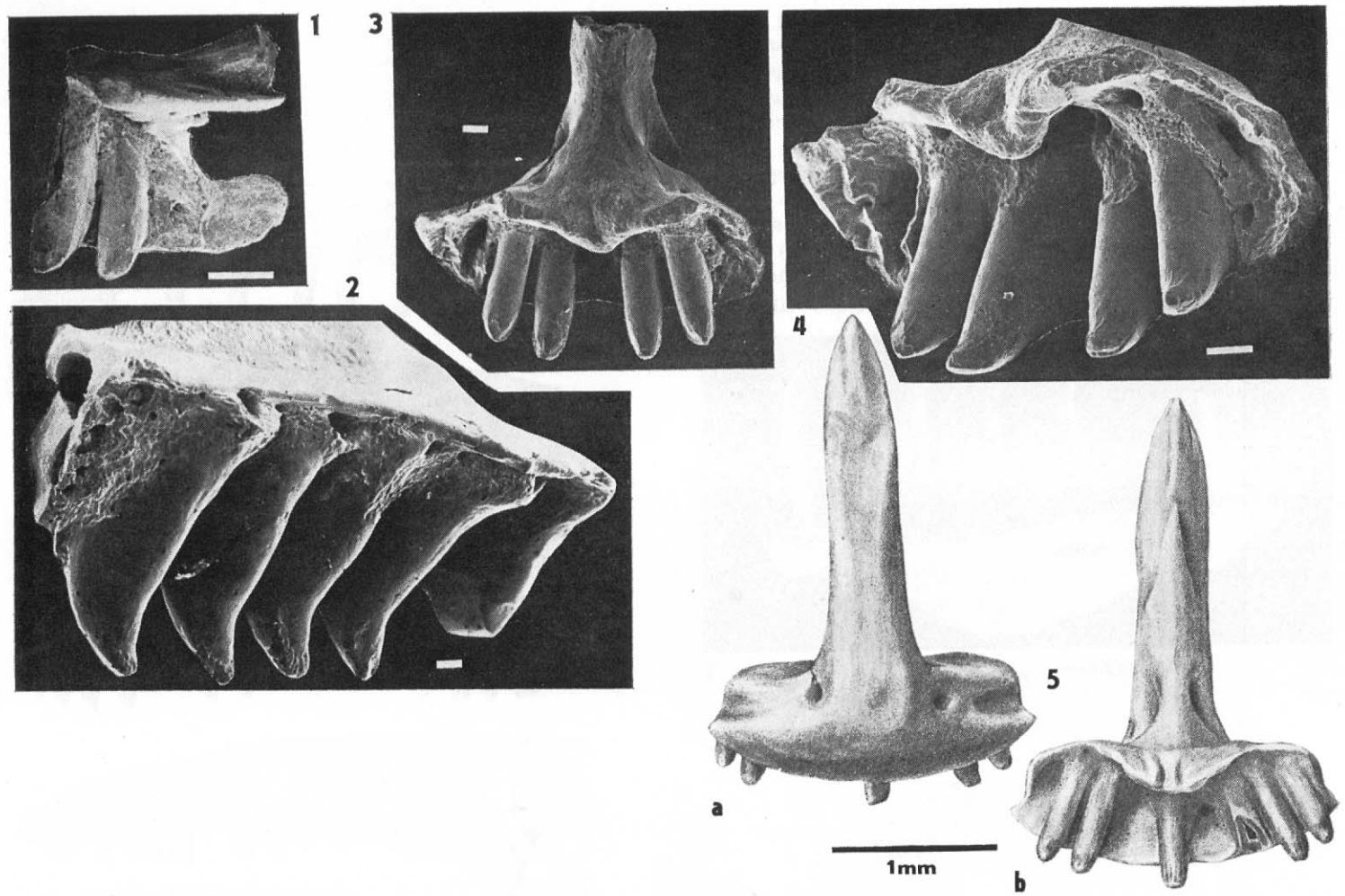


Pl. XII. 1 Anguidae, cf. *Ophisaurus* sp. (morphotype I) (DP FNSP 4001). Trunk vertebra in lateral aspect. The line is 1 mm. 2 Anguidae, cf. *Ophisaurus* sp. (morphotype I) (DP FNSP 3965). Trunk vertebra in anterior view. The line is 1 mm. 3 Anguidae (morphotype II) (DP FNSP 1313). Trunk vertebra in lateral and slightly dorsal aspect. The line is 1 mm. 4 Anguidae (morphotype II) (DP FNSP 1335). Praeautotomic part of the caudal vertebra in dorsal view. The line is 1 mm. 5 Anguidae (morphotype IV) (DP FNSP 3951). Trunk vertebra in ventral view. The line is 1 mm. 6 Anguidae (morphotype VI) (DP FNSP 1310). Trunk vertebra in ventral view. The line is 1 mm. 7 Anguidae (morphotype V) (DP FNSP 3937). Trunk vertebra in ventral view. The line is 1 mm. 8 Anguidae (morphotype I) (DP FNSP 3977). Postautotomic part of the caudal vertebra in ventral view. The line is 1 mm. 9 Anguidae (morphotype I) (DP FNSP 3972). Caudal vertebra in ventral view, incl. prae - and post-autotomic parts. The line is 1 mm.

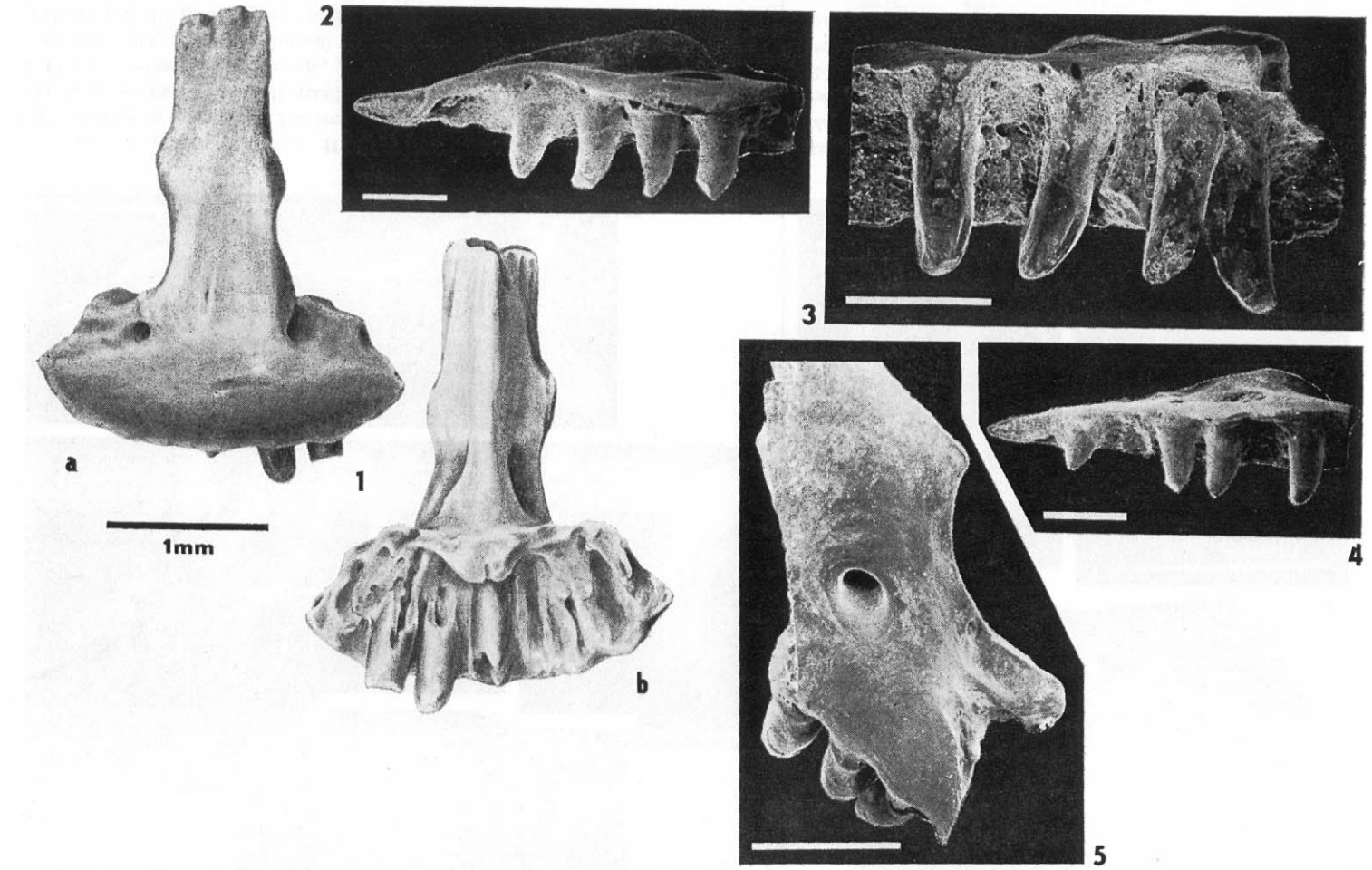




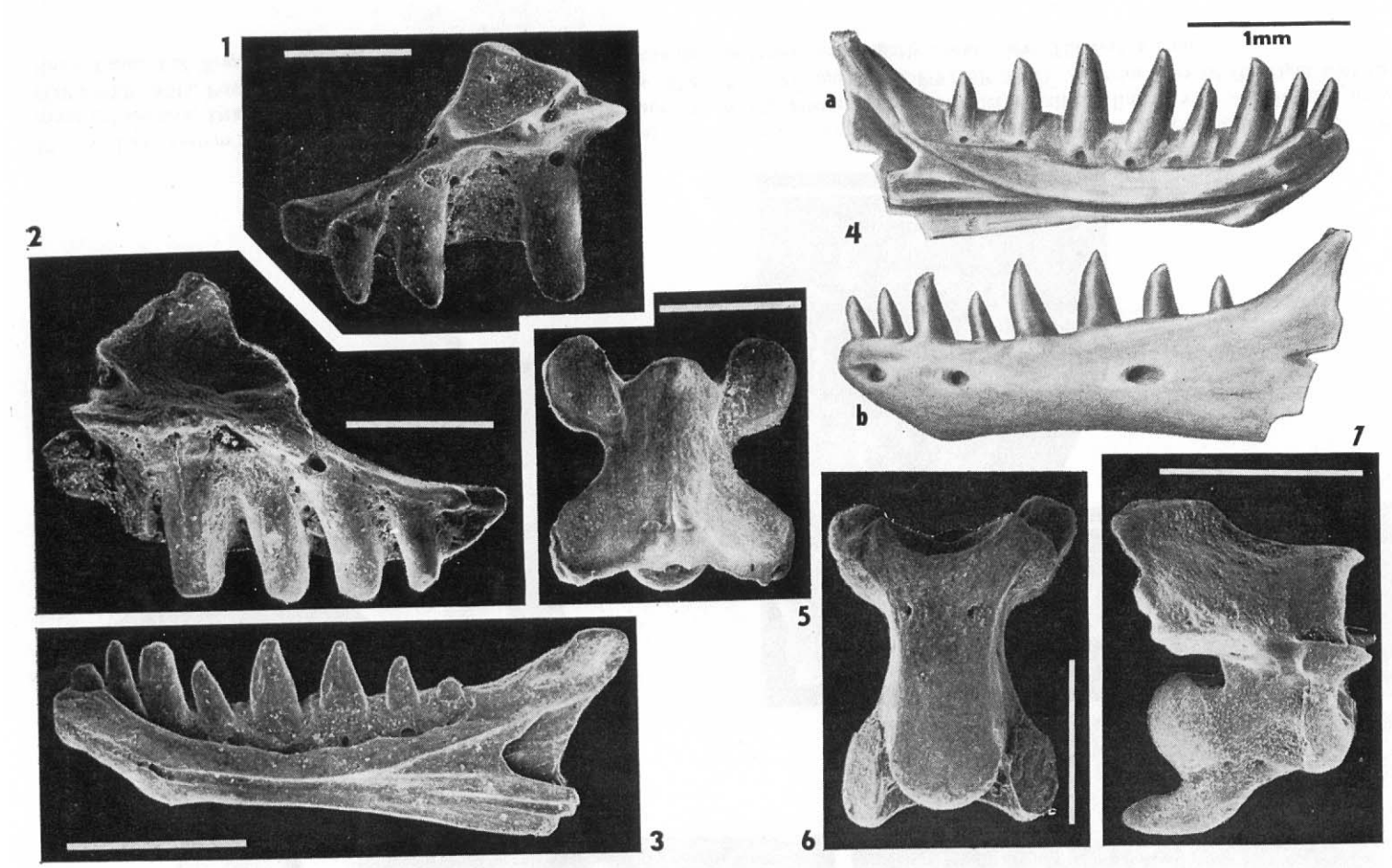
Pl. XIII. 1 *Ophisaurus koellikeri*, contemporaneous species (CK uncatalogized). Anterior part of the left mandible in inner (a) and outer (b) aspects. Drawings by I. Kolebaba. 2 *Ophisaurus ventralis*, contemporaneous species (CK, uncatalogized). Anterior part of the right mandible in inner (a) and outer (b) aspects. Drawings by I. Kolebaba. 3 *Ophisaurus attenuatus*, juv., contemporaneous species (CK, uncatalogized). Left dentary in lingual (a) and lateral (b) aspects. Drawings by I. Kolebaba. 4 *Ophisaurus attenuatus*, ad., contemporaneous species (CK, uncatalogized). Left dentary in lingual (a) and labial (b) aspects. Drawings by I. Kolebaba. 5 cf. *Xestops* sp. (DP FNSP 219). Section of the right maxilla in lingual view. The line is 1 mm.



Pl. XIV. 1 cf. *Xestops* sp. (DP FNSP 129). Anterior part of the left maxilla in lingual and slightly ventral view. The line is 1 mm. 2 cf. *Xestops* sp. (DP FNSP 219). Section of the right maxilla in anterolingual view. The line is 0.1 mm. 3 cf. *Xestops* sp. (DP FNSP 345). Section of intermaxilla in inner aspect. The line is 0.1 mm. 4 cf. *Xestops* sp. (DP FNSP 345). Section of intermaxilla in laterolingual and slightly ventral view, to show the shape of teeth and the morphology of the lamina horizontalis. The line is 0.1 mm. 5 cf. *Xestops* sp. (DP FNSP 195). Intermaxilla in anterodorsal and inner aspects. Drawings by I. Kolebaba.



Pl. XV. 1 cf. *Xestops* sp. (DP FNSP 194). Intermaxilla in outer (a) and inner (b) aspects. Drawings by I. Kolebaba. 2 Anguidae, gen. indet. I (DP FNSP 3801). Posterior part of the left maxilla in lingual view. The line is 1 mm. 3 cf. *Xestops* sp. (DP FNSP 3831). Section of the left maxilla in lingual view. The line is 1 mm. 4 Anguidae, gen. indet. I (DP FNSP 4312). Posterior part of the left maxilla in lingual view. The line is 1 mm. 5 cf. *Xestops* sp. (DP FNSP 3821). Anterior part of the right maxilla in lateral and slightly dorsal view. The line is 1 mm.



Pl. XVI. 1 Anguidae, gen. indet. II (DP FNSP 93). Anterior part of the right maxilla in inner view. The line is 1 mm. 2 cf. Scincidae (DP FNSP 59). Anterior part of the left maxilla in lingual view. The line is 1 mm. 3 *Omoiotyphlops gracilis* n. sp., holotype (DP FNSP 3771). Almost complete right dentary in lingual aspect. The line is 1 mm. 4 *Omoiotyphlops gracilis* n. sp., paratype (DP FNSP 8). Almost complete left dentary in lingual (a) and labial (b) aspects. Drawings by I. Kolebaba. 5 *Omoiotyphlops gracilis* n. sp., paratype (DP FNSP 1317). Trunk vertebra in dorsal view. The line is 1 mm. 6 *Omoiotyphlops gracilis* n. sp., paratype (DP FNSP 1336). Trunk vertebra in ventral view. The line is 1 mm. 7 *Omoiotyphlops gracilis* n. sp., paratype (DP FNSP 1364). Anterior trunk vertebra in lateral view. The line is 1 mm.

РЕЗЮМЕ

Ящерицы (Reptilia: Sauria) из раннемиоценного местонахождения Dolnice (западная Чехия, Чехословакия)

В работе описаны формы, принадлежащие к подотряду *Sauria*, которые были найдены на местонахождении раннемиоценного возраста Dolnice (западная Чехия, Чехословакия). Ископаемый материал из этого местонахождения представляют изолированные, по большей части зубчатые кости. Другие скелетные элементы встречались очень редко. Этот характер материала имел влияние на возможности определения. Но вопреки этому ископаемый материал предоставил дополнительную информацию о *Chamaeleo caroliquarti* и потвердил присутствие представителей семейства Cordylidae не только в палеогене, и даже в миоцене Европы (был описан новый род и вид *Palaeocordylus bohemicus* и обсуждены находки из еоцена местонахождения Geiseltal, ГДР, и олигоцена местонахождения Quercy, Франция). Что касается семейства Lacertidae, было установлено присудствие рода *Lacerta* и описаны новые роды и виды *Amblyolacerta dolnicensis* и *Miolacerta tenuis*. Ископаемый материал, который мы имели в распоряжении, указывает, что херпетофауна из Dolnice включает сравнительно большое число форм, принадлежающих к семейству Anguidae но ввиду униформных зубов и морфологии зубчатых костей допустимо только приблизительное включение их в роды *Ophisaurus* и *Pseudopus*. Тоже определение части материала как *Ophisaurus spinari* нужно считать только приблизительным. Довольно удивительна находка форм несомненно принадлежающих к близости рода *Xestops*. Она является первой находкой этого рода из миоцена. Кроме того в местонахождении Dolnice была найдена тоже одна форма, принадлежащая к семейству Amphisbaenidae; это первая находка Amphisbaenidae третичного периода Европы, которая включает не только позвонки, и также другие скелетные образования. Работу завершают замечения об отношениях херпетофауны из Dolnice к херпетофаунам других районов европейского третичного периода.

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