

HENRYK KUBIAK

Equidae and Rhinocerotidae (Perissodactyla, Mammalia) from the Miocene of Przeworno in Lower Silesia

ABSTRACT: Remains of equids determined as *Anchitherium aurelianense* (Cuvier), and rhinocerotids, *Aceratherium simorreense* (Lartet) and *Brachypotherium brachypus* (Lartet), from the Middle Miocene karst localities at Przeworno in Lower Silesia are described. The phylogenetical stage of the investigated species allows to suggest a Badenian age for the both localities. The fauna remains represent mammals which could live in an arid open forest or savanna.

INTRODUCTION

The marble quarry at Przeworno, situated on the foreland of the Sudetes Mts, about 50 km south from Wrocław, Lower Silesia (see Text-fig. 1) yielded three Miocene karst localities (Głazek & al. 1971, 1972; Galewski & Głazek 1973): Przeworno 1 and Przeworno 2 contain vertebrate remains, whereas Przeworno 3 a unique beetle fauna.

Previously, the only locality of fossil terrestrial vertebrate faunas from Poland was Opole situated also in Lower Silesia (cf. Text-fig. 1), where in alluvial sediments rich vertebrate remains and terrestrial as well as fresh-water gastropods had been found. This locality was assigned to the younger Miocene (Sarmatian) by Wegner (1913), Ryziewicz (1961) and Kowalski (1967).

The present paper is one of the series describing the vertebrates from Przeworno. Hitherto, various mammals were described or mentioned by Sulimski (in: Głazek & al. 1971) and Kubiak (1978, 1981b). The amphibians and reptiles were investigated by Młynarski (1976, 1978, 1980), primates by Kowalski & Zapfe (1974), mastodons by Kubiak (1975), as well as suids and tayassuids also by Kubiak (1981a).

Systematical excavations at Przeworno have been carried out since 1971 by a team of the Institute of Systematic and Experimental Zoology, Polish Academy of Sciences in Cracow. The fieldworks will be continued, because every year further vertebrate remains are collectable.

The age of Przeworno 1 was assigned by Głazek, Oberc & Sulimski (1971) and Głazek, Galewski & Wysoczański-Minkowicz (1977) as Lower

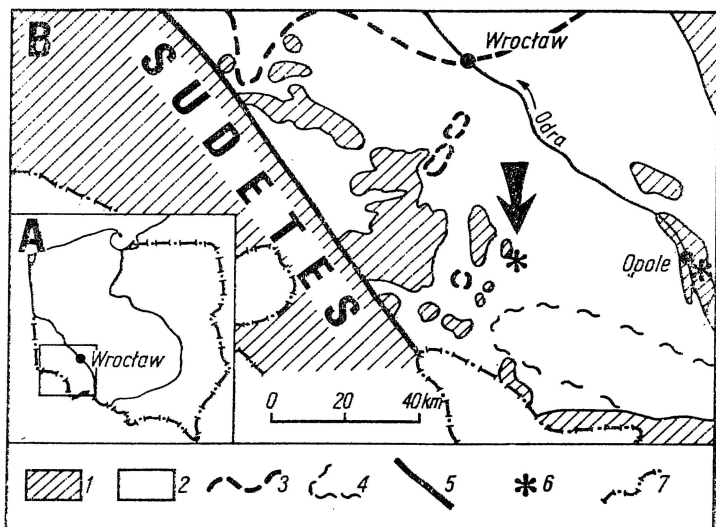


Fig. 1. General map of Poland (A) and geological sketch map of the region surrounding Przeworno in Lower Silesia (B); taken from Głazek & al. (1971, Text-fig. 1)

1 pre-Tertiary substrate, 2 young Tertiary clays, 3 extent of Miocene brown-coal formation, 4 extent of Lower Tortonian marine deposits within Eastern Sudetic Foreland, 5 marginal Sudetic fault, 6 Miocene vertebrate faunas (the arrow points to Przeworno), 7 state frontier

Miocene (Upper Burdigalian), and that of Przeworno 2 as Younger Vindobonian (=Tortonian=Badenian). According to these authors Przeworno 1 represents a subtropical swampy rain forest whereas Przeworno 2, a dryer savanna environment.

In the present author's opinion, based on the studies of various mammal remains (Kubiak 1981a,b), there are no differences in the two fauna assemblages (Przeworno 1 and 2). The mammals represent a mixed fauna of a moisty wood habitat as well as a more arid savanna or even steppe environment.

The paleontological material described in the present paper is housed at the Institute of Systematic and Experimental Zoology, Polish Academy of Sciences in Cracow.

Acknowledgements. The author expresses his thanks to Professor K. Kowalski (Cracow) for his interest and valuable advice during the course of this study, to Dr. K. Heissig (München) for the discussion on the rhinoceroses, to Dr. E. P. J. Heizmann (Ludwigsburg) for his suggestions and discussion on the fossil material,

to Mr. W. Kochan for the preparation of the material, to Mrs. G. Czyż for typing the manuscript, to Mrs. A. Malczewska for the drawing of the figures, and to Mr. K. Jakubek for making the photos.

SYSTEMATIC DESCRIPTION

Order Perissodactyla Owen, 1848

Family Equidae Gray, 1821

Subfamily Anchitheriinae Osborn, 1910

Genus *ANCHITHERIUM* Meyer, 1834

Anchitherium aurelianense (Cuvier, 1825)

(Text-fig. 2)

Material: Well preserved unworn right M^1 (MF/1721/80), another right M_1 and two fragments of right and left M_2 from Przeworno 1 (Nos. respectively MF/1721/80-1, 2, 3); well preserved unworn right P_2 (MF/1722/80) and one left P_4 (MF/1722/80-1) from Przeworno 2.

Dimensions: Length and width of P^2 — 25.5 mm/21.3 mm, P_4 — 21.6 mm/16.4 mm, M_1 — 22.6 mm/24.2 mm, M_2 — 20.3 mm/13.7 mm.

Description. — All the upper teeth are brachyodont. A distinct molarization of all lophodont cheek teeth is visible. The P^2 shows a strongly developed parastyle. The ectoloph is distinctly *W-shaped*. Protoloph and ectoloph are separated, but metaloph and ectoloph joined. The hypostyle together with the posterior basal crest surrounds in P^2 a triangle-shaped groove. Protoconulus and

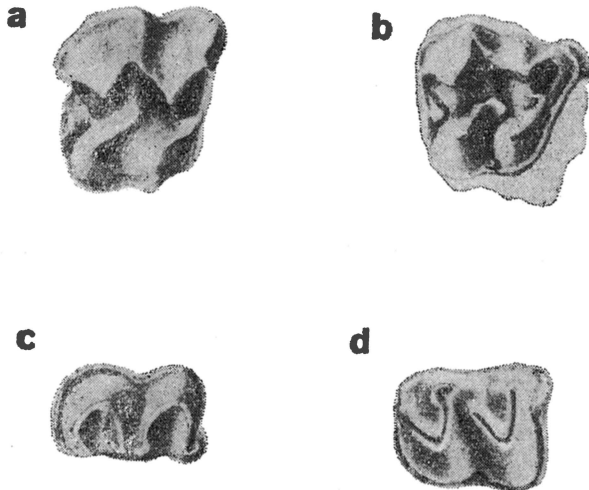


Fig. 2. *Anchitherium aurelianense* (Cuvier)

a — occlusal view of right M^1 (No. MF/1721/80) from Przeworno 1; b — occlusal view of right P^2 (No. MF/1722/80) from Przeworno 2; c — occlusal view of right M_1 (No. MF/1721/81-1) from Przeworno 1; d — occlusal view of left P_4 (No. MF/1722/80-1) from Przeworno 2; all figures of nat. size

metaconulus range only slightly above the crests (cf. Text-fig. 2). The lower teeth are distinctly selenolophodont. The cingulum is developed at the anterior, labial and posterior part. P_4 is broader than M and shows a weaker developed cingulum at the labial side.

Discussion. — The teeth of *Anchitherium aurelianense* (Cuvier) from Prze-

worno show typical diagnostic features of the genus *Anchitherium*. They belong to the group of broader and longer teeth of this species (cf. Wehrli 1938).

According to the present state of knowledge on the evolution of the equids (cf. Kovalevsky 1873, Osborn 1918, Thenius & Hofer 1960, Thenius 1979) the Recent equids are only a side branch in the evolution of this family. The main evolution line (Anchitheriinae) became extinct in the Upper Tertiary.

The genus *Anchitherium*, the only Miocene equid of Europe appeared in the Lower Miocene, widely distributed. It was present also in the Middle and Upper Miocene. Thenius (1950) reported the first find of *Anchitherium aurelianense* from the Pliocene deposits of Austria. Previously the coexistence of *Anchitherium* and *Hipparion* in Europe was suggested by Koenigswald (1931) and Viret (1945).

The species *Anchitherium aurelianense* is well known from the Neogene deposits of Styria, Austria (cf. Steiniger 1963, Mottl 1970), whose occurs in the Lower Miocene sediments exposed at Eibiswald, Schöneegg near Wies, Kalkgrub near Schwanberg, Münzingberg, Parschlug, and in the Badenian at Göriach, and in the Pannonian deposits at Brunn near Nestelbach, Lassnitzhöhe. Besides, Rabeder (1978) reported *Anchitherium* from the Badenian localities Sibnica and Mala Miliva in Serbia, Yugoslavia.

It ought to be mentioned that the third metacarpals of *Anchitherium* are more useful for a stratigraphical classification than the teeth of this species (cf. Mottl 1955, Steiniger 1963). Sondaar (1969 pp. 308—309) considering the history of the horses in North America distinguished four different types in the locomotion of these mammals. The *Meshippus-Anchitherium-Hyphippus* group was characterized by him as follows:

"The locomotion of these horses was characterized by a functional tridactylism on front and hind foot. The foot had clear pads. The central phalanges were relatively short. The lateral metapodials could act to a certain degree independently of the central and were specially on their distal end free from the central. The flexibility of the fetlock joint in anterior-posterior direction was restricted and some lateral movement in this articulation joint was still possible. The position of the foot during locomotion and at rest were clearly different from that of the recent horse (at rest the angle between central metapodial and ground was in *Meshippus* $\pm 50^\circ$ and is in *Equus* $\pm 90^\circ$). In consequence the laterals always did touch the ground and were functional also in rest position."

Unfortunately metacarpals were not yet found at Przeworno, but according to the structure and dimensions of the investigated teeth these remains may be attributed to the "normal" race of *Anchitherium aurelianense* (Cuvier) (cf. Wehrli 1938, Kretzoi 1941).

From the ecological point of view *Anchitherium* was an equid living in the forest (Thenius & Hofer 1960).

It has to be pointed out that remains of *Anchitherium* were found in both localities of Przeworno (1 and 2) which is a remarkable fact for the discussion on the stratigraphy and ecological conditions of this locality.

Family **Rhinocerotidae** Owen, 1845

Subfamily **Aceratheriinae** Dollo, 1885

Genus **ACERATHERIUM** Kaup, 1832

Aceratherium (*Alicornops*) *simorreense* (Lartet, 1851)

(Pl. 2, Figs 1—3; Pl. 3, Figs 1—4; Pl. 4, Figs 1—2)

Material: Some fragments of teeth and well preserved teeth: right P^2 (No. MF/1717/80—4), left P^2 (No. MF/1720/80) from the locality Przeworno 1. Left I_1 (No. MF/1717/80—3), right M_2 (No. MF/1717/80—1) and left M_3 No. MF/1717/80—2) from the locality Przeworno 2.

Dimensions. The I_1 total length (crown + root) about 120 mm, length of the crown about 40 mm, width of the crown about 23 mm. Length and width of right P^2 = 33 mm/ 40 mm, of left P^2 = 35.5 mm (39.6 mm, of right M_2 — about 43 mm/about 27 mm, length of M_3 55 mm, and its width 33 mm.

Description *. — The I_1 is slightly compressed dorsoventrally, the dorsal part of the crown worn, labially and lingually sharp edges marked. The cross-section of the root is oval, that of the crown triangle-shaped.

The left P^2 with well preserved crown belongs perhaps to a mature individual. The right P^2 , however, is heavily worn. In P^2 the ectoloph is convex, but its profile presents an inflection toward the fold of the paracone. The crochet is present in the unworn left P^2 , but not distinctly visible in the heavily worn right P^2 . The crista is lacking. The medifosette is not closed, and the antecrochet not developed. The protocone is isolated. The strongly developed cingulum is continuous — even visible in the very strong worn right P^2 . The cingulum surrounds the crown posteriorly and lingually reaching the anterior side of the crown. It is irregularly granulated.

The slightly worn lower molars (right M_2 and left M_3) are typically brachydont. The metalophid and hypolophid are not yet joint.

Discussion. — Generally the upper premolars of *Aceratherium simorreense* are slightly more hypsodont than those of *Aceratherium tetradactylum* and *A. incisivum* (cf. Ginsburg & Guérin 1979), and they are well molarized. The left P^2 presented in this paper (Pl. 4, Fig. 2) is almost identical with that referred by Sulimski (in Głazek & al. 1971, pp. 499—503, Text-fig. 17 and Pl. 5, Fig 6abc) as the holotype of *Aceratherium silesiacum* Sulimski, and there is no reason for the assignment of these remains to a separate species. The description of this tooth by Sulimski (*op. cit.*) is covered by the characteristics of the teeth of *Aceratherium simorreense* presented by Ginsburg & Guérin (1979).

The lower molars of *Aceratherium simorreense* presented in this paper (Pl. 2, Figs 1—3) are close to those reported by Wegner (1913, pp. 239—240, Pl. 13, Figs 3—4) from Opole and described as *Ceratorhinus (Rhinoceros) simorreensis* Lartet.

According to Ginsburg & Guérin (1979), this small rhinocerotid from the Middle Miocene of Simorre (Gers, France) was first described as *Rhinoceros simorreensis* Lartet, later attributed to the genus *Dicerorhinus* and finally to the genus *Aceratherium*, “belongs to peculiar and new subgenus, *Alicornops*”. This species, characterized by the upper dentition, appeared in Europe since the Orleanian (i.e. MN3 zone of the European continental scale) and subsisted till the Upper Vallesian (MN10 zone). It belongs to the immigrants which arrived to Europe during that epoch and it usually occurs in the fauna assemblage with *Anchitherium*, *Palaeomeryx*, *Lagomeryx* and others.

The species *Aceratherium simorreense* has never occurred very abundantly, but it could be found in deposits of such diverse origin as lacustrine (Sansan), fluvial (Simorre), and karst (Winterhof-West, Lay Grive, Przeworno). Its brachydont teeth indicate a diet of soft plants. A habitat of an open, rather dry forest could be particularly convenient for this species. It disappeared in the Upper Miocene in Europe during a decline of forests and savannas vegetation in favor of the steppe.

Genus *BRACHYPOTHERIUM* Roger, 1904

Brachypotherium brachypus (Lartet, 1848)

(Pl. 1, Figs 1—4; Pl. 2, Figs 4—5; Pl. 4, Figs 3—5)

Material: Several fragments of the dentition and some well preserved teeth: right I^1 ♂ (No. MF/1718/80), right I^1 ♀ (No. MF/1719/80) from Przeworno 1. At Przeworno 2 the following teeth were found: fragment of left I_1 (No. MF/1716/80—3), right and left P^1 — P^2 (No. MF/1716/80—1, 2), right M_1 — M_2 (No. MF/1716/80—4).

* The cusp nomenclature for cheek teeth is after Osborn (1898), Heissig (1969), and Hamilton (1973).

Dimensions: The mesio-distal length of the crown basis in $I^1 \sigma$ ranges about 88 mm, its width about 28 mm; the length of the cutting surface in the right $I^1 \varphi$ is about 40 mm, the width at the basis of the cutting surface is about 15 mm; the length and width of right P^1 — 45 mm/ 35 mm, of right P^2 = 46 mm/ 40 mm, of left P^1 = 44 mm, of left P^2 — 45 mm/ 39 mm. The length and width of M^1 — 54 mm/ 54 mm, of M^2 — 43 mm/ 50 mm.

Description. — The upper incisors show the typical enamel cap which is characteristic for the genus. At the right $I^1 \varphi$ an oval wearing surface occurs, similar as in the incisor reported by Mottl (1969, p. 304, Pl. 1, Fig. 3). The root of this incisor from Przeworno is not preserved. The right $I^1 \sigma$ is damaged or worn at the cutting surface on the labial side. The tooth is large, subtriangle in lateral profile; the root is laterally compressed; the whole cutting surface is covered with enamel.

The right and left unworn P^1 — P^2 belong probably to one specimen. The teeth are similar in preservation, colour, structure, dimensions and wear. In P^1 and P^2 a well developed granulated cingulum surrounds the tooth mesially, lingually and distally. It is almost continuous, interrupted only lingually in P^1 at the hypocone; in P^2 the interruption of the cingulum is visible at the protocone and hypocone. In P^2 a weak crista and a crochet are present. The anterochet is lacking.

The half-worn right M^1 and the M^2 belong to the same specimen. Both teeth are well preserved. The crochet is well developed in both teeth. In M^1 the anterochet is also strong. Paracone, parastyle and metastyle well marked. The cingulum in M^1 is preserved only at the distal part of the molar. In M^2 the cingulum surrounds the tooth mesially, lingually and distally.

Discussion. — The right $I^1 \sigma$ (No. MF/1718/80) from Przeworno 1 is nearly identical with that presented by Sulimski (in Głazek & al. 1971, Pl. 5, Fig. 7a,b). A distinct enamel cover, at least at the lingual side of the incisor, is visible. Such an enamel cap is typical of the genus *Brachypotherium* (see e.g. Fraas 1870, Wang 1929, Mottl 1969). The labial side of the crown in the right $I^1 \sigma$ (No. 1718/80) is rather worn than damaged. This may lead mistakenly to a statement of the presence of a terminal cusp (cf. also Głazek & al. 1971, pp. 499—500, Pl. 5, Fig. 7a). Moreover, according to Wang (1929) in the upper incisors of *Brachypotherium brachypus* sex dimorphism may be observed. The mesio-distal length of the crown basis of I^1 in males is 55—90 mm, in females 40—50 mm, the labio-lingual width of male incisors reaches 22.5 mm. Thus, it is apparent that the I^1 described by Sulimski (in: Głazek & al. 1971) as well as the right I^1 (No. MF/1718/80) described in the present paper belong to males of *Brachypotherium brachypus* (Lartet). The smaller right I^1 (No. MF/1719/80) is a female incisor.

The *Brachypotherium brachypus* finds in Europe are known from the Middle and Upper Miocene (cf. Heissig 1973), and several "types" were established. Teeth of the Steinheim type were described by Wegner (1913) from the Sarmatian locality Opole. Finds from Styria (Austria) were regarded as connected with the Upper Helvetian age (Mottl 1969). According to Thenius (1951), *Brachypotherium brachypus* (Lartet) is a characteristic form of the Austrian Upper Miocene and a significant savanna or dry forest element.

The occurrence of *Brachypotherium brachypus* in the locality Przeworno 1 indicates at least its Middle Miocene (Badenian) age.

FINAL REMARKS

The representatives of the Equidae (*Anchitherium aurelianense*) and of the Rhinocerotidae (*Aceratherium simorreense* and *Brachypotherium*

brachypus) indicate that the both localities Przeworno 1 and 2 are more or less of the same age.

In comparison with other Miocene faunal assemblages of Europe this age should be defined as Middle Miocene (Badenian).

The representatives of the equids (*Anchitherium*) indicate the existence of a forest at Przeworno: *Brachypotherium* was living in a savanna or dry forest, while *Aceratherium simorrense* suggests an open, rather arid forest. In conclusion, an environment of an arid open forest (savanna) may therefore be considered for the discussed locality.

The presented study of the perissodactyls may furthermore be useful in stratigraphic and ecological correlations of the terrestrial Miocene in Middle Europe where in comparison with the other parts of Europe, the number of known localities of vertebrate faunas is extremely low.

*Institute of Systematic and Experimental Zoology
of the Polish Academy of Sciences,
ul. Sławkowska 17,
31-016 Kraków, Poland*

REFERENCES

- FRAAS O. 1870. Die fauna von Steinheim. *Württ. Naturwiss. Jh.*, 26 (2/3), 145—306. Stuttgart.
- GINSBURG L. & GUÉRIN C. 1979. Sur l'origine et l'extension stratigraphique du petit Rhinocerotidé miocène *Aceratherium (Alicornops) simorrense* (Lartet, 1851), nov. subgen. *C.-R. somm. Soc. Géol. Fr., fasc. 3*, 114—116. Paris.
- GŁAZEK J., GALEWSKI K. & WYSOCZAŃSKI-MINKOWICZ T. 1977. Nowe dane o krasie kopalnym w Przewornie. *Kras i Speleologia*, 1, 81—88. Katowice.
- GŁAZEK J., OBERC J. & SULIMSKI A. 1971. Miocene vertebrate faunas from Przeworno (Lower Silesia) and their geological setting. *Acta Geol. Polon.*, 21 (3), 473—516. Warszawa.
- , OBERC J. & SULIMSKI A. 1972. Odkrycie miocenijskich faun kręgowców w Przewornie (Dolny Śląsk). *Przegl. Geol.*, 21 (2), 65—71. Warszawa.
- GUÉRIN C. 1979. Les rhinocerotidés (Mammalia, Perissodactyla) du Miocène supérieur au Pléistocène final d'Europe occidentale. *Thèse Doct. Sciences, Univ. Lyon*.
- HAMILTON W. R. 1973. North American Lower Miocene Rhinoceroses. *Bull. British Mus. (Nat. Hist.), Geology*, 24 (6), 351—395. London.
- HEISSIG K. 1969. Die Rhinocerotidae (Mammalia) aus der oberoligozänen Spaltenfüllung Gaimersheim bei Ingolstadt in Bayern und ihre phylogenetische Stellung. *Bayer. Staatssamml. Paläont. Hist. Geol.*, 11, 125—128. München.
- 1973. Die Unterfamilien und Tribus red rezenten und fossilen Rhinocerotidae (Mammalia). *Säugetierkundl. Mitteil.*, 21 (1), 25—30. München.
- KOENIGSWALD G. H. R. v., 1931. Die Bedeutung der Equiden für die Alterstellung des rheinhessischen Dinotheriensandes. *Cbl. Min. etc., B*, Stuttgart.
- KOVALEVSKY W. 1873. Sur l'*Anchitherium aurelianense* Cuv. et sur l'histoire paléontologique des chevaux. *Mem. Acad. Imp. Sci. St. Petersbourg*, (7) 20, Nr. 5, St. Petersburg.
- KOWALSKI K. 1967. Rodents from the Miocene of Opole. *Acta Zool. Cracov.*, 12, 1—18. Kraków.

- & Zapfe H. 1974. *Pliopithecus antiquus* (Blainville, 1839) (Primates, Mammalia) from the Miocene of Przeworno in Silesia (Poland). *Acta Zool. Cracov.*, **19**, 19—30. Kraków.
- KRETZOI M. 1941. *Anchitherium aurelianense* im ungarischen Miozän. *Ann. Hist. Nat. Mus. Nat. Hungarici*, **34**. Budapest.
- KUBIAK H. 1975. *Gomphotherium angustidens* (Cuvier, 1806) (Proboscidea, Mammalia) from the Miocene of Przeworno (Silesia, Poland). *Acta Zool. Cracov.*, **20**, 469—480. Kraków.
- 1978. Upper Miocene Mammals of Poland. *Abstracts II. Congr. Theriol. Intern.*, p. 123. Brno.
- 1981a. Suidae and Tayassuidae (Artiodactyla, Mammalia) from the Miocene of Przeworno in Lower Silesia. *Acta Geol. Polon.*, **31** (1/2). Warszawa.
- 1981b. Die miozänen Wirbeltierfunde von Przeworno (Dolny Śląsk, Polen). *Zeitschr. Geol. Wissensch.* Berlin.
- MŁYNARSKI M. 1976. *Discoglossus giganteus* Wettstein-Westerheimb, 1955 (Discoglossidae, Anura) from the Miocene of Przeworno in Silesia (Poland). *Acta Zool. Cracov.*, **21** (1), 1—12. Kraków.
- 1978. Tortoises (Emydidae and Testudinidae) from the Miocene of Przeworno in Silesia (Poland). *Acta Zool. Cracov.*, **23**, 79—92. Kraków.
- 1980. *Chelydropsis* aff. *murchisoni* (Bell, 1832) (Testudines, Chelydridae) from the Miocene of Przeworno in Silesia (Poland). *Acta Zool. Cracov.*, Kraków.
- MOTTL M. 1955. *Anchitherium*-Funde aus dem Unterpliozän der Steiermark. *Mitteil. Mus. Bergbau, Geol. Technik am Landesmus. Joanneum*, **15**: 51—58. Graz.
- Die Säugetierfunde von St. Oswald bei Gratwein, westlich von Graz in der Steiermark. *Festschrift des Joanneums*, 299—320. Graz.
- Die jungtertiären Säugetierfaunen der Steiermark, Südost-Österreichs. *Mitt. Mus. Bergbau Geol. Tech. Landesmus. Joanneum*, **31**, 79—168. Graz.
- OSBORN H. F. 1898. The extinct rhinoceroses. *Mem. Am. Mus. Nat. Hist.*, **1**, 75—164. New York.
- 1918. Equidae of the Oligocene, Miocene and Pliocene of North America. *Mem. Mus. Nat. Hist. N. S.*, **2**.
- RABEDER G. 1978. Die Säugetiere des Badenien. In: PAPP A., CICHA I., SENES J., STEININGER F. Chronostratigraphie und Neostatotypen, Miozän: *M₄* Badenien. pp. 467—480. Bratislava.
- RYZIEWICZ Z. 1961. A tapir tooth from Nowa Wieś Królewska near Opole. *Acta Palaeont. Pol.*, **6**, 331—338. Warszawa.
- SONDAAR P. Y. 1969. Some remarks on horse evolution and classification. *Zeitschr. Säugetierkunde*, **34** (5), 307—311. Hamburg.
- STEININGER F. 1963. Über die stratigraphische Verwertbarkeit von *Anchitherium aurelianense* (Cuv.) im Jungtertiär Österreichs. *N. Jb. Geol. Paläont. Abh.*, **116** (2), 149—161. Stuttgart.
- THENIUS E. 1950. Über den Nachweis von *Anchitherium aurelianense* im Pannon des Wiener Beckens. *Anz. Österr. Akad. Wiss., Math.-Naturwiss. Kl. Wien*.
- Die Rhinocerotiden (Mammalia) des Wiener Jungtertiärs (Vorl. Mitt.). *Anz. Öst. Ak. Wiss., Math. Naturw. Kl.*, **13**, 343—347. Wien.
- Die Evolution der Säugetiere. *Gustav Fischer Verlag*; Stuttgart — New York.
- & HOFFER H. 1960. Stammesgeschichte der Säugetiere. *Springer-Verlag*; Berlin—Göttingen—Heidelberg.
- VIRET J. 1945. Sur la coexistence des équidés *Anchitherium* et *Hipparion* en Europe occidentale. *Bull. Soc. Géol. France* (5) **5**, Paris.

- WANG K. M. 1929. Die fossilen Rhinocerotiden des Wiener Beckens. *Mem. of the Inst. Geol. Nat. Res. Inst. China*, 8. Shanghai.
- WEGNER R. N. 1913. Tertiär und umgelagerte Kreide bei Oppeln (Oberschlesien). *Palaeontographica*, 60, 175—274. Stuttgart.
- WEHRLI H. 1938. *Anchitherium arelianense* Cuv. von Steinheim a. Albuch und seine Stellung im Rahmen der Übrigen anchitherien Pferde. *Palaeontographica, Suppl.* Bd. 8, T. 7. Stuttgart.

H. KUBIAK

**EQUIDAE I RHINOCEROTIDAE (PERISSODACTYLA, MAMMALIA)
Z MIOCENU PRZEWORNA NA DOLNYM ŚLĄSKU**

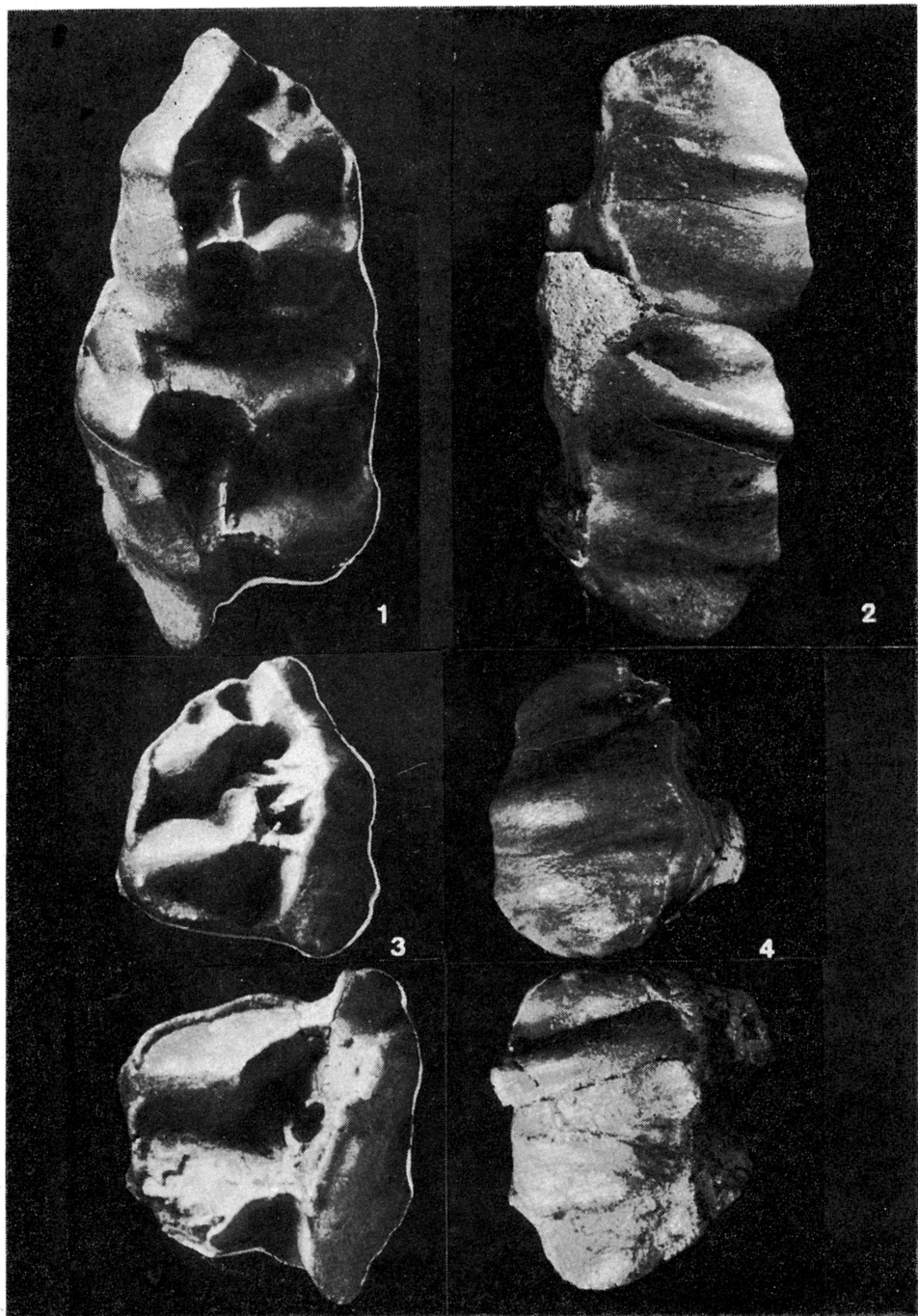
(Streszczenie)

Przedmiotem pracy* jest opis szczątków koniowatych i nosorożców ze stanowiska fauny mioceńskich kęgowców w Przewornie na Dolnym Śląsku (fig. 1), zachowanej w szczelinie krasowej we wschodniej ścianie kamieniołomu (Przeworno 1), oraz pomiędzy blokami skalnymi w głębokiej rozpadlinie w zachodniej ścianie kamieniołomu (Przeworno 2). Wiek stanowiska Przeworno 1 określano pierwotnie (Głazek & al. 1971, 1972, 1977) na dolny miocen (górnny burdygaj), a wiek Przeworno 2 na młodszy windobon („torlon”, baden).

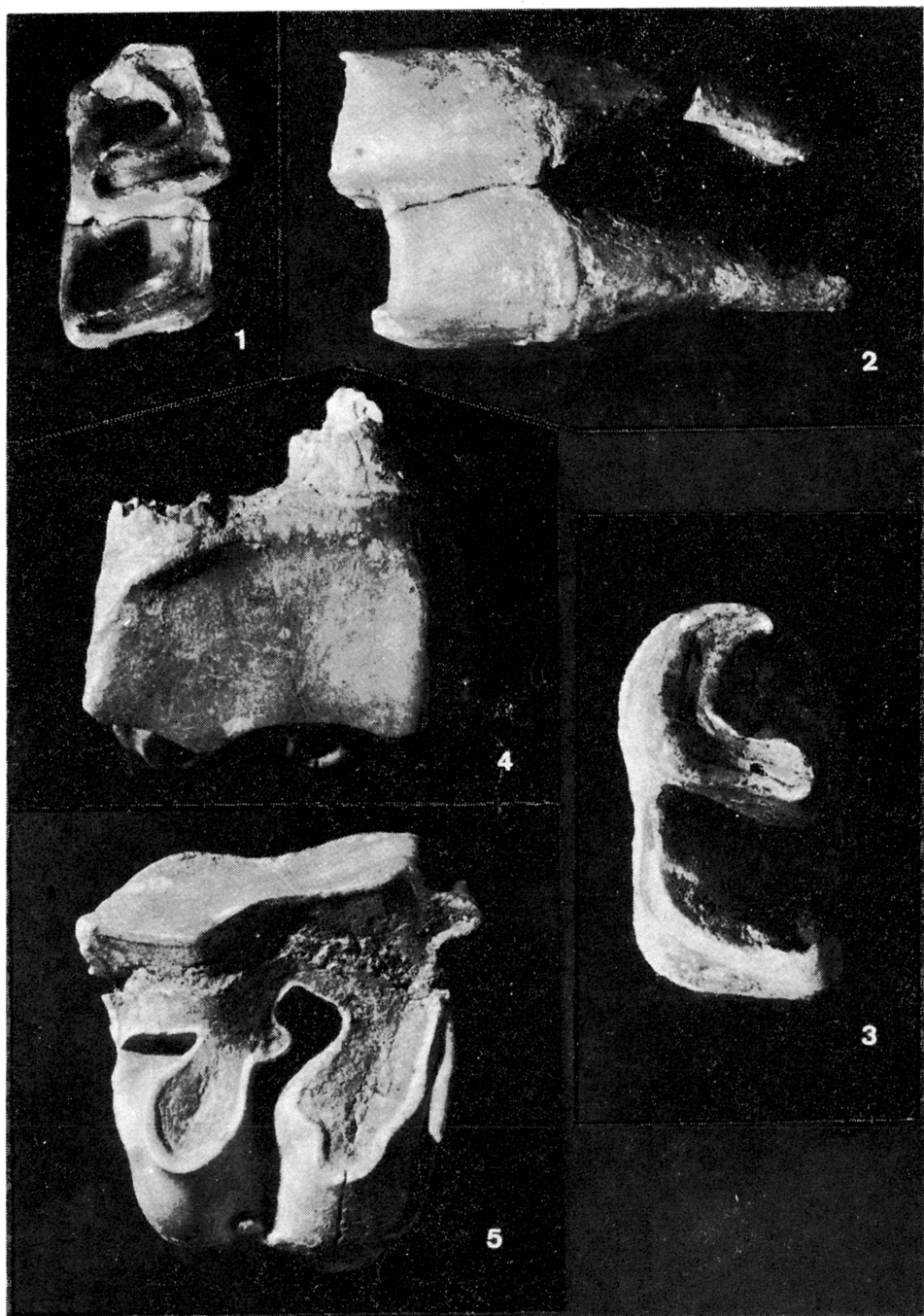
Wśród znalezionych szczątków (patrz fig. 2 oraz pl. 1—4) rozpoznano obecność koniowatych (Equidae) reprezentowanych przez gatunek *Anchitherium aurelianense* (Cuvier), oraz nosorożców (Rhinocerotidae) reprezentowanych przez dwa gatunki: *Aceratherium simorreense* (Lartet) i *Brachypotherium brachypus* (Lartet). W oparciu o porównanie szczątków nieparzystokopytnych z Przeworna z innymi mioceńskimi zespołami faun z Europy (patrz np. Mottl 1955, 1969, 1970; Rabeder 1978) oraz na podstawie analizy innych grup ssaków (patrz Kubiak 1981a,b), określono wiek obu stanowisk w Przewornie na środkowy miocen (baden).

Rozpatrywane gatunki ssaków nieparzystokopytnych są przedstawicielami środowiska suchego otwartego lasu (sawanna), a ich obecność w Przewornie wskazuje na istnienie w środkowym miocenie w tym rejonie takiego właśnie środowiska.

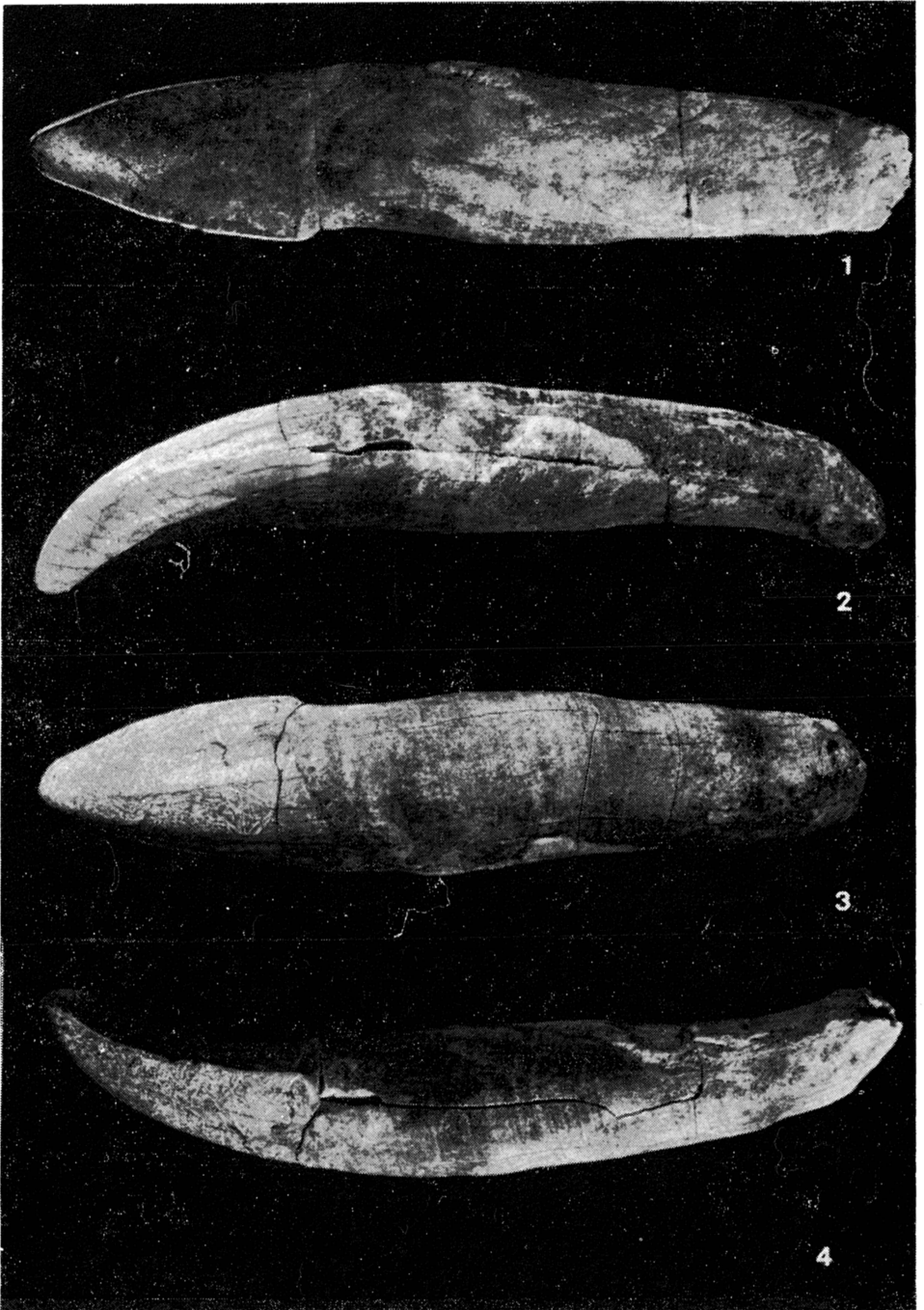
* Praca wykonana w ramach planu międzyresortowego MR.II-3.



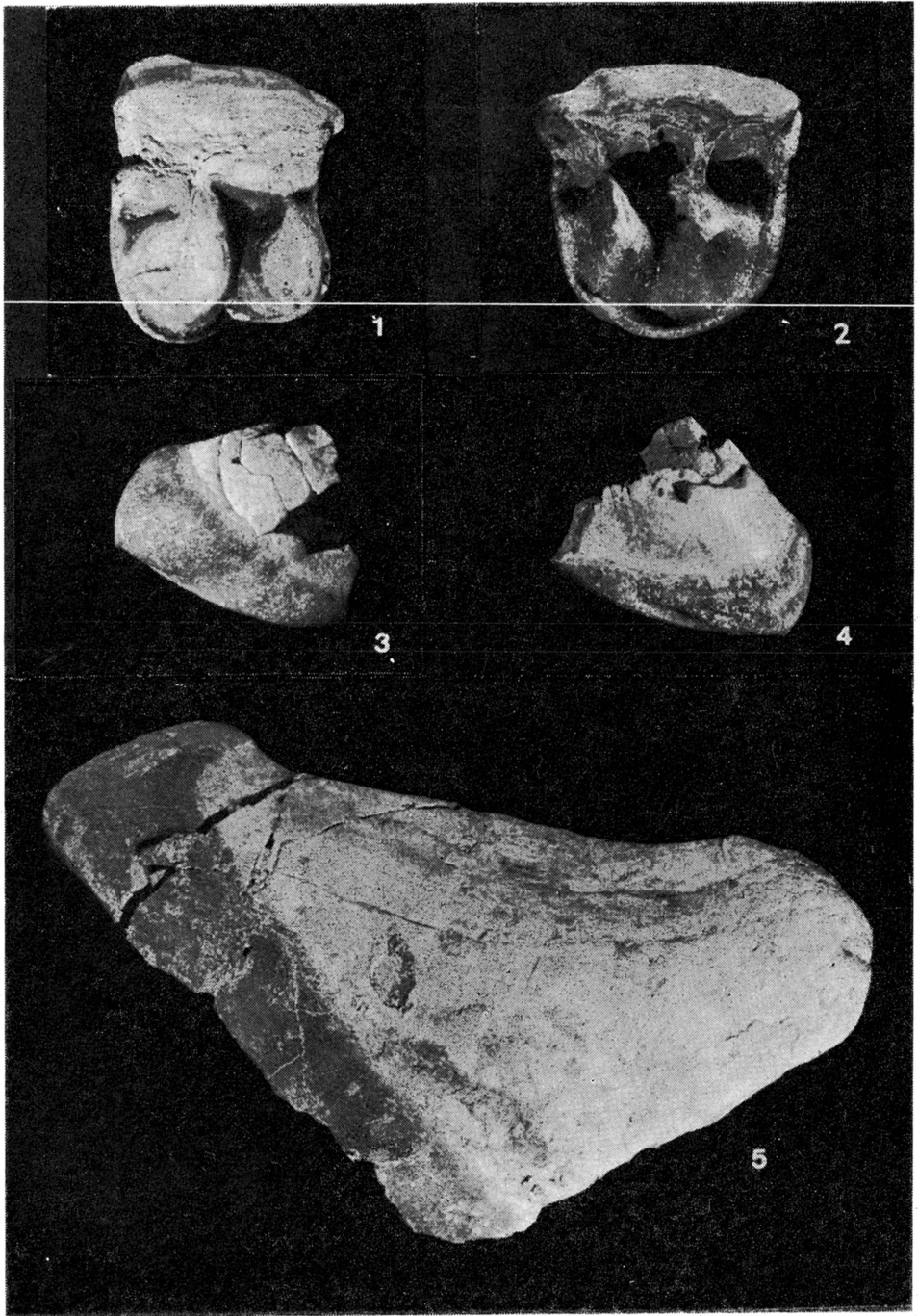
Brachypotherium brachypus (Lartet): 1—2 right P^1 — P^2 (No. MF/1716/80-1): 1 occlusal view, 2 labial side; 3—4 left P^1 — P^2 (No. MF/1716/80-2): 3 occlusal view, 4 labial side; locality Przeworno 2; nat. size



1—3 — *Aceratherium simorreense* (Lartet); 1—2 right M_2 (No. MF/1717/80-1; 1 occlusal view, 2 labial side), 3 left M_3 (No. MF/1717/80-2) (occlusal view); 4—5 — *Brachypotherium brachypus* (Lartet), right M^1 (MF/1716/80-4): 4 labial side, 5 occlusal view; locality Przeworno 2; nat. size



1—4 — *Aceratherium simorrense* (Lartet), left I_1 (No. MF/1717/80-3): 1 dorsal, 2 lingual, 3 ventral, 4 labial view; locality Przeworno 2; nat. size



1—2 — *Aceratherium simorreense* (Lartet); right P² (No. MF/1720/80-1) in occlusal view; 2 left P² (No. MF/1720/80-2) in occlusal view; 3—5 — *Brachypotherium brachypus* (Lartet); 3—4 right I¹ ♀ (No. MF/1719/80; 3 labial, 4 lingual side), 5 right I¹ ♂ (No. MF/1718/80), lingual side; locality Przeworno 1; nat. size