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Plioceńskie owadożerne i gryzonie z Rębielic Królewskich (Polska)

Насекомоядные и грызуны плиоцена Рембелиц Крулевских (Польша)

Pliocene Insectivores and Rodents from Rębielice Królewskie (Poland)

[With Pl. XIX—XXI and 8 text-figures]

Abstract. A description is here given of small mammalian fossils recovered from Pliocene deposits filling in a karst fissure at Rębielice Królewskie in Poland. This fauna comprises 16 species of Insectivores and Rodents of which one, *Mimomys polonicus* n. sp. is here described as new to science. The Rębielice Królewskie fauna displays distinct connections with fossils found in the neighbouring fossil localities of Węże and Podlesice, though mutual differences are likewise observable and are here discussed by the writer.

INTRODUCTION

Rębielice Królewskie (51°00′N, 18°51′E) is a village in the northern portion of the Kraków-Wieluń Highlands, district of Kłobuck. A small hill, 258,6 m a. s. l., called Góra, rises in this village. It is built up of Rauracian limestone and some unimportant quarries are worked there. In 1958, a fissure

filled in by terra rossa and containing bones of vertebrates was discovered in one of the quarries.

The fossils of Rębielice Królewskie were discovered by Mr. Z. Mossoczy of the Geological Survey of Poland, who published a note on this find, comprising a sketch map, section of the site and tentative classification of the fauna (Z. Mossoczy, 1959). The collected material was included in the deposits of the Geological Survey and subsequently handed over to the writer to be worked out. A part of the described material has been collected by the writer and Dr M. Młynarski and deposited in the collections of the Cracow Branch of the Zoological Institute of the Polish Academy of Sciences. The terra rossa fissure at Rębielice Królewskie is now covered up by a dumphill. It is, however, quite possible to remove the dumphill in order to recover more ample materials.

Remains of *Geoemyda eureia* (Wagner) (Reptilia) from Rębielice Królewskie have been described by M. Młynarski (1959) who has also prepared a paper on other reptiles and amphibians of this fauna (M. Młynarski, 1960). Remains of *Prospalax priscus* (Nehring) have been described in a paper of the present writer (K. Kowalski, 1960). Finally, bones of Lagomorphs, forming the largest group of palaeontological material from Rębielice Królewskie, will be the subject of a paper by L. Sych.

The present writer wishes to convey here his sincere thanks to Mr. Z. Mossoczy for his information on the discovery of the site and for help in collecting the material, to the Directors of the Geological Survey for entrusting him with the description of the material, to Mr. L. Sych for doing the photograps and to Mrs. J. Humnicka for the English translation of the text.

ORIGIN AND AGE OF DEPOSITS

The vertebrate remains of Rębielice Królewskie were etched from the terra rossa of bright red colouration, uncemented by calcite. The bones were not abundant or distinctly concentrated. Remains of Leporidae were the most numerous, together with many fragments of the carapace of the turtle *Geoemyda eureia* (Wagner) and of vertebrae of snakes. Together

with forms specified here below there have been collected a fragmentary tooth of a large representative of Pecora, two teeth and the last phalanx of a small carnivore, also minute fragments of the mandible of a more closely indeterminate bat. The following is a list of small mammals identified from the Rębielice Królewskie fauna showing the number of individuals:

Insectivora

Talpa minor FREUDENBERG	2	cf. *Neomys* sp.	1
Desmana kormosi SCHREUDER	3	*Blarinoides mariae* SULIMSKI	2
Sorex runtonensis HINTON	2	*Beremendia fissidens* (PETÉNYI)	2
Sorex cf. *minutus* LINNAEUS	2		

Rodentia

Mimomys polonicus n. sp.	10	*Baranomys* sp.	2
Mimomys cf. *stehlini* KORMOS	3	*Prospalax priscus* (NEHRING)	3
Mimomys reidi HINTON	11	*Apodemus* sp.	1
Mimomys (*Villanyia*) *exilis* (KRETZOI)	10	Cf. *Glis* sp.	1
		Sicista cf. *praeloriger* KORMOS	1

All the species represented in the Rębielice Królewskie fauna are fossil forms.

Talpa minor FREUDENBERG occurs in practically all of the early Pleistocene European faunal localities of small mammals and is recorded from the Pliocene to the Middle Pleistocene (Heppenloch). In Poland it has been reported from Węże, Podlesice and Kadzielnia.

Desmana kormosi SCHREUDER has so far been reported only from Beremend 4 and 5, and Csarnota 1—3 in southern Hungary. The assignment here of specimens from Gundersheim in Germany is doubtful. This species has not so far been recorded in Poland. *Desmana nehringi* KORMOS, occurring in the Podlesice and Węże faunas, is a closely allied species but with greater dimensions and shortened toothrow, as is shown in P_3 which is characteristically displaced.

Sorex runtonensis HINTON is apparently a form with a wide geographical and geological distribution during the late Pliocene and early Pleistocene. Another form of genus *Sorex* LINNAEUS, here named *Sorex* cf. *minutus* LINNAEUS, comes near to the corresponding living species in what dimensions and morphology

are concerned. The same, or very closely allied, minute form of shrew has been encountered in many vertebrate faunas bordering between Tertiary and Quaternary strata. In Poland it has been reported from Węże and Kadzielnia. Some incomplete remains, possibly referable to the genus *Neomys* KAUP, are more closely indeterminate.

Beremendia fissidens (PETÉNYI) may be regarded as the index form for the late Pliocene and the early Pleistocene of Central Europe. In Poland it has thus far been reported from Węże and Kadzielnia.

Of some interest is the discovery at Rębielice Królewskie of a species recently described from Węże as *Blarinoides mariae* SULIMSKI. It has not, thus far, been reported from other localities, though *Sorex dehneli* KOWALSKI from Podlesice seems to be a closely allied species, nothwithstanding difference in size.

The marked stratigraphic importance of the Microtinae is due to their rapid development and strong differentiation. In the Rębielice Królewskie fauna they are represented by four species, all belonging to the genus *Mimomys* F. MAJOR. Two of these species display all the characters within this genus regarded as primitive, i. e. the presence of 3 roots in all the upper molars, the early closing up of roots, the lack of cement in re-entrant folds of molars. One of them, here described as *Mimomys polonicus* n. sp., is apparently the ancestor of *M. pliocaenicus* F. MAJOR, a form with wide distribution and very characteristic of the early faunas of the older Pleistocene. The other one is more likely identical with *M. stehlini* KORMOS, described from Val d'Arno in Italy. This species is represented by scanty specimens in a number of the oldest faunas reported from the boundary of the Tertiary with the Quaternary, such as Arcille in Italy, Sète in France, Gundersheim in Germany („*M. hassiacus* HELLER") and Węże in Poland. The third microtine form from Rębielice Królewskie is here described as *Mimomys reidi* HINTON. It is a species recorded from England, Holland, Italy, Germany and Hungary; in Poland it has been reported from Kadzielnia. The Rębielice Królewskie specimens display several primitive characters as compared with the Kadzielnia specimens, and others so far described from locali-

ties outside of Poland. Hence it appears beyond doubt that they represent an earlier evolutionary stage of the same species. The writer, however, prefers not to separate them under a different name. Palaeontological materials now available are often ample enough to trace an unbroken in time evolutionary line of forms. The separation of such evolutionary lines into groups corresponding to separate systematic units is, therefore, apt to become a question of individual opinion.

Mimomys (*Villanyia*) *exilis* (KRETZOI) differs from the here considered three forms of the genus *Mimomys* F. MAJOR. It displays very strong structural variability of M_1, though its dimensions and other morphological characters are fairly constant. So far this species has been found only in Villany 5, an early Pleistocene fossil locality in Hungary. *Mimomys* (*Villanyia*) *exilis* (KRETZOI) likewise displays a close resemblance with the undescribed specimen of M_1 from Perrier Etouaires in France, deposited in the Naturhistorisches Museum of Basle. *Mimomys* (*Villanyia*) *exilis* (KRETZOI) from Rębielice Królewskie displays a number of primitive characters, such as the early closing up of molar roots and lack of cement in re-entrant folds. At the same time, however, we may observe here the lack of an enamel islet on the anterior loop of M_1, and the presence of two roots only in M^3.

Baranomys KORMOS has, thus far, been but rarely encountered within the oldest early Pleistocene faunas of Hungary and Germany. Their more abundant occurrence was never reported until the discovery of the Polish fossil localities of Wojcieszów, Podlesice, Węże and Rębielice Królewskie.

The stratigraphic and palaeoclimatic significance of *Prospalax priscus* (NEHRING) has been stressed elsewhere (K. KOWALSKI, 1960). This species is an important index form for the older faunas bordering on Pliocene and Pleistocene strata.

The scanty material in the case of the genus *Apodemus* KAUP does not allow detailed classification. This genus has been reported from many early Pleistocene localities.

A single detached tooth confirms the presence in Rębielice Królewskie of a representative of the family Gliridae, most likely belonging to a thus far undescribed species from the genus *Glis* BRISSON. An identical species seems to be present

in the thus far undescribed rodent material from the Pliocene breccia of Węże near Działoszyn.

Sicista praeloriger KORMOS, with which the Rębielice Królewskie specimen displays closest resemblance, is known from Nagyharsanyhegy 4 and from several localities at Villany in Hungary, Episcopia in Rumania, Koneprusy in Czechoslovakia and Sackdillinger Höhle in Germany. Evidently this species has, thus far, been recorded from younger faunas of the early Pleistocene (Biharium). It is, however, also encountered among heretofore not described material of the Pliocene deposits at Węże.

On the whole the small mammalian assemblage from Rębielice Królewskie shows distinct analogies with the earliest „preglacial" faunas of Csarnota in Hungary, Gundersheim in Germany, Sète in France, which are all evidently referable to the uppermost Pliocene. In Poland this fauna displays a number of similarities with the Węże fauna, discovered in its near proximity, as well as with the somewhat more distant Podlesice fauna. *Talpa minor* FREUDENBERG, *Sorex runtonensis* HINTON, *Beremendia fissidens* (PETÉNYI), *Blarinoides mariae* SULIMSKI, *Prospalax priscus* (NEHRING), *Mimomys* cf. *stehlini* KORMOS, also the genera *Baranomys* KORMOS, *Sicista* GRAY, *Apodemus* KAUP, as well as above mentioned form from the family Gliridae, occur in common in Rębielice Królewskie and Węże. The turtle *Geoemyda eureia* (WAGNER) is likewise present in both these localities. The other forms of the genus *Mimomys* F. MAJOR are absent from Węże, while a number of species represented in Węże, some of them even very abundantly, do not occur in Rębielice Królewskie, e. g. representatives of the genus *Dolomys* NEHRING. The genus *Desmana* GULDENSTADT is represented in Węże by a different species than in Rębielice Królewskie. As a whole, the Rębielice Królewskie fauna presents a somewhat different ecological aspect than that in Węże, it contains more aquatic species, such as *Desmana kormosi* SCHREUDER, also numerous frogs, while land turtles not encountered in Rębielice Królewskie are rather frequent in Węże. For the time being it is difficult to state something definite with regard to the age of the Węże and Rębielice localities. The present writer believes them to be referable to the uppermost Pliocene.

The Podlesice fauna is not so readily comparable with the Rębielice Królewskie fossils in view of the scantity of microtine remains in Podlesice. Some close similarities have nevertheless been observed referring the Podlesice fossils to the same period. The Kadzielnia fauna from Kielce, however (K. KOWALSKI, 1958), represents a distinctly later period.

Palaeoecological inferences based on the composition of the Rębielice Królewskie fauna are limited inasmuch that for the greatest part we find there extinct species concerning whose ecological requirements nothing is known. As is suggested both by the nature of sediments and the presence of the turtle *Geoemyda eureia* (WAGNER), encountered in warm Miocene faunas, the climate then must have been fairly warm. A number of species indicates the presence of water while others, such as *Prospalax priscus* (NEHRING) and the numerical abundance of Microtinae, suggest open, woodless country. The few sylvian elements (*Apodemus* KAUP, *Glis* BRISSON) testify to the presence of a forest, possibly in river valleys only.

SYSTEMATIC DESCRIPTIONS

Insectivora BODWICH 1821

Family *Talpidae* GRAY 1825

Subfamily *Talpinae* MURRAY 1866

Genus *Talpa* LINNAEUS 1758

Talpa minor FREUDENBERG 1914

The synonymics have been given in K. KOWALSKI's paper 1956, Insectivores..., p. 341; also K. KOWALSKI, 1958, An early Pleistocene..., 8. Moreover:

1957. *Talpa minor* FREUDENBERG; V. LOŽEK & O. FEJFAR K otazce..., p. 292.

1958. *Talpa gracilis* KORMOS; F. HELLER, Eine neue..., p. 6—9, pl. I, 1, 2, 3.

1958. *Talpa minor* FREUDENBERG; G. BRUNNER, Nachtrag zur..., p. 502—503.

? 1958. *Talpa* cf. *minor* FREUDENBERG; K. KOWALSKI, Altpleistozäne..., p. 6, 7, 9.

1958. *Talpa minor* FREUDENBERG; A. SULIMSKI Pliocene Insectivores..., p. 133—134, pl. IV, 10.

Material. A toothless mandibulal fragment with preserved processes, 4 specimens of humerus whose assignement to this species may suggest doubts.

Description. Mandible extremely minute and delicate. Coronoid process slender, with tip hooked backwards. Particular specimens of humerus differ considerably in dimensions though displaying analogous proportions similar to those observed in *Talpa europaea* LINNAEUS.

Dimensions. Preserved specimens of the humerus are with the following dimensions (in mm):

specimen	1	2	3	4
maximum length	14,4	13,4	12,2	—
minimum breadth	4,8	3,9	3,3	3,3

Systematic position. Characteristic structure and minute dimensions of mandible clearly suggest species *Talpa minor* FREUDENBERG. The specific assignment of the collected specimens of the humerus meets with great difficulties. Recently, F. HELLER (1958) has correlated the skeletal dimensions of fossil moles, ascertaining their strong variability, similarly as that of the living species. The Rębielice Królewskie specimens occupy an intermediate position between *Talpa minor* FREUDENBERG and *T. fossilis* PETÉNYI with regard to variability. For the time being it cannot be definitely established whether we are dealing here with two distinct species, or whether *T. minor* FREUDENBERG is represented in Rębielice Królewskie by particularly large specimens.

Subfamily *Desmaninae* THOMAS 1912

Genus *Desmana* GULDENSTADT 1777

***Desmana kormosi* SCHREUDER 1940**

[Pl. XIX figs. 1—3]

? 1936. *Galemys semseyi* KORMOS; F. HELLER, Eine oberpliozäne..., p. 106 (partim).

1938. *Galemys semseyi* KORMOS; T. KORMOS, Zur näheren Kenntnis..., p. 171, fig. 1.

1940. *Desmana kormosi* spec. nov.; A. SCHREUDER, A revision..., p. 314—316, pl. XI, 9, text figs. 36, 46, 47, 54.
1943. *Desmana kormosi* SCHREUDER; A. SCHREUDER, Fossil voles..., p. 402—403.
1956. *Desmana kormosi* SCHREUDER; M. KRETZOI, Die Altpleistozänen..., p. 152, 162, 164, 169, 204, 260.

Material. Detached I^1 and P^2 or P^3, 2 nearly complete mandibles, 2 fragmentary ones, detached P_4 and M_1, 1 complete femur and 2 fragmentary ones, 3 damaged specimens of the humerus.

Description. I^1 is smaller and more slender than that in *Desmana nehringi* KORMOS from Podlesice. P^2 or P^3 is with three roots, the inside root being extremely minute and short. The crown of this tooth is triangulate, the cingulum very distinctly marked. P^2 and P^3 thus far unknown either in *D. kormosi* SCHREUDER or in *D. tegelensis* SCHREUDER, hence, when dealing with a single detached tooth it is difficult to decide which one of these two teeth is represents.

Mandible minute and delicate. Anterior margin of the coronoid process meets the body of the mandible at a nearly right angle. Two mental foramina are present, the anterior one placed below the anterior margin of P_4, the posterior one below the anterior margin in one specimen, in another below the central portion of M_1 The symphysal thickening extends to the posterior margin of P_2.

Incisors not preserved. The canine one-rooted, strongly inclined forward. The anterior margin of this tooth short and convex, the posterior one long and concave. The posterior margin provided with a distinct cingulum. P_1 one-rooted, with the tip shifted forward and the crown expanding posteriorly. P_2 has two roots and a strongly developed cingulum which disappears on the inside of the tooth only. Posteriorly the margin of the tooth forms a distinct crest terminating in a small tubercle on the cingulum. The whole tooth is slightly inclined forward.

P_3 not known in the considered material, its alveoles, however, indicate the presence of two roots and somewhat smaller dimensions than those of P_2 and P_4. The alveoles of both roots are placed within the tooth-row and do not show

any displacement, so typical for *D. nehringi* KORMOS. P_4 has a well developed cingulum, except on the central part of the lingual side of the tooth. The paraconid is distinctly developed, the metaconid is also conspicuous. The molars have a well developed cingulum.

The humeral and femoral bones have a structure typical for the Desmaninae. As has been shown by A. SCHREUDER (1943) structural bone differences in the particular species of this group are insignificant.

Dimensions. See tables on pages 165—166.

Systematic position. The assignment of the collected fossil remains to the genus *Desmana* GULDENSTADT is perfectly certain. Among species of this genus the only group that may be taken into account is one with forms of very small dimensions, comprising: *D. nehringi* KORMOS, *D. kormosi* SCHREUDER and *D. tegelensis* SCHREUDER. *D. nehringi* KORMOS, a species occurring in Poland at Podlesice and Węże, has dimensions distinctly greater than the Rębielice Królewskie fossils; moreover a feature strongly characteristic of this species consists in the displacement of the P_3 alveoles which are placed outside the tooth-row. In dimensions the Rębielice Królewskie specimens come very near to those of *D. kormosi* SCHREUDER. This species has thus far been studied on some very few specimens only; hence, the slight differences displayed by them as compared with our specimens which, in most cases, are somewhat larger than the Hungarian specimens, seem reasonably referable to individual variation. A. SCHREUDER (1941, 1943) has descibed from Holland species *D. tegelensis* SCHREUDER, only slightly differing from *D. kormosi* SCHREUDER. This species is said to be somewhat larger than the Hungarian form, with the symphysal thickening terminating somewhere below the centre of P_2, not beyond P_2 as in *D. kormosi* SCHREUDER, moreover the femur is supposed to be here more compressed. In view of the great familiarity of A. SCHREUDER with the Desmaninae, it is hardly possible to question the correctness of her conclusions without a knowledge of the material under consideration. It should, however, be remembered that SCHREUDER'S description of *D. tegelensis* is based on a single mandibular fragment, 2 femora and 1 tibia-fibula. Hence, even those few characte-

Dimensions of mandibles

	Rębielice Królewskie				*D. kormosi* SCHR. (SCHREUDER, 1940)	*D. tegelensis* SCHR. (SCHREUDER, 1943)
	1	2	3	4		
length of alveoles P_1—M_3	11,3	—	—	11,3	11,5—12,0	—
length of M_1—M_3 (crowns)	6,9	—	—	6,9	6,6— 6,9	—
height of jaw (inter.) behind C	3,0	—	—	3,0	2,9— 3,1	—
height of jaw (inter.) behind P_2	2,7	—	—	2,9	3,0— 3,5	3,4
height of jaw (inter.) behind P_4	3,1	—	—	3,0	3,1— 3,3	—
thickness there	1,3	—	—	1,4	1,3— 1,5	—
height of jaw (inter.) behind M_1	3,7	3,1	3,0	3,2	3,2— 3,5	—
thickness there	1,7	1,6	1,7	1,8	1,7— 1,9	—
height of jaw behind M_3	3,7	3,1	3,1	3,7	3,3— 3,5	—
thickness there	1,6	1,5	1,6	1,6	1,5— 1,7	—
C length	—	—	—	1,2	—	—
C width	—	—	—	0,8	—	—
C height	—	—	—	1,1	—	—
P_1 length	—	—	—	1,1	—	—
P_1 width	—	—	—	0,8	—	—
P_1 height	—	—	—	1,0	—	—
P_2 length	—	—	—	1,4	1,5	1,6
P_2 width	—	—	—	0,9	0,9	1,1
P_2 height	—	—	—	1,3	1,3	—
M_1 length	2,7	—	2,8	2,5	2,5— 2,7	—
M_1 width post.	1,8	—	1,7	1,7	1,8— 2,0	—
M_1 width ant.	1,4	—	1,3	1,7	1,4— 1,6	—
M_2 length	2,5	2,5	2,5	2,4	2,5	—
M_2 width max.	1,6	1,7	1,5	1,7	1,8	—
M_3 length	1,9	1,9	—	1,9	1,9— 2,0	—
M_3 width max.	1,3	1,3	—	1,3	1,3— 1,4	—

ristic features may be attributable to individual variation. In any case species *D. kormosi* SCHREUDER and *D. tegelensis* SCHREUDER are closely related. In regard differences mentioned by A. SCHREUDER (1940, 1943) the Rębielice Królew-

Dimensions of humerus

	Rębielice Królewskie			*D. kormosi* Schr. (Schreuder, 1940)
	1	2	3	
1. length	14,6	—	—	14,3—14,4
2. from for. epic. to distal end of lateral crest	4,4	4,6	4,7	3,9— 4,2
3. from top of trochanter to end of lateral crest	7,8	—	—	7,2
4. from distal end of lateral crest to base	7,1	7,5	7,5	7,0— 7,7
5. width of proximal epiphyse	5,3	—	—	4,7
6. minimal width of shaft	2,2	2,3	2,1	2,1— 2,3
7. width of distal epiphyse	—	6,8	7,0	6,4— 7,0

Dimensions of femur

	Rębielice Królewskie			*D. kormosi* Schr. (Schreuder, 1943)	*D. tegelensis* Schr. (Schreuder, 1943)
	1	2	3		
1. length (troch. maj. to endocond.)	18,4	—	—	14,4 —15,3	±18,5
2. width over troch. tert. and minor	6,7	6,0	5,8	5,2 — 5,5	8,0
3. max. diameter of caput	2,8	2,1	2,2	2,2 — 2,3	3,0
4. max. width of shaft	2,3	—	—	2,0 — 2,1	2,5 —2,8
5. min. thickness of shaft	1,7	—	—	1,4 — 1,6	1,7 —1,8
6. width of distal epiphyse	6,0	—	—	5,3 — 5,4	7
7. width of condyli	5,0	—	—	4,0 — 4,4	5,8
8. depth of entocondylus	3,5	—	—	2,9 — 3,3	4,0
9. 2 : 1	0,37	—	—	0,36	0,43
10. 4 : 5	1,35	—	—	1,47— 1,55	1,25—1,43
11. 6 : 4	2,61	—	—	2,57— 2,65	2,8
12. 7 : 4	2,18	—	—	2,00— 2,15	2,32
13. 7 : 8	1,43	—	—	1,33— 1,48	1,45

skie specimens approach *D. kormosi* Schreuder, their dimensions are likewise nearer to those of the Hungarian form, though some are intermediate between the two forms.

Family *Soricidae* GRAY 1821

Subfamily *Soricinae* MURRAY 1866

Genus *Sorex* LINNAEUS 1758

Sorex runtonensis HINTON 1911

[Pl. XX fig. 2]

The synonimics have been given in K. KOWALSKI'S paper, 1958. Altpleistozäne..., p. 9—10. Moreover:

? 1957. *Sorex* cf. *runtonensis* HINTON; V. LOŽEK & O. FEJFAR, K otazce..., p. 292.

1959. *Sorex runtonensis* HINTON; A. SULIMSKI, Pliocene Insectivores..., p. 140—142, pl. IV. fig. 5a, b.

Material. Fragment of mandible with processes and P_4—M_3, fragment of maxilla with P^3—M^2, detached upper incisor and two detached lower incisors.

Description. Tooth points with distinct reddish-brown coloration. Structure of preserved fragment of jaw and of upper dentition closely resembles that of *Sorex araneus* LINNAEUS. Mandibular incisor with three distinct cusps. Mandible smaller and the coronoid process narrower than in *S. araneus* LINNAEUS. Anterior margin of the coronoid process meets the body of the mandible at a slightly obtuse angle. Facets of processus articularis connected by a broad bone bridge. M_3 provided with an unreduced talonid.

Dimensions. Height of coronoid process 3,7 mm, height of mandibular body below M_2 on the inside 1,2 mm, thickness there 0,7 mm, length of P_4—M_3 4,0 mm, of M_1—M_3 3,1 mm, length of M_1 1,2 mm, of M_2 1,0 mm.

Systematic position. Structure of incisor, pigmentation of tooth cusps and lack of reduction in M_3 suggest the assignment to genus *Sorex* LINNAEUS, while the shape of the coronoid process and the dimensions of the specimen refer it to species *Sorex runtonensis* HINTON. The Rębielice Królewskie specimens do not differ from Węże specimens referred to that species (A. SULIMSKI, 1959) or from those from Podumci in Yougoslavia which the author had the opportunity to compare. As compared with *Sorex* cf. *runtonensis* HINTON from Kadzielnia (K. Ko-

WALSKI, 1958a), the Rębielice Królewskie specimens are distinguished by slightly smaller dimensions and a more vertical course of the anterior margin of the coronoid process. The Podlesice material, identified as *S. praearaneus* KORMOS, differs from the Rębielice Królewskie specimens by markedly greater dimensions.

Sorex cf. *minutus* LINNAEUS 1866

[Pl. XX fig. 3]

Material. 3 fragmentary mandibles with processes, one of these with M_1—M_2, other two without dentition.

Description. Mandible minute and delicate. Anterior margin of the coronoid process meets the body of the mandible at a slightly obtuse angle. Upper part of the coronoid process narrow. Fossa pterygoidea deep, triangular. Facets of processus articularis connected by a broad bone bridge. The points of teeth only slightly coloured to a brown hue. M_3 with five tubercles.

Dimensions (in mm):

No. of specimen:	1	2	3
length of M_1—M_3	3,0	—	—
length of M_1	1,3	—	—
length of M_2	1,1	—	—
height of mandibular body below M_2 on the inner side	0,9	1,0	—
thickness of same	0,6	0,7	0,6
height of coronoid process	3,0	3,2	—

Systematic position. The described fossil remains closely resemble *Sorex minutus* LINNAEUS, both in morphology and dimensions. Similar specimens have been recorded from a number of early Pleistocene localities. In Poland, a form with morphology and dimensions analogous to those displayed by the Rębielice Królewskie specimens has been described by A. SULIMSKI (1959) as *Sorex* cf. *minutus* LINNAEUS. Identical specimens from Kadzielnia are likewise known as *Sorex* sp.

Genus *Neomys* KAUP 1892

Cf. *Neomys* sp.

Material. Fragmentary mandible with damaged processes, lacking dentition.

Description. Fossa pterygoidea deep, fairly high, rounded at top. The coronoid process moderately high, broad. Facets of processus articularis connected by a deeply arcuated bone bridge.

Dimensions. Height of coronoid process 4,3 mm.

Systematic position. Shape of processes, particulary that of the facets of the processus articularis indicate the assignment to genus *Neomys* KAUP. Shape and dimensions possibly suggest species *Neomys soriculoides* SULIMSKI described from Węże, but the fragmentary condition of the fossil remains does not permit more precise classification.

Blarinoides SULIMSKI 1959

Blarinoides mariae SULIMSKI 1959

[Pl. XX fig. 1]

1959. *Blarinoides mariae* n. sp.; A. SULIMSKI, Pliocene Insectivores..., p. 144—148, pl. II, fig. 4 a—b, pl. III, fig. 6 a—c, text-figs. 4, 2 a—f.

Material. Nearly complete mandible with damaged incisor, fragment of mandible with preserved processes and 4 fragments of the upper jaw with P^2—M^2.

Description. Mandible robust. Coronoid process broad, posterior portion of its upper surface separated by an incision. Anterior margin of the coronoid process arcuate, meeting the madibular body at a strongly obtuse angle. Upper facet of the processus articularis strongly oblique to the lower one. Fossa pterygoidea moderately large but rather deep, divided up by a transverse ridge. Foramen mentale placed below the posterior root of M_1. Tooth tips strongly pigmented. Incisor

provided with a conspicuous cingulum at the base. The canine small, squeezed in between the bases of the incisor and of P_4. In our specimen, which is rather worn, P_4 is unicuspid.

Foramen lacrimale above the middle of M^1. P^2 minute, hardly discernible from the inside. Posterior margin of M^1 and M^2 slightly incised and therein differing distinctly from the molars of *Beremendia fissidens* (PETÉNYI).

Dimensions. The dimensions of the single available mandible are: cardinal length 13,3 mm, height of processus coronoideus 6,5 mm, height of mandibular body below M_2 2,7 mm, thickness there 1,4 mm, length of C—M_3 7,3 mm, length of P_4—M_3 6,6 mm, of M_1—M_3 5,4 mm, of M_1—M_2 4,4 mm, of M_2—M_3 3,0 mm, of M_3 1,2 mm. It has been possible to measure the length of P^3—M^1 in three fragmentary maxillae, the respective figures are 4,6; 4,6 and 4,8 mm. In the fourth fragment of maxilla the length of M^1—M^2 has been ascertained to be 3,9 mm.

Systematic position. Morphologically the Rębielice Królewskie material fully agrees with that from Węże described as *Blarinoides mariae* SULIMSKI. The dimensions of the mandible likewise closely resemble the dimensions of Węże specimens, whereas the fragments of the upper jaw are with considerably smaller dimensions than those stated by A. SULIMSKI (1959). The measurements taken by the present writer of the Węże specimens agree exactly with those of Rębielice Królewskie.

Notwithstanding similar dimensions there can be no doubt in distinguishing *Blarinoides mariae* SULIMSKI from *Beremendia fissidens* (PETÉNYI) occurring together with it in both of the known localities. The writer does not feel in a position to postulate any views on the systematic relations of the genus *Blarinoides* SULIMSKI, since the Rębielice Królewskie material suggests no new inferences. It should be here pointed out that *Sorex dehneli* KOWALSKI, described by the writer from Podlesice (K. KOWALSKI, 1956) in spite of smaller dimensions shows distinct analogies with *Blarinoides mariae* SULIMSKI and is probably congeneric. This is moreover confirmed by the morphology of the skull of *Sorex dehneli* KOWALSKI, discovered after the publication of the above mentioned paper.

Genus *Beremendia* KORMOS 1934

Beremendia fissidens (PETÉNYI 1864)

The synonymics have been given in K. KOWALSKI's paper, 1958, An early Pleistocene..., p. 13. Also:

1953. *Beremendia fissidens* PET.; G. BRUNNER, Zur Osteologie..., p. 99—100, fig. 4.

1955. *Blarina ucrainica* PIDOPLIČKO; J. G. PIDOPLIČKO, Novye danye..., p. 990—991.

1956. *Blarina ucrainica* PIDOPLIČKO; J. G. PIDOPLIČKO, Material..., p. 133.

1958. *Blarina ucrainica* PIDOPLIČKO; K. A. TATARINOV, Znachidki..., p. 81—84, figs. 1—2a, 3a.

1959. *Beremendia fissidens* (PETÉNYI); A. SULIMSKI, Pliocene Insectivores..., p. 152—154, pl. III, 7, text-fig. 4, 1a—f.

Material. Fragment of mandible with I—M_2, mandibular ramus with processes, detached mandibular incisor, fragment of upper jaw with M^1—M^2.

Description. Morphology agrees perfectly with the well known structure of mandible and dentition of *Beremendia fissidens* (PETÉNYI). The most characteristic features consist in the structure of the coronoid process, the absence of lobes on the mandibular incisor, the strong pigmentation of tooth tips and strong incision on the posterior margin of M^1 and M^2.

Dimensions. Length of M^1—M^2 4,4 mm, height of mandibular body below M_2 2,5 mm, thickness there 1,5 mm, length of I—M_2 10,4 mm.

Systematic position. These fossil remains fully agree with the characters of so clearly distinct a form as *Beremendia fissidens* (PETÉNYI). No differences have been ascertained upon comparing the writer's specimens with the Kadzielnia and Węże material.

Rodentia Bodwich 1821

Family *Cricetidae* Rochebrune 1883
Subfamily *Microtinae* Miller 1896
Genus *Mimomys* F. Major 1902

Mimomys polonicus n. sp.

[Pl. XXI fig. 1—2 and text-fig. 1—2]

Holotype: damaged mandible with M_1—M_3.
Stratum typicum: Upper Pliocene
Locus typicus: Rębielice Królewskie, Poland
Derivatio nominis: *polonicus*, found in Poland

Material. 14 mandibles with 1—3 molars, fragment of skull with palate and M^1—M^2 on both sides, 3 fragments of upper jaws with molars, detached molars: 5 M_1, 3 M_2, 11 M^1, 5 M^2, 10 M^3.

Description. Palate somewhat narrower than in *M. pliocaenicus* (F. Major) from Kadzielnia, thickness of palate bones smaller. Mandible resembling that of *M. pliocaenicus* (F. Major), but somewhat more delicate, with the body somewhat lower. Processes unknown. Incisor stretches below the posterior root of M_2 (belonging to Acrorhiza).

All molars are with distinctly developed roots. On correlating the development of roots and the surface pattern of the particular teeth it is to be inferred that the roots here develop at an earlier moment than those in *M. pliocaenicus* (F. Major). Cement in re-entrant folds scarce or altogether lacking.

M_1 consists of a posterior loop, 3 triangles and a complicated anterior loop. The anterior portion of this loop is oblique and separated from the posterior portion by a deep re-entrant fold on the lingual side. In the majority of specimens there is, posteriorly of that constriction, a large-sized enamel islet with outline either circular or elongated transversely to the long axis of the tooth. On the outside the anterior portion of the loop is delimited by a re-entrant fold („Inselfalte") which is shallower than that on the inside; to the back of it there occurs a narrow salient-angle („Mimomyskante"). This re-entrant fold and salient-angle are here placed more posteriorly than in *M. pliocaenicus* (F. Major).

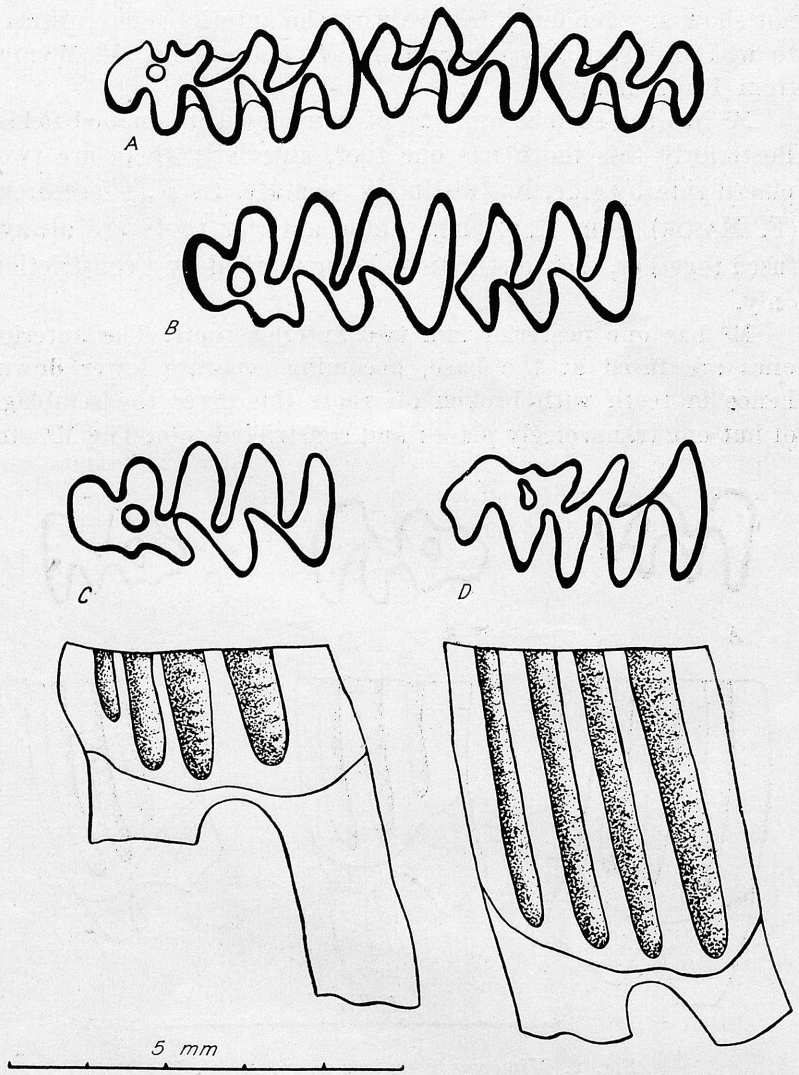

Fig. 1. *Mimomys polonicus* n. sp. A: M_1—M_3 (holotype), B: M_1—M_2, C—D: M_1

M_2 resembles the corresponding tooth of *M. pliocaenicus* (F. Major), M_3 likewise shows a similar structure.

M^1, similarly as in *M. pliocaenicus* (F. Major) is with five closed up enamel fields. This tooth is distinctly three-rooted, the median root is placed on the outside of the tooth and does

not show any tendency to fuse with the anterior root, contrary to what is invariably observed in *M. pliocaenicus* (F. MAJOR) from Kadzielnia.

M^2 has the surface built up of four closed up enamel fields. Posteriorly this tooth has one root, anteriorly there are two, placed side by side, but distinctly separate. In *M. pliocaenicus* (F. MAJOR) from Kadzielnia, these anterior roots are always fused together, their distinctness being marked by a constriction only.

M^3 has one posterior and two anterior roots. The anterior ones are fused at the base, becoming separate lower down, hence in teeth with broken off roots this gives the semblage of but one transversely placed and constricted root. The M^3 sur-

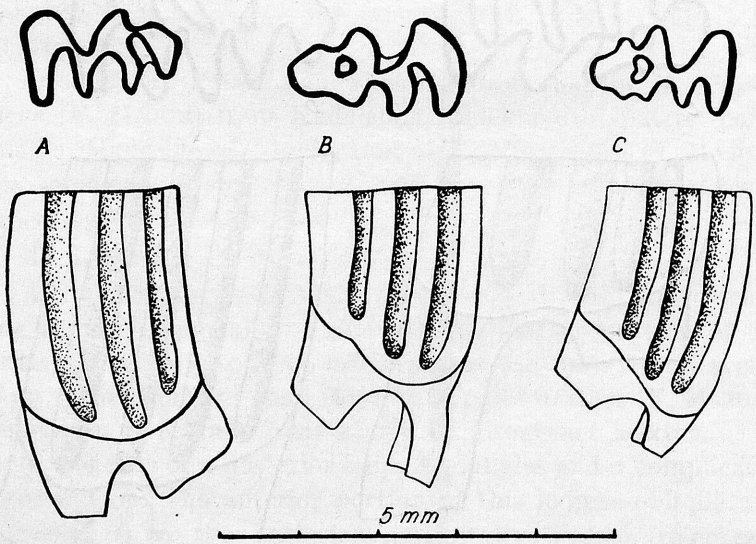

Fig. 2. *Mimomys polonicus* n. sp. A—C: M^3

face pattern does not fundamentally differ from that of *M. pliocaenicus* (F. MAJOR). It consists of one anterior loop, a closed up enamel triangle, situated behind this loop, and a large posterior loop. In very young individuals the back portion of the posterior loop is most probably completely separated. Later on the back portion is separated by a deep re-entrant fold on the inside. Subsequently this fold is modified

into a large enamel islet, elongated transversly to the long axis of the tooth. On the outside the re-entrant fold is shallower.

Dimensions. The following are some dimensions of molars in the available fragmentary upper-jaws (in mm):

Specimens nos.	20	23
M^1 length	3,0	3,0
breadth	1,7	1,5
M^2 length	2,3	2,1

In detached upper molars the dimensions were as follows:

length of:	number of specimens	minimum	average	maximum
M^1	11	2,5	2,8	3,0
M^2	5	2,1	2,1	2,1
M^3	10	1,7	2,0	2,2

Dimensions in fragments of mandible:

Specimen nos:	1	2	3	4	5	6	7	8	9	10
height of mandible on the inner side below M_2	—	—	±4,0	4,2	3,7	3,6	3,7	4,0	4,3	4,0
thickness of same	—	—	3,7	3,7	3,6	3,2	3,2	3,3	3,5	3,6
M_1—M_3 length	—	—	—	—	7,5	—	±7,3	7,8	—	—
M_1 length	3,5	3,3	3,3	3,3	3,4	3,1	±3,3	3,7	3,7	—
M_1 breadth	1,7	1,6	1,5	1,7	1,6	1,5	1,5	1,7	1,5	1,4
M_2 length	2,3	—	2,3	2,2	2,1	2,2	2,2	2,3	2,3	2,5
M_3 length	—	—	—	—	1,9	1,9	1,8	—	2,1	—

Specimens Nos. 8 and 9 are extremly old. Specimen No. 5 is the holotype.

The length and breadth dimensions of some detached specimens of M_1 are (in mm): 3,4/1,7; 3,5/1,7; 3,1/1,4; 3,5/1,7; 3,3/1,5. Detached specimens of M_2 are 2,0; 2,1 and 2,1 mm in length.

Systematic position. The structure of M_1 clearly shows that the here cosidered form belong to the genus *Mimomys* F. Major. As is known, this genus comprises remarkably various forms, displaing differences stronger than those occurring within recent microtine genera. A revision of the genus *Mimomys* F. Major, involving the structure not only of the

molars but that of the skull also, is believed most recommendable. The present generic classification must be retained until such a revision has been made; in view of its stratigraphic convenience in defining the evolutionary stage of a number of the phylogenetic lines of the Microtinae.

The unusually early development of roots in molars, presence of three roots in all the upper molars, the course of the mandibular incisor below the posterior root of M_2 and the scarcity of cement in the re-entrant folds, all refer the here described form to the most primitive representatives of the genus *Mimomys* F. MAJOR. *M. pliocaenicus* (F. MAJOR), heretofore regarded as the most primitive one, represents an evolutionary stage distinctly higher than that of our form: M^3 is here two-rooted only, the enamel islet disappears earlier from the surface of M_1 and M^3, cement is abundant in the re-entrant folds. From other primitive forms of the genus *Mimomys* F. MAJOR, *M. polonicus* n. sp. differs in its tendency for the enamel fields to fuse together, also in smaller dimensions. In the writer's opinion *M. polonicus* n. sp. may be regarded to be direct ancestor of *M. pliocaenicus* (F. MAJOR); still the differences between them are so marked that the separation of the Rębielice Królewskie form into a separate species seems reasonably necessary.

Mimomys cf. *stehlini* KORMOS 1931

[Text-fig. 3]

Material. 6 fragments of mandible with M_1—M_2, two detached specimens of M_1. The assignment to this form of available fragments of the upper jaw is uncertain; two detached specimens of M^3, however, do probably belog here.

Description. No cement in re-entrant folds. Roots are formed very early. The incisor stretches below the posterior root of M_2.

M_1 has a posterior loop, 3 triangles and a high anterior loop. The anterior portion of the anterior loop is placed obliquely and separated from the remaining part by a deep re-entrant fold on the inside and a less strong one on the outside. A rather small salient angle („Mimomyskante") occurs beyond the

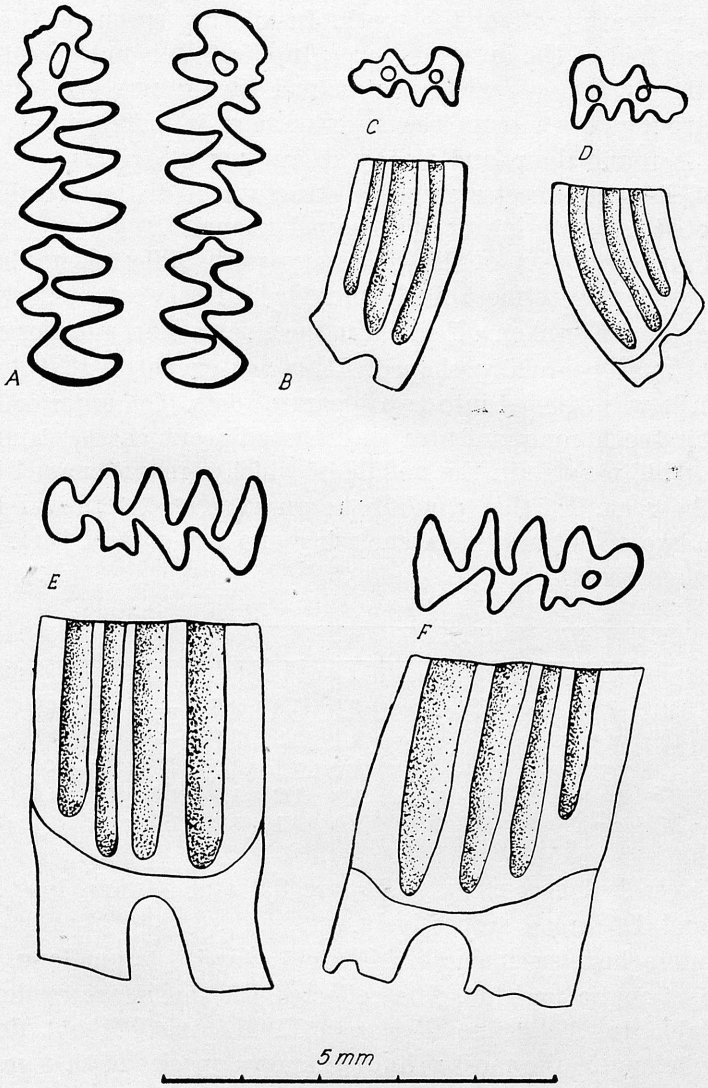

Fig. 3. *Mimomys* cf. *stehlini* Kormos. A—B: M_1—M_2, C—D: M^3, E—F: M_1

outer re-entrant fold. An islet occupies the centre of the anterior loop, showing a distinct antero-posterior elongation. In one of the specimens we may observe further complications of the anterior loop. As is, however, suggested by the side view of the tooth, these complications would be obliterated with

further wearing off of the tooth. In another specimen the re-entrant fold of the anterior loop („Inselfalte") is not closed up, but deeply incised, while the enamel islet is not yer formed. In strongly worn teeth the anterior loop is more simple, the islet is rounded up and finally disappears altogether.

M_2 has an almost symmetric structure. A distinct tendency is noted for a fusion of the enamel triangles.

Two specimens of M^3, in every probability referable to this species, were most likely provided with two roots, which, however, are broken off in both specimens. The anterior root was transverso-ovally shaped. It is not excluded that lower down it was divided into two separate roots. The anterior loop in this tooth communicates with the adjacent enamel triangle by a wide passage in the middle of which a round enamel islet can be seen. Further caudally is an elongated terminal loop with two re-entrant folds enclosing another enamel islet.

Dimensions.

Mandibles	1	2	3	4	5	6
height of mandible on the inner side below M_2	4,1	3,8	3,6	—	—	4,0
thickness of same	3,3	3,0	3,0	—	—	3,1
M_1 length	3,0	3,1	3,0	2,7	3,3	3,1
M_1 breadth	1,3	1,2	1,3	1,3	1,4	1,4
M_2 length	2,0	2,1	1,9	1,9	1,9	2,1

The detached specimens of M_3 are 3,0 and 3,0 mm long and 1,3 and 1,5 broad respectively.

The detached specimens of M^3 are 1,4 and 1,5 mm long.

Systematic position. The collected specimens are evidently referable to the genus *Mimomys* F. Major. Without doubt they belong to the most primitive known species of that genus. *Mimomys stehlini* Kormos, described in 1931 from San Giusto near Emboli in Italy, is that form among these species which has been known longest and which comes closest to the Rębielice Królewskie specimens. T. Kormos based his description on two specimens only, of which that selected as the holotype was a mandible with a markedly characteristic structure of M_1. This specimen, which the writer had the opportunity to inspect in the collections of the Naturhistorisches Museum at Basle,

belongs to a young individual, with intricacies of the anterior loop im M_1 very characteristic of juvenile specimens. Upon a closer examination of the specimen it has been ascertained that the above mentioned complications in the structure of the anterior loop would have been obliterated with further wear of the tooth. If T. KORMOS (1931) regards the specimen selected for a holotype as mature, this is probably so in view of his age estimate being based on the development of roots which, in this species, occurs exceptionally early. The other specimen investigated by T. KORMOS displays a simpler structure of M_1. The figured Rębielice Królewskie specimen (text-fig. 3 A) has a nearly identical structure as the holotype of *M. stehlini* KORMOS. The San Giusto and the Rębielice Królewskie specimens agree in dimensions and in the structure of M_2.

Mimomys stehlini KORMOS probably also occurs in Arcille, another Italian locality. Specimens collected there, but thus far unpublished, are housed in the Naturhistorisches Museum of Basle. One of them: F. P. 40, represents M_1 of a young individual, and very closely resembles the holotype of *M. stehlini* KORMOS from San Giusto. The length of a complete mandibular tooth-row in Arcille specimens is 7,0 mm, M_1 is 2,9 to 3,2 mm long, M^3 is ca. 1,9 mm in length and has a distinct enamel islet. Cement is lacking in re-entrant folds and M_2—M_3 more strongly tend to fuse the enamel triangles than is the case in *M. pliocaenicus* (F. MAJOR).

Material representing *Mimomys* F. MAJOR from the locality Sète in the south of France presents marked interest. M. FRIANT (1953, 1954) and M. A. C. HINTON (1954) have described specimens collected there as *Mimomys pliocaenicus* (F. MAJOR), in spite of having observed and pointed out certain peculiarities e. g. the presence of two enamel islets on M^3. The Sète material has been revised by L. THALER (1956). A summary only of his paper has been published, the present writer has, however, had the opportunity to look through its manuscript containing some excellent stereoscopic photographs, and to inspect a part of the original specimens at the Naturhistorisches Museum of Basle. L. THALER describes the Sète specimens as a new species, *Mimomys occitanus*, without, however, figuring it in the published paper and without indicating the holotype.

As far as the present writer has been able to ascertain, two different species of Microtinae are contained in the Sète material, one belonging to the genus *Mimomys* F. MAJOR, the other to the genus *Dolomys* NEHRING. L. THALER did not correctly identify the specimens referable to *Dolomys* NEHRING and, consequently, he describes all the material as belonging to one species. He states (1956): „La denture du *Mimomys* de Sète présente une trop grande variabilité individuelle pour qu'on puisse appliquer les critères habituels de détermination à l'intérieur de ce genre, en particulier ceux relatifs à la première molaire inférieure". In the type-written copy of his paper L. THALER uses the name *M. stehlini* KORMOS, introducing the new specific name later on in result of the mis-inclusion here of specimens of *Dolomys* NEHRING. Hence, *Mimomys occitans* THALER must be regarded as a nomen delendum. In the Sète material the only specimen with M_1—M_3, measured by the present writer, has the lower tooth-row 6,9 mm long. M_1 is 2,6—3,1 mm in length, the cement is lacking in re-entrant folds. M^3, 1, 8—1, 9 mm long, is very characteristic: it is usually three-rooted, sometimes, however, only two-rooted and with two enamel islets on the surface. The surface pattern of this tooth is identical with that in the Rębielice Królewskie specimens.

Specimens of a primitive form of *Mimomys* F. MAJOR, described from Gundersheim in Germany as *Mimomys hassiacus* HELLER, are likewise strongly similar to specimens of *M. stehlini* KORMOS from San Giusto in Italy and with those of Rębielice Królewskie. When describing them F. HELLER (1936) stresses the differences noted in comparing them with *M. pliocaenicus* (F. MAJOR), but does not make any comparisons at all with *M. stehlini* KORMOS. The dimensions of the two known specimens of M_1 in *M. hassiacus* HELLER are: 3,1 and 3,2 mm, the length of M_2 being 1,9 mm. The roots are formed very early, cement is lacking in re-entrant folds. There is a distinct tendency for the enamel triangles in M_2 to fuse together. In a later paper (1958) F. HELLER moreover described a M^3 from Gundersheim, referring it to this species. That tooth is three-rooted and lacks enamel islets on its surface, but the considered individual is very old. In the present writer's opinion *M. hassiacus* HELLER is conspecific with *M. stehlini* KORMOS.

Finally the occurrence should be pointed out in Węże of a species identical with that here described as *Mimomys* cf. *stehlini* KORMOS, and constituting one of two form of the genus *Mimomys* F. MAJOR represented in that locality.

Mimomys reidi HINTON 1910

[Text-fig. 4—5]

The synonymics up to 1957 have been given in K. KOWALSKI'S paper, 1958, An early Pleistocene..., p. 33.

Material. 24 fragmentary mandibles with M_1—M_3 or M_1—M_2, 14 detached M_1. 5 detached specimens of M^3 probably also belong here.

Description. Roots clearly differentiated even in young individuals. No cement in re-entrant folds. Incisor of the mandible passes below the posterior root of M_2 (belongs to Acrorhiza).

M_1 consists of a posterior loop, 3 triangles and an anterior loop. The latter is with the anterior part somewhat inclined laterally, outwards, and with a distinctly indicated salient angle („Mimomyskante"). In very young individuals we may note the characteristic complications of the anterior margin of the anterior loop and an enamel islet, which, however, soon disappears. The two anterior triangles of M_1 communicate by a broad passage.

M_2 displays a distinct tendency for the fusion of the enamel triangles. This tooth does not show strong assymetry. In M_3 the tendency for the fusion of the triangles is very marked. The surface of this tooth consist of three nearly symmetric enamel fields, separated from each other by constrictions.

Specimens of M^3, here referable on its dimensions, are two-rooted. Their surface is with a broad anterior loop, communicating by a rather broad passage with the usually faintly indicated enamel triangle. Beyond it occurs a large posterior loop. Its outer re-entrant fold is obliterated by the formation of the islet which disappears completely in senile individuals. The inner re-entrant fold is indicated in a markedly varying degree.

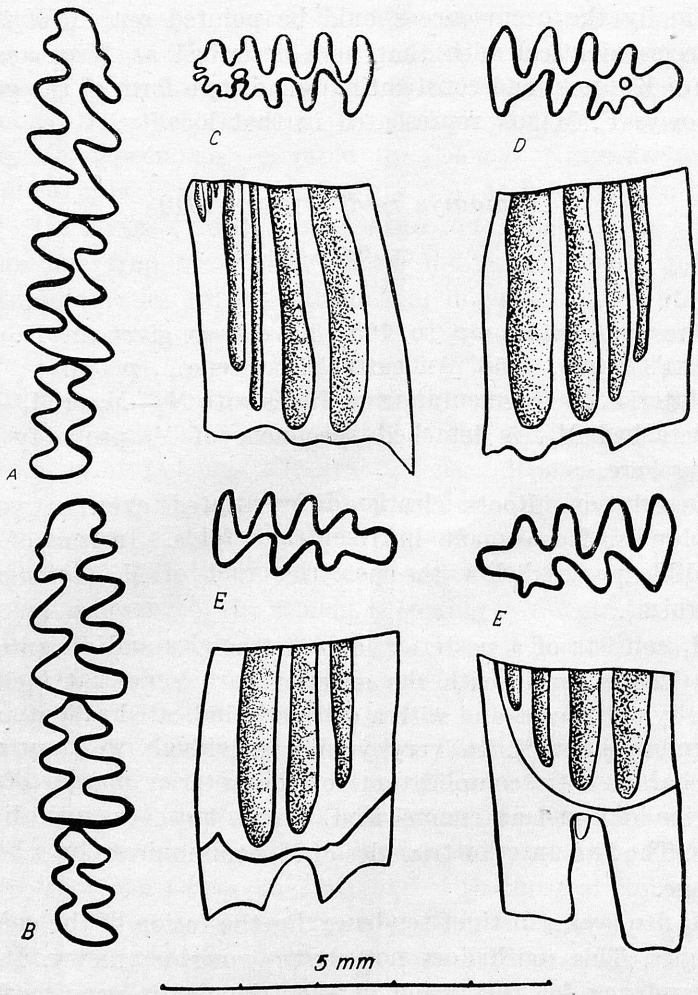

Fig. 4. *Mimomys reidi* HINTON. A—B: M_1—M_3, C—F: M_1

Dimensions. For dimensions of mandibles see table on p. 184. The dimensions of detached specimens of M^3 are:

Specimen Nos.	1	2	3	4	5
length	1,5	1,6	1,6	1,7	1,7
breadth of anterior loop	1,1	0,9	1,0	0,9	0,9

Systematic position. The here described form doubtlessly belongs to the genus *Mimomys* F. MAJOR. In dimensions and in morphology of the molars it comes very close to *M. reidi*

HINTON. It resembles most strongly Hungarian specimens of that species described as „*M. petenyi* MÉHELY", which is a name regarded as synonymous with *M. reidi* HINTON. The most characteristic common features for both *M. reidi* HINTON and the Rębielice Królewskie specimens are their tendency for the fusion of the triangles in M_2 and M_3, the presence of an islet on the surface of M^3 and the dimensions. The Rębielice Królewskie specimens, however, display many features more primitive than those observed by the present writer in the specimens of *M. reidi* HINTON from Kadzielnia in Kielce (K. KOWALSKI, 1958). Namely, in our Rębielice Królewskie specimens the cement is lacking in re-entrant folds, the roots are formed at an earlier moment, the islet on M_1 occurs in young individuals, while heretofore it has never been noted, even though M. A. C. HINTON (1926) did suppose its appearance

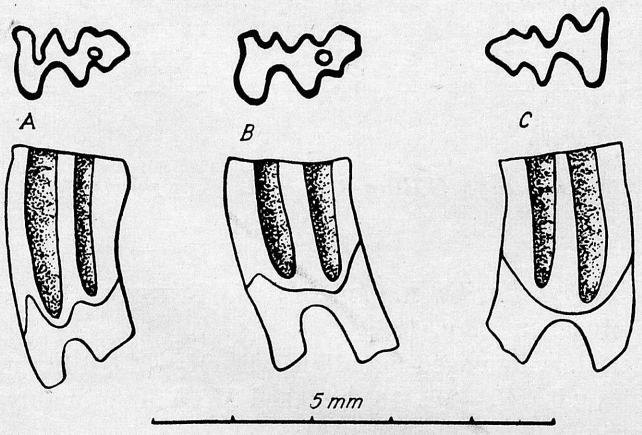

Fig. 5. *Mimomys reidi* HINTON. A—C: M^3

at an early age. All these characters suggest that the above described specimens constitute an earlier evolutionary member in a line descending to *M. reidi* HINTON. The writer does not believe it reasonably sound to provide it with a distinct specific name. He thinks it probable that species described on single molars, namely *Mimomys kislangensis* KRETZOI and *Mimomys franconicus* HELLER, are synonyms of *M. reidi* HINTON, while specimens on which their descriptions have been based are senile individuals of an early evolutionary form from the line of this species.

Mimomys reidi HINTON

Mandibles:	1	2	3	4	5	6	7	8	9
heigh of mandible on the inner side below M_2	—	2,9	3,1	—	—	3,4	—	3,6	3,0
thickness of same	—	2,6	2,5	—	—	2,5	2,8	2,5	2,4
M_1--M_3	—	—	5,9	—	—	—	—	—	—
M_1 length	2,7	2,4	2,7	2,6	2,8	2,6	2,5	2,7	2,5
M_1 width	1,2	1,2	1,2	1,2	1,2	1,1	1,2	1,2	1,2
M_2 length	1,5	1,6	1,6	1,7	1,7	1,7	1,6	1,7	1,7
M_3 length	—	—	1,4	—	—	—	—	—	—

10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
3,0	2,9	3,0	—	—	—	3,0	—	3,3	3,1	—	—	—	3,3	—
2,4	2,5	2,4	—	—	2,5	2,6	2,5	2,7	—	—	—	—	2,6	—
—	5,3	—	—	5,5	—	5 5	—	—	—	—	5,3	—	—	—
2,5	2,4	2,7	2,7	2,5	2,5	2,5	2,6	2,5	2,7	2,5	2,5	2,5	2,6	2,6
1,2	1,2	1,2	1,1	1,2	1,2	1,2	1,1	1,2	1,2	1,2	1,1	1,2	1,1	1,2
1,7	1,5	1,7	1,7	1,7	1,7	1,7	1,6	1,6	1,8	1,7	1,5	1,7	1,7	1,8
—	1,3	—	—	1,3	—	1,3	—	—	—	—	1,3	—	—	—

Mimomys (Villanyia) exilis KRETZOI 1956

[Text-fig. 6—7]

1956. *Villányia exilis* n. g. n. sp.; M. KRETZOI, Die Altpleistozänen..., p. 188.

Material. A damaged mandible with M_1—M_3, 6 fragmentary mandibles with M_1—M_2, 16 detached M_1; 4 M^3 probably belonging here.

Description. The roots are formed early. No cement in reentrant folds. M_1 is with a posterior loop, 3 triangles and an anterior loop. The latter is very variable, it consists either only of an anterior and two lateral salient angles, or it is with a distinctly indicated additional salient angle („Mimomyskante"), similarly as in *M. reidi* HINTON. This variability is not a question of age differences, since „Mimomyskante" extends along the tooth wall down to its base. Some specimens show a so to say intermediate structure: the „Mimomyskante" is shifted nearly to the top of the salient angle situated beyond it and is faintly marked. The oblique position of the anterior

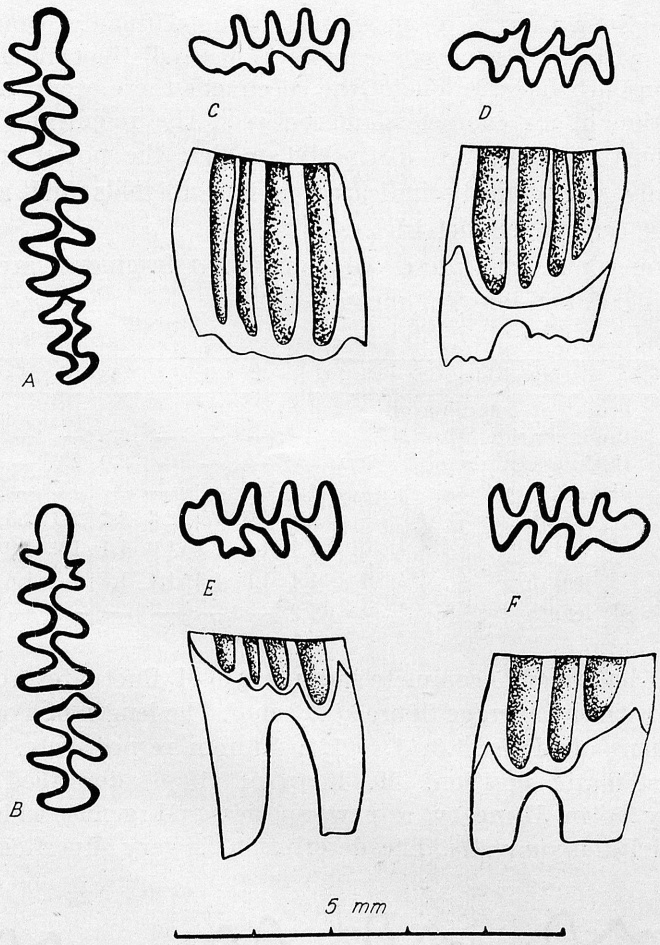

Fig. 6. *Mimomys* (*Villanyia*) *exilis* KRETZOI. A: M_1—M_3, B: M_1—M_2, C—F: M_1

salient angle of the anterior loop of M_1 is likewise indicated in a varying degree.

M_2 is without marked asymmetry or a tendency for fusion of the enamel triangles which remain here distinctly differentiated. M_3 has the outer salient angles slightly smaller than the inside ones. The two central triangles are separated by a moderately wide passage.

M^3, here referable on dimensions, likewise display marked variability. Three specimens are somewhat larger. Beyond the

anterior loop they have an enamel triangle broadly communicating with it, also a posterior loop with distinct re-entrant folds on both sides. In one of the specimens there occurs a faint indication of an enamel island between the re-entrant folds. The fourth specimen is distinctly smaller, the posterior loop has only very faintly indicated re-entrant folds and a well marked central enamel islet.

Dimensions. The preserved mandibular fragments are with following dimensions (in mm):

Mandibles:	1	2	3	4	5	6	7
height of mandible on the inner side below M_2	—	—	—	—	2,8	—	—
thickness of same	—	—	—	—	2,0	2,0	—
M_1—M_3	4,7	—	—	—	—	—	—
M_1 length	2,1	2,3	2,2	2,3	2,2	2,3	2,3
M_1 width	1,1	1,0	1,1	1,0	1,1	1,0	1,0
M_2 length	1,4	1,6	1,5	1,4	1,5	1,5	1,6
M_3 length	1,2	—	—	—	—	—	—

The length of 15 complete specimens of M_1 fluctuates from 2,1 to 2,3 with the average figure at 2,2 mm. The length of available specimens of M^3 is: 1,3; 1,4; 1,4; 1,6 mm respectively.

Systematic position. M. KRETZOI (1956) described from Villany 5 in Hungary a new species and genus which he named *Villanyia exilis*. The description is very superficial but

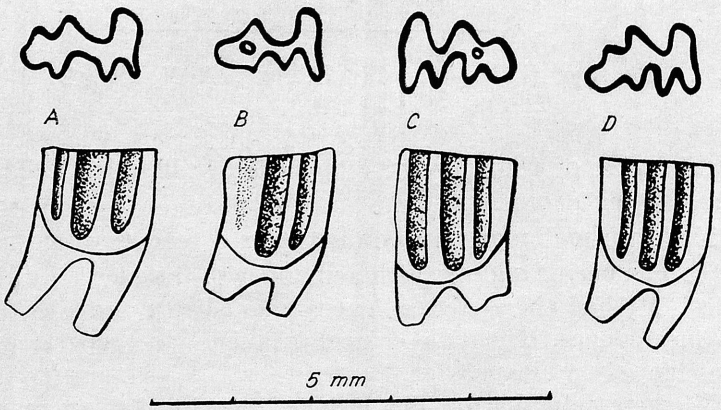

Fig. 7. *Mimomys* (*Villanyia*) *exilis* KRETZOI. A—D: M^3

I had the opportunity tu study in Budapest the only known two specimens of M_1 of this species and to ascertain that they are wholly identical with some of Rębielice Królewskie specimens. I also think that they merit a subgeneric rank only within the genus *Mimomys* F. MAJOR. The striking variability of M_1, as well as structural differences noted in specimens of M^3, possibly referable to this form, may suggest that we are dealing here with two distinct species of approximately the same size. Owing to the scarcity and incompleteness of material it is not for the time being possible definitely to settle the question. Moreover it should be mentioned that one of the specimens of M_1 from Perrier-Etouaires, which the present writer had the opportunity to study at the Naturhistorisches Museum of Basle, perfectly agrees in morphology and dimensions with the Rębielice Królewskie specimens.

Cricetidae incertae sedis

Genus *Baranomys* KORMOS 1933

***Baranomys* sp.**

[Text-fig. 8]

Material. Fragment of mandible with M_1, 1 detached M_1.

Description. Both specimens of M_1 show a structure typical for the genus *Baranomys* KORMOS. Enamel islets are absent from the anterior loop. The enamel is exceedingly fine.

Dimensions. The two specimens of M_1 are 1,6 and 1,7 mm long and 0,7 mm broad.

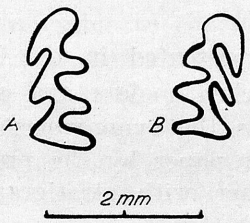

Fig. 8. *Baranomys* sp. A—B: M_1

Systematic position. The assignment of the described teeth to the genus *Baranomys* KORMOS is beyond doubt due to the characteristic structure of molars. Two species of that genus have thus far been known: *B. loczyi* KORMOS recorded from Hungary and Germany and *B. langenhani* HELLER described from Wojcieszów in the Sudeten Mts. On the ground of material from Podlesice the present writer (K. KOWALSKI, 1956) formerly expressed an opinion postulating that the second name ought to be regarded as synonym of the first. Comparative studies, however, on the ample material of *Baranomys* KORMOS from the Pliocene breccia of Węże with the equally abundant material of Podlesice indicate that in these two localities we are dealing with two separate species. The fundamental difference between them is expressed in the structure of M_3, while the other molars are rather similar. Is is not easy to decide to which of the two species the Rębielice Królewskie specimens are to be assigned. Striking features in them are elongation and slenderness of teeth, also fineness of enamel and absence of the enamel islet. All this brings them closer to the Węże form.

It ought to be mentioned here that J. A. SHOTWELL (1956) has described from a Hemphillian fauna in the state of Oregon in U. S. A. a rodent by him named „*Prosomys mimus* n. g. n. sp." This form displays striking similarities with the genus *Baranomys* KORMOS and is evidently referable thereto.

Family *Spalacidae* GRAY 1821

Genus *Prospalax* MÉHELY 1908

***Prospalax priscus* (NEHRING 1897)**

This species is represented in the Rębielice Królewskie fauna by three detached molars and seven incisors. Their description, as well as the synonymics of this species have been given in another paper by the present writer (K. KOWALSKI, 1960) together with stratigraphic and systematic remarks.

Family *Muridae* GRAY 1921
Subfamily *Murinae* MURRAY 1886
Genus *Apodemus* KAUP 1829

Apodemus sp.

Material. A detached M_1 belonging to a young individual.

Description. Structure of tooth identical with that in *Apodemus sylvaticus* (LINNAEUS). The tubercles on the cingulum on the inside are poorly developed.

Dimensions. Length 1,8 mm, breadth 1,0 mm.

Systematic position. Both in dimensions and morphology the collected tooth corresponds to the recent species *Apodemus sylvaticus* (LINNAEUS). Within the family Murinae, however, the structure of M_1 is not characteristic enough to provide a sound basis for specific identification.

Family *Gliridae* THOMAS 1897
Subfamily *Glirinae* THOMAS 1897
Cf. Genus *Glis* BRISSON 1762

Cf. *Glis* sp.

Material. Detached P_4.

Description. This tooth belongs to an old individual since the enamel ridges are badly worn. It is one-rooted. The crown is in the shape of a triangle with rounded corners. Anteriorly the enamel forms a closed up oval, while posteriorly occur two transverse enamel ridges communicating on the inside and thus U shaped.

Dimensions. Crown 0,9 mm long, 0,9 mm broad.

Systematic position. On the structure of the tooth surface this form is clearly referable to the family Gliridae, coming nearest to the genus *Glis* BRISSON. However, both the living and extinct, thus far known species of this genus, are larger sized. In *Glis sackdillingensis minor* KOWALSKI, the smallest known form, P_4 is somewhat longer and considerably broader. Hence, it may be inferred that the collected tooth belongs to a thus far unknown, very minute form of the genus *Glis*

BRISSON. The question of the assignment of the considered specimen to the genus *Glis* BRISSON and its specific identification must be left open until more ample material is available from Rębielice Królewskie, or until the rodent material from the Pliocene breccia of Węże has been worked out. The present writer has discovered there, among a fairly abundant material of Gliridae, a specimen of P_4, fully identical with that described here above.

Family *Zapodidae* COUES 1875
Subfamily *Sicistinae* ALLEN 1901
Genus *Sicista* GRAY 1827

Sicista cf. *praeloriger* KORMOS 1930

Material. A detached M_1 belonging to a young individual.

Description. This tooth is very little worn. In the anterior portion of it, the meta-, para- and protoconid are arranged into the characteristic shape of a clover leaf. A ridge extends obliquely posteriorly, from which a distinct spur branches off terminating in a rather small tubercle. The strongly developed entoconid is shifted forward in relation to the hypoconid, hence the central embayment of tooth is larger on the outside. The poorly distinguishable hypoconulid extends into the conspicuous crest of the posterior cingulum.

Dimensions. Length 1,1 mm, breadth 0,7 mm.

Systematic position. On the characteristic structure of M_1 the described tooth may reasonably be referred to the genus *Sicista* GRAY. Within this genus it comes closest to the species *Sicista praeloriger* KORMOS, reported from the early Pleistocene strata of Hungary, Rumania and Germany, but occurring there in younger („Biharium") faunas only. The genus *Sicista* GRAY has thus far never been recorded from the older, „Villanyium" period of the early Pleistocene. Living species of this genus, showing no fundamental differences from the fossil form, are not known before the younger Pleistocene of Central Europe. In dimensions our tooth agrees perfectly with those of *Sicista praeloriger* KORMOS, thus far described in literature.

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STRESZCZENIE

W Rębielicach Królewskich w pow. Kłobuck, w północnej części Wyżyny Krakowsko-Wieluńskiej znalazł Z. Mossoczy (1959) szczelinę w wapieniach rauraku wypełnioną *terra rossa* z kośćmi kręgowców. Dotychczas z materiału tego opracowano gady (M. Młynarski, 1959, 1960), a ze ssaków gatunek *Prospalax priscus* (Nehring) (Kowalski, 1960). Liczny materiał Leporidae opublikowany będzie przez L. Sycha.

W materiale kostnym przeważały szczątki Leporidae, liczne były też fragmenty pancerzy żółwi *Geoemyda eureia* (Wegner) i kręgi węży. Lista oznaczonych szczątków ssaków przedstawia się następująco (liczby podają ilość okazów):

Insectivora

Talpa minor Freudenberg	3	Cf. *Neomys* sp.	1
Desmana kormosi Schreuder	3	*Blarinoides mariae* Sulimski	2
Sorex runtonensis Hinton	2	*Beremendia fissidens* (Petényi)	2
Sorex cf. *minutus* Linnaeus	2		

Rodentia

Mimomys polonicus n. sp.	10	*Baranomys* sp.	2
Mimomys cf. *stehlini* KORMOS	3	*Prospalax priscus* (NEHRING)	3
Mimomys reidi HINTON	11	*Apodemus* sp.	1
Mimomys (*Villanyia*) *exilis*		Cf. *Glis* sp.	1
(KRETZOI)	10	*Sicista* cf. *praeloriger* KORMOS	1

Ponadto znaleziono nieoznaczone fragmenty szkieletu dużego przedstawiciela Pecora, drobnego drapieżnika i nietoperzy.

Fauna z Rębielic Królewskich wykazuje bliskie analogie do najstarszych faun przełomu trzeciorzędu i czwartorzędu w Europie, jak Csarnota na Węgrzech, Gundersheim w Niemczech, Sète we Francji. W Polsce bliskie jej są fauny Węży i Podlesic. Należy ją zaliczyć do najmłodszego pliocenu.

Fauna z Rębielic Królewskich zawiera dość dużo elementów związanych z wodą (liczne Amphibia, *Desmana kormosi* SCHREUDER). Charakter osadu i obecność żółwia *Geoemyda eureia* (WEGNER) świadczą o dość ciepłym klimacie.

Autor szczegółowo omawia szczątki gatunków Insectivora i Rodentia znalezione w Rębielicach Królewskich podając ich opisy, wymiary i omawiając stanowisko systematyczne. *Mimomys polonicus* n. sp. został tu opisany po raz pierwszy; jest on prawdopodobnie bezpośrednim przodkiem *M. pliocaenicus* (F. MAJOR).

РЕЗЮМЕ

В Рембелицах Крулевских Клобуцкого уезда в северной части краковско-велюньской возвышенности З. Моссочи нашел (1959) расселину в известнчках раурака, наполненную terra rossa с костьми позвоночных. До настоящего времени из этого материала обработаны пресмыкающиеся (М. Млынарский, 1959, 1960), а из млекопитающих, вид *Prospalax priscus* (NEHRING) (Ковальский, 1960). Богатый материал Leporidae лудет обработан Л. Сыхом.

В костном материале встречалис преимушиственно остатки Leporidae. Многочисленны были также части панцырей черепахи *Geoemyda eureia* (WEGNER) и позвонки ужей. Список определен-

ных остатков млекопитающих представляется следующим образом (цифры обозначают число особей).

Insectivora

Talpa minor Freudenberg	3	Cf. *Neomys* sp.	1
Desmana kormosi Schreuder	3	*Blarinoides mariae* Sulimski	2
Sorex runtonensis Hinton	2	*Beremendia fissidens* (Petényi)	2
Sorex cf. *minutus* Linnaeus	2		

Rodentia.

Mimomys polonicus n. sp.	10	*Baranomys* sp.	2
Mimomys cf. *stehlini* Kormos	3	*Prospalax priscus* (Nehring)	3
Mimomys reidi Hinton	11	*Apodemus* sp.	1
Mimomys (*Villanyia*) *exilis* (Kretzoi)	10	Cf. *Glis* sp.	1
		Sicista cf. *praeloriger* Kormos	1

Сверх того найдены были части скелета большого представителя рода Pecora, мелкого хищника и летучих мышей, которых определить не удалось.

Фауна Рембелиц Крулевских обнаруживает большое сходство со старейшими фаунами перелома третичного и четвертичного периодов в Европе, как например Csarnota в Венгрии, Gundersheim в Германии, Sète во Франции. В Польше сродственными ей являются фауны Венжув и Подлесице. Ее следует причислить к самым младшим фаунам плиоцена.

Фауна Рембелиц Крулевских содержит довольно много элементов, связанных с водой (многочисленные Amphibia, *Desmana kormosi* Schreuder). Характер осадка и присутствие черепахи *Geoemyda eureia* (Wegner) указывают на теплый климат.

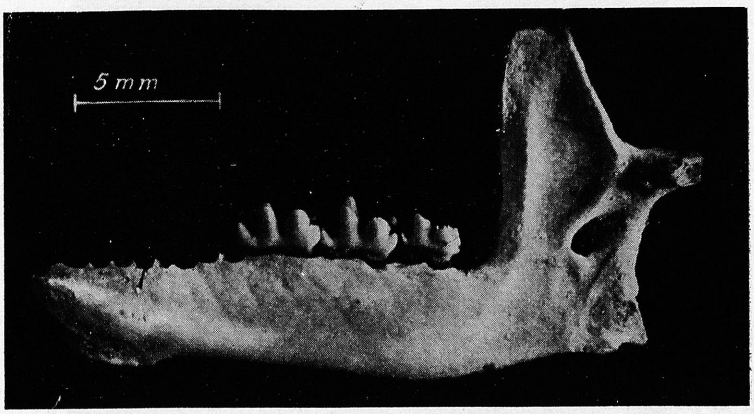
Автор подробно оговаривает остатки видов Insectivora и Rodentia найденные в Рембелицах Крулевских, проиводя их описания, размеры и оговаривая их систематические местоположение. Впервые был тут описан вид *Mimomys polonicus* n. sp. По мнению он вероятно является безпосредственным предком *Mimomys pliocaenicus* (F. Major).

PLATES

Plate XIX

Desmana kormosi SCHREUDER from Rębielice Królewskie

Fig. 1. Mandible
Fig. 2. Femur
Fig. 3. Humerus



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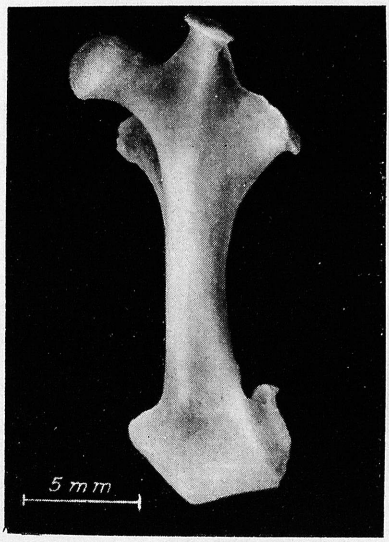

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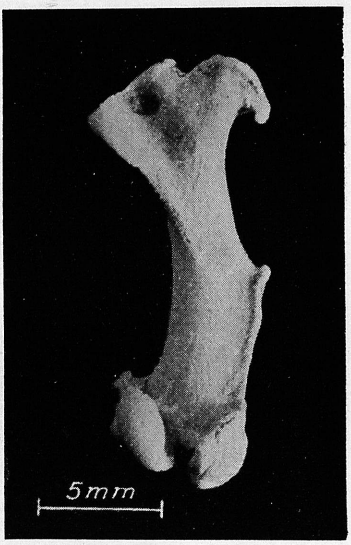

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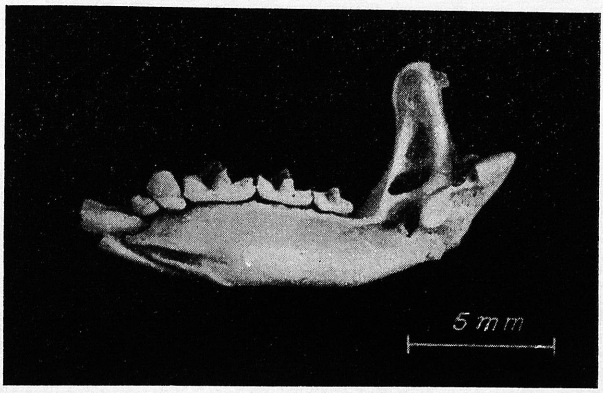
L. Sych phot.
K. Kowalski

Plate XX

Mandibles of Soricidae from Rębielice Królewskie

Fig. 1. *Blarinoides mariae* Sulimski
Fig. 2. *Sorex runtonensis* Hinton
Fig. 3. *Sorex* cf. *minutus* Linnaeus



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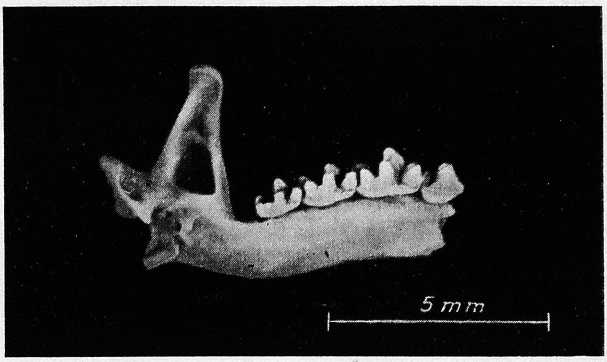

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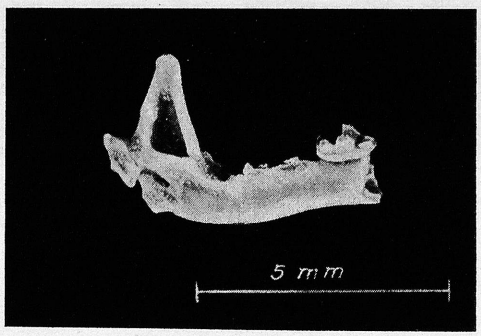

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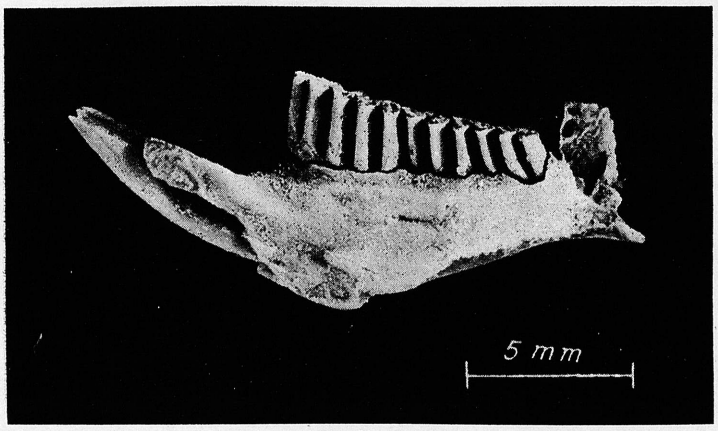
L. Sych phot.
K. Kowalski

Plate XXI

Fig. 1. Mandible of *Mimomys polonicus* n. sp. from Rębielice Królewskie (holotype).
Fig. 2. Palate of *Mimomys polonicus* n. sp. from Rębielice Królewskie
Fig. 3. Palate of *Mimomys pliocaenicus* (F. MAJOR) from Kadzielnia (Poland).



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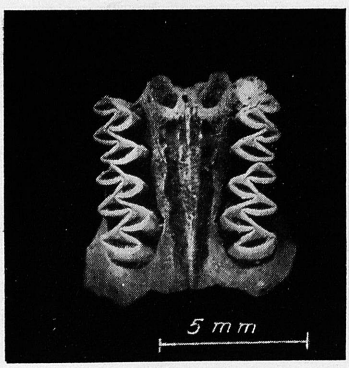

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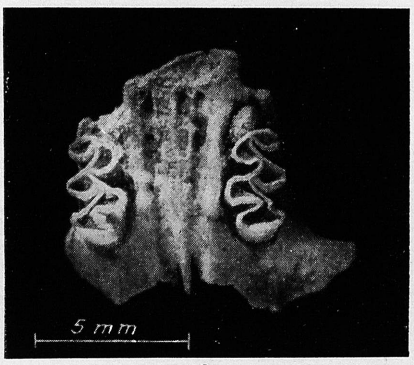

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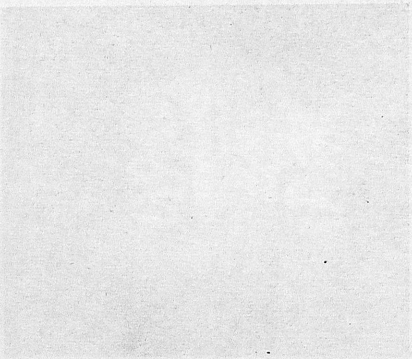
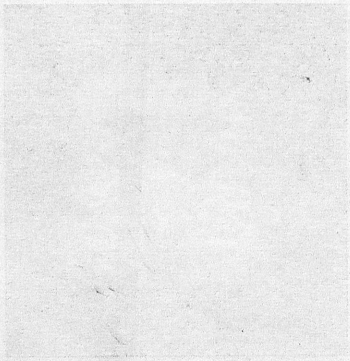
K. Kowalski





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