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ANDRZEJ SULIMSKI

SUPPLEMENTARY STUDIES ON THE INSECTIVORES FROM WĘŻE 1 (POLAND)

Study on the Tertiary bone breccia fauna from Węże near Działoszyn in Poland

PART XVII **

Abstract. – Some of the insectivore species previously described by the writer (Sulimski, 1959) are revised. One new genus and three new species of the Soricidae are described: *Zelceina* n. gen., *Sorex subminutus* n. sp., *S. hibbardi* n. sp. and *S. kretzoii* n. sp. A description is also given of *Desmana pontica* Schreuder and *D.* cf. *kormosi* Schreuder — two species thus far not recorded from the Węże breccia, and of the skull of *Erinaceus samsonowiczi* Sulimski.

INTRODUCTION

The insectivore remains from the bone breccia of Węże near Działoszyn (province of Łódź) have, in large measure, been already described by the present writer (Sulimski, 1959); during 1959—61, however, some new finds were added to the material covering this group of mammals. Since the new collections include new species thus far not recorded from the Węże fauna, the publication of their description in this paper seems much needed. In 1959 the writer was able to compare the Węże assemblage of insectivores, including forms already described and new ones, with

* Another fossil locality of Pliocene age, containing a fauna of vertebrates, chiefly mammals, was discovered and exploited at Węże in the course of 1959—61 (Sulimski, 1962). It is referred to as *Węże 2*. The karst doline, discovered by Samsonowicz (1934), will, therefore, be referred to in future publications as *Węże 1*.

** Parts I-V — see *Acta Geol. Pol.*, vol II-V/1952—55; parts VI-XVI — *Acta Palaeont. Pol.*, vol. I-VI/1956-61.

the Hungarian collections at the Museum of Natural History and Geological Institute in Budapest. This allowed a number of uncertain points connected with the systematic position of some species previously described to be cleared up and helped to discover in the Węże fauna several new representatives of the Soricidae Gray family.

In the systematic part of this paper, dealing with representatives of the Soricidae, the terminology used is that introduced by Kindal (1959) who based it on her studies on the development of milk and permanent dentition. In accordance with these results in the genus *Sorex* Linnaeus P^1 is recognized as P^2, and P^2 as P^3, in genus *Neomys* Kaup we admit the presence of P^2 and in genus *Crocidura* Wagler the absence of a one-cusped upper premolar. Likewise, after Kindal, the writer regards the lower canine in all the Węże shrews as the second incisor.

The insectivore remains described here and in the earlier paper (Sulimski, 1959) are the property of the Muzeum Ziemi (Museum of the Earth) of the Polish Academy of Sciences. They are marked: M.Z.VIII/Vm, while the particular species have been numbered 300—319.

The photographs have been taken by Miss M. Czarnocka and retouched by the author, who also executed the drawings. The work technique and the measurement methods are the same as those previously used. Greater stress has, however, been laid on the morphology of the condyloid process in species from the family Soricidae Gray as it is believed diagnostically important.

ACKNOWLEDGMENTS

The warmest thanks are due from the writer to the following persons for the assistance offered in the preparation of this paper: Prof. R. Kozłowski kindly read it and made valuable suggestions on some problems connected with this group of mammals; Prof. Z. Kielan-Jaworowska offered helpful criticism and hints; Prof. M. Kretzoi generously assisted the writer during his stay in Budapest and facilitated the research study at the Institute of Geology and the Museum of Natural History; Prof. C. W. Hibbard from the Palaeontological Museum of the Michigan University at Ann Arbor kindly sent some American insectivore specimens which helped to clear up certain controversial points regarding the relationship of some species here described with American forms.

SYSTEMATIC DESCRIPTIONS

Order **Insectivora** Bowdich, 1821
Family **Erinaceidae** Bonaparte, 1838
Subfamily **Erinaceinae** Gill, 1872
Genus *Erinaceus* Linnaeus, 1758

Erinaceus samsonowiczi Sulimski, 1959

(pl. II, fig. 14-16; text-fig. 1)

1959. *Erinaceus samsonowiczi* n. sp.; A. Sulimski, Pliocene insectivores..., p. 129—132, pl. 2, fig. 1 a—c, 2.

1959. *Erinaceus* sp.; A. Sulimski, *Ibid.*, p. 132—133, pl. 4, fig. 11.

Material. — 12 lower jaws (new material), one with complete, well preserved articular processes, 5 rostral fragments of skulls with incomplete dentition and 4 halves of upper jaws, likewise with incomplete dentition in situ. About 300 isolated lower and upper teeth of every category. Small lower jaw fragments, lacking dentition or only with single teeth — mostly P_4 — belonging to young individuals, have also been referred to this species. All these specimens have been successively marked from number 1 onwards. The collection is labelled: M.Z. VIII/Vm — 300.

Description. — The earlier description of this species (Sulimski, 1959) was based chiefly on 8 fragments of lower jaws. Owing to the unsatisfactory state of preservation and the scarcity of specimens, no description of the skull was then given. New material now available has provided better preserved skulls.

Upper dentition: I^1 (isolated specimen) very large, in transverse section ovate, directed slightly forwards, one-cusped and one-rooted. I^2 (isolated specimen), half the size of I^1, in transverse section round, one-cusped and one-rooted. This tooth is strongly lingually shoved by I^1 and I^3. The crown bears a distinct posterior cuspule. I^3 large, one-cusped, two-rooted; the anterior root smaller than the posterior, well delimited; the crown bears a small posterior cuspule (deuterocone?). Diastema between I^3 and C very short, C large, one-cusped, with two roots that have a tendency to fuse together. On some isolated teeth a thin blade is seen joining the two roots. There are distinct anterior and posterior cuspules. P^2 slightly broader than C, lower, one-cusped and one-rooted, with a small deuterocone. P^3 relatively small, subtriangular, with a low protocone, distinct deuterocone and three roots (a small, vestigial third root occurs in some specimens); the crown shows a tendency to reduction. P^4 strongly molarized, with the talon and the tetracone well developed. The inner roots not very clearly delimited, the outer ones large and strong. M^1 is the largest tooth, subquadrate in outline and bearing a conspicuous metacone. M^2 smaller than M^1, with weak talon and stronger trigon. Metaconulus very

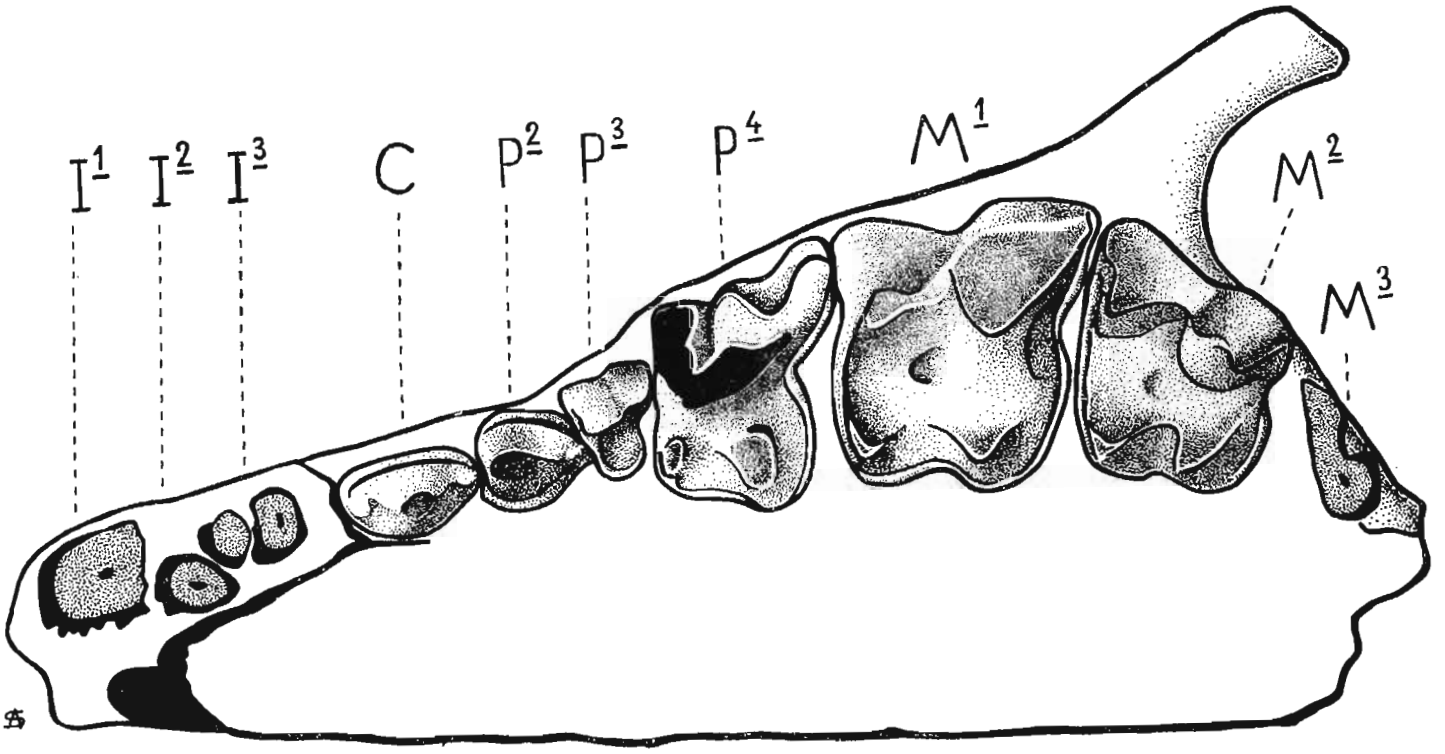


Fig. 1. — *Erinaceus samsonowiczi* Sulimski; left fragment of skull with dentition, in palatal view (no. 300/51); ca. × 7.

weak, or lacking. The structure and number of roots in these two molars coincide with specimens of *Erinaceus europaeus* L. M^3 much reduced to a small subtriangular „trigon", two-rooted and two-cusped. The buccal root smaller than the lingual. The roots well delimited. The premaxillar suture (*pmx*), seen in some rostral fragments of the skull, does not reach the frontal suture (*front.*). The interorbital width small. The infraorbital foramen in front of the anterior root of P^4. Judging from the preserved fragments of the hind part of the skull, the brain case is relatively broad but low, its width in the tympanic area being fairly great. The preserved fragments of the zygomatic arches tend to become lower, particularly so in their posterior portions. Palate relatively short and narrow, proportionately smaller than in *E. europaeus* L.

Lower jaw and lower dentition: The structure of the lower jaw has already been given in the writer's earlier paper (Sulimski, 1959). Some supplementary data, however, are now necessary. They are as follows:

The upper part of the coronoid process is curved backwards and terminates in a hook. A conspicuous sharp crest occurs on the inner side of the angular process. The crown of the first incisor is large, not grooved on the inner side. The second incisor (I_3) very small, with a flattened crown. The canine is large, with a distinct hind cuspule. As a rule, there is a metaconid in P_4, often, however, as a small elevation. In the first two molars the entoconid is large, higher than the hypoconid. In M_3 the root is composed of two root-like, fused elements, but one alveole.

Measurement data of the lower jaws and their dentition have been given completely in the writer's earlier paper (Sulimski, 1959, p. 131). Tables 1-3, contained in the present paper, specify the upper jaw and upper dentition measurements, as well as the lower jaw and lower dentition measurements.

Discussion. — The characteristic structure of the lower jaws, the number of teeth and their structure, clearly point to the genus *Erinaceus* L. The characteristic features of *E. samsonowiczi* are the position of the mental foramen, the structure of articular processes, particularly of the coronoid and the angular, the size and shape of the lower canine, the structure of P_4 (weakly developed metaconid), structure of M_3 (more reduced), course of the frontal suture, position of infraorbital foramen, size of I^1, I^2 strongly pushed lingually, P^2 one-rooted, with a weak deuterocone, P^3 with a poorly developed (vestigial ?) third root, rather poorly developed inner roots in P^4, M^2 with a poorly developed metaconulus, stronger reduction of M^3, and the position of the hind portions of the zygomatic arches.

As regards size, *Erinaceus samsonowiczi* occupies an intermediate position between *E. europaeus* L. and *E. olgae* Young from Chine. *E. samsonowiczi* comes near to the now living *E. europaeus* (pl. II, fig. 12, 13)

Table 1

Erinaceus samsonowiczi Sulimski
Measurements of upper jaws and teeth, in situ (in mm)

Cat. number M. Z. VIII/Vm		300/13	300/14	300/15	300/16	300/17
Length	I^1	2.0*	1.9*	1.9*	—	—
Width		1.5*	1.5*	1.6*	—	—
Length	I^2	1.4*	1.4*	1.4*	—	—
Width		1.2*	1.3*	1.2*	—	—
Length	I^3	2.0	1.8	1.9	—	—
Width		1.6	1.6	1.5	—	—
Length	C	2.6	2.6	2.7	—	—
Width		1.6	1.5	1.5	—	—
Length	P^1	2.2	2.1	—	—	—
Width		1.8	1.7	—	—	—
Length	P^3	1.8	—	—	—	—
Width		2.1	—	—	—	—
Length	P^4	3.5	3.6	3.2	3.6	3.3
Width		4.4	4.4	4.6	4.6	4.8
Length	M^1	5.0	5.1	5.0	4.8	4.9
Width		5.5	5.4	5.2	5.2	5.2
Length	M^2	4.1	4.0	3.9	4.0	3.8
Width		5.0	4.9	5.0	4.7	5.1
Length	M^3	1.7	1.7	1.8	1.7	1.6
Width		2.7	2.5	2.6	2.6	2.7
Length of: $I^1 — M^3$		26.2	26.3	24.2	—	—
$P^4 — M^3$		14.1	14.4	13.7	14.1	13.8
$C — M^3$		20.8	20.8	19.8	—	—
$M^1 — M^3$		10.8	10.9	10.7	10.6	10.4
Length of palate		27.0	—	—	—	—
Inner width of palate in $M^1 — M^1$		10.0	—	—	—	—
Outer width of palate in $M^1 — M^1$		20.0	—	—	—	—
Length of diastema		0.8	0.9	0.7?	—	—

* Approximate data, measured on alveoles. Dimensions in accordance with measurements of detached teeth.

Table 2

Measurements of skulls and upper dentition (in mm)

Species / Measurements	*Erinaceus samsonowiczi* Sulimski Węże 1 Pliocene	*Erinaceus** *olgae* Young Choukoutien 1,13 Plio-Pleistocene	*Erinaceus*** *europaeus* Linnaeus Recent
Length/Width of I^1	1.7-2.1/1.4-1.6	1.7/1.6	2.0/2.0
I^2	1.4-1.6/1.1-1.4	1.4/1.3	1.3/1.5
I^3	1.6-2.2/1.4-1.7	1.7/1.8	2.0/2.0
C	2.2-2.8/1.4-1.6	2.3/1.3	2.5/1.8
P^2	2.0-2.3/1.5-1.8	2.0/1.7	2.5/2.2
P^3	1.6-1.8/1.8-2.2	1.4/1.4	2.0/3.0
P^4	3.0-3.6/4.2-4.8	3.4/4.9	3.5/5.0
M^1	4.8-5.2/4.8-5.5	3.7/5.5	5.1/5.5
M^2	3.6-4.2/4.6-5.2	3.4/4.7	5.0/4.5
M^3	1.6-1.8/2.4-2.7	1.3/3.0	2.0/3.5
Length of: $I^1 - M^3$	24.2-26.3	27.0?, 28.0?	29.0
$C - M^3$	19.8-20.8	19.0, 20.5	22.8
$P^4 - M^3$	13.7-14.4	14.0	16.5
$M^1 - M^3$	10.4-10.9	10.0, 11.0, 11.4	14.5
$C - P^4$	10.1	11.0	11.5
$P^2 - M^2$	17.0, 17.5	17.3	20.0
Postorbital width	13.0	13.9	16.0
Outer width of palate in $M^1 - M^1$	20.0	24.0	23.0
Length of palate	27.0	28.0?	31.0
Length of diastema	0.7-0.9	0.4?	0.8

* Data after Young (1934) and Teilhard de Chardin & Pei (1941).

** Approximate data based on measurements of 10 skulls.

Table 3

Measurements of lower jaws and their dentition (in mm)

Species / Measurements	*Erinaceus samsonowiczi* Sulimski Węże 1 Pliocene	*Erinaceus* olgae* Young Choukoutien 1,13 Plio-Pleistocene	*Erinaceus** europaeus* Linnaeus Recent
Length between I_2 and condylus from inside	35.5 — 38.4	35.0	44.0
Length of: I_2 — M_3	21.0	26.5	28.0
I_3 — P_4	9.0	8.0	11.0
P_4 — M_3	14.0 — 14.7	15.0	17.0
M_1 — M_3	11.5 — 12.2	12.0, 13.0	14.2
Length/Width of: P_4	2.8 — 3.1/2.1 — 2.4	2.6/2.2	3.5/2.5
M_1	5.1 — 5.5/3.3 — 3.5	5.1/3.2	6.0/4.0
M_2	4.7 — 5.2/3.0 — 3.3	3.9/2.6	5.0/3.5
M_3	1.8 — 2.3/1.5 — 1.8	2.9/1.7	2.7/2.1
Height below: P_4	6.4 — 6.6	5.0	6.8
M_1	6.5 — 7.0	6.0	7.3
M_2	6.5 — 7.0	5.0	7.5
M_3	5.5 — 6.7	5.0	7.3
Thickness below: M_1	3.0 — 3.2	3.0	3.5
M_3	3.1 — 3.4	3.0	3.3
Height of coronoid process	18.0	18.0	20.0
Width of articular facet of condyloid process	5.0 — 5.6	4.0	6.5
Length of angular process	7.0	7.5 ?	8.5

* See comparative table 1.

** Data based on measurements of 20 lower jaws.

in the following features: structure of the condyloid process, especially in outline of its articular facet, structure of I_2, shape of the canine, structure of the first two lower molars, course of the frontal suture, structure of I^3, the upper canine, the successive diminution of C, P^2 and P^3, structure of P^4, and the character of the first two upper molars. By the remaining characters *E. samsonowiczi* approaches the Chinese *E. olgae* Young (Young, 1934; Teilhard de Chardin & Pei, 1941).

Erinaceus samsonowiczi is smaller than other species of *Erinaceus* L. described from the Plio-Pleistocene beds of Europe. An exception here is *E. lechei* Kormos (Kormos, 1934) from the Upper Pliocene of Hungary. This species is, however, distincly smaller and has a dubious systematic position. *E. praeglacialis* Brunner, recorded from Windloch (Brunner, 1934), is comparable with the European variety *E. europaeus fossilis* and is considerably larger than *E. samsonowiczi*.

The material previously described by the writer (Sulimski, 1959) contained fragmentary lower jaws, in size comparable with *E. lechei* Kormos. These fragments were without dentition. The additional material obtained from Węże contains some lower jaws of the same size, but bearing one tooth (in situ). The structure of the molars, particularly of P_4 which is in the stage of eruption, reasonably refers these fossil remains to young individuals of *E. samsonowiczi*.

In an early Pliocene find from Csarnóta 2, Kretzoi (1959) collected some mandibular remains which he identified as *Erinaceus* sp. indet. These fragments are somewhat larger-sized than the Węże specimens, but coincide in the structure of jaws and their dentition.

Family **Talpidae** Gray, 1825
Subfamily **Talpinae** Murray, 1866
Genus *Talpa* Linnaeus, 1758
Talpa minor Freudenberg, 1914
(pl. I, fig 5-9)

The synonymics of this species, covering the years 1914—1959, are given in papers by Kowalski (1956, p. 341; 1958*b*, p. 8) and by Sulimski (1959, p. 133). To those must be added:

1958. *Talpa gracilis* Kormos; F. Heller, Eine neue..., p. 6—9, pl. 1, fig. 1-3.
1958. *Talpa minor* Freudenberg; G. Brunner, Nachtrag..., p. 502—503.
1958*a*. *Talpa* cf. *minor* Freudenberg; K. Kowalski, Altpleistozäne..., p. 9.
1960*a*. *Talpa minor* Freudenberg; K. Kowalski, Pliocene insectivores..., p. 161—162. Partim.

Material. — In addition to the material previously described (Sulimski, 1959), 5 fragmentary lower jaws with teeth in situ, 15 shoulder bones and numerous molars have been collected. Also 6 shoulder bones and 4 fragments of small-sized lower jaws, belonging to young individuals.

All these specimens are marked from number 1 onwards. The collection is labelled: M. Z. VIII/Vm — 301.

Description. — Horizontal branch of lower jaw slender, delicate, elongated, constricted anteriorly. The coronoid process slender, narrowing upwards, with delicate end hooked backwards. The ascending ramus meets the horizontal ramus at a slightly obtuse angle. The anterior mental foramen usually occurs below P_3, the posterior one below the hind root of M_1, or between the roots of that tooth. M_1 has weakly developed accessory cuspules on the lingual side. This also applies to the other molars. Protoconids with high and sharp tips. Some small shoulder bones, belonging to young individuals, display the same structure as that of adult forms.

Measurement data of the lower jaws and shoulder bones have been given in the writer's previous paper (Sulimski, 1959, p. 133). Those specified in the table 4 are made on young individuals.

Table 4

Talpa minor Freudenberg

A. Measurements of lower jaws (in mm)

Cat. number M. Z. VIII/Vm	301/6	301/7	301/8	301/9
Height below M_2	1.4	1.6	1.6	1.5
Length of M_1	1.7	1.8	1.7	—
Length of M_2	1.5	1.6	1.6	—

B. Measurements of shoulder bones (in mm)

Cat. number M. Z. VIII/Vm	301/15	301/16	301/17	301/18	301/19	301/20
Maximum length	8.8	9.5	8.9	9.5	9.0	8.8
Distal width	5.4	6.2	6.6	—	—	—
Proximal width	6.7	7.4	7.7	7.5	—	—
Minimum width	2.5	2.6	2.5	2.5	2.4	2.4

Discussion. — The diagnostic importance for *Talpa minor* (= *T. gracilis*) of such characters as the structure of molars and the number and position of mental foramens, has been stressed by Heller (1958, p. 7—8). Moreover, that author has ascertained that the maximum length of the shoulder bone in this species is rather variable, since it ranges from 10.0 to 12.9 mm. He stated that among 27 specimens of that bone, two were approx. 13 mm long, another one 17 mm, and he referred them all to *T. fossilis* (= *T. praeglacialis* Kormos). Moreover, Heller believed that

the strong variability not only of the size of lower jaws, but also of the shoulder bones, undoubtedly fits into individual variations due to sexual dimorphism. The living *T. europaea* L. also displays an equally strong variability range.

The fossil remains of shoulder bones of *Talpa minor* Freudenberg, described from Rębielice Królewskie (Kowalski, 1960 *a*), are somewhat larger than the Węże specimens. The maximum length and minimum width dimensions of some of them (14.4/4.8 and 13.4/3.9) come closer to those of *T. fossilis* Petényi, while in dimensions of lower jaws, probably also in morphological details, they agree with the Węże specimens.

Shoulder bones and fragments of lower jaws of *Talpa* cf. *minor* Freudenberg from Podumci (Kowalski, 1958*a*) are also larger than the Węże specimens, the shoulder bones being longer and more slender, as well.

Talpa fossilis Petényi, 1864
(pl. I, fig. 13)

The synonymics covering the years 1864—1959 are given in papers by Kowalski (1958*b*, p. 9) and by Sulimski (1959, p. 134). To those must be added:

1958. *Talpa praeglacialis* Kormos; F. Heller Eine neue..., p. 9—10, pl. 1, fig. 4, 5.
1959. *Talpa* sp.; A. Sulimski, Pliocene insectivores..., p. 135.
1960*a*. *Talpa minor* Freudenberg; K. Kowalski, Pliocene insectivores..., p. 161, 162. Partim.
1960*d*. *Talpa* sp.: K. Kowalski, An early Pleistocene..., p. 4—5.

Material. — 7 fragmentary lower jaws with dentition, and 10 shoulder bones have been added to the material described in the writer's previous paper (Sulimski, 1959). All the specimens are marked from number 1 onwards. The collection is labelled: M.Z.VIII/Vm — 302.

Description. — The description concides with those made by Petényi (1864), Kormos (1930, 1937*a*), Heller (1936, 1958), Kowalski (1958*b*) and Sulimski (1959).

Measurement data of the lower jaws, the dentition and the shoulder bones were given in the writer's earlier paper (Sulimski, 1959).

Discussion. — A comparison of the Węże specimens with the material from Hungary does not show any distinct differences. The fragmentary lower jaw remains from Węże resemble these elements of the skull in *Talpa europaea* L. But in dental structure, length of palate and lower jaws, the Węże remains may be readily distinguished from *T. europaea* L. So far as the shoulder bones are concerned, their maximum length approaches the minimum length of shoulder bones observed in the recent species, while their mean length is distinctly smaller and this provides additional evidence for the specific distinction of these forms.

Talpa europaea fossilis L., described by Pasa (1950), is hardly smaller

than the living *T. europaea* L. These remains most probably belong to *T. fossilis* Petényi.

A closer examination of some anterior portions of the lower jaws from Węże (Sulimski, 1959, p. 135, pl. 4, fig. 9b), in which three incisors, instead of four, have been preserved, revealed a small alveole, belonging to the fourth anterior incisor. The figured specimen was actually damaged. On other, better preserved specimens, there are four readily discernible alveoles of these teeth. The meagre remains of *Talpa* sp. (*l. c.*, p. 135), representing a very fragmentary jaw, one incomplete shoulder bone, and several isolated teeth, also seem reasonably referable to *T. fossilis* Petényi, in spite of their somewhat larger dimensions.

It has been stated by Heller (1958, p. 10) that in *Talpa fossilis* Petényi (= *T. praeglacialis* Kormos) the coronoid process is broad, rounded at the tip, and that three mental foramens occur on the horizontal ramus — the anterior one below P_2, the median below the anterior root of M_1, the posterior below the hind root of M_1. Similar characters are also observable in the Węże specimens. The same may be said of two P_3 alveoles which are rather obliquely placed. According to Heller, these features are representative of *T. fossilis* Petényi. There are other similarities in the structure of molars, i.e. the presence of lingual cusps on the talonid, and of weakly developed accessory anterior cusps on the same side of the teeth.

In view of their dimensions, some of the shoulder bones described from Rębielice Królewskie (Kowalski, 1960*a*), and the bone remains from Kamyk near Kłobuck (Kowalski, 1960*d*), seem to correspond with the species *Talpa fossilis* Petényi.

A new species — *Talpa csarnotana* — was described by Kretzoi (1959) from the young Pliocene deposits at Csarnóta 2. In size this species comes near *T. fossilis* Petényi, but differs from it in structure of teeth and shoulder bones.

Fig. 1. *Sorex araneus* Linnaeus: *a* left lower jaw, inner view, *b* condyloid process; recent.

Fig. 2. *Sorex* cf. *praearaneus* Kormos: *a* right lower jaw, outer view, *b* the same, inner view, *c* condyloid process (no. 307/2).

Fig. 3. *Sorex runtonensis* Hinton: *a* right lower jaw, inner view, *b* condyloid process (no. 306/15).

Fig. 4. Same species: fragment of right lower jaw, inner view (Villány 8).

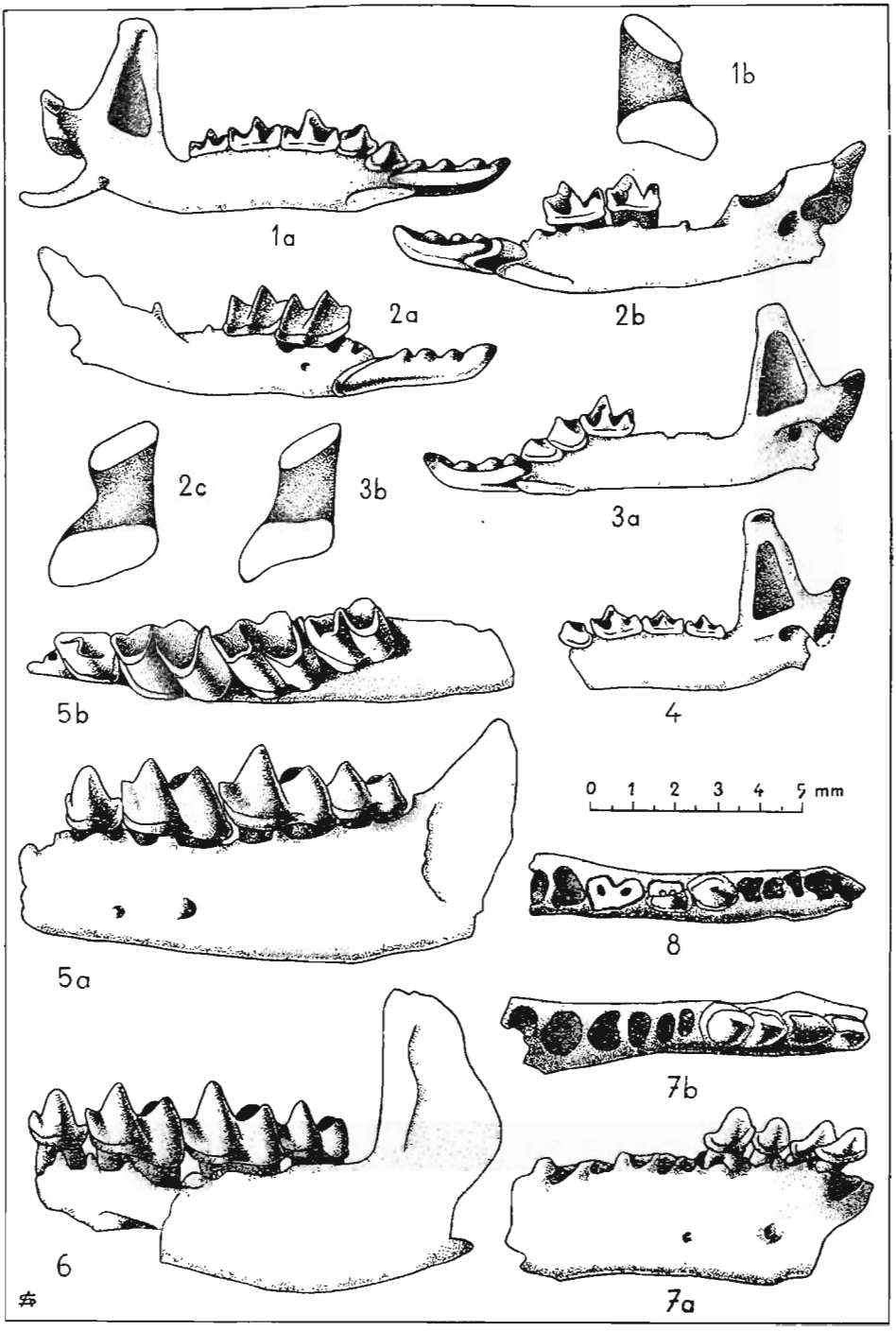
Fig. 5. *Desmana pontica* Schreuder: *a* fragment of left lower jaw, top view, *b* outer view (no. 304/4).

Fig. 6. Same species: another specimen of left lower jaw with P_4—M_3, outer view (no. 304/5).

Fig. 7. Same species: *a* anterior fragment of lower jaw with I_3—P_2, outer view, *b* top view (no. 304/8).

Fig. 8. Same spiecies: another specimen of left lower jaw with P_2—P_3, top view (no. 304/11).

TEXT-PL. I



Subfamily **Desmaninae** Thomas, 1912

Genus *Desmana* Güldenstaedt, 1777

Desmana pontica Schreuder, 1940

(pl. I, fig. 1-4; text-pl. I, fig. 5 *a-b*, 6,7 *a-b*, 8)

1913. *Galemys hungaricus* Kormos; T. Kormos, Trois nouvelles espèces..., p. 142.

1940. *Desmana pontica* n. sp.; A. Schreuder, A revision..., p. 317—318, fig. 5, 21, 42, 63.

1959. *Galemys* (?) sp.; A. Sulimski, Pliocene insectivores..., p. 139—140. Partim.

Material. — Two fragments of right lower jaws with M_{1-3} and M_{1-2}, right fragment with I_3—P_2, and with alveoles of P_4 and M_{1-2}, 4 left lower jaw fragments, two with P_4—M_3, one with M_{1-2}, one with M_1; also several other lower jaw fragments, without dentition, about 80 lower and upper teeth, three fragmentary skulls (rostral parts) with M^{1-3}, parts of the palate and bridges over the infraorbital foramen. Rostral fragments of skulls described in the writer's earlier work (Sulimski, 1959; Nos. 1301—1303) as *Galemys* (?) sp., also belong to this material. All the specimens are marked from 1 onwards. The collection is labelled: M.Z. VIII/Vm — 304.

Description. — Lower dentition: Alveole I_1 large, deep, obliquely directed to the front and upwards. Alveole I_2 small, but larger than alveole I_3. I_3 one-rooted, one-cusped, small. The next tooth resembles I_3. The diastema between the last incisor and the canine very small, or lacking. The crown in P_1 closely resembles the crown of the preceding teeth. P_2 with two roots, often fused together. P_3 one-cusped, smaller than the preceding tooth, with two roots, which are placed somewhat obliquely to the longer axis of the jaw. P_4 three-cusped, with two large roots, the crown provided with a small paraconid and a still smaller and lower metaconid — both lingually pushed, the protoconid high and sharp-tipped. M_1 and the following molars five-cusped, with a thick and stout entoconid and a small terminal cusp behind the entoconid. The paraconid small, the metaconid narrow and sharp-tipped, the hypoconid basally broad, similarly as the protoconid. As a rule, no terminal small cusp occurs behind the entoconid of M_3. A crest is present between the metaconid and the entoconid in all molars. It connects these cusps at about one half the height of the entoconid. The proportions of M_1 and M_3 are the same, while M_3 is slightly smaller and its talonid somewhat more reduced. The cingula of the molars are well developed only below the protoconids. On the lingual side of teeth the cingula are broad, but not so well outlined as those on the buccal side. Two mental foramens are usually present, the anterior one below the root of P_1, the posterior between the roots of M_1. A third, median foramen may be present below the anterior root of P_3, or between the roots of P_2 and P_3. It is only

half the size of the foramens mentioned above. The anterior margin of ascending ramus is directed upwards at a right angle. The articular processes are not preserved on any of the specimens.

Upper dentition: Fragments of skulls with preserved M^{1-3} are without incisors and premolars. The structure of upper molars essentially resembles that in *Desmana nehringi* Kormos, except that they are proportionately smaller. On closer comparison M^1 agrees in size and structure with M^1 in *Desmana pontica* Schreuder from Polgardia. In the Węże specimens M^3 is strongly reduced. The bridge over the infraorbital foramen is narrow and oblique.

Measurement data of skulls and upper dentition, lower jaws and their dentition, as well as comparative data — are given on tables 5—8.

Discussion. — The remains of *Desmana pontica* Schreuder from Polgardia (Kormos, 1913; Schreuder, 1940) are represented by a fragmentary upper jaw with C—P^2 in situ, a detached first upper molar, an anterior segment of the lower jaw with C—P_4, two other fragments of the lower jaw with M_1, and a detached M_2. Though not all of these remains can

Table 5

Desmana pontica Schreuder

Measurements of skulls and upper dentition (in mm)

Cat. number M.Z.VIII/Vm		304/1	304/2	304/3
Proximal width of palate		ca. 4.4	ca. 5.0	—
Distal width of palate		ca. 10.6	ca. 11.6	—
Length of tooth-row M_{1-3}		6.3	6.5	6.3
Thickness of bridge above the infraorbital foramen		0.6	0.7	0.6
Length	C *	1.3	1.3	—
Width		1.0	0.9	—
Length	P^1 *	1.2	—	—
Width		1.1	—	—
Length	P^3 *	1.7	1.8	—
Width		1.3	1.4	—
Length	M^1	2.3	2.7	2.5
Width		2.5	2.7	2.4
Length	M^2	2.2	2.3	2.2
Width		2.2	2.4	2.3
Length	M^3	1.5	1.8	1.6
Width		1.4	1.6	1.5

* Detached teeth.

Table 6

Desmana pontica Schreuder

Measurements of lower jaws and their dentition (in mm)

Cat. number M. Z. VIII/Vm	304/4	304/5	304/6	304/7	304/8	304/9	304/10
Length of: I_3—P_2	4.5	—	—	—	—	—	—
P_4—M_3	—	7.5	8.0	—	—	—	—
M_1—M_3	—	6.2	6.6	6.3	5.8	—	—
M_1—M_2	—	4.7	5.0	4.7	4.4	4.8	—
Length/Width of: C	0.9/0.9	—	—	—	—	—	—
P_1	1.1/0.8	—	—	—	—	—	—
P_2	1.3/1.2	—	—	—	—	—	—
P_4	—	1.3/1.1	1.4/1.1	—	—	—	—
M_1	—	2.4/1.8	2.5/1.8	2.5/1.8	2.2/1.7	2.5/1.8	2.4/1.8
M_2	—	2.3/1.7	2.5/1.8	2.2/1.7	2.2/1.6	2.3/1.7	—
M_3	—	1.5/1.4	1.6/1.5	1.6/1.5	1.2/1.3	—	—
Height of lower jaw below: C	2.5	—	—	—	—	—	—
P_1	2.5	—	—	—	—	—	—
M_1	—	2.4	2.4	2.3	2.3	2.4	—
M_2	—	2.4	2.5	2.4	2.4	2.5	—
Thickness of lower jaw in M_1	—	1.6	1.7	1.7	1.6	1.6	—

be compared with the Węże specimens, they point out to the existence of distinct similarities. *Desmana pontica* is smaller than *D. kormosi* Schreuder.

In his earlier paper, the writer (Sulimski, 1959, p. 140) described and referred to *Galemys* (?) sp. the remains of three upper jaws (rostral fragments) with dentition, and two lower, also tooth-bearing, jaws in situ. More accurate measurements and comparisons indicate, however, that these bones belong to two species. The smaller ones are referable to *Desmana pontica* Schreuder, the larger ones — to a form related to *D. kormosi* Schreuder. In the larger specimens the height of the horizontal ramus below M_2 ranged from 3.0 to 3.1 mm, the length of M_2 — from 2.0 to 2.1 mm.

Table 7

Measurements of skulls and upper dentition (in mm)

Species / Measurements	*Desmana nehringi* Kormos		*Desmana pontica* Schreuder	
	Podlesice	Węże 1	Polgardi	Węże 1
	Early Pleistocene	Pliocene	Pontian	Pliocene
Length of skull	—	ca. 45.7	—	—
Maximum width of skull	—	20.1	—	—
Minimum width of skull	—	8.0, 8.5	—	—
Proximal width of palate	—	5.2, 5.5	—	4.4, 4.5
Distal width of palate	—	13.2, 13.5	—	10.6, 11.6
Width of bridge over infraorbital foramen	0.75	0.8 — 0.9	—	0.6 — 0.7
Length of: $I^1 - M^3$	—	22.0 — 22.5	—	—
$C - P^4$	—	8.6 — 9.1	—	—
$M^1 - M^3$	—	7.0 — 7.2	—	6.3 — 6.5
Length/Width of: I^1	3.0/1.2	3.0/1.5*	—	—
C	—	1.0 — 1.2/1.1 — 1.3	1.3/0.9	1.3/1.0
P^1	—	1.8 — 2.0/1.2 — 1.3	1.2/0.9	1.2/1.1
P^2	2.25/1.5	2.1 — 2.2/1.5 — 1.6	—	—
P^3	—	1.3 — 1.4/1.5 — 1.6	1.8/1.3	1.7/1.3
P^4	2.75/2.25	2.2 — 2.5/2.3 — 2.5	—	—
M^1	3.5/2.7	2.7 — 2.8/3.3	—	2.3 — 2.7/2.5 — 2.7
M^2	—	2.5 — 2.7/2.8 — 3.0*	—	2.2 — 2.3/2.2 — 2.4
M^3	—	1.8 — 2.0/2.0 — 2.1	—	1.5 — 1.8/1.4 — 1.6

* Refer to the new specimens.

Desmana cf. *kormosi* Schreuder, 1940

Material. — Three fragmentary lower jaws with M_{1-3}, but lacking the anterior parts and the articular processes. Several detached first and second lower molars. These specimens are marked from number 1 onwards. The collection is labelled: M.Z. VIII/Vm — 305.

Description. — In structure of lower jaws and lower dentition our material agrees with the specimens described from Rębielice Królewskie (Kowalski, 1960*a*) and with the Beremend remains of the same species (Schreuder, 1940).

Measurement data are given in table 8.

Discussion. — The remains here considered were described in the writer's earlier paper (Sulimski, 1959) under the name of *Galemys* (?) sp. They consist of lower jaws (l.c., p. 140; spec. Nos. 1304—1306). In dimensions and morphology the preserved molars come nearest to *Desmana kormosi* from Beremend and Csarnóta in Hungary (Schreuder, 1940).

The Węże specimens differ from the Hungarian remains in width of trigonids and talonids on the first and second lower molars, also in size of the third lower molar. The height of the horizontal ramus below M_2 is very much the same in all these forms. The number and position of mental foramens are also concordant.

Family **Soricidae** Gray, 1821
Subfamily **Soricinae** Murray, 1866
Genus *Sorex* Linnaeus, 1758
Sorex runtonensis Hinton, 1911
(text-pl. I, fig. 3 *a-b*)

The synonymics covering the years 1911—1959 are given in papers by Kowalski (1958 *a*, *b*, p. 9) and by Sulimski (1959, p. 140). To those must be added:

1960*a*. *Sorex runtonensis* Hinton; K. Kowalski, Pliocene insectivores..., p. 167—168, pl. 20, fig. 2.

Material. — Six lower jaws and a great number of various isolated teeth has been found, in addition to the material described in the writer's previous paper (Sulimski, 1959). The specimens are marked from number 1 onwards. The collection is labelled: M.Z. VIII/Vm — 306.

Description. — The morphology of the Węże specimens comes nearest to the material described by Hinton (1911). Their most characteristic feature is the slender structure of the whole lower jaw, particularly of the coronoid process. The ascending ramus of that process meets the horizontal ramus of the lower jaw at a right angle, sometimes at a slightly obtuse angle. The orientation of the articular facets in the condyloid

Table 8

Measurements of lower jaws and their dentition (in mm)

Species / Measurements	*Desmana nehringi* Kormos		*Desmana kormosi* Schreuder			*Desmana pontica* Schreuder	
	Podlesice Early Pleistocene	Węże 1 Pliocene	Beremend Upper Pliocene	Rębielice Królewskie Upper Pliocene	Węże 1 Pliocene	Polgardi Pontian	Węże 1 Pliocene
Total length of jaw	—	ca. 26.3	—	—	—	—	—
Length from the anterior part of bone to the posterior border of M_3, from inside	—	ca. 16.3	14.5	—	—	—	—
Distance between mental foramens (anter.-poster.)	—	6.0*, 6.2, 6.5	—	—	—	—	—
Length of: $I_1 - M_3$	—	20.0**	—	—	—	—	—
$I_2 - P_2$	—	—	—	—	—	—	4.5
$C - M_3$	—	14.3**	—	—	—	—	—
$P_1 - M_3$	—	—	11.5 — 12.0	11.3	—	—	—
$P_4 - M_3$	—	—	—	—	—	—	7.5, 8.0
$M_1 - M_3$	—	7.3 — 7.5	6.6 — 6.9	6.9	6.8 — 7.0	—	5.8 — 6.6
Length/Width of:	—	1.2/1.1*	—	—	—	—	1.3/1.2
I_3	—	—	—	—	—	—	1.1/1.0
C	—	—	—	1.2/0.8	—	1.0/0.9	0.9/0.9
P_1	—	2.0/1.3*	—	1.1/0.8	—	1.1/1.1	1.1/0.8
P_2	2.0/1.25	—	1.5/0.9	1.4/0.9	—	—	1.3/1.2
P_4	2.25/1.25	1.9 — 2.2/1.1 — 1.3*	—	—	—	—	1.3 — 1.4/1.1
M_1	3.0/2.2	2.6 — 2.8/2.0 — 2.5	2.5 — 2.7/1.8 — 2.0	2.5 — 2.8/1.7 — 1.8	2.5/1.1	—	2.1 — 2.5/1.7 — 1.8
M_2	28./1.8	2.3 — 2.6/2.0 — 2.4*	2.5/1.8	2.4 — 2.5/1.5 — 1.7	2.3 — 2.4/1.4 — 1.6	2.4 — 2.6/1.6 — 1.8	2.2 — 2.5/1.6 — 1.8
M_3	—	2.0 — 2.2/1.5 — 1.6	1.9 — 2.0/1.3 — 1.4	1.9/1.3	2.0 — 2.1/1.0 — 1.5	—	1.2 — 1.6/1.3 — 1.5
Height of jaw below: C	—	3.2*	2.9 — 3.1	3.0	—	—	2.5
P_2	4.0	3.8 — 4.0*	3.0 — 3.5	2.7 — 2.9	—	—	2.5
P_4	4.0	3.5 — 3.7*	3.1 — 3.3	3.0 — 3.1	—	—	—
M_1	4.1	3.5 — 3.9*	3.2 — 3.5	3.0 — 3.7	—	2.3	2.3 — 2.4
M_2	—	3.4 — 4.0*	—	ca. 3.2	3.0 — 3.1	2.4	2.4 — 2.5
M_3	—	3.8 — 4.0*	3.3 — 3.6	3.1 — 3.7	—	—	—
Thickness of jaw below: P_4	2.0	1.9*	1.3 — 1.6	1.3 — 1.4	—	—	—
M_1	2.1	1.9 — 2.2*	1.7 — 2.0	1.6 — 1.8	—	1.6	—
M_2	—	2.0 — 2.2	—	—	1.6 — 1.7	—	1.6 — 1.7
M_3	—	2.0 — 2.2*	1.5 — 1.7	1.5 — 1.6	—	—	—

* Refer to the new specimens.

** Measured along the alveoles.

process is rather typical of this species (fig. 3 *b*). Both articular facets are subparallel, while the interarticular list has a slight lingual notch. The lingual end of the lower articular facet sharp-tipped. The pterygoid fossa is distinct, deep, triangular and sharp-edged. The preserved fragments of the upper jaws do not display cardinal differences, except for the stronger constriction of rostrum and more reduced M^3 and P^3.

Measurement data of the lower jaws and their dentition are given in the writer's earlier paper (Sulimski, 1959).

Discussion. — From *Sorex praearaneus* Kormos, *S. araneoides* Heller and other species of this group, *S. runtonensis* Hinton differs, in the first place, in the elongation of the horizontal ramus of the lower jaw, in the coronoid process which is high, narrow, tapering upwards, and in the different structure of the articular facets of the condyloid process. The lower jaws described from Rębielice Królewskie by Kowalski (1960*a*) differ from the Węże specimens solely in somewhat larger dimensions, but they agree in morphological details.

Sorex cf. *praearaneus* Kormos, 1934
(pl. II, fig. 7; text-pl. I, fig. 2 *a-c*)

1959. *Sorex araneus* Linnaeus; A. Sulimski, Pliocene insectivores..., p. 142, pl. 4, fig. 8 a, b).

Material. — Several right and left lower jaws, one of them with the teeth in situ and with damaged coronoid process. A dozen or so of detached teeth. A rostral fragment of the skull with five preserved one-cusped teeth. The specimens are marked from number 1 onwards. The collection is labelled: M.Z. VIII/Vm — 307.

Description. — The general pattern of the lower jaw structure resembles that in *Sorex araneus* L. (text-pl. I, fig. 1 *a-b*). Some similarities are also observable in the structure of the upper jaw. The most striking differences occur in the dimensions and morphological details of the anterior dentition and in the structure of articular facets on the condyloid process.

Measurement data of lower jaws and their dentition have been given in the writer's earlier paper (Sulimski, 1959).

Discussion. — In the dimensions of the lower jaws and the preserved rostral fragment of the skull, these remains come nearest to *Sorex araneus* L. Similar specimens have been described by Kormos (1934) under the name of *S. praearaneus*. In the opinion of some authors (Kretzoi, 1956; Kowalski, 1958*a*), the name *S. praearaneus* Kormos should be regarded as synonymous with *S. runtonensis* Hinton. Yet the Podlesice remains, described as *S.* cf. *praearaneus* Kormos (Kowalski, 1956), as well as the Węże specimens, agree in dimensions with those quoted by

Kormos, and are larger than *S. runtonensis*. Moreover, the features characteristic of *S. praearaneus* Kormos are: more robust structure of the coronoid process (the upper portion of the process being enlarged), height and elongation of the horizontal ramus of the lower jaw, structure of I_1, I_2 and P_4, strong development of entoconid on M_3 and the arrangement of the articular facets of the condyloid process. Contrary to this species, *S. runtonensis* Hinton has a more slender lower jaw, since the horizontal ramus is elongated and low, the coronoid process sharp-tipped and the articular facets of the condyloid process differently developed.

Sorex araneoides Heller from Sackdillinger Höhle and Erpfingen (Heller, 1930, 1958) differs from the Węże remains in smaller dimensions of the horizontal ramus of the lower jaw and of the tooth-row M_{1-3}, also in the structure of the articular facets of the condyloid process. Another species, *S. subaraneus* Heller (Heller, 1958), differs, similarly as the one mentioned above, in slightly smaller dimensions, structure of the first lower incisor and position of mental foramen. In the morphology of the molars, the coronoid process, and the general character of the articular facets of the condyloid process, this species agrees with the specimens from Węże.

A reliable assignment of these remains to *Sorex praearaneus* Kormos or *S.subaraneus* Heller cannot as yet be made, owing to the scarcity of the material representing the lower jaws and the only thus far available fragment of the upper jaw. However, it is not excluded that we are dealing with conspecific specimens, if so the second name would be a synonym of the first one.

Sorex minutus Linnaeus, 1766

(pl. II, fig. 5; text-pl. II, fig. 3 *a-b*)

The synonymics covering the years 1766—1946 are given in papers by Miller (1912, p. 55), Ellermann & Morrison-Scott (1951, p. 47). To those must be added:

1956. *Sorex minutus* Linnaeus; M. Kretzoi, Die Altpleistozänen..., p. 154, 170, 184, 187, 193, 197, 200, 201.
1956. *Sorex* sp.; K. Kowalski, Insectivores..., p. 351—352, pl. 2, fig. 1.
1958b. *Sorex* sp.; K. Kowalski, An early Pleistocene..., p. 12, fig. 3.
1959. *Sorex* cf. *minutus* Linnaeus; A. Sulimski. Pliocene insectivores..., p. 142-143, pl. 4, fig. 3 a-b.
1960*a*. *Sorex* cf. *minutus* Linnaeus; K. Kowalski, Pliocene insectivores... p. 168, pl. 20, fig. 3.
?1960*d*. *Sorex* sp.; K. Kowalski, An early Pleistocene..., p. 5.

Material — The collection described in the writer's earlier paper (Sulimski, 1959) was supplemented by 15 new fragments of the lower jaw, two of which are well preserved, with I_1—M_3, and slightly damaged

articular processes. Also three fragments of the upper jaw, and numerous isolated incisors and molars. The specimens are marked from number 1 onwards. The collection is labelled: M.Z. VIII/Vm — 308.

Description. — The structure of the lower and upper jaws and their dentition agrees with that in the living *S. minutus* Linnaeus (text-pl. II, fig. 2 *a-b*). Differences concerning the size fit into the rather strong intraspecific variation.

Measurement data are given in the paper by Sulimski (1959, p. 143).

Discussion. — Five one-cusped upper teeth, the trilobate structure of I_1, the five-cusped M_3, the characteristic structure of the coronoid and condyloid processes, and pigmentation of dentition indicate the genus *Sorex* L., while the dimensions of the specimens suggest their assignment to the living species *S. minutus* L. Fragments of the lower jaws from Podlesice, Kadzielnia and Rębielice Królewskie (Kowalski, 1956, 1958b) may, in spite of their bad state of preservation, be closely correlated in size with the Węże specimens. The specimens from Kamyk near Kłobuck (Kowalski, 1960 *d*) differ a little in dimensions, but in morphology they agree with *S. minutus* L.

Sorex subminutus n. sp.
(pl. II, fig. 2, 3; text-pl. II, fig. 4 *a-b*, 5)

Holotypus: Rostral skull fragment with I^1 and M^{1-3}. Specimen No. M.Z. VIII/Vm-309/1.

Paratypus: Left lower jaw without I_2. Specimen No. M.Z. VIII/Vm-309/2.

Derivatio nominis: *subminutus* — smaller than *S. minutus* L.

Material. — 3 rostral fragments of the skull with incomplete dentition; 35 right and left fragments of the lower jaw, also detached teeth of almost every category. The specimens are marked from number 1 onwards; the collection is labelled: M.Z. VIII/Vm — 309.

Diagnosis. — The dental formula is:

$$\frac{3\ 1\ 3\ 3}{2\ 0\ 1\ 3} = 32$$

I_1 is short, thick, robust, with the tip strongly hooked. I_2 is reduced, rather small. P_4 short and high. The molar talonids are broader than the trigonids. The tips of molars hooked backwards. Horizontal ramus slender, lower than the height of the crowns in molars. Mental foramen below M_1. P^4 much molarized, with a strong hypocone. M^3 lacking both hypocone and metastyle. Nasal bones narrow and long. Infraorbital foramen broad.

Description. — First lower incisor short, thick, with conspicuous cingulum at the base and three well developed lobes. The tip strongly curved upwards. The second lower incisor shortened, one-cusped, with

a distinct cingulum (sometimes weakly two-cusped). P_4 two-cusped, with distinct cingulum and the protoconid higher than the hypoconid. In relation to its height, this tooth is rather short. First and second lower molars five-cusped; the former slightly larger than the latter, their talonids broader than the trigonids. The cingula lingually broad, buccally narrow, of uniform thickness below the protoconids and the hypoconids, which are both directed backwards. M_3 smaller than M_2, with a well developed talonid and conspicuous entoconid. In molars the entoconids are connected with the metaconids by a rather low crest. The teeth are pigmented. The lower jaw slender, its horizontal ramus narrow and of about uniform height along the whole length, lower than the height of the crowns in molars. Mental foramen pushed below M_1. The coronoid process slender, tapering towards the top, with a small semilunar masseteric crest. In side view the upper portion of the condyloid process curving strongly backwards. The interarticular list high and broad, without the lingual notch. The angular process straight, spike-like and long. Superior sigmoid notch broad, at a nearly right angle; inferior sigmoid notch broad and deep. Pterygoid fossa triangular, deep, covering nearly the whole surface of the coronoid process. Mandibular foramen broad, chanelled with the pterygoid fossa.

First upper incisor with a prominent outer cingulum and without an accessory lingual fissident cusp. The talon small, sharp-tipped. Second upper incisor and the next one-cusped teeth are all one-rooted and of similar structure; towards the back of the skull the size of the teeth is gradually reduced. P^4 strongly molarized, with a well developed hypocone and a posterior notch. M^1 and M^2 similar in structure, the latter only just

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Fig. 1. *Petenyiella zelcea* (Sulimski), rostral fragment of skull with lower jaws, side view (no. 318/1).

Fig. 2. *Sorex minutus* Linnaeus: *a* right lower jaw, inner view, *b* condyloid process; recent.

Fig. 3. Same species from Węże: *a* fragment of right lower jaw, inner view. *b* condyloid process (no. 308/6).

Fig. 4. *Sorex subminutus* n. sp., paratype: *a* left lower jaw, inner view, *b* condyloid process (no. 309/2).

Fig. 5. Same species; holotype, skull in bottom view (no. 309/1).

Fig. 6. *Sorex hibbardi* n. sp., holotype: *a* left lower jaw, inner view, *b* condyloid process (no. 311/1).

Fig. 7. *Sorex* cf. *praealpinus* Heller: *a* right lower jaw, inner view, *b* condyloid process (no. 310/1).

Fig. 8. *Petenyia hungarica* Kormos: *a* right lower jaw, inner view, *b* condyloid process (no. 315/5).

Fig. 9. *Sorex kretzoii* n. sp., paratype: *a* fragment of lower jaw, inner view, *b* condyloid process (no. 312/3).

Fig. 10. Same species, holotype: *a* rostral fragment of skull with lower jaws, side view, *b* the same, top view (no. 312/1).

TEXT-PL. II

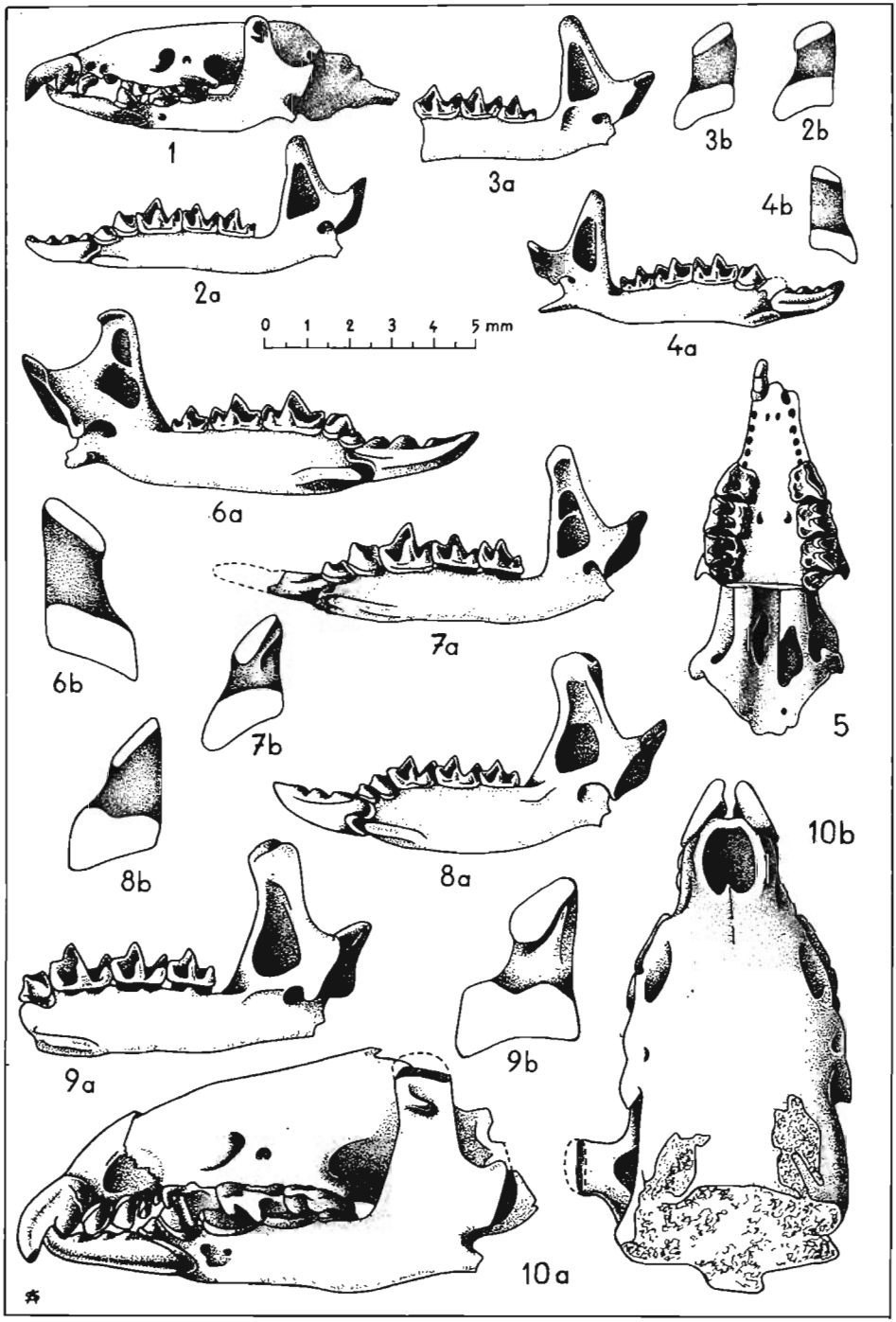

Table 9

Sorex subminutus n. sp.

A. Measurements of skulls (in mm)

Cat. number M. Z. VIII/Vm	309/1	309/3
Length of $I^1 - M^3$	5.5	5.3
Width of palate at M^{1-1}	3.0	3.0
Length of palate	5.0	—

B. Measurements of lower jaws (in mm)

Cat. number M. Z. VIII/Vm	309/2	309/4	309/5	309/6	309/7
Total length	8.9	—	—	—	—
Cardinal length	6.5	6.4	6.6	—	—
Length of $I_1 - M_3$	5.5	5.4	5.5	5.6	5.5
Length of $M_1 - M_3$	3.0	3.1	3.0	3.0	3.0
Height of the coronoid process	from 2.5 to 2.8 (15 specimens)				
Height of lower jaw below M_2	from 0.4 to 0.6 (24 specimens)				
Thickness of lower jaw at M_2	from 0.4 to 0.5 (24 specimens)				

a little smaller than the former, both strongly notched posteriorly. M^3 has well developed protocone, paracone, mesostyle and metacone. The hypocone and metastyle are lacking. The nasal bones long and narrow. Infraorbital foramen broad and deep, occurring between P^4 and M^1. Lacrimal foramen above M^1. The zygomatic processes long and bluntly terminated. The bridge between the anterior and posterior infraorbital foramens narrow, its width about equal to the length of M^1. Posterior palatin foramina between M^{1-1}.

Measurement data of skulls and of lower jaws are given in table 9.

Discussion. — Three-lobed I_1, two-cusped P_4, five-cusped M_3, general structure of articular facets of the condyloid process, structure of the coronoid process, and tooth pigmentation — suggest the assignment to genus *Sorex* L. *Sorex subminutus* n. sp. can be distinguished from *S. minutus* L. by: its small dimensions, I_1 being short and broad at the

base and with the tip distinctly upcurved, short and high one-cusped I_2, broad talonids of the molars, by the structure of M_3, protoconids and hypoconids on the molars being directed posteriorly, the low horizontal ramus of the lower jaw, the position of the mental foramen, by the arrangement of the articular facets on the condyloid process, the broad and high interarticular list, the structure of pterygoid fossa, the elongated rostral part of the skull, the narrow and long nasal bones, by the position of infraorbital foramen, the structure of I^1, the arrangement of the one-cuspids, the strongly molarized P^4, distinct posterior notched molars, structure of M^3, and the position of posterior palatin foramens.

The lower jaws and the skull in our species are distinctly smaller than in the living *S. minutus* L., and their dimensions come nearer to those of *S. minutissimus* Heim de Balsac (1940). From the last mentioned species the Węże specimens differ in position on mental foramen, structure of I_1, the condyloid process and its articular facets, smaller length of horizontal ramus of the lower jaw, and shorter I_2.

Sorex cf. *praealpinus* Heller, 1930
(pl. II, fig. 6; text-pl. II, fig. 7 *a-b*)

Material. — Two right lower jaws, one with complete dentition (damaged I_1) and articular processes (without the angular process); the other lower jaw represented by a posterior fragment with complete articular processes, but lacking dentition. Also several isolated molars. Skulls and upper dentition unknown. The specimens are marked from number 1 onwards. The collection is labelled: M.Z. VIII/Vm — 310.

Description. — I_1 long, narrow, with weakly developed lobes on the cutting edge and a weak cingulum at the base. I_2 two-cusped, elongated, with a distinct buccal cingulum. Both cusps of nearly the same height. P_4 two-cusped, with a narrow buccal cingulum. Protoconid higher than the hypoconid. In M_1 the cusps are posteriorly directed. The cingulum is narrow, upcurved between the protoconid and the hypoconid. M_2 resembles M_1, but slightly smaller. M_3 with a slightly reduced talonid. All the molars are five-cusped and have pigmented tips. The horizontal ramus of the lower jaw narrow and long. Mental foramen below P_4. The coronoid process high, slender, tapering upwards, with a poorly marked masseter crest. Ascending ramus meets the horizontal ramus at a right angle. Superior sigmoid notch deep. Upper edge of the condyloid process and the posterior edge of the coronoid process meet at a right angle. Inferior sigmoid notch small, but distinct. Pterygoid fossa triangular, deep, with a distinct sill at the top. Mandibular foramen broad, with distinct canal toward pterygoid fossa. Structure of the condyloid process of the soricine type, lacking a distinct lingual notch. Lower articular facet with the lingual portion strongly downcurved.

Table 10
Sorex cf. *praealpinus* Heller
Measurements of lower jaws (in mm)

Cat. number M. Z. VIII/Vm	310/1	310/2
Total length	ca. 10.0	—
Length of $I_1 - M_3$	ca. 7.5	—
Length of $M_1 - M_3$	3.7	3.6
Height of jaw below M_2	1.3	1.3
Thickness of jaw below M_2	0.8	0.9
Height of coronoid process	4.2	4.1

Measurement data of the lower jaws are given in table 10.

Discussion. — The assignment of the Węże specimens to genus *Sorex* L. is suggested by the structure of the articular processes, the five-cusped M_3, the two-cusped P_4, the pigmented tips of teeth, and structure of I_1. On the other hand, the assignment of these remains to the *S. alpinus* Schinz group is suggested by the structure of the coronoid process which is high, slender, meeting the horizontal ramus at a nearly right angle, the structure — even though not typical — of the condyloid process, and most particularly the two cusps of I_2. The Węże specimens come nearest to a fragment of the lower jaw of *S. praelpinus* Heller, described from Sackdillinger Höhle (Heller, 1930) and to the jaws of the same species from Erpfingen (Heller, 1958). They agree in size of jaws, structure of the coronoid process (deep corono-condyloids notch) and in general appearance of the articular facets of the condyloid process (interarticular list being not very high). The remains from Sackdilling and Erpfingen differ, however, from the Węże specimens in the position of mental foramen, lower coronoid process, position of the articular facets on the condyloid process and stronger lingual notches of the interarticular list.

Sorex alpinoides Kowalski, described from Podlesice (Kowalski, 1956), differs from the Węże specimens in the first place in smaller dimensions, reduced horizontal ramus of the lower jaw, the angle between the coronoid and condyloid processes, the structure of articular facets on the condyloid process, and of the condyloid process itself, as well as in a shorter I_1. It resembles only in the position of mental foramen (below P_4).

Sorex hibbardi n.sp.

(pl. II, fig. 8; text-pl. II, fig. 6 *a*-*b*)

Holotypus: Complete left lower jaw with I_1—M_3, lacking the angular process. Specimen No. M.Z. VIII/Vm-311/1.

Derivatio nominis: *hibbardi* — in honour of Professor Claude W. Hibbard, American mammalogist.

Material. — 15 lower jaws with incomplete dentition, a score or so of isolated incisors, molars and premolars. Skull remains thus far unknown. The specimens are marked from number 1 onwards. The collection is labelled: M.Z. VIII/Vm — 311.

Diagnosis. — Dental formula is:

$$\frac{(3\ 1\ 3\ 3)}{2\ 0\ 1\ 3} = 32$$

I_1 elongated, with a conspicuous cingulum. The anterior lobe of the incisor small, connected with the tip; the second lobe large, short and high; the third lobe small, separated from the cingulum. I_2 small, compressed, squeezed in between the posterior edge of I_1 and the anterior edge of P_4. P_4 with two rudimentary cusps. Cingula of the molars strong, equal in thickness. The entoconids separated. M_3 small, lacking the entoconid, bearing a low talonid. Mental foramen in a depression between the proto- and hypoconid of M_1. The coronoid process low, curved outwards and to the back. Masseter crest provided with a spine. The angular process thick. Pterygoid fossa small, trapezoid, deep. The interarticular list of the condyloid process wide. The upper articular facet narrow, oblique; the lower one three times as thick, strongly oblique, with a sharp lingual end.

Description. — I_1 elongated, with a distinct basal cingulum. The anterior lobe on the cutting edge of the incisor, small, connected with the tip; the second lobe large, short and high; the third lobe smaller than the second. A distinct groove runs upward on the lingual face of the tooth. I_2 small, compressed, in size equal to the second lobe of I_1, with a distinct buccal cingulum, squeezed in between I_1 and P_4, but not closed up by them. P_4 two-topped, the cusps poorly indicated, with a strong buccal cingulum. The posterior edge of P_4 on one line with the posterior edge of I_1. P_4 in top view wide, with well developed crests. M_1 and M_2 five-cusped, with strong buccal cingula of uniform thickness. Protoconids narrow and sharp. Talonids well developed, strong, delimited from the entoconids. Buccal cingulum rather wide. A low crest runs from the metaconid to the entoconid. M_3 small, with a low, reduced talonid, lacking the entoconid. Mental foramen between the protoconid and hypoconid of M_1 in a rather small depressed area. The coronoid process low, curving out slightly to the outside and proximally strongly to the

back. The articular facet of the process curved backwards, with a small hooked heel. Masseter crest semicircular, with a spine which curves latero-posteriorly. Superior sigmoid notch wide and shallow; inferior sigmoid notch narrow. The angular process rather thick, long, not curved. A longitudinal swelling occurs between the coronoid and condyloid processes. Lower portion of pterygoid fossa is trapezoid, rather deep; the upper part — situated above the transversal sill — shallow and ovate. Mandibular foramen connected by a canal with pterygoid fossa and the dental channel. The condyloid process of the soricine type, with a wide interarticular list, lacking a lingual notch. Upper articular facet narrow, oblique; the lower one three times as thick, also strongly oblique and with sharp lingual end. The two articular facets subparallel to one another.

Table 11

Sorex hibbardi n. sp.

Measurements of lower jaws (in mm)

Cat. number M. Z. VIII/V.n	311/1	311/2	311/3	311/4	311/5
Total length	12.0	12.5	12.4	—	—
Length of I_1 on the outside	4.2	4.0	4.1	—	—
Length of $I_1 - M_3$	7.5	7.6	7.4	7.5	—
Length of $M_1 - M_3$	3.8	3.9	3.6	3.7	3.7
Height below M_2	1.5	1.7	1.6	1.7	1.7
Height of condyloid process	2.5	2.5	2.4	2.4	2.5
Height of coronoid process	4.0	4.1	—	4.0	—

Measurement data of lower jaws are given in table 11.

Discussion. — The three-lobed incisor, the general structure of the condyloid and coronoid processes, one-cusped I_2, two-topped P_4, and the distinct pigmentation of teeth, all suggest the assignment of the Węże specimens to genus *Sorex* L. The characters in which *S. hibbardi* n. sp. differs from other Plio-Pleistocene species, such as *S. praearaneus* Kormos, *S. araneoides* Heller, *S. runtonensis* Hinton, as well as from *S. kretzoii* n. sp. from Węże, are: the low coronoid process with the proximal end curving distinctly backward in the form of a small posterior heel; the connection of the anterior lobe of I_1 with the tip; the small size and compression of I_2 (strongly squeezed by P_4); lack of the entoconid

on the last molar; small size of pterygoid fossa, and the position of mental foramen. These features are important enough to justify the erection of a new taxonomic unit for the specimens here described.

Sorex kretzoii n. sp.

(pl. II, fig. 9, 10; text-pl. II, fig. 9 *a-b*, 10 *a-b*)

Holotypus: Rostral fragment of the skull with the lower jaws. Left lower jaw nearly complete, only lacking the angular process; the right lower jaw with a damaged coronoid process. Both jaws with complete dentition. Specimen No. M.Z. VIII/Vm-312/1.

Paratypus: Right ramus of the lower jaw, without I_1 and I_2. Specimen No. M.Z. VIII/Vm-312/3.

Derivatio nominis: *kretzoii* — in honour of the Hungarian palaeontologist Professor Miklós Kretzoi.

Material. — 14 lower jaws, represented by proximal and distal fragments which bear a varying number of teeth in situ; several rostral fragments of skulls, numerous isolated, upper and lower incisors and molars. Specimens marked from number 1 onwards. Collection labelled: M.Z. XIII/Vm — 312.

Diagnosis. — Dental formula is:

$$\frac{3\ 1\ 3\ 3}{2\ 0\ 1\ 3} = 32$$

I_2 small, compressed, with a strong cingulum, one-cusped. P_4 high, with the cingulum robust and strongly directed to the back. Cingula of molars thick and uniform. Entoconid separated. M_3 with a small entoconid. Mental foramen between the proto-and the hypoconid in shallow depression. Coronoid process wide, spade-like. Masseter crest provided with a spine. Pterygoid fossa triangular, wide and deep. Upper articular facet of the condyloid process lingually expanded, oblique, the lower one long and wide, not so oblique, bearing a slight notch on its upper edge, and with the lingual end distinctly curving downward. I^1 with a strong talon and cingulum, the fissident cusp not present. Arrangement ratio of the one-cuspids: 2 : 2 : 1 : 1 : 0.5. P^3 is small, pushed below P^4. M^3 small, reduced. Rostrum of skull shorter.

Description. — I_1 long, with three lobes on the cutting edge, as in genus *Sorex* L. Cingulum weak but can be seen at the base of this tooth. I_2 small, compressed, with distinct cingulum, one-cusped. P_4 weakly two-cusped, with hypoconid slightly higher than the protoconid. Buccal and lingual cingula distinct and rather wide. Posterior part of tooth directed to the back. M_1 strong, five-cusped, with a thick cingulum. M_2 smaller than M_1, but of similar structure. The entoconid is easily seen on both these teeth. Crest between entoconid and metaconid lacking.

On some specimens of M_3 the entoconid occurs as a very weak cuspule. Talonid on M_3 low and small. Tips of upper and lower teeth pigmented. The horizontal ramus of the lower jaw approximately uniform in height below M_{1-3}. Mental foramen between the protoconid and hypoconid of M_1, in a rather shallow depressed area. The coronoid process high, spade-like, similarly as in the genus *Blarinoides* Sulimski, or in *Petenyia* Kormos, with distinct masseter crest and spine. The angular process probably long (not known in any of the specimens), and thin. The condyloid process rather high. Upper articular facet lingually strongly expanded and oblique; the lower one long and wide, less oblique, slightly notched on the upper edge. Lingual end of the facet downcurved.

I^1 with the talon and cingulum strong, without the accessory lingual cusp (fissident). The next two premolars one-cusped and of equal size, with a distinct, strong cingulum at the back. The third one-cuspid smaller than the preceding ones. The last one-cuspid small, much pushed below P^4. The structure of P^4 and of the other molars, M^3 excepted, agrees with that in genus *Petenyia* Kormos, but the teeth of our specimens are posteriorly more strongly notched. M^3 small, reduced to a small triangular denticle. The rostral fragment of the skull relatively short. The distance between the anterior edges of P^{4-4} and the anterior edge of the palate so short that only four one-cuspids can be seen in side view. Infraorbital foramen between P^4 and M^1. Lacrimal foramen above the posterior root of M^1. The bridge over the infraorbital fossa wide. Sutures of nasal bones on holotype skull closed up (adult-old individual).

Measurement data of skulls and upper and lower dentition are given in table 12.

Discussion. — The assignment of this species to genus *Sorex* L. is reasonably indicated by the presence of five upper one-cuspids, three-lobed I_1, and the structure of the condyloid process which has a long lower articular facet. *S. kretzoii* n. sp. differs from other species of the genus *Sorex* L. in a broad, spade-like coronoid process, a small, compressed I_2, straight horizontal ramus of the lower jaw, size differences of the first pair of upper one-cuspids in relation to the second pair of these teeth, and the reduction in length of the anterior palate.

In size of lower jaws and in general character of structure *S. kretzoii* n. sp. resembles *Petenyia hungarica* Kormos (pl. II, fig. 11; text-pl. II, fig. 8 *a-b*). The same size and width of the coronoid process and certain similarities in the structure of articular facets on the condyloid process are observable in *Sorex* (*Drepanosorex*) *margaritodon* Kormos (Kormos, 1935). The last named species, however, differs distinctly in height of the coronoid process, and a longer, better developed second incisor.

Sorex kretzoii n.sp. resembles *S. dehneli* Kowalski, described from Podlesice (Kowalski, 1956) in size and general character of the structure

Table 12

Sorex kretzoii n. sp.

A. Measurements of skulls and of upper dentition (in mm)

Cater number M.Z.VIII/Vm	312/1	312/2
Length of $I^1 - M^3$	8.5	—
Length of $M^1 - M^3$	3.8	4.0
Proximal width of palate	2.3	—
Distal width of palate	5.3	—
Interorbital width	4.6	—

B. Measurements of lower jaws and their dentition (in mm)

Cat. number M.Z.VIII/Vm	312/3	312/4	312/5	312/6	312/7
Total length	12.5	12.2	—	—	—
External length of I_1	4.2	4.3	—	—	—
Length of: $I_1 - M_3$	8.0	8.2	—	—	—
$P_4 - M_3$	5.1	5.2	5.1	—	—
$M_1 - M_3$	4.0	4.2	3.8	4.0	4.1
Height below M_2	1.8	1.7	1.8	1.8	1.7
Height of coronoid process	5.0	5.4	5.3	5.2	5.2

of the lower jaw. The resemblance of these two species is expressed by long I_1, large P_4, strong cingula of molars, height of the horizontal ramus of the lower jaw, strong coronoid processes which are wide at the base, and the position of the coronoid process in relation to the horizontal ramus. The existing differences, however, warrant their specific differentiation. They are: the structure of articular facets of condyloid process, of the upper end of the coronoid process (wide, spade-like, provided with a spine in *S. kretzoii* n. sp., and constricted, lacking the spine in *S. dehneli* Kowalski), the position of mental foramen (in a depressed area between the protoconid and the hypoconid of M_1 in *S. kretzoii* n. sp., and below P_4 in *S. dehneli* Kowalski), the pterygoid fossa (triangular and high in the former species, low and rounded at top in the latter), lobes on the cutting edge of I_1 (distinct in our species, rudimentary in *S. dehneli*

Kowalski), structure of I_2 (which is small and compressed, or large and robust, respectively), structure of P_4 (large, with the cingulum projecting strongly backwards in *S. kretzoii* n. sp., and large too, but with a weaker cingulum in *S. dehneli* Kowalski), and finally the structure of M_3 (with a very small entoconid and a reduced talonid in our species, while in *S. dehneli* Kowalski the entoconid is distinct and the talonid small, but not reduced).

Other early Pleistocene species such as *S. savinii* Hinton (Hinton, 1911), *S. (Drepanosorex) tasnadii* Kretzoi (Kretzoi, 1938; Heller, 1958), differ from *S. kretzoii* n. sp. in a number of morphological characters on which they are readily distinguishable from our species.

Genus *Blarinoides* Sulimski, 1959
Blarinoides mariae Sulimski, 1959

1959. *Blarinoides mariae* n. gen., n. sp.; A. Sulimski, Pliocene insectivores..., p. 144—148, pl. 2, fig. 4 a-b; pl. 3, fig. 6 a-c; text-fig. 4, fig. 2 a-f.
1959. *Blarinoides mariae* Sulimski; M. Kretzoi, Insectivoren..., p. 238.
1960a. *Blarinoides mariae* Sulimski; K. Kowalski, Pliocene insectivores..., p. 169—170, pl. 20, fig. 1.

Material. — The material described in the writer's earlier paper (Sulimski, 1959) has been complemented by the additional find of 6 rostral fragments of skulls (besides others not so well preserved), 24 right and left lower jaws, also numerous fragmentary jaws — mostly articular processes — and a great number of isolated teeth of all categories. The specimens are marked from number 1 onwards. The collection is labelled: M.Z. VIII/Vm — 313.

Description. — An accurate description of the skulls and lower jaws has been given in the writer's earlier paper (Sulimski, 1959). The morphology of the new specimens fully coincides with that description.

Measurement data of skulls and lower jaws are as given in the paper just mentioned. Some errors have, however, been noted in the table specifying the dimensions of the lower and upper dentition. After verification, they are here given again (tables 13 and 14).

Discussion. — Outside of Węże, *Bl. mariae* Sulimski has also been described from the late Pliocene at Csarnóta 2 in Hungary (Kretzoi, 1959) and from Rębielice Królewskie (Kowalski, 1960*a*). Lower jaws and fragmentary skulls described from these localities in size and morphology agree with the Węże specimens.

Shikamainosorex densicingulata Hasegawa has been described from the upper Kuzuü Formation of Japan (Hasegawa, 1957), solely on an incomplete left fragment of the lower jaw. This fragment resembles *Bl. mariae* Sulimski, except size, general structure of the coronoid

process — which is spade-like, wide, bearing masseter crest, but lacking the spine — and the presence of thick cingula below the protoconids of molars. The majority of these features, however, brings this species closer to forms from genus *Anourosorex* Milne-Edwards. From *Bl. mariae* Sulimski it differs also in the structure of P_4 — which is smaller and two-cusped as in *Paracryptotis rex* Hibbard, in the arrangement of articular facets of condyloid process — very important diagnostic character, and the absence of entoconid on M_3. The lack of I_1 and I_2 in the Japanese form excludes their comparison with these teeth in *Bl. mariae* Sulimski, while the lack of skull remains impedes the determination whether the fragmentary skull under consideration actually belongs to a representative of the *Sorex* L. group.

Sorex dehneli Kowalski, described from Podlesice, is, according to its author (Kowalski, 1960*a*, p. 170), closely morphologically allied with *Blarinoides mariae* Sulimski. In addition to its smaller size, however, it differs first of all in a constricted coronoid process, two-cusped P_4, more distinctly three-lobed I_1 and the structure of the articular facets on the condyloid process

Table 13

Measurements of skulls and of upper dentition (in mm)

Species / Measurements	*Blarinoides mariae* Sulimski Węże 1	medium	*Blarinoides mariae* Sulimski Rębielice Królewskie
Length of: $I^1 - M^3$	11.8 — 12.8	12.4	—
$I^2 - M^3$	9.8 — 10.5	10.3	—
$I^1 - M^2$	12.1 — 13.0	12.5	—
$P^2 - M^1$	4.5 — 4.9	4.6	4.6 — 4.8
$P^4 - M^1$	4.3 — 4.9	4.6	—
$P^4 - M^3$	6.8 — 7.2	7.0	—
$M^1 - M^3$	4.2 — 4.8	4.6	—
$M^1 - M^2$	3.6 — 4.0	3.8	3.9
$M^2 - M^3$	2.1 — 2.7	2.3	—
M^3	0.6 — 0.9	0.7	—
Interorbital width	7.0 — 7.5	7.3	—
Infraorbital width	6.3 — 6.6	6.5	—
Distance between interorbital fossa and infraorbital foramen	3.5 — 4.0	3.7	—
Length of nasal bones	10.6	10.6	—

Table 14

Measurements of lower jaws and their dentition (in mm)

Species / Measurements	*Blarinoides mariae* Sulimski Węże 1	medium	*Blarinoides mariae* Sulimski Rębielice Królewskie
Total length	15.0—16.5	16.2	—
Cardinal length	10.8—13.0	12.7	13.3
Length of: $I_1 - M_3$	10.6—11.3	10.8	—
$I_2 - M_3$	7.1—7.7	7.5	7.3
$P_4 - M_3$	6.3—7.0	6.6	6.6
$M_1 - M_3$	5.3—6.0	5.5	5.4
$M_1 - M_2$	4.0—4.5	4.3	4.4
$M_2 - M_3$	3.0—3.4	3.3	3.0
M_3	1.0—1.5	1.3	1.4
Height below M_2	2.2—2.7	2.5	2.7
Thickness below M_2	1.3—1.6	1.5	1.4
Height of coronoid process	6.0—6.8	6.4	6.3
Height of condyloid process	4.0—4.8	4.3	—

Genus *Beremendia* Kormos, 1934

Beremendia fissidens (Petényi, 1864)

The synonymics covering the years 1864—1959 are given in papers by Kowalski (1958, p. 13) and Sulimski (1959, p. 152). To those must be added:

1959. *Beremendia fissidens* (Petényi); M. Kretzoi, Insectivoren..., p. 238.
1960*a*. *Beremendia fissidens* (Petényi); K. Kowalski, Pliocene insectivores..., p. 171.
1960*d*. *Beremendia fissidens* (Petényi); K. Kowalski, An early Pleistocene..., p. 6.

Material. — The material described in the writer's earlier paper (Sulimski, 1959) has been complemented by the find of 24 right and left lower jaws, in various state of preservation, 4 rostral fragments of skulls, and numerous isolated teeth of all categories. The specimens are marked from number 1 onwards. The collection is labelled: M.Z.VIII/Vm — 314.

Description. — In agreement with the descriptions given by Petényi

(1864), Kormos (1934), Heller (1930, 1936), Brunner (1934), Pasa (1948), Kowalski (1958*b*, 1960*a*,*d*), and with the remarks of Sulimski (1959).

Measurement data: Some inaccuracies have been noted by the writer as regards the dimensions given in his earlier paper (Sulimski, 1959). They have, therefore, been verified and given here again in an abridged form (table 15).

Table 15

Beremendia fissidens (Pétenyi)

A. Measurements of lower jaws and lower dentition (in mm)

Total length of jaw	15.8—17.2
Cardinal length of jaw	12.5—13.6
Length of $I_1 - M_1$	10.4—11.4
Length of $M_1 - M_3$	5.4— 6.6
Height of jaw below M_2	2.3— 2.6
Thickness of jaw below M_2	1.4— 1.6
Height of coronoid process	5.7— 6.4

B. Measurements of skulls and of upper dentition (in mm)

Length of: $I^1 - M^3$	12.6—13.5
$I^2 - M^3$	10.2—11.0
$P^4 - M^3$	7.5— 8.0
$P^4 - M^2$	6.6— 7.2
$M^1 - M^3$	5.0— 5.8
$M^1 - M^2$	4.4— 5.0
Interorbital width	6.6— 7.2
Infraorbital width	5.8— 6.2
Length of nasal bones	10.0—10.4

Discussion. — Studies on the variability of this species carried out by Miss M. Borsuk, University of Warsaw (unpublished thesis) have shown that its morphological characters are fairly constant. Stronger variations affect only the coronoid process whose latero-anterior position depends on the orientation angle of the lower jaw in relation to the skull. The structure of the condyloid process and its articular facets is a constant character. The position of mental foramen is subject to certain variations, though most commonly it occurs between the protoconid and the hypoconid of M_1. The investigations of the author mentioned above also show that the mean total length of the lower jaw in our specimens is smaller than that of forms described from Hungary, whose predominant mean length is about 18.5 mm or even more, as well as of German forms

which in that respect slightly exceed the Węże specimens. On the other hand, the mean total length of the Węże mandibles equals that of specimens from Verona (Pasa, 1948). Miss M. Borsuk's studies have also revealed a distinct resemblance of *Beremendia fissidens* (Petényi) with the American Upper Pliocene *Paracryptotis rex* Hibbard (Hibbard, 1950, 1953). The resemblance here is expressed not only by the structure of the lower jaw, but in that of the skull, too. The major similarities consist in the unlobed I_1 lacking the cingulum, the large two-cusped P_4, the thin and uniform cingulum of the molars, the four-cusped M_3, the position of mental foramen, general structure of the condyloid process, presence of four upper one-cuspids, distincly lingually pushed P^3. The most important difference between the species concerns their size, since in *Paracryptotis rex* the mean total length of the lower jaw is 15 mm, in *Beremendia fissidens* from Węże 16.5 mm, and in Hungarian forms up to 18.5 mm or more. The structure of the upper incisor differs too, since in *Paracryptotis rex* the accessory cuspule (fissident) is missing.

Zelceina n. gen.

Genotypus: Neomys soriculoides Sulimski, 1959.

Derivatio nominis: *Zelceina* — after the name of the hill Zelce where the Węże bone breccia was discovered.

Diagnosis. — Dental formula is:

$$\frac{3\ 1\ 2\ 3}{2\ 0\ 1\ 3} = 30$$

I_1 relatively short, with two lobes and a distinct cingulum. M_3 lacking the entoconid. The coronoid process low, slender, with a prominent small posterior heel. The upper facet of the condyloid process oblique, narrow, its length slightly exceeding the width of the interarticular list; the lower facet wide, narrower on the buccal side, inflated and lingually downcurved. The upper line of the lower facet medially notched. The interarticular list lingually notched, bucally straight. Mental foramen below the hypoconid of M_1. Horizontal ramus high, shortened. Rostrum of skull slender, constricted and shortened. Infraorbital foramen large, above M^1. I^1 large, without an accessory lingual cuspule (fissident). Four one-cuspids. P^4 has a robust, posteriorly directed protocone. M^3 small, with two, sometimes with three cusps and a reduced talon.

Discussion. — Genus *Zelceina* n. gen. is comparable with *Neomys* Kaup and *Soriculus* Blyth. In the presence of four upper one-cuspids, it resembles *Neomys* Kaup, while the height and general structure of the coronoid process and the reduced horizontal ramus — are similar to *Soriculus* Blyth. From *Neomys* and *Soriculus* our genus differs above all in the articular list of the condyloid process, being distinctly less lingually notched, in the two-lobed I_1 (text-fig. 2), in the lack of the

entoconid on M_3, and the position of mental foramen below the hypoconid of M_1. Moreover, *Zelceina* n. gen. differs from *Neomys* Kaup in shorter I_1, much shorter, one-cusped I_2, lower coronoid process, size differences of the first and second pair of one-cuspids, shortened rostrum of skull, and more reduced M^3. The features which distinguish *Zelceina* n. gen. from *Soriculus* Blyth, of which *S. gibberodon* (Petényi) [1] is the only one known fossil species, are the absence of the accessory lingual cuspule (fissident) on I^1, longer I_1, two-cusped P_4 with the cingulum more postero-lingually directed, the position of mental foramen and the number of one-cuspids. In the living species of genus *Soriculus* Blyth the number of one-cuspids varies from 3 to 4, 3 one-cuspids being the most common case (after Dobson, 1882—90). The new genus from Węże is represented by one species — *Z. soriculoides* (Sulimski). The remains of *Zelceina* n. gen. occur in all beds of Węże breccia.

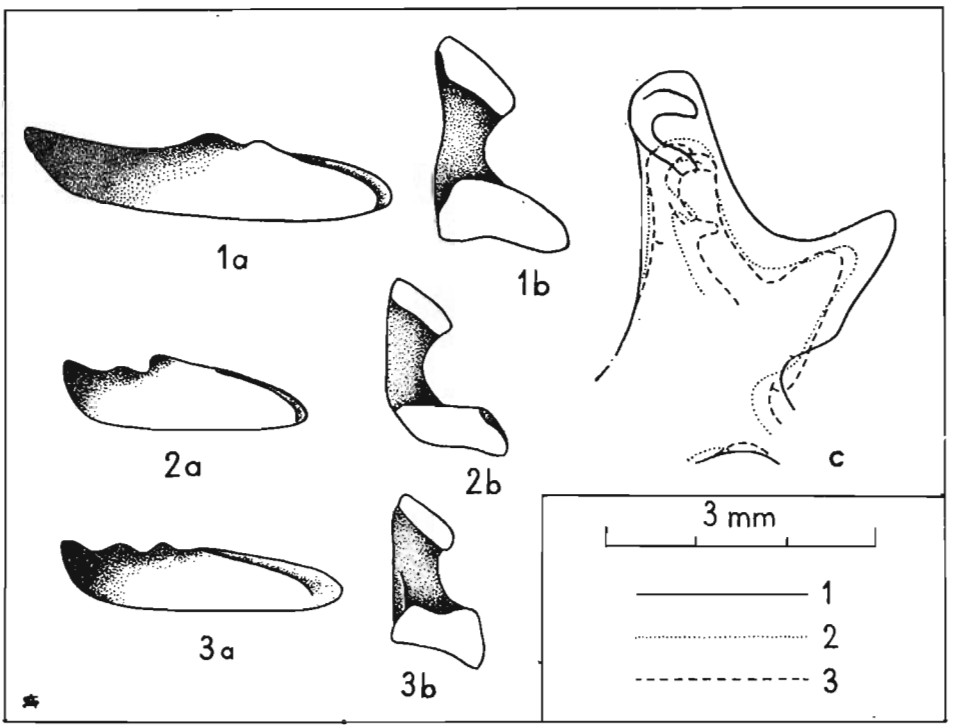

Fig. 2. — Comparison of first lower incisors, construction of the condyloid and coronoid processes in: *1 Neomys fodiens* Schreber, *2 Soriculus gibberodon* (Petényi), and *3 Zelceina soriculoides* (Sulimski); *a* I_1, outer view, *b* condyloid process seen from the articular facets, *c* side view of coronoid process.

[1] This species was first described from Beremend by Petényi (1864) as *Crocidura gibberodon*. In 1934 Kormos described a find from Villány under the name of *Soriculus kubinyi*. In 1956, during a revision of the material from Beremend and Villány, Kretzoi proved the identity of these two species, and gave them one common name of *S. gibberodon* (Petényi). In 1959 (p. 238), on the base of structural differences of I^1 and M_3, and of other characters, the same author emended the generic value of this species and referred it to *Asoriculus*.

Zelceina soriculoides (Sulimski, 1959)
(text-fig. 2, 3 *a-c*)

1959. *Neomys soriculoides* n. sp.; A. Sulimski, Pliocene insectivores..., p. 149—152, pl. 3, fig. 4 a-c; text-fig. 5 C, D.

Holotypus: See holotype *Neomys soriculoides* Sulimski (Sulimski, 1959, p. 149; rigth and left lower jaws, specimens No. 160, 700, pl. 3, fig. 4 a, b; rostral part of skull with complete dentition, specimen No. 1109, text-fig. 5 *C, D*). Specimens No. M.Z. VIII/Vm-316/1—3.

Material. — 5 rostral fragments of skulls, 95 fragmentary lower jaws bearing a varying number of teeth in situ, also numerous isolated lower and upper teeth supplement the material already described in the writer's earlier paper (Sulimski, 1959). These specimens are marked from number 1 onwards. The collection is labelled: M.Z.VIII/Vm — 316.

Description. — The following characters have been observed besides those already mentioned in the generic diagnosis: I_2 is short, closely adhering to I_1 and P_4, one-cusped. P_4 is two-cusped, with the cingulum postero-lingually directed. M_1 and M_2 five-cusped. Cingula of molars well developed, rather thick. Superior sigmoid notch at a right angle between the coronoid and condyloid processes, deep. Inferior sigmoid notch small, but deep. Angular process short, thin, straight, with the end occasionally upcurved. Above the transverse sill, preceding pterygoid fossa, runs a small groove which tapers towards the top of the coronoid process. Horizontal ramus slightly curved below M_1. Dentition pigmented. Ascending ramus meets horizontal ramus at an obtuse angle. The proximal end of the coronoid process slightly declines to the front. Trigon in I^1 long, slender, hooked, with a low talon and a basal cingulum. The arrangement ratio of one-cuspids: 2 : 2 : 1 : 2/3. P^3 small, seen in side view. P^4 trapezoid, with well developed protocone and strong talon. M^1 and M^2 subquadrate, posteriorly strongly notched. Zygomatic processes short, pointed.

Measurement data — as given in the writer's earlier paper (Sulimski, 1959). The measurements made on the new material display very slight oscillations of the minimum and maximum dimensions, depending on the individual age of the specimen examined.

Discussion. — *Zelceina soriculoides* (Sulimski) is comparable with *Soriculus gibberodon* (Petényi) (Kormos, 1934; Kretzoi, 1956, 1959), *Neomys browni* Hinton, *N. newtoni* Hinton (Hinton, 1911), and *N. bohlini* Young (Young, 1934; Pei, 1936). All the *Neomys* species just mentioned differ, however, from *Zelceina soriculoides* in the interarticular list being strongly notched and the common presence of one lobe on the cutting edge of I_1. Additional differences are a very low coronoid process — as in *N. bohlini* Young — or less reduced M_3 and the presence on that tooth of an entoconid, as in *N. newtoni* Hinton and *N. browni* Hinton. Upon comparison with *Soriculus gibberodon* (Petényi), *Z. soriculoides*

displays a similar size of the lower jaw, similar structure of the coronoid process, and similarly shortened horizontal ramus of the lower jaw. It differs — in addition to characters already mentioned in the generic diagnosis — in a longer I_1 with a distinct basal cingulum, two-cusped P_4 with a strong postero-lingually directed cingulum, strong cingula of molars, a wide and high pterygoid fossa, and in the presence of a distal small heel on the coronoid process.

The remains described from Rębielice Królewskie as cf. *Neomys* sp. (Kowalski, 1960*a*) have a high, rounded at top pterygoid fossa, a high and wide coronoid process, the interarticular list strongly lingually notched. By these features it is related on the one hand to genus *Zelceina*, on the other hand — to *Soriculus* Blyth. The character of the structure of the lower jaw and the proximity of Rębielice Królewskie reasonably suggest their assignment to the species *Z. soriculoides*. The fragmentary preservation of the remains and the meagreness of measurement data exclude their undoubted reference to that species. In the structure of the coronoid, and still more the condyloid process, the specimens described from Podumci (Kowalski, 1958*a*) as ?*Neomys* sp., come nearer to genus *Soriculus* Blyth than to *Zelceina* n. gen.

Genus *Petenyiella* Kretzoi, 1956

Petenyiella gracilis (Petényi, 1864)

1864. *Sorex gracilis* n. sp.; J. S. Petényi, Hátrahagyott Munkái..., p. 54.
1956. *Petenyiella gracilis* (Petényi); M. Kretzoi, Die altpleistozänen..., p. 136, 143, 160, 163, 260.
1959. *Suncus pannonicus* (Kormos); A. Sulimski, Pliocene insectivores..., p. 157, 158, pl. 3, fig. 1 a-b; pl. 4, fig. 2 a-b.
1959. *Petenyiella gracilis* (Petényi);M. Kretzoi, Insectivoren..., p. 239.

Material. — 15 fragments of lower jaws, two of them well preserved, with complete dentition and articular processess. Rather numerous isolated lower teeth. The specimens are marked from number 1 onwards. The collection is labelled: M.Z.VIII/Vm — 317.

Description and measurement data — as given in papers by Petényi (1864), Kretzoi (1959) and Sulimski (1959).

Discussion. — Upon comparison with the Hungarian specimens belonging to *Petenyiella gracilis* (Petényi), the Węże specimens described in the writer's earlier paper (Sulimski, 1959) as *Suncus pannonicus*, resemble *Petenyiella gracilis* — not only in the pigmentation of tooth tips, but also in the structure of pterygoid fossa, of molars and of the incisor, as well as in the position of mental foramen. Neither are any differences observed in the articular facets of the condyloid process of these species. The Węże specimens differ from the Hungarian forms merely in slightly smaller dimensions, in the less distinct lobes on the cutting edge of I_1, and in structure of M_3.

The remains described from Podlesice (Kowalski, 1956) as *Suncus* cf. *pannonicus* (Kormos), in size come very near the Węże specimens, but differ in the lack of dental pigmentation and absence of lobes on I_1, strong reduction of talonid in M_3, and well developed cingula of the molars.

Petenyiella zelcea (Sulimski, 1959)

(pl. II, fig. 1; text-pl. II, fig. 1)

1959. *Suncus zelceus* n. sp.; A. Sulimski, Pliocene insectivores..., p. 153—159, pl. 3, fig. 2 a-b; pl. 4, fig. 1 a-e.

Material. — The collection previously described by the writer (Sulimski, 1959) has now been supplemented by the find of 32 fragmentary right and left lower jaws, 3 of which are satisfactorily preserved, but with incomplete dentition. Also one rostral fragment of the skull with the lower jaws. These specimens are marked from number 1 onwards. The collection is labelled: M.Z.VIII/Vm — 318.

Description. — Substantially coincides with that given in the writer's earlier paper (Sulimski, 1959). In other specimens of the lower jaw, tooth pigmentation is more conspicuous and the first incisor has two distinct lobes on the cutting edge, besides the tip. The reduction of the talonid on M_3 is distinct only in two specimens. The structure of the articular facets of the condyloid process displays strong reduction of the length of the upper facet; it is often equal to the thickness of the interarticular list. The lower facet is narrow and long. The mental foramen occurs between P_4 and M_1 on 3 specimens only, in the remaining ones it is placed below the frontal roots of M_1. On three lower jaws the total length is seen to be 5.8, 6.0 and 6.1 mm, respectively. The first lower incisor is, as a rule, long, narrow, with a poorly indicated basal cingulum.

Measurement data — as given in the writer's earlier paper (Sulimski, 1959).

Discussion. — *Petenyiella zelcea* (Sulimski) differs from *P. gracilis* in distinctly smaller dimensions, also in greater distinctness of lobes on the cutting edge of I_1, since the absence of lobes has been noted but on one specimen (belonging to an old individual), while the incisor itself is longer. Other features distinguishing *P. zelcea* are stronger pigmentation of teeth, considerably greater length of the lower facet on the condyloid process, finally a constricted and higher coronoid process. The differences separating *P. zelcea* from *Suncus pannonicus* (Kormos) are analogous as those between *P. gracilis* and *S. pannonicus*, but much more conspicuous.

OCCURRENCE AND DISTRIBUTION

The Węże insectivores form a decidedly mixed faunal assemblage whose elements are referable to the younger Pliocene, or older Pleisto-

cene, while some, probably relict forms, may be assigned to the early Pliocene. The full list of insectivores from Węże is now as follows:

Erinaceus samsonowiczi Sulimski, 1959
Talpa minor Freudenberg, 1914
Talpa fossilis Petényi, 1864
Desmana nehringi Kormos, 1913
Desmana pontica Schreuder, 1940
Desmana cf. *kormosi* Schreuder, 1940
Sorex runtonensis Hinton, 1911
Sorex cf. *praearaneus* Kormos, 1934
Sorex minutus Linnaeus, 1766
Sorex subminutus n. sp., 1962
Sorex cf. *praealpinus* Heller, 1930
Sorex hibbardi n. sp., 1962
Sorex kretzoii n. sp., 1962
Blarinoides mariae Sulimski, 1959
Beremendia fissidens (Petényi, 1864)
Petenyia hungarica Kormos, 1934
Zelceina soriculoides (Sulimski, 1959)
Petenyiella gracilis (Petényi, 1864)
Petenyiella zelcea (Sulimski, 1959)
Crocidura sp. (? *Crocidura* cf. *kornfeldi* Kormos, 1934)

Erinaceus samsonowiczi Sulimski, first described from Węże (Sulimski, 1959), is probably recorded from Csarnóta 2 in Hungary (Kretzoi, 1959). The age of the Węże specimens is also regarded as being older than Upper Pliocene.

Talpa minor Freudenberg (= *T. gracilis* Kormos) is a well known Plio-Pleistocene species, common in Central Europe. It occurs in Hungary (Nagyharsányhegy 4, Villány 3, 8, Beremend 4), Rumania (Püspökfürdö, Brassó), Germany (Sackdillinger Höhle, Gundersheim, Erpfingen, Mosbach, Breitenberghöhle, Heppenloch), Austria (Hundsheim), Yougoslavia (Podumci), Poland (Podlesice, Rębielice Królewskie, Kamyk near Kłobuck, Węże), possibly in Italy (Verona) and England (Upper Fresh-Water-Bed).

Talpa fossilis Petényi (= *T. praeglacialis* Kormos), similarly as *T. minor* Freudenberg just mentioned, is found in the Plio-Pleistocene faunas of Central Europe. Its localities are known from Hungary (Nagyharsányhegy 4, Villány 3, 5, 6, 7, 8, 11, Beremend 1—3, 4, 6, 7, Csarnóta 1—3, 4), Rumania (Püspökfürdö, Brassó), Austria (Hundsheim, Laerberg near Vienna), Germany (Sackdillinger Höhle, Gundersheim, Erpfingen, Heppenloch (as a species), in Mauer, Mosbach (as a species), Hohensültze), Czechoslovakia (Gombasek, Koneprusy), Poland (Kadziel-

nia, Rębielice Królewskie, Kamyk near Kłobuck, Węże), Italy (Verona), and possibly in England (Fresh-Water-Bed) and Holland (Dodrecht).

Desmana nehringi Kormos has been recorded from Hungary (Beremend 4, Villány 3, 5, 11), Germany (Gundersheim) and Poland (Podlesice, Węże). *D. tegelensis* Schreuder may, perhaps, also belong to this species. *D. nehringi* is confined to the Upper Pliocene and to its decline. As Pliocene relicts it may, probably, be found in the older Pleistocene (Podlesice).

Desmana kormosi Schreuder has been recorded thus far from several parts of Central Europe. Its localities are known from Hungary (Csarnóta 1—3, 2, Beremend 4, 5) and Poland (Rębielice Królewskie, Węże), possibly also from Germany. This species is confined to the Upper Pliocene. It has not been reported from Lower Pleistocene deposits.

Desmana pontica Schreuder is a rare Lower Pliocene species (Pontian). So far it has been recorded from two localities: Polgardi in Hungary, and Węże in Poland. Most likely it is the direct ancestor of *D. nehringi* Kormos and *D. kormosi* Schreuder (Schreuder, 1940, p. 299). At Węże the bone remains of *D. pontica* Schreuder have been found in the lower beds of the breccia.

Sorex runtonensis Hinton is an extremely common species. It is known from the Upper Pliocene and older Pleistocene beds of Hungary (Beremend 5, Csarnóta 2, Nagyharsányhegy 2, 4, Villány 3, 4, 5, 6, 7, 8, 11), Poland (Kadzielnia, Rębielice Królewskie, Węże, perhaps Kamyk), Yougoslavia (Podumci), England (West Runton and Bacton), Germany (Sackdillinger Höhle), Czechoslovakia (Gombasek, Koneprusy), and Austria (Hundsheim).

Sorex minutus Linnaeus, the only still now living species, is of common occurrence in the Plio-Pleistocene faunas of Europe. It is found in Hungary (Csarnóta 2, Villány 3, 5, 6, 8, 11), Poland (Rębielice Królewskie, Kamyk near Kłobuck, Węże), Germany (Sackdillinger Höhle, Erpfingen, Gaisloch, Westhofen, Breitenberg-Höhle, Hohensültze). In the Węże fauna it belongs to the sylvian elements of that assemblage.

Sorex praearaneus Kormos has previously been described from Hungary (Villány 3) and from Germany (Gundersheim). Now it has also been found in Poland (Podlesice and Węże). Some authors regard this species as a synonym of *S. runtonensis* Hinton. From Węże it has, with some doubts, been described as *S. araneus* L. (Sulimski, 1959).

Sorex praealpinus Heller has thus far been reported only from Germany (Sackdillinger Höhle, Gundersheim, Erpfingen, Gaisloch). The Węże remains come closest to this species. An allied species — *S. alpinoides* Kowalski — is known from Podlesice in Poland.

Sorex subminutus n.sp., *S. hibbardi* n. sp. and *S. kretzoii* n.sp. are new species in the insectivore fauna from Węże. Most probably all

three belong to a group of forms that are older than the afore mentioned species of the Soricidae. Their remains, particularly those of *S. hibbardi* n. sp., have been yielded by the lower layers of the breccia.

Blarinoides mariae Sulimski, described from Węże and Rębielice Królewskie, also occurs in Hungary (Csarnóta 2). The age of this species may be regarded as being older than Upper Pliocene, since the majority of its remains has been found in the lower parts of the breccia.

Beremendia fissidens (Petényi) is a form common on the Plio-Pleistocene boundary of Central Europe. It is reported from Hungary (Beremend 1, 2, 3, 5, 6, 8, 9, Csarnóta 1—3, 2, 4, Nagyharsányhegy 2, 3, 4, 5, Villány 1—2, 3, 4, 5, 6, 7, 8, 11), Germany (Sackdillinger Höhle, Gundersheim), Czechoslovakia (Gombasek), Italy (Verona), U.S.S.R. (Czortkow), Poland (Kadzielnia, Węże, Kamyk near Kłobuck). At Węże *B. fissidens* (Petényi) occurs in equal abundance in the lower and upper parts of the breccia. It is not only a cosmopolitan, but also relatively conservative and long-lived species.

Petenyia hungarica Kormos is likewise a very common species in the Plio-Pleistocene faunas of Europe. It has been recorded from Hungary (Beremend 5, Csarnóta 1—3, 2, Villány 3, 5, 11, Nagyharsányhegy 2), Rumania (Püspökfürdö), Germany (Gundersheim), Poland (Podlesice, Kamyk near Kłobuck, Węże). *P. suavensis* Pasa from the bone breccia of Verona probably belongs to this species. At Węże *P. hungarica* is found both in the upper and lower parts of the breccia.

Zelceina soriculoides (Sulimski), originally described from Węże as *Neomys soriculoides* Sulimski (Sulimski, 1959), has now been identified as a new genus. It is one of the most abundant species in this locality. Its remains have been obtained mainly from the lower parts of the breccia. It is quite possible that specimens, described from Rębielice Królewskie as cf. *Neomys* Kaup, also belong to this species.

Petenyiella gracilis (Petényi) has thus far been known only from Hungary (Beremend 1—3, Csarnóta 2). The remains of this species found at Węże have been described as *Suncus pannonicus* (Kormos) (Sulimski, 1959). At present, they have been assigned to *Petenyiella* Kretzoi, 1959, on the presence of pigmented dentition and the structure of the first lower incisor. The Węże remains of *P. gracilis* may reasonably be considered as being older than Upper Pliocene. They are rather scarce and are yielded mostly by the lower parts of the breccia.

Petenyiella zelcea (Sulimski) occur only at Węże and is very closely allied with *P. gracilis* (Petényi). Its remains are, however, much more abundant here. They may be regarded of an older age than the Upper Pliocene.

Crocidura sp. The extremely meagre remains of this form from Węże bear the closest resemblance to species *C. kornfeldi* Kormos, known from Hungary (Csarnóta 1-3, Nagyharsányhegy 2, Villány 3, 5, 11). In the Pliocene and the early Pleistocene the remains of the genus *Crocidura* Wagler are very rare. At present, 3 species only are known from Europe: *C. zorzi* Pana (Verona), *C. obtusa* Kretzoi (Gombasek) and *C. kornfeldi* Kormos from the Hungarian sites just mentioned. From the mid-Pleistocene this genus grows more numerous and gains in faunal importance of that period.

PALAEOECOLOGICAL AND PALAEOCLIMATIC CONDITIONS AT WĘŻE

The majority of the Węże insectivores represent extinct forms. *Sorex minutus* Linnaeus is the only still living species among them. Out of the 10 genera described from Węże, five are not on record among the recent fauna. They are: *Blarinoides* Sulimski, *Beremendia* Kormos, *Petenyia* Kormos, *Zelceina* n. gen. and *Petenyiella* Kretzoi. The most common remains in the Węże breccia are those of *Erinaceus samsonowiczi* Sulimski, *Blarinoides mariae* Sulimski, *Beremendia fissidens* (Petényi) and *Zelceina soriculoides* (Sulimski). *Petenyia hungarica* Kormos, *Sorex subminutus* n. sp. and *Petenyiella zelcea* (Sulimski) are rarer. The remaining forms are represented by meagre remains, consisting of a few up to a dozen or so specimens. The extremely small number of specimens, representing such forms as *Desmana* cf. *kormosi* Schreuder, *D. pontica* Schreuder, *Sorex* cf. *praealpinus* Heller, *S.* cf. *praearaneus* Kormos, *Petenyiella gracilis* (Petényi) and particularly so *Crocidura* sp. — is quite striking.

The environmental conditions that accompanied the rather prolonged period of the formation of the Węże breccia, may be approximately determined on the quantitative composition of the local assemblage and the frequency of its particular species. Thus it may be supposed that the climatic conditions at that time probably resembled those now prevailing in the subtropical regions of Asia Minor and Northern Africa. This is to a certain extent suggested by forms of the subfamily Desmaninae Thomas, by some species of the family Soricidae Gray — probably of such genera as *Blarinoides*, *Beremendia*, *Petenyia*, *Zelceina* n. gen., *Petenyiella* — possibly also by some species of the genus *Sorex* L.

The latest studies on the amphibians from Węże (Młynarski, 1961) point out to their xerothermic character. Similar conclusions as regards climate have been reached by authors, engaged in the description of carnivores and ungulates of that locality (Stach, 1959, 1961; Czyżewska, 1959, 1960).

A much better picture can be drawn of the environmental conditions from the insectivore fauna described from Węże. Its reconstruction is facilitated by the fact that most of the genera making up this assemblage are still living. The genus *Erinaceus* L. is today found throughout Eurasia, chiefly in its southern zones, while some genera allied with it, such as *Hemiechinus* Fitzinger, *Paraechinus* Trouessart and *Aethechinus* Thomas, live in North Africa, Asia Minor and India. *Erinaceus roumanicus* Barret & Hamilton, which resembles the European species, occupies the open steppe-woodland territory of SE Europe. The two species of Talpinae Murray, similarly as the recent species of that subfamily, must have lived in the so-called light soils of the open country where burrowing is easy. Representatives of Desmaninae Thomas resemble the recent forms of that family, in that they led an aquatic or supra-aquatic mode of life in small water basing or swamps situated in open steppelands.

Three groups of Soricidae may be differentiated as regards their adaptability to environment. The first group, at present occupying open-country territories, is made up chiefly of forms of Crocidurinae Milne-Edwards. The second group contains sylvian forms leading a terrestrial life. Out of the recent forms we may place here *Sorex araneus* L., *S. minutus* L., *S. caecutiens* Laxm. etc. From the Węże fauna, in addition to *S. minutus* L., pertain to this group such species as *Sorex* cf. *praearaneus* Kormos, possibly also *S. subminutus* n. sp. The third group consists of supra-aquatic forms; the recent species *Neomys fodiens* Pennant, *N. anomalus milleri* Mottaz, and others of the same genus, belong here. *Blarina brevicauda* Say & Ord. in North America leads a similar mode of life. Out of the Węże fauna *Blarinoides mariae* Sulimski seems the only form referable to this group. The mode of life of the remaining forms at Węże can scarcely be determined in fuller detail. They may have lived in open terrain, such as is now occupied by the Crocidurinae. The majority of species belong here: *Beremendia fissidens* (Petényi), *Petenyia hungarica* Kormos, *P. gracilis* (Petényi), *P. zelcea* (Sulimski), *Zelceina soriculoides* (Sulimski), and *Sorex hibbardi* n. sp., *S. kretzoii* n. sp. and *S. runtonensis* Hinton. The meagreness of the fossil remains at Węże of genus *Crocidura* Wagler, as well as its distribution in the Plio-Pleistocene beyond the Polish territory, reasonably suggest that the soricine assemblage mentioned above may have occupied ecological niches peculiar to that genus. Today the genus *Crocidura* is represented by numerous species, particularly so in Africa and South Asia, as well as in the Palaearctic belt of Eurasia.

Palaeozoological Laboratory
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ANDRZEJ SULIMSKI

DODATKOWE BADANIA NAD OWADOŻERNYMI (INSECTIVORA) Z WĘŻÓW 1* KOŁO DZIAŁOSZYNA

Streszczenie

Owadożerne z plioceńskiej brekcji kostnej z Wężów koło Działoszyna, odkrytej przez Samsonowicza (1934), zostały opracowane przeze mnie w poprzedniej pracy (Sulimski, 1959). Ponieważ bez przerwy trwająca preparacja tej brekcji dostarczyła w ostatnich latach nowych materiałów kostnych, zawierających nowe i nie notowane dotychczas w faunie owadożernych z Wężów gatunki, uznałem za potrzebne opublikowanie ich opisów w niniejszej pracy. Ponadto w roku 1959 miałem możność porównać oznaczone poprzednio zbiory ze zbiorami węgierskimi w Muzeum Historii Naturalnej i w Instytucie Geologicznym w Budapeszcie. Pozwoliło to wyjaśnić szereg wątpliwości, związanych ze stanowiskiem systematycznym pewnych opisanych gatunków oraz stwierdzić obecność kilku nowych przedstawicieli z rodziny Soricidae.

W wyniku tej kontroli i obecnych badań nad nowym materiałem, lista fauny owadożernych uległa pewnym zmianom. I tak obejmuje ona trzy rodziny: Erinaceidae Bonaparte, Talpidae Gray i Soricidae Gray, w tym dziesięć rodzajów: *Erinaceus* L., z jednym gatunkiem *E. samsonowiczi* Sulimski; *Talpa* L., z dwoma gatunkami — *T. minor* Freudenberg i *T. fossilis* Petényi; *Desmana* Güldenstaedt, z trzema gatunkami — *D. nehringi* Kormos, *D. pontica* Schreuder i *D.* cf. *kormosi* Schreuder; dalej rodzaj *Sorex* L. z siedmioma gatunkami — *S. minutus* L., *S. runtonensis* Hinton, *S.* cf. *praearaneus* Kormos, *S.* cf. *praealpinus* Heller, *S. subminutus* n. sp., *S. hibbardi* n. sp. i *S. kretzoii* n. sp.; następnie *Blarinoides* Sulimski, z gatunkiem *B. mariae* Sulimski; *Beremendia* Kormos, z jedynym przedstawicielem *B. fissidens* (Petényi); *Petenyia* Kormos, z gatunkiem *P. hungarica* Kormos; nowy rodzaj *Zelceina* n. gen., z gatunkiem *Z. soriculoides* (Sulimski); wreszcie dwa gatunki *Petenyiella* Kretzoi — *P. gracilis* (Petényi) i *P. zelcea* (Sulimski), oraz rodzaj *Crocidura* Wagler, z nieoznaczonym gatunkiem, zapewne zbliżonym do *Crocidura kornfeldi* Kormos.

Opisane w poprzedniej pracy (Sulimski, 1959) szczątki *Galemys* (?) sp. miały niepewną pozycję systematyczną, ponieważ szczątki doń zaliczone były skąpe

* W latach 1959—1961 odkryto i wyeksploatowano nowe znalezisko plioceńskiej fauny kręgowców, głównie ssaków, w tej samej miejscowości (Sulimski, 1962); znalezisko to oznaczono symbolem *Węże 2.*

Stary lej krasowy, odkryty przez Samsonowicza (1934), oznaczany będzie w dalszych pracach symbolem *Węże 1.*

i na ogół źle zachowane. Materiały uzupełniające pozwoliły ustalić, że należą one do dwóch gatunków rodzaju *Desmana* Güldenstaedt, a mianowicie do *D. nehringi* Kormos i *D.* cf. *kormosi* Schreuder. Nowym elementem w tej grupie form jest *Desmana pontica* Schreuder, która w faunie owadożernych z Węży uważana może być za relikt wczesno-plioceński.

Rewizji uległy nazwy rodzajowe i gatunkowe takich form, jak *Suncus pannonicus* (Kormos), *Suncus zelceus* Sulimski i *Neomys soriculoides* Sulimski. Pierwsze dwa gatunki, dzięki obecności pigmentacji zębów i innym cechom, zaliczyłem obecnie do rodzaju *Petenyiella* Kretzoi (Kretzoi, 1956, 1959), przy czym pierwszy z nich okazał się identyczny z *Petenyiella gracilis* (Petényi), opisanym z Beremend na Węgrzech. *Neomys soriculoides*, po uzupełnieniu materiału i dokładnej analizie porównawczej z najbliższym mu przedstawicielem rodzaju *Soriculus* Blyth — *S. gibberodon* (Petényi), również znanym z Węgier, zaliczyłem obecnie do nowego rodzaju, któremu nadałem nazwę *Zelceina* n. gen.

Dokładne opisy i pomiary wymienionych wyżej form podane są w tekście angielskim. Poniżej przytoczone są tylko diagnozy nowych jednostek systematycznych. W pracy, przy opisach gatunków z rodziny Soricidae, wprowadziłem zmiany w terminologii uzębienia, wynikłe z ostatnich badań Kindal (1959). We wnioskach omówiłem także występowanie i rozprzestrzenienie poszczególnych gatunków zespołu, jak też podałem próbę chronologicznego ich ustawienia w znalezisku. Wreszcie przedstawiłem w ogólnych zarysach warunki paleoekologiczne i paleoklimatyczne, opierając się na występującym w znalezisku Węże zespole owadożernych.

DIAGNOZY NOWYCH JEDNOSTEK SYSTEMATYCZNYCH

Sorex subminutus n. sp.
(pl. II, fig. 2 *a-b*; text-pl. II, fig. 4 *a-c*)

Diagnoza. — Wzór zębowy:

$$\frac{3\,1\,3\,3}{2\,0\,1\,3} = 32$$

I_1 krótki, gruby, z trzema wyraźnymi płatami, cingulum i szpicem, zagiętym silnie ku górze. I_2 krótki, wysoki, dwuszczytowy. M_1 i M_2 z talonidami szerszymi, niż trigonidy. Cingula dopoliczkowe wąskie. Szczyty trzonowców skierowane ku tyłowi. M_3 pięcioguzkowy, z talonidem dobrze rozwiniętym. Grzebień między entokonidem a metakonidem trzonowców obecny. Ramus horizontalis niższe, aniżeli wysokość koron trzonowców. Foramen mentale pod M_1. Processus coronoideus wysoki, smukły, zaostrzony. Fossa pterygoidea głęboka, trójkątna. Dolna fasetka stawowa processus condyloideus dojęzykowo zagięta ku dołowi. Rostralna część czaszki smukła, wąska. Foramen infraorbitale między P^4 a M^1. I^1 bez dojęzykowego guzka fissident. P^4 silnie zmolaryzowany, z mocnym hypokonem. M^3 bez hypokonu i metastylu.

Uwagi. — *Sorex subminutus* n. sp. mniejszy niż *S. minutus* L., od którego różni się krótkim i grubym I_1, krótkimi i wysokimi I_2 i P_4, szerokimi talonidami trzonowców, wąskimi cingulami dopoliczkowymi, odgiętymi szczytami trzonowców, niskim ramus horizontalis, położeniem foramen mentale, wysokim, zaostrzonym processus coronoideus, głęboką fossa pterygoidea, smuklejszą częścią rostralną czaszki, położeniem foramen infraorbitale, budową P^4 oraz silniejszym M^3.

Sorex hibbardi n. sp.
(pl. II, fig. 7; text-pl. II, fig. 5 *a-b*)

Diagnoza. — Wzór zębowy:

$$\frac{3\,1\,3\,3}{2\,0\,1\,3} = 32$$

I_1 długi, z mocnym cingulum i trzema płatami. Przedni płat mały, połączony ze szpicem. Środkowy płat duży i wysoki. Tylny płat mały, oddzielony. I_2 mały, spłaszczony, ściśle przylega do podstawy I_1 i przedniej krawędzi P_4. P_4 szeroki, z mocnym dopoliczkowym cingulum, dwuszczytowy. Cingula dopoliczkowe trzonowców jednakowej grubości. Entokonidy oddzielone. Brak grzebienia między entokonidem a metakonidem. M_3 mały, z niskim talonidem, bez entokonidu. Foramen mentale pod M_1 w depresji. Processus coronoideus niski, lekko na zewnątrz i silnie ku tyłowi odchylony, z małą, hakowatą stopką z tyłu. Crista masseterica z kolcem. Processus angularis gruby u podstawy. Fossa pterygoidea mała, trapezowata i głęboka, z prożkiem u góry. Górna fasetka stawowa processus condyloideus wąska, ukośna. Dolna fasetka trzykrotnie grubsza od górnej, mocno ukośna, z ostrym końcem dojęzykowym. Listwa międzystawowa szeroka, słabo wcięta dojęzykowo. Obie fasetki stawowe równoległe do siebie.

Uwagi. — *Sorex hibbardi* n. sp. zbliżony jest wielkością do *S. praealpinus* Heller i *S. praearaneus* Kormos, lecz różni się od nich znacznie budową processus coronoideus, uzębieniem, szczególnie dolnych siecznych, wyższym i masywniejszym ramus horizontalis oraz przede wszystkim budową fasetek stawowych processus condyloideus. Te same różnice dotyczą również innych gatunków, jak *S. runtonensis* Hinton, *S. kennardi* Hinton, *S.* (*Drepanosorex*) *margaritodon* Kormos, *S. araneoides* Heller i *S. dehneli* Kowalski. U wszystkich tych gatunków processus coronoideus jest smukły i z reguły pionowo ustawiony.

Sorex kretzoii n. sp.
(pl. II, fig. 8 *a-c*; text-pl. II, fig. 8 *a-d*)

Diagnoza. — Wzór zębowy:

$$\frac{3\,1\,3\,3}{2\,0\,1\,3} = 32$$

I_1 długi, ze słabym cingulum. I_2 mały, niski, z wyraźnym cingulum. P_4 słabo dwuszczytowy, z silnym, wyciągniętym ku tyłowi cingulum. Cingula dopoliczkowe

trzonowców grube. M_3 bez entokonidu i z małym talonidem. Między entokonidami a metakonidami brak grzebienia dojęzykowego. Foramen mentale między protokonidem a hypokonidem M_1 w depresji. Processus coronoideus wysoki, łopatowaty, szeroki. Crista masseterica z kolcem. Fossa pterygoidea trójkątna, głęboka. Górna fasetka processus condyloideus mocno dojęzykowo wydęta i ukośna. Dolna fasetka długa, szeroka, mniej ukośna niż górna, z wcięciem górnej krawędzi i ku dołowi dojęzykowo zagięta. Listwa międzystawowa słabo dojęzykowo wcięta. I^1 silny, z mocnym talonem, bez dojęzykowego guzka fissident. I^2 i I^3 jednakowej wielkości, z tylnymi piętkami. C i P^2 dwa razy mniejsze od jednoguzkowych siekaczy. P^3 bardzo mały, podsunięty pod P^4. Rostrum czaszki skrócone. Foramen lacrimale nad tylnym korzeniem M^1.

Uwagi. — Od form plio-plejstoceńskich rodzaju *Sorex* L. gatunek ten różni się wysokim i łopatowatym processus coronoideus, małym i płaskim I_2, długim, z słabym cingulum I_1, różnicą wielkości jednoguzkowców i ich układem oraz skróconą rostralną częścią czaszki. Najbliższe temu gatunkowi wydają się być tylko trzy formy: *Petenyia hungarica* Kormos (ogólny charakter budowy dolnych szczęk), *Sorex* (*Drepanosorex*) *margaritodon* Kormos (szeroki i łopatowaty processus coronoideus) i *S. dehneli* Kowalski (budowa processus coronoideus, zbliżona wielkość szczęk, ogólny charakter budowy dolnych zębów).

Zelceina n. gen.

(fig. 2)

Diagnoza. — Rodzaj dotychczas monotypowy. Diagnoza pokrywa się z diagnozą gatunku typowego *Zelceina soriculoides* (Sulimski). Wzór zębowy:

$$\frac{3\,1\,2\,3}{2\,0\,1\,3} = 30$$

I_1 skrócony, z dwoma, poza szpicem, płatami i wyraźnym cingulum. M_3 dwukrotnie mniejszy od M_1, bez entokonidu, ze zredukowanym talonidem. Górna fasetka stawowa processus condyloideus wąska, ukośna, dolna natomiast szeroka, węższa dopoliczkowo, wydęta i zagięta ku dołowi dojęzykowo. Górna linia dolnej fasetki pośrodku wgłębiona. Listwa międzystawowa niezbyt głęboko dojęzykowo wcięta. Fossa pterygoidea duża, trapezowata. Foramen mentale pod hypokonidem M_1. Ramus horizontalis skrócone, wysokie. Rostralny profil czaszki smukły, skrócony. I^2 i I^3 jednakowej wielkości, z mocnymi tylnymi cingulami. C prawie dwa razy mniejszy od jednoguzkowych siekaczy. P^3 mały, blisko P^4. I^1 bez dojęzykowego guzka fissident. Protokon P^4 skierowany ku tyłowi. M^3 ze zredukowanym talonem. Foramen infraorbitale nad M^1, duży.

Uwagi. — Znany jest dotychczas tylko jeden gatunek: *Zelceina soriculoides* (Sulimski). Rodzaj *Zelceina* n. gen., porównany z najbliższym mu węgierskim rodzajem *Soriculus* Blyth (vel *Asoriculus* Kretzoi), wykazuje zasadnicze różnice w budowie I_1 (dwa płaty na krawędzi tnącej), silnie wyciągniętym ku tyłowi cingulum P_4, czteroguzkowym M_3, w budowie processus condyloideus (szersza listwa

międzystawowa, krótka i wąska górna fasetka stawowa oraz stosunkowo krótka i szeroka fasetka stawowa dolna), w wielkości foramen infraorbitale i w braku dojęzykowego guzka fissident. Liczba jednoguzkowców górnej szczęki u jedynego przedstawiciela rodzaju *Soriculus* (= *Asoriculus*) Blyth — *S. gibberodon* (Petényi) — nie jest znana.

OBJAŚNIENIA DO ILUSTRACJI

Fig. 1 (p. 444)

Erinaceus samsonowiczi Sulimski; lewy fragment czaszki z uzębieniem od strony podniebienia (no. 300/51); ca. × 7.

Fig. 2 (p. 477)

Porównanie dolnych pierwszych siekaczy, konstrukcji processus condyloideus i proc. coronoideus u: *1 Neomys fodiens* Schreber, *2 Soriculus gibberodon* (Petényi) i *3 Zelceina soriculoides* (Sulimski); *a* I_1 od zewnątrz, *b* processus condyloideus od strony fasetek stawowych, *c* proc. coronoideus z boku.

Text-Pl. I (p. 453)

Fig. 1. *Sorex araneus* Linnaeus: *a* lewa dolna szczęka, od wewnątrz, *b* wyrostek stawowy; dzisiejszy.
Fig. 2. *Sorex* cf. *praearaneus* Kormos: *a* prawa dolna szczęka, od zewnątrz, *b* to samo, od wewnątrz, *c* wyrostek stawowy (no. 307/2).
Fig. 3. *Sorex runtonensis* Hinton: *a* prawa dolna szczęka, od wewnątrz, *b* wyrostek stawowy (no. 306/15).
Fig. 4. Tenże gatunek; fragment prawej dolnej szczęki, od wewnątrz (Villány 8).
Fig. 5. *Desmana pontica* Schreuder: *a* fragment lewej dolnej szczęki, od góry, *b* od zewnątrz (no. 304/4).
Fig. 6. Tenże gatunek; inny okaz lewej dolnej szczęki z P_4—M_3, od zewnątrz (no. 304/5).
Fig. 7. Tenże gatunek: *a* przedni fragment dolnej szczęki z I_3—P_2, od zewnątrz, *b* od góry (no. 304/8).
Fig. 8. Tenże gatunek; inny okaz lewej dolnej szczęki z P_2—P_3, od góry (no. 304/11).

Text-Pl. II (p. 463)

Fig. 1. *Petenyiella zelcea* (Sulimski), rostralny fragment czaszki z dolnymi szczękami, z boku (no 318/1).
Fig. 2. *Sorex minutus* Linnaeus: *a* prawa dolna szczęka, od wewnątrz, *b* wyrostek stawowy; dzisiejszy.
Fig. 3. Tenże gatunek z Węży 1: *a* fragment prawej dolnej szczęki, od zewnątrz, *b* wyrostek stawowy (no. 308/6).
Fig. 4. *Sorex subminutus* n. sp., paratyp: *a* lewa dolna szczęka, od wewnątrz, *b* wyrostek stawowy (no. 309/2).
Fig. 5. Tenże gatunek, holotyp, czaszka, od dołu (no. 309/1).
Fig. 6. *Sorex hibbardi* n. sp., holotyp: *a* lewa dolna szczęka, od zewnątrz, *b* wyrostek stawowy (no. 311/1).
Fig. 7. *Sorex* cf. *praealpinus* Heller: *a* prawa dolna szczęka, od wewnątrz, *b* wyrostek stawowy (no. 310/1).
Fig. 8. *Petenyia hungarica* Kormos: *a* prawa dolna szczęka, od wewnątrz, *b* wyrostek stawowy (no. 315/5).
Fig. 9. *Sorex kretzoii* n. sp., paratyp: *a* fragment dolnej szczęki, od wewnątrz, *b* wyrostek stawowy (no. 312/3).

Fig. 10. Tenże gatunek, holotyp: *a* rostralny fragment czaszki z dolnymi szczękami, z boku, *b* od góry (no. 312/1).

Pl. I

Desmana pontica Schreuder

Fig. 1. Prawy fragment dolnej szczęki z I_3—P_2, od zewnątrz (no. 304/8).
Fig. 2. Lewy fragment dolnej szczęki z P_2—P_3, od zewnątrz (no. 304/11).
Fig. 3. Lewy fragment dolnej szczęki z P_4—M_3, od zewnątrz (no. 304/4).
Fig. 4. Inny lewy fragment dolnej szczęki z P_4—M_3, od zewnątrz (no. 304/5).
Wszystkie okazy (fig. 1-4) pochodzą z Węży 1; × 3.1.

Talpa minor Freudenberg

Fig. 5-7. Kości ramieniowe młodych osobników.
Fig. 8-9. Lewa i prawa kość ramieniowa osobników dojrzałych.
Fig. 10. Kość ramieniowa okazu z Püspökfürdö.

Talpa fossilis Petényi

Fig. 11-12. Lewa i prawa kość ramieniowa z Püspökfürdö.
Fig. 13. Kość ramieniowa z Węży 1.

Talpa europaea Linnaeus

Fig. 14-16. Kości ramieniowe różnych osobników; dzisiejsze.
Wszystkie okazy (fig. 5-16) × 1.9.

Pl. II

Fig. 1. *Petenyiella zelcea* (Sulimski), rostralny fragment czaszki z dolnymi szczękami, z boku (no. 318/1).
Fig. 2. *Sorex subminutus* n. sp., holotyp, czaszka od dołu (no. 309/1).
Fig. 3. Tenże gatunek, paratyp, lewa dolna szczęka (no. 309/2).
Fig. 4. *Sorex minutus* Linnaeus, prawa dolna szczęka, od zewnątrz; dzisiejszy.
Fig. 5. Tenże gatunek z Węży — 1, tylny fragment dolnej szczęki, od zewnątrz (no. 308/6).
Fig. 6. *Sorex* cf. *praealpinus* Heller, prawa dolna szczęka, od zewnątrz (no. 310/1).
Fig. 7. *Sorex* cf. *praearaneus* Kormos, prawa dolna szczęka, od zewnątrz (no. 307/2).
Fig. 8. *Sorex hibbardi* n. sp., holotyp, lewa dolna szczęka, od zewnątrz (no. 311/1).
Fig. 9. *Sorex kretzoii* n. sp., holotyp, rostralny fragment czaszki z dolnymi szczękami, z boku (no. 312/1).
Fig. 10. Tenże gatunek, paratyp, prawa dolna szczęka, od wewnątrz (no. 312/3).
Fig. 11. *Petenyia hungarica* Kormos, prawa dolna szczęka, od zewnątrz (no. 315/5).
Fig. 12. *Erinaceus europaeus* Linnaeus, prawa dolna szczęka, od zewnątrz; dzisiejszy.
Fig. 13. Tenże gatunek, czaszka, od góry; dzisiejszy.
Fig. 14. *Erinaceus samsonowiczi* Sulimski, prawa dolna szczęka, od zewnątrz (no. 300/1a).
Fig. 15. Tenże gatunek, czaszka, od góry (no. 300/50).
Fig. 16. Tenże gatunek, czaszka od strony podniebienia (no. 300/51).
Powiększenia fig. 1-16 według skali, podanej przy każdej fotografii.

АНДРЖЕЙ СУЛИМСКИ

ДОБАВОЧНЫЕ ИССЛЕДОВАНИЯ НАСЕКОМОЯДНЫХ (INSECTIVORA) ИЗ МЕСТНОСТИ ВЕНЖЕ 1* БЛИЗ ДЗЯЛОШИНА (ПОЛЬША)

Резюме

ВВЕДЕНИЕ

Насекомоядные из плиоценовой костной брекчии из местности Венже около Дзялошина, найденной Самсоновичем (1934), описаны мною в предыдущей работе (Сулимски, 1959). Ввиду того, что непрерывно продолжающаяся препарировка этой брекчии доставила в последние годы новые костные материалы, содержащие новые и до сих пор не отмеченные в фауне насекомоядных из этого местонахождения виды, я признал необходимым опубликовать их описание в настоящей работе. Сверх того, в 1959 году имел возможность сопоставить определенные раньше формы с венгерскими коллекциями в Естественно-историческом Музее и в Геологическом Институте в Будапеште. Это дало возможность выяснить ряд сомнений, связанных с систематическим положением некоторых описанных видов и установить наличие нескольких новых представителей семейства Soricidae.

В результате этой проверки и настоящих исследований список фауны насекомоядных подвергся некоторым изменениям. Таким образом содержит она три семейства: Erinaceidae Bonaparte, Talpidae Gray и Soricidae Gray, в том числе десять родов: *Erinaceus* L., с одним видом *E. samsonowiczi* Sulimski; *Talpa* L., с двумя видами — *T. minor* Freudenberg и *T. fossilis* Petényi; *Desmana* Güldenstaedt, с тремя видами — *D. nehringi* Kormos, *D. pontica* Schreuder и *D.* cf *kormosi* Schreuder; затем род *Sorex* L., с семью видами — *S. minutus* L., *S. runtonensis* Hinton, *S.* cf. *praearaneus* Kormos, *S.* cf. *praealpinus* Heller, *S. subminutus* n. sp., *S. hibbardi* n. sp. и *S. kretzoii* n. sp.; далее *Blarinoides* Sulimski, с видом *Bl. mariae* Sulimski; *Beremendia* Kormos, с единственным представителем *B. fissidens* (Petényi); *Petenyia* Kormos, с видом *P. hungarica* Kormos; новый род *Zelceina* n. gen., с видом *Z. soriculoides* (Sulimski); наконец два вида *Petenyiella* Kretzoi — *P. gracilis* (Petényi) и *P. zelcea* (Sulimski), а также род *Crocidura* Wagler, с неопределенным видом, вероятно приближающимся к *Crocidura kornfeldi* Kormos.

Описанные в предыдущей работе (Сулимски, 1959) остатки *Galemys* (?) sp. имели неуверенное систематическое положение ввиду того, что отнесенные сюда остатки были скудные и вообще плохой сохранности. Дополнительные материалы дают возможность установить, что они относятся к двум видам рода *Desmana*

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* В годах 1959—61 найдено и эксплоатировано новое местонахождение плиоценовой фауны позвоночных, главным образом млекопитающих, в той же местности (Сулимски, 1962); местонахождение это получило название „*Венже 2*".

Старая карстовая воронка, обнаруженная Самсоновичем (1934), будет отмечена в следующих работах обозначением „*Венже 1*".

Güldenstaedt, а именно *D. nehringi* Kormos и *D.* cf. *kormosi* Schreuder. Новым элементом в этой группе форм является *Desmana pontica* Schreuder, которую среди насекомоядных из Венже можно считать, как реликт ранне-плиоценовый.

Пересмотру подверглись родовые и видовые названия таких форм, как *Suncus pannonicus* (Kormos), *S. zelceus* Sulimski и *Neomys soriculoides* Sulimski. Первые два вида, благодаря наличию пигментировки зубов и других признаков, я отнес теперь к роду *Petenyiella* Kretzoi (Kretzoi, 1956, 1959), причем первый из них оказался тождественным с *Petenyiella gracilis* (Petényi), описанным из Беременд в Венгрии. *Neomys soriculoides*, после пополнения материала и обстоятельного сравнительного анализа с ближайшим ему представителем рода *Soriculus* Blyth — *S. gibberodon* (Petényi) — известным также из Венгрии, я отнес теперь к новому роду, которому дал название *Zelceina* n. gen.

Точные описания и измерения приведенных выше форм даны в английском тексте. Ниже приведены только диагнозы новых систематических единиц. При описании видов из семейства Soricidae я ввел изменения в терминологии зубной системы, вытекающие из последних исследований Киндал (1959). В выводах были обсуждены также проявление и распространение отдельных видов, равно как и приведена попытка их хронологической установки в местонахождении. Наконец представлены в общих чертах палеоэкологические и палеоклиматические условия на основании выступающей в местонахождении Венже фауны насекомоядных.

ДИАГНОЗЫ НОВЫХ СИСТЕМАТИЧЕСКИХ ЕДИНИЦ

Sorex subminutus n. sp.

(пл. II, фиг. 2 *a*-*b*; текст-пл. II, фиг. 4 *a*-*c*)

Диагноз. — Зубная формула:

$$\frac{3\ 1\ 3\ 3}{2\ 0\ 1\ 3} = 32$$

I_1 короткий, толстый, с тремя отчетливыми лопастями, cingulum и острым концом, сильно отогнутым кверху. I_2 короткий, высокий, одновершинный и с толстым cingulum. P_4 короткий, высокий, двувершинный. M_1 и M_2 с талонидами более широкими, чем тригониды. Наружные cingula узкие. Верхушки коренных направлены назад. M_3 пятибугорчатый, с хорошо развитым талонидом. На коренных имеется гребень между энтоконидом и метаконидом. Ramus horizontalis ниже высоты коронок коренных. Foramen mentale под M_1 Венечный отросток высокий, стройный, заостренный. Fossa pterygoidea глубокая, треугольная. Нижняя суставная поверхность суставного отростка нижней челюсти изогнута внутренним концом вниз. Ростральная часть черепа стройная, узкая. Foramen infraorbitale между P^4 и M^1. I^1 без внутреннего бугорка fissident. P^4 сильно моляризирован, с крепким гипоконом. M^3 без гипокона и метастиля.

Замечание. — *Sorex subminutus* n. sp. меньше чем *S. minutus* L., от которого отличается коротким и толстым I_1, коротким и высоким I_2 и P_4, широкими талонидами коренных, их узким наружным cingulum, отогнутыми назад верхушками коренных, низким ramus horizontalis, расположением foramen mentale, высоким, заостренным венечным отростком, глубокой fossa pterygoidea, более стройной ростральной частью черепа, положением foramen infraorbitale, строением P^4, а также более крепким M^3.

Sorex hibbardi n. sp.
(пл. II, фиг. 7; текст-пл. II, фиг. 5 *a-b*)

Диагноз. — Зубная формула:

$$\frac{3\ 1\ 3\ 3}{2\ 0\ 1\ 3} = 32$$

I_1 длинный, с крепким cingulum и тремя лопастями. Передняя лопасть малая, соединенная со шипилем зуба. Медиальная лопасть большая и высокая; задняя маленькая, отделенная. I_2 мал, сплюснутый, плотно прилегает к основанию I_1 и переднему краю P_4. P_4 широкий, с крепким наружным cingulum, двувершинный. Наружные cingula коренных одинаковой толщины. Энтокониды отделены. Нет гребня между энтоконидом и метаконидом. M_3 мал, с низким талонидом, без энтоконида. Foramen mentale под M_1, в углублении. Венечный отросток низкий, слегка отклонен наружу и сильно назад, с малой, коротковатой стопочкой позади. Crista masseterica с шипом. Processus angularis толстый у основания. Fossa pterygoidea мала, трапециевидная и глубокая, с малым порогом вверху. Верхняя суставная поверхность суставного отростка узкая, косая. Нижняя поверхность три раза толще, чем верхняя, сильно косая, с острым внутренним концом. Межсуставная планка широкая, слабо врезана с внутренней стороны. Обе суставные поверхности взаимно параллельны.

Замечания. — *Sorex hibbardi* n. sp. близок по величине *S. praealpinus* Heller и *S. praearaneus* Kormos, но отличается от них сильно строением венечного отростка, зубным аппаратом, особенно нижними резцами, более высоким и массивным ramus horizontalis и прежде всего строением суставных поверхностей суставного отростка. Те же отличия касаются и других видов, как *S. runtonensis* Hinton, *S. kennardi* Hinton, *S. (Drepanosorex) margaritodon* Kormos, *S. araneoides* Heller, или тоже *S. dehneli* Kowalski. У всех этих видов венечный отросток стройный и как правило установлен перпендикулярно.

Sorex kretzoi n. sp.
(пл. II, фиг. 8 *a-c*; текст-пл. II, фиг. 8 *a-d*)

Диагноз. — Зубная формула:

$$\frac{3\ 1\ 3\ 3}{2\ 0\ 1\ 3} = 32$$

I_1 длинный, со слабым cingulum. I_2 мал, низок, с ясным cingulum. P_4 слабо двувершинный, с сильно вытянутым назад cingulum. Наружные cingula коренных толстые. M_3 без энтоконида и с малым талонидом. Между энтоконидами и метаконидами нет внутреннего гребня. Foramen mentale между протоконидом и гипоконидом M_1 в углублении. Венечный отросток высокий, лопатовидный, широкий. Crista masseterica с шипом. Fossa pterygoidea треугольная, глубокая. Верхняя поверхность суставного отростка сильно вздута и косая. Нижняя длинная, широкая, менее косая чем верхняя, с вырезом верхнего края и книзу загнута во внутреннем направлении. Межсуставная планка слабо врезана. I^1 сильный, с крепким талоном, без внутреннего бугорка fissident. I^2 и I^3 одинаковой величины с задними пятками. C и P^2 вдвое меньше, чем однобугорчатые резцы. P^3 очень мал, пододвинут под P^4. Ростр черепа укорочен. Foramen lacrimale над задним корнем M^1.

Замечания. — От форм плио-плеистоценовых рода *Sorex* L. вид этот отличается высоким и лопатовидным венечным отростком, малым и плоским I_2, длинным I_1 со слабым cingulum, разницей величины однобугорчатых и их распо-

ложением, а также укороченной ростральной частью черепа. Наиболее близки этому виду кажутся только три формы: *Petenyia hungarica* Kormos (общий характер строения нижних челюстей), *Sorex (Drepanosorex) margaritodon* Kormos (широкий и лопатовидный венечный отросток) и *Sorex dehneli* Kowalski (строение венечного отростка, близкие величины челюстей, общий характер строения нижних зубов).

Zelceina n. gen.

(фиг. 2)

Диагноз. — Род до настоящего времени монотипный, диагноз совпадает с диагнозом типичного вида *Zelceina soriculoides* (Sulimski). Зубная формула:

$$\frac{3\ 1\ 2\ 3}{2\ 0\ 1\ 3} = 30\ ;$$

I_1 укороченный, с двумя лопастями кроме шпиля и с отчетливым cingulum. M_3 вдвое меньше чем M_1, без энтоконида и с редуцированным талонидом. Верхняя суставная поверхность суставного отростка узкая, косая; нижняя зато широкая, наружно узкая и вздутая, а также внутренно загнутая книзу. Верхняя линия суставной поверхности углублена посередине. Межсуставная планка врезана внутренно не особенно глубоко. Fossa pterygoidea большая, трапециевидная. Foramen mentale под гипоконидом M_1. Ramus horizontalis укорочен, высокий. Ростральный профиль черепа стройный, укороченный. I^2 и I^3 одинаковой величины, с крепкими задними cingula. С почти что вдвое меньше, чем однобугорчатые резцы. P^3 мал, близко P^4. I^1 без внутреннего бугорка fissident. Протокон P^4 направлен назад. M^3 с редуцированным талоном. Foramen infraorbitale над M^1 большой.

Замечания. — До настоящего времени известен только один вид: *Zelceina soriculoides* (Sulimski). Род *Zelceina* n. gen., сравненный с наиболее близким ему венгерским родом *Soriculus* Blyth (vel *Asoriculus* Kretzoi), обнаруживает основные отличия: в строении I_1 (две лопасти на секущей поверхности), в сильно вытянутым назад cingulum P_4, четыребугорчатым M_3, в строении суставного отростка (более широкая межсуставная планка, короткая и узкая верхняя суставная поверхность, и относительно короткая и широкая нижняя суставная поверхность), в величине foramen infraorbitale и в отсутствии внутреннего бугорка fissident. Число однобугорчатых зубов верхней челюсти у единственного представителя рода *Soriculus* (=*Ascriculus*) Blyth — *S. gibberodon* (Petényi) — неизвестно.

PLATES

PL. I

Desmana pontica Schreuder

Fig. 1. Right fragment of the lower jaw with I_3—P_2, outer view (no. 304/8).

Fig. 2. Left fragment of the lower jaw with P_2—P_3, outer view (no. 304/11).

Fig. 3. Left fragment the lower jaw with P_4—M_3, outer view (no. 304/4).

Fig. 4. Another fragment, outer view (no. 304/5).

All the specimens (fig. 1-4) are from Węże 1; × 3.1

Talpa minor Freudenberg

Fig. 5-7. Shoulder bones of young individuals.

Fig. 8-9. Left and right shoulder bones of mature individuals.

Fig. 10. Shoulder bone from Püspökfürdö.

Talpa fossilis Petényi

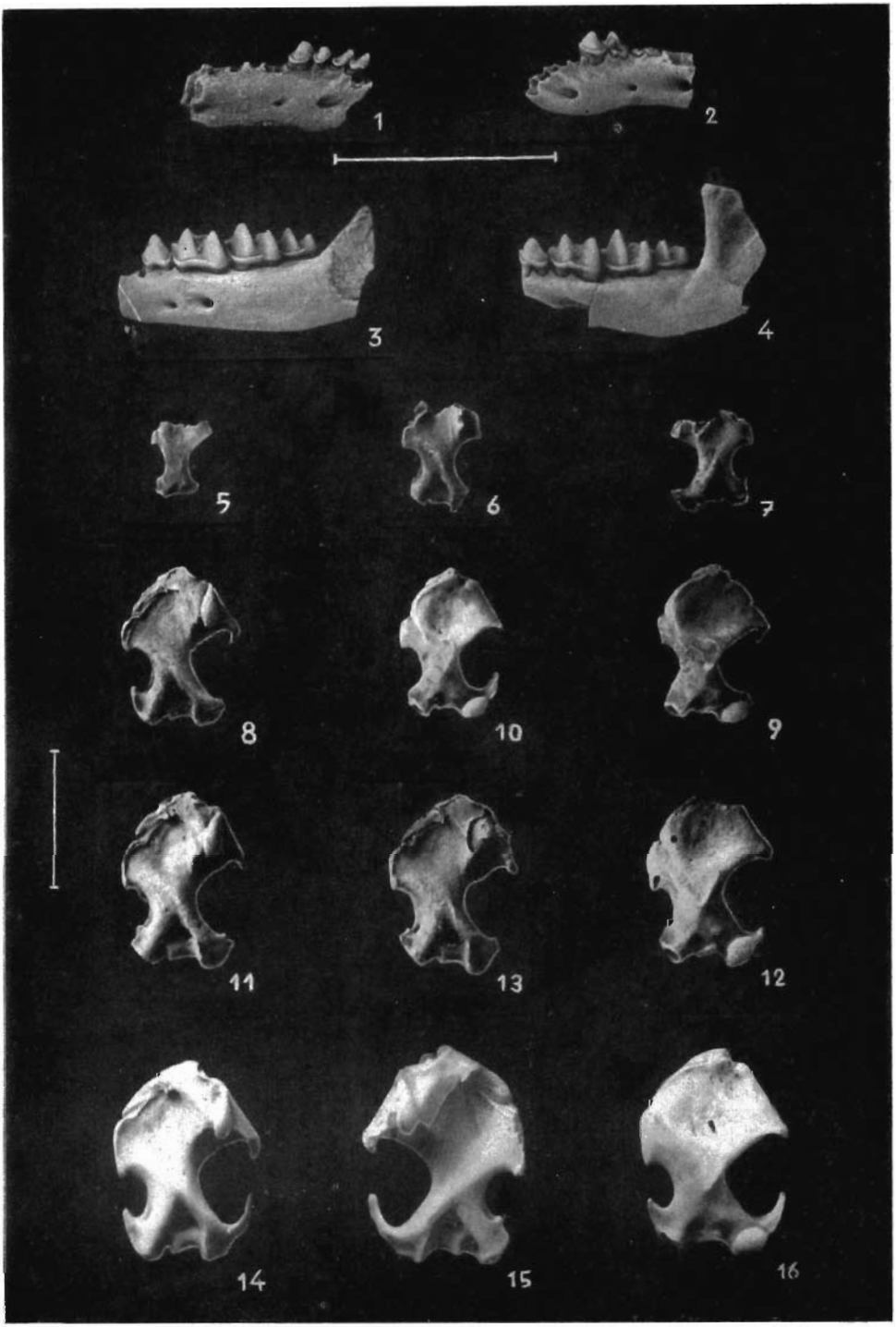
Fig. 11-12. Left and right shoulder bones from Püspökfürdö.

Fig. 13. Shoulder bones from Węże 1.

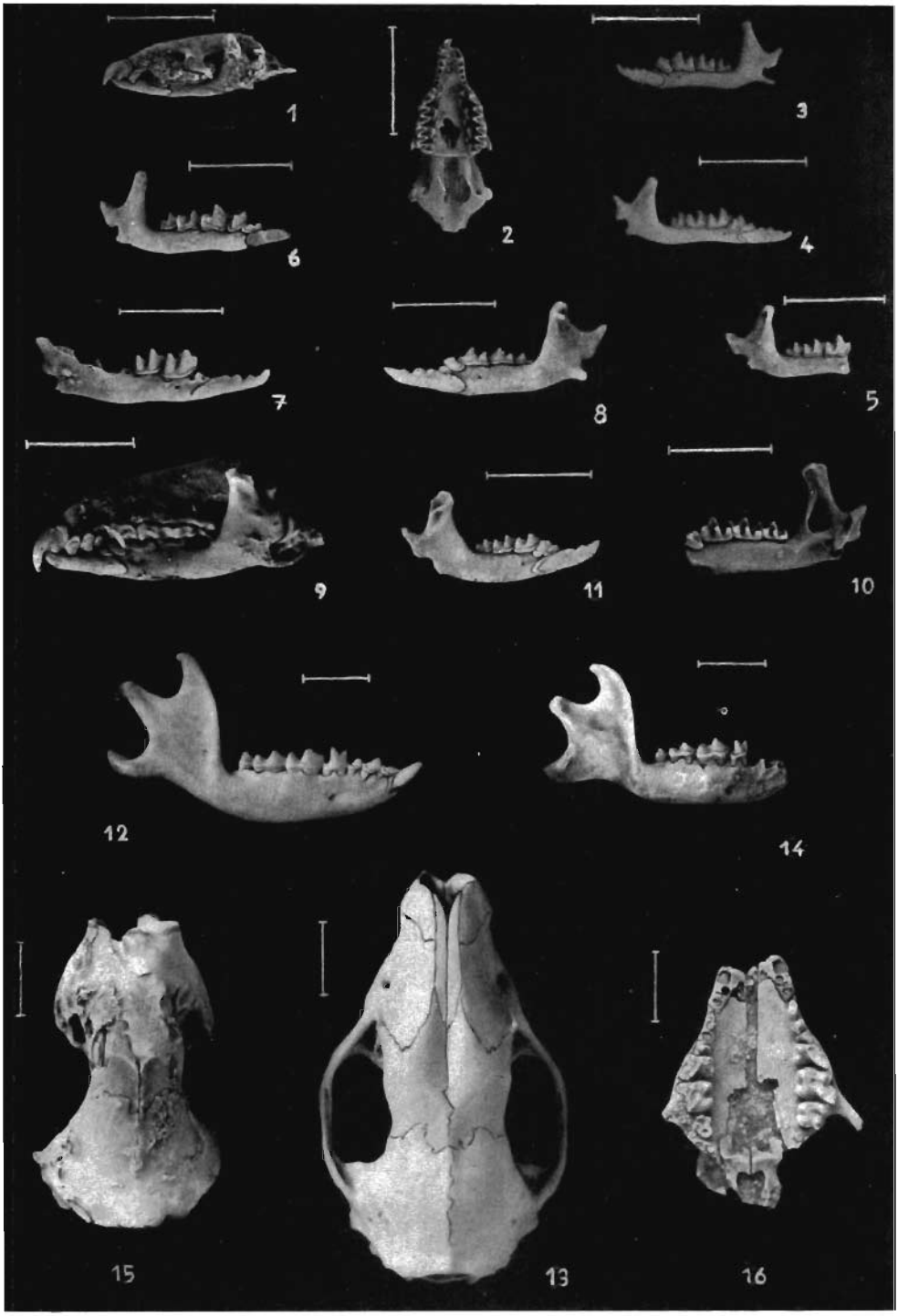
Talpa europaea Linnaeus

Fig. 14-16. Shoulder bones of living forms, belonging to various individuals.

All the specimens (fig. 5-16) × 1.9



Phot. M. Czarnocka *Retouch A. Sulimski*



Phot. M. Czarnocka *Retouch A. Sulimski*

PL. II

Fig. 1. *Petenyiella zelcea* (Sulimski), rostral fragment of the skull with lower jaws, side view (no. 318/1).

Fig. 2. *Sorex subminutus* n. sp., holotype, bottom view of skull (no. 309/1).

Fig. 3. Same species, paratype, left lower jaw, outer view (no. 309/2).

Fig. 4. *Sorex minutus* Linnaeus, right lower jaw, outer view; recent.

Fig. 5. Same species from Węże 1, posterior fragment of lower jaw, outer view (no. 308/6).

Fig. 6. *Sorex* cf. *praealpinus* Heller, right lower jaw, outer view (no. 310/1).

Fig. 7. *Sorex* cf. *praearaneus* Kormos, right lower jaw, outer view (no. 307/2).

Fig. 8. *Sorex hibbardi* n. sp., holotype, left lower jaw, outer view (no. 311/1).

Fig. 9. *Sorex kretzoii* n. sp., holotype, rostral fragment of the skull with lower jaws, side view (no. 312/1).

Fig. 10. Same species, paratype, right lower jaw, inner view (no. 312/3).

Fig. 11. *Petenyia hungarica* Kormos, right lower jaw, outer view (no. 315/5).

Fig. 12. *Erinaceus europaeus* Linnaeus, right lower jaw, outer view; recent.

Fig. 13. Same species, top view of skull; recent.

Fig. 14. *Erinaceus samsonowiczi* Sulimski, right lower jaw, outer view (no. 300/1a).

Fig. 15. Same species, top view of skull (no. 300/50).

Fig. 16. Same species, palatal view of skull (no. 300/51).

Figs. 1—11 × 3; figs. 12—16 nat. size