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Teresa CZYŻEWSKA

Natural endocranial casts of *Hypolagus brachygnathus* Kormos, 1934 (*Leporidae, Lagomorpha*) from Węże I near Działoszyn (Poland)

[With 3 text-figs and pl. I]

Naturalne odlewy endocranum *Hypolagus brachygnathus* Kormos, 1934 (*Leporidae, Lagomorpha*), z Wężów koło Działoszyna (Polska)

**Abstract.** The paper contains a description of endocranial casts of *Hypolagus brachygnathus* KORMOS as well as a characterization of the brain of this species as compared with that of *Lepus* and *Oryctolagus*.

### I. INTRODUCTION

The locality Węże I is a part of cave whose vertical funnel had been filled with a deposit consisting mainly of bone-breccia. The deposit contained numerous remains of large and small mammals and other terrestrial vertebrates. Many endocranial casts were discovered there beside skeletal fragments. Up till now, description have been made of the endocranial casts of *Desmana kormosi* SCHREUDER (SYCH and RZEBIK-KOWALSKA, 1972), *Arctomeles pliocaenicus* STACH (CZYŻEWSKA, 1978), several species of *Mustelinae* (CZYŻEWSKA, 1981b), *Canidae* (CZYŻEWSKA, 1981a) and *Cervidae* (CZYŻEWSKA, 1982). *Hypolagus brachygnathus*, a representative of the *Leporidae*, is relatively frequently found in Węże. Its bony remains and dentition were discussed by SULIMSKI (1964) and SYCH (1965, 1967a). SYCH (1967b) described also four fragments of endocranial casts of *Hypolagus brachygnathus*. The aim of this paper has been to supplement SYCH's (1967b) description of the endocranum of *Hypolagus brachygnathus* basing on other specimens of endocranial casts, to try to characterize the brain of this species and to compare it with the brains of the European Hare and Rabbit.

The deposit of Węże I accumulated in several sedimentation cycles (SAMSONOWICZ 1934; GŁAZEK et al., 1973). The remains of *Hypolagus brachygnathus* were discovered in bone-breccia blocks beside the bones of *Procapreolus* (CZYŻEWSKA 1968, 1982). The probable age of the deposit containing *Hypolagus*

*brachygynathus* was estimated at around 3.3 to 4 milion years; that was a period of cooling which took place at the very beginning of the Villafranchian (the Upper Pliocene).

The terminology of BAUER and SCHOBER (1970) as well as that of STELMA-SIAK (1958) and WILLAND (1974) has been used in the description of the brain and cerebral vessels. The comparative material consisted of the skulls of Hare and Domestic Rabbit which are the property of the Natural History Museum in Wrocław. Some casts of the endocranum of the Hare and Rabbit were made of latex. The examined natural casts of *Hypolagus brachygynathus* are in the possession of the Museum of Earth, Polish Academy of Sciences, Warsaw (MZ VIII—Vn 363/1 — 5).

This work has been carried out under the scheme of Interdepartmental Project MR. II. 3.

I wish to express my gratitude to Professor W. RYDZEWSKI, Head of the Natural History Museum of the Wrocław University for his kind permission to use the skulls in the possession of the Museum for making the latex casts; I also wish to thank Mr R. ADAMSKI, M. Sc. for taking photographs of the specimens.

## II. DESCRIPTION

*Lagomorpha* BRAND 1855

Family: *Leporidae* GRAY 1821

Subfamily: *Palaeolaginae* DICE 1917

Genus: *Hypolagus* DICE 1917

*Hypolagus brachygynathus* KORMOS 1934

### Material

A damaged skull with an endocranial cast exposed on the right side, MZ VIII — Vn 363/1.

A part of a skull with an endocranial cast exposed on the right side and partly at the back on the left side, MZ VIII — Vn 363/2.

Fragment of the frontal region of an endocranial cast, MZ VIII — Vn 363/3. Fragment of a cast of the caudal region of the endocranum, the right side, MZ VIII — Vn 363/4.

Fragment of the right side of an endocranial cast, MZ VIII — Vn 363/5.

The ventral area is damaged in all the natural endocranial casts of *Hypolagus brachygynathus* KORMOS from Weże I, the exception being specimen No. 3 where a part of the frontal region can be seen from below. The cast of the cerebellum \*

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\* According to CHOINOWSKI (1958) the cerebellum in the Wild Rabbit constitutes some 13.7 per cent of the brain.

is missing in all the specimens. The casts reveal the following features of the brain structure of *Hypolagus brachygnathus*.

The cerebral hemispheres of *Hypolagus brachygnathus* KORMOS showed a marked rostral narrowing (Table I: 4, 6, 12) while the temporal part (Table I: 8) was broad at the posterior base of the zygomatic arches of the skull. The rostral edge of the hemispheres reached the back of the orbit and lay on the line of the posterior notch of the frontale separating the postorbital region of the processus supraorbitalis at the narrowest part of the frontale; the olfactory bulbs extended beyond half of the orbital length. The frontal region of the hemispheres was flattened; the external outline of the region, seen from above, was slightly concave (fig. 1, A and B). The occipital region of the hemispheres was very short.

The cast of the fossa olfactoria is roundish in shape (fig. 1, A) and wider than the rostral part of the hemispheres; thus the olfactory bulbs must all

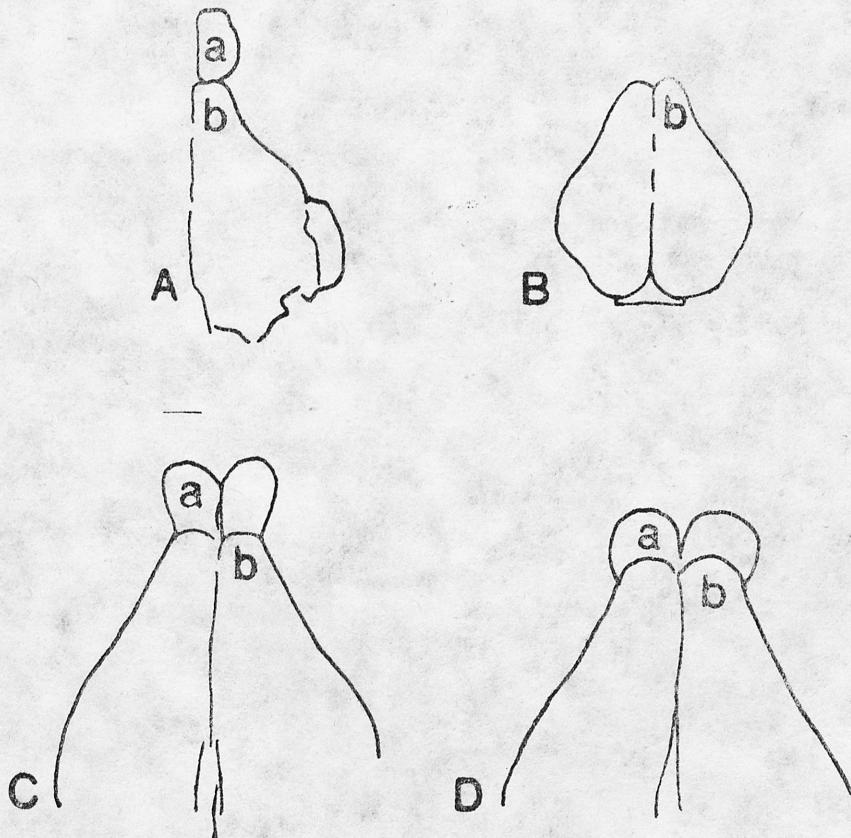


Fig. 1. Outline of endocranial casts seen from above. A—B — *Hypolagus brachygnathus* KORMOS, MZVIII—Vn 363, Weže I, Upper Pliocene,  $\times 1$ . A — Specimen no. 2, adult, B — Specimen no. 3, juvenile. C — *Oryctolagus cuniculus*, recent. D — *Lepus europaeus*, recent. a — cast of fossa olfactoria, b — frontal region. Figures C and D according to SYCH 1967b, Pl. X 1 and 2, changed.

have been at the front, before the hemispheres, the upper surface of the frontal region of the hemispheres being on the same level as the corresponding surface of the olfactory bulbs. The wholly rostral part of the end-brain was slightly bent downwards and forward (fig. 2). The height of the brain cannot be determined. However, it can be seen from specimen No 3 that the brain was highest near the lobi piriformes.

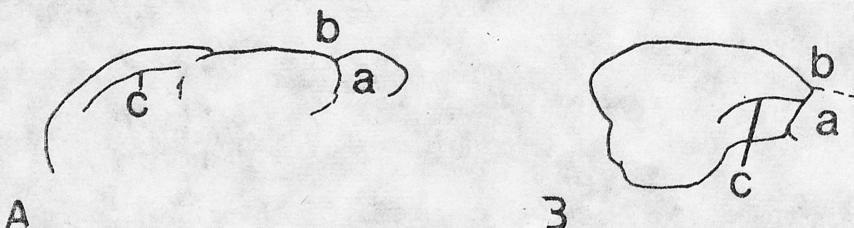


Fig. 2. Outline of endocranial casts of *Hypolagus brachygynathus* KORMOS, side view. Węże I, Upper Pliocene,  $\times 1$ . A — Specimen no. MZVIII—Vn 363/2, adult, B — Specimen no. MZVIII—Vn 363/3, juvenile. a — cast of fossa olfactoria, b — notch in the cast between frontal region and fossa olfactoria, c — sulcus rhinalis

The surface of the hemispheres was almost completely smooth except for the sulcus rhinalis which ran straight and was not very clearly marked on the casts. The sulcus rhinalis was pronounced in the anterior part of the cast and ran along the lateral surface of the end-brain, at half its height, separating the relatively large palaeopallium from the flattened hemispheres which only slightly slipped over the lateral surface.

The wide temporal region of the cerebral hemispheres ran obliquely downwards across the surface of the lobus piriformis. Because of damage, it is impossible to determine what part of the lobus piriformis was covered.

Fragments of casts of the medial cerebral artery were preserved in *Hypolagus brachygynathus* specimens Nos. 2, 3 and 5. The main trunk of the medial cerebral artery lay crosswise on the ventral surface of the brain in its rostral region. It extended from the lobus piriformis to the sulcus rhinalis (specimen No. 3, Pl. I 4b and 5c); the medial cerebral artery gave off several branches on the lateral and upper surface of the cerebral hemispheres (specimens Nos. 2, 3, 5, Pl. I 3b). Large veins were present on the upper surface of the cerebral hemispheres (Pl. I 2c and 3c).

### III. COMPARISONS

Two of the endocranial casts of *Hypolagus brachygynathus* described in this paper were uncovered inside the skulls. Skull No. 1 was over 80.3 mm. long, the braincase was 31.2 mm. wide; the width of the skull at the postorbital narrowing was 15.8 mm., the height of the braincase was about 25 mm. These dimensions fall within the range of those determined for the genus *Lepus* (MILLER,

1912). The profile of the *Hypolagus brachygnathus* skull forms a straight line in the parietal region at the back of the frontal while it arches in that of *Lepus europaeus* and *Oryctolagus cuniculus* (WALKER, 1964). The outline of the *Hypolagus brachygnathus* braincase seen from above resemble that of the European Hare and Rabbit. The suture separating the frontal and parietal regions — seen in specimen No. 1 — is bent rostrally as in the European Hare. The similarity of the skull structure of *Hypolagus brachygnathus* and the European Hare was stressed by SYCH (1965).

The posterior edge of the cerebral hemisphere of *Hypolagus brachygnathus* had a large triangular concavity, in which the lamina tecti was placed. This area is much more narrow in the Hare and Rabbit and extends further to the front. Endocranial casts of *Hypolagus brachygnathus* and the corresponding part of the skull are flattened (Pl. I 1 and 4, fig. 2 and 3), while the brain of the European Hare and Rabbit is bulking markedly, particularly so in the frontal

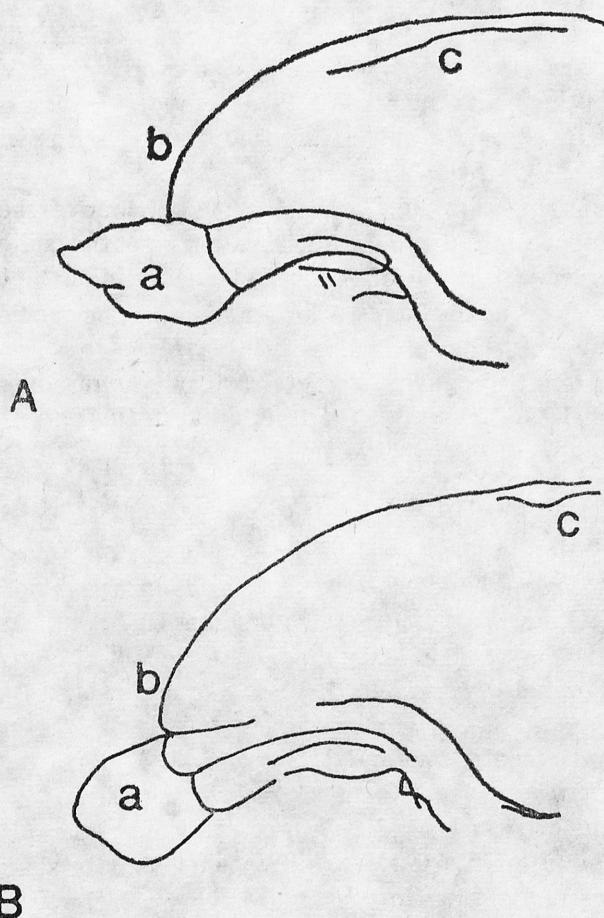


Fig. 3. Diagram of rostral part of brain. A — *Lepus europaeus*, recent,  $\times 2$ , B — *Oryctolagus cuniculus*, recent,  $\times 2, 4$ . a — bulbi olfactorii, b — rostral bulging of frontal region, c — sulcus lateralis. According to BRAUER and SCHOBER, 1970, changed

area. The frontal region is considerably narrowed towards the front. SYCH (1967 b) pointed out that the frontal region was more bulky than in the European Hare and Rabbit and that its rostral end was blunt. It appears from Table I that the cerebral hemispheres of *Hypolagus brachygnathus* are relatively more narrow than those of the European Hare and Rabbit. SYCH (1967 b) demonstrated that the olfactory bulbs in *Hypolagus brachygnathus* were better developed than those of the European Hare and Rabbit. The specimens Nos 1 and 2 described in the present paper show the olfactory bulbs of *Hypolagus brachygnathus* to be placed entirely before the anterior edge of the frontal region of the cerebral hemispheres, which is low and flattened (fig. 2), while the olfactory bulbs of the European Hare and Rabbit are partly covered by the bulging frontal region of the cerebral hemispheres (fig. 3). The jugum limitans fossae olfactoriae of *Hypolagus brachygnathus* was less pronounced than that of the European Hare. Cast No 3 shows the opening leading inside the fossa olfactoria to have been quadrangular in shape and almost vertical while the same opening in the European Hare is heart-shaped and has a more forward position. The frontal region of the brain of *Hypolagus brachygnathus* is of a more primitive character than that of the European Hare and Rabbit. The temporal region of the neopallium in the European Hare and Rabbit is larger and reaches further down the lobus piriformis than that of *Hypolagus brachygnathus*.

It can be seen from cast No. 3 that the main trunk of the medial cerebral artery of *Hypolagus brachygnathus* ran crosswise to the sulcus rhinalis as in *Oryctolagus*; other ramifications of this vessel ran through the lateral and upper surface of the cerebral hemispheres. The branches of the medial cerebral artery in the Rabbit vary considerably while those in *Hypolagus brachygnathus* do so only slightly. No multiple medial cerebral artery was discovered in *Hypolagus brachygnathus* (pl. I 4b, 5c) while it can be found in the Rabbit (WILAND, 1974).

#### IV. REMARKS

*Hypolagus brachygnathus* is a common species in the deposits of the Upper Pliocene and the Lower Pleistocene (KOWALSKI, 1958; SULIMSKI, 1964; SYCH, 1965, 1967a and b; TOBIEN, 1974). In most of the localities containing *Hypolagus brachygnathus* there also occurred the less numerous and smaller *Pliolagus*. In SYCH's opinion (1965), there are no morphological grounds to consider *Pliolagus beremendensis* KORMOS and *Pliolagus tothi* KRETZOI as species different from *Hypolagus brachygnathus* KORMOS. According to him, they represent only juvenile specimens of *Hypolagus brachygnathus*. The endocranial casts of *Hypolagus brachygnathus* from Węże I also differ somewhat in size, specimen No. 3 being apparently smaller than others and having relatively wide hemispheres (Table I: 3, 4, 8). It might be a cast of the endocranum of a young animal. The females of Rabbits and Hares are usually bigger than the males so the difference in sex might also account for the difference in size.

Table I

Measurements in mm. and ratios of endocranial casts of *Hypolagus brachygnathus* and the brains of *Lepus europaeus* and *Oryctolagus cuniculus*

No	Measurements and ratios	<i>Hypolagus brachygnathus</i> MZVIII-Vn 363			<i>Lepus europaeus</i>	<i>Oryctolagus cuniculus</i>
		1	2	3	BRAUER and SCHOBER (1970)	
1.	Maximal width of the olfactory bulbs	11	12	—	—	—
2.	Maximal length of the olfactory bulbs	8.5	7	—	—	—
3.	Maximal length of the cerebral hemispheres	40.7	38.7	29	37.5	31
4.	Maximal width of the cerebral hemispheres	27	28	26	33	28.1
5.	Length of the olfactory bulbs and cerebral hemispheres	49.2	45.7	—	—	—
6.	Anterior width of the cerebral hemispheres	7.6	8.8	7.7	—	—
7.	2 : 1	129.4	170	—	—	—
8.	3 : 4	66.3	74.2	86.7	90.4	90.7
9.	3 : 2	20.9	18.1	—	—	—
10.	5 : 3	81.7	84.7	—	—	—
11.	5 : 4	55	62.8	—	—	—
12.	4 : 6	28.1	30.7	29.6	—	—
13.	5 : 2	17.3	15.3	—	—	—

The remains of *Hypolagus brachygnathus* in Węże I include mainly postcranial skeletal bones and jaws with teeth (SULIMSKI, 1964; SYCH, 1965, 1967a), skulls or their fragments being rare. The size of the population of Rabbits and Hares increases periodically and such increases might account for the accumulation of so many remains of *Hypolagus brachygnathus* in Węże I. Contemporary Hares sometimes find shelter in caves or crevices (WALKER, 1964) and such behaviour might explain the presence of *Hypolagus* in Węże I. In this locality, *Hypolagus brachygnathus* occurs beside the species inhabiting woods as well as open space, e.g. *Procapreolus* nad many others.

Hares and Rabbits are active mainly at night or at dusk (WALKER, 1964). Sight does not play the most important role in their behaviour. Accordingly, the area of visual association connected with the visual cortex placed between the caudal parts of the sulcus lateralis and outside the sulcus is not extensive either in recent Hares and Rabbits or *Hypolagus brachygnathus* and does not reach far rostrally and sidewise. On the contrary, Hares and Rabbits have a very acute sense of smell and hearing. The olfactory region in *Hypolagus brachygnathus*,

the olfactory bulbs in particular, was extensive and it does not seem to be less large than that observed in the extant Hare. However, a more detailed assessment of the region is impossible due to the poor preservation of the cast. The external structure of the cast of *Hypolagus brachygynathus* does not allow an evaluation of the stage of development of hearing. The temporal region is large, particularly in the caudal part, both in extant Hares and Rabbits and in *Hypolagus brachygynathus* although in the latter it is markedly smaller and less bulging. The narrowed and flattened frontal region and the flat parietal region in *Hypolagus brachygynathus* give grounds for the assumption that the area of the motoric cortex and the sensory cortex were smaller than those of the European Hare or Rabbit. According to RADINSKY (1976), the expansion of the frontal region was delayed as compared with other cerebral regions and this expansion is an example of parallel evolution in many groups. The expansion of the frontal cortex in *Hypolagus brachygynathus* was clearly less advanced than that in *Lepus* and *Oryctolagus*.

Translated into English  
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#### V. REFERENCES

- BRAUER K., SCHÖBER W., 1970. Katalog der Säugetiergehirne. VEB Fischer Verl., Jena, 20 pp., 150 pls.
- CHOINOWSKI H., 1958. Vergleichende Messungen an Gehirnen von Wild- und Hauskaninchen. Zool. Anz., Leipzig, **161** (11–12): 259–271.
- CZYŻEWSKA T., 1968. Deers from Węże and their relationship with the Pliocene and recent Eurasian Cervidae. Acta Palaeont. Pol., Warszawa, **13** (4): 537–603.
- CZYŻEWSKA T., 1978. A natural cast of the endocranum of *Arctomeles pliocaenicus* STACH from Węże near Działoszyn (Poland). Acta zool. cracov., Kraków, **23** (7): 93–100.
- CZYŻEWSKA T., 1981a. Natural endocranial casts of the Canidae from Węże I near Działoszyn (Poland). Acta zool. cracov., Kraków, **25** (9): 251–260.
- CZYŻEWSKA T., 1981b. Natural endocranial casts of the Mustelinae from Węże I near Działoszyn (Poland). Acta zool. cracov., Kraków, **25** (10): 261–270.
- CZYŻEWSKA T., 1982. Natural endocranial casts of the Cervidae from Węże I near Działoszyn (Poland). Acta zool. cracov., Kraków, **26** (7): 229–240.
- GŁAZEK J., SULIMSKI A., WYSOCZAŃSKI-MINKOWICZ T., 1976. On the stratigraphic position of Węże locality (Middle Poland). Proc. 6th Int. Congr. Speleology, Olomouc, 435–442.
- KOWALSKI K., 1958. An early Pleistocene fauna of small Mammals from the Kadzień Hill in Kielce (Poland). Acta Palaeont. Pol., Warszawa, **3** (1): 1–47.
- MILLER G. S., 1912. Catalogue of the Mammals of Western Europe. British Mus. (Nat. Hist.), London, 1019 pp.
- RADINSKY L., 1976. New evidence on Ungulate brain evolution. Amer. Zool., **16**: 207.

- SAMSONOWICZ J., 1934. Zjawiska krasowe i trzeciorzędowa brekeja kostna w Wężach pod Działoszynelem. *Zabytki Przyr. Nieuż.*, Warszawa, 3: 147—158.
- STELMASIAK M., 1958. Mianownictwo anatomiczne. PZWL, Warszawa, 430 pp.
- SULIMSKI A., 1964. Pliocene *Lagomorpha* and *Rodentia* from Węże (Poland). *Acta Palaeont. Pol.*, Warszawa, 9: 149—261.
- SYCH B., RZEBIK-KOWALSKA B., 1972. Fossil endocranial cast of *Desmana kormosi* SCHREUER (*Insectivora, Mammalia*) from the Pliocene of Poland. *Acta zool. cracov.*, Kraków, 17 (2): 37—44.
- SYCH L., 1965. Fossil *Leporidae* from the Pliocene and Pleistocene of Poland. *Acta zool. cracov.*, Kraków, 10 (1): 1—88.
- SYCH L., 1967a. Unworn teeth of *Hypolagus brachygynathus* KORMOS (*Leporidae, Mammalia*). *Acta zool. cracov.*, Kraków, 12 (2): 19—25.
- SYCH L., 1967b. Fossil endocranial cast of *Hypolagus brachygynathus* (KORMOS) (*Leporidae, Mammalia*). *Acta zool. cracov.*, Kraków, 12 (3): 27—30.
- TOBIEN H., 1974. Villafranchian Mammals in Western Germany. *Mem. B. R. G. M.*, Paris, 78: 259—265.
- WALKER E. P., 1964. Mammals of the World. Hopkins Press, Baltimore, 1500 pp.
- WILAND C., 1974. Arterie mózgu ssaków. *Przegl. Zool.*, Wrocław, 18 (3): 400—416.

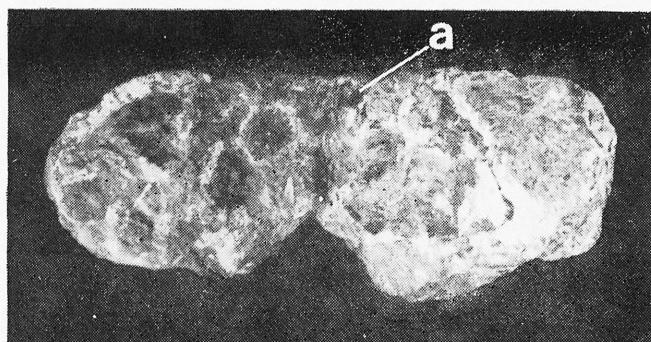
#### STRESZCZENIE

W pracy opisano naturalne odlewy endocranum *Hypolagus brachygynathus* (KORMOS) pochodzące z plioceńskiego stanowiska Węże I k. Działoszyna. Półkule mózgu tego gatunku były silnie zwężone rostralnie, a szerokie w części skroniowej. Opuszki węchowe sięgały poza połowę długości orbity. Region potyliczny półkul był bardzo krótki, a ich powierzchnia prawie zupełnie gładka. Endocranum *Hypolagus brachygynathus* porównano z budową mózgu u dzisiejszych gatunków *Leporidae*: *Lepus europaeus* i *Oryctolagus cuniculus*. Stwierdzono silniejszy rozwój opuszek węchowych i bardziej pierwotną budowę okolicy czołowej mózgu u gatunku kopalnego.

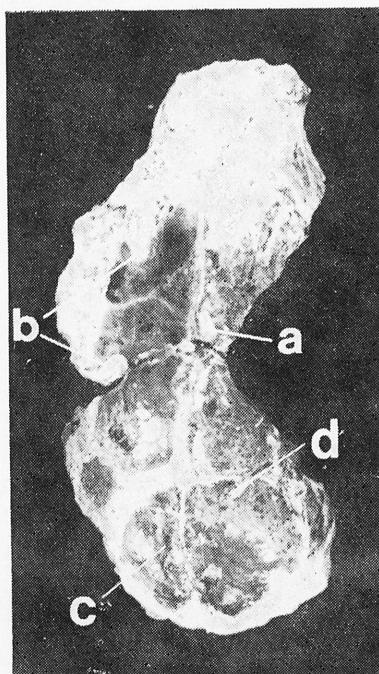
Redaktor pracy: prof. dr K. Kowalski

Plate I

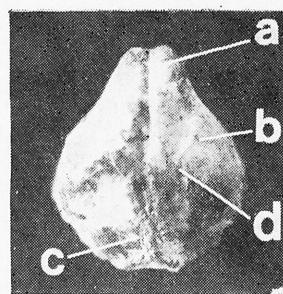
*Hypolagus brachygynathus* KORMOS, MZVIII—Vn 363, Węże I, Upper Pliocene. Endocranial casts,  $\times 1$ . 1—2 — specimen no. 2, 3—5 — specimen no. 3. 1 — right-side view, a — cast of fossa olfactoria. 2 — view from above, a — fossa olfactoria, b — notch in processus supraorbitalis, c — veins, d — sulcus lateralis. 3 — view from above, a — fissura longitudinalis cerebri, b — arteria cerebri media, c — veins, d — sulcus lateralis. 4 — right-side view, a — sulcus rhinalis, b — main trunk of arteria cerebri media. 5 — view from below, a — opening of fossa olfactoria, b — infundibulum, c — main trunk of arteria cerebri media



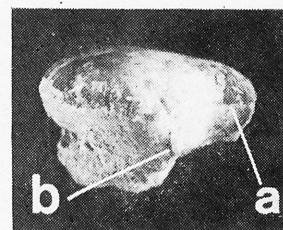
1



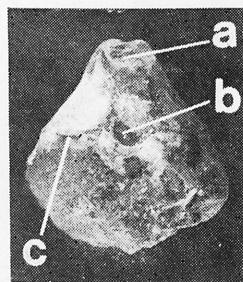
2



3



4



5

