

OSTEOLOGICAL STUDY OF A BOVINE SKELETON DISCOVERED ON THE SITE OF THE EARLY SETTLEMENT (10th C) ON TRANSYLVANIA AVENUE AT ALBA IULIA

1. *Characterization of the archaeological context*

On excavating the foundation for a block of flats on the eastern end of Transylvania Avenue on the „Romans Tableland“ on the western side of „Union Park“ in 1987, remains of archaeological interest, such as huts, storage and garbage, graves of Roman, early feudal and late medieval times (XIV—XVIII) were discovered. Out of the most important sites, pit no. 4 has offered faunistic and archaeological inventories of outstanding scientific interest which are the object of the present study.

The grain pit is dug 2,75 m deep in the adobe soil, having two compartments divided by a 30 cm wide and 25 cm thick threshold (fig. 1). After desertion it had been half filled with earth associated with pottery fragments forming the grave of a bovidae ruminant. Thrown on a right side of the trunk, with the head towards WNW and the legs towards ENE, the skull had its mandible facing south. The anterior and the posterior membres are bent, the knees brought forward and the hooves backwards (fig. 2). The vertebral column is arched externally. Above the dorsal part there were found two Roman bricks in secondary position. The animal had been laid on a bed of black earth, 1,90—2,15 m deep.

Out of the filling around the skeleton, 72 pottery fragments (3 bottoms, 62 wall and 4 brim fragments) of bowls and pots were recovered. The vessels were made on potter's wheel of fine sandy clay paste, slowly burnt. They are black and brown-grayish in colour with smut spots and remnants of food on the outer walls. The bottom of pot displays a mark in relief in the form of a 4 cm diameter circle bearing inside two diameters perpendicularly cut by a third ones. Thus an X and a P (ro) are formed which identify with the chrismon XP, paleo-Christian symbol encountered on post-Roman Dacia at Biertan, as early as the 4th C. The other fragments of pottery are ornated with grooves, wavy lines, horizontal striations, rhombic impressions done by means of small cogwheel.

According to the technical characteristics of the pottery (paste, manufacturing technique, burning, shape, profile and ornamentation) the pit nr. 4 can be dated in the 10th C (fig. 3). This site, as well as the other annexes discovered in the neighbourhood, were utilized for preserving the corn.

2. Material and method

The faunistic material is represented by one bovine skeleton preserved in a 90% proportion. The integral skeleton can therefore be reconstituted, offering possibilities for dated measurements. This fact enabled us a venture of a complete study of the bone fragments by using observation, comparison and measurements adapted to the methods of Kiessewalter, Duerst, Bökönyi and Krahmer.

The results were introduced in the tables, expressed in *mm*.

3. Description of the faunistic material

The skeleton discovered in the storage pit serving as household annex of a hut in the early feudal settlement (10th C) at Alba Iulia belongs to one single bovine.

On lifting of the damp and the fragile bones it was found that they were highly decomposed which led to difficulties in reconstruction and measurements of the cephalic area. Notwithstanding, neurocranium and the splanchnocranium are illustrated but of five disparaged fragments. By means of the osteological determinations, parts of the occiput, zygoma, frons and maxilla were identified. Because of the highly deteriorated stage of these segments measurements were not possible.

The mandible shows a higher degree of conservation, having the horizontal branches, the arches of molars and premolars and partially the vertical and bent branches, all complete (fig. 4). The body of mandibula as such, the incisive arcade and a portion of diastema are missing. The measurements of fragments and extant tooth arcades are to be found in *Table 1*.

The vertebral column is relatively well conserved. A higher degree of deterioration is present in the vertebrae of the cervical area; later on, the last three pieces (C7, 6, 5) were reconstituted (fig. 5). The dorsal area is represented by the thoracic vertebrae which include all five extant pieces. Sacrum has suffered some deterioration though the segment is only partial (fig. 6). The coccygeal area is represented by three characteristic vertebrae (fig. 7).

Ribs, under the form of double or treble fragments have offered elements for processing and partial measurements (fig. 8).

The fore-members (Thoracic) are represented by two fragments of zone skeleton in which the distal end offers all the elements necessary for a thorough osteological processing (spine, collum and glenoid, cavity determination). The left and the right stilopodiums, well preserved, were entirely measured. It should be noted that the right humerus has the articular head deteriorated (fig. 9–10). The fore-member includes the two radius bones and left ulna whereas the right ulna is fragmented. The carpus is formed by the carpal bones (pisiform, pyramidal, scaphoid, semilunar, unciform, capitular-trapezoid), in the right member. Metapodalia of the two thoracic members include the metacarpal bones, processed and measured entirely. Acropodalia are illustrated by phalanx I and II of the right side thoracic member. Phalanx III and the other pieces in the left member are missing.

The pelvic legs are represented by two fragments of the left and right coxal bones. In the right leg only the iliac blade and a portion of collum were preserved. The left coxa retains the bony extremities which outlines the acetabulum; the latter was submitted to measurements (fig. 11). The stylopodium has the femoral bones well preserved. The left femur, with its distal end incomplete, due to the loss one femoral-condyle fragment, has been only partially measured (fig. 12). The two tibia long bones are complete with all surface events well preserved.

The patella is present only in the right member which also retains the calcaneal, astragal and cuboscaphoid bones. Similarly, in the same member, the malleolar bone and phalanx I and II were identified (fig. 13).

4. Discussion of results and conclusions

The biometric study of bony remnants of the bovine skeleton allows for some observations on the morphological characters (type, body, characteristics) of the bovine skeleton. Thus, from the diagnosis of the faunistic material results that the bulk of the bone radii are untouched. The presence of some fragmentary pieces is due to degradation lifting and transportation of the material.

The size of the entire bones and the proportions between bone radii of the members have allowed for the exact determination of the girth of bovine which measured 1,55 m at withers. The skeleton belongs to a female aged 7 years, of average-robust constitution specific for the type having the tendency towards the plus variant of the species. The animal lacked horns, a genetic mutation transmitted to *Bos taurus* progeny whereas the cause of others being polykeratic is probably due to domestication.

Lines, rugosity, as well as the muscular prints identified on the bones of the skeleton reclaim the presence of rather bulky muscles, mostly in the members. These observations and that the bones of the members had the joint heads with zones of erosion lead to the conclusion that the animal as well as some other specimens of the same species, was utilized in carting and agricultural-works as meat milk source.

As already mentioned, the skeleton remnants belong to the native bovine type of *Bos taurus* well known on the pre-historic territory of Dacia beginning with the late Hallstatt up to the transformation of the Carpathian — Danubian — Pontic space into a Roman province (2nd C). During the colonization of Dacia, the colonists coming *ex toto Orbe Romano* had brought along to the northern Danube the *Bos taurus* large cattle breed. The persistence of this breed containing polled individuals, till the end of the first millennium stands witness to the existence of a sedentary population in the Transylvanian intra-Carpathian space; this population, besides agriculture, had practiced the raising and breeding of animals as a traditional concern. The population of this period dwelt in huts outfitted with ovens for bread baking, used storage pits as well as household utensils made of iron for they knew process extracting this metal from ore, identify themselves with the Romanian collectivity in the pre-Magyar early feudal settlement (9th — 10th C) at Alba Iulia. The identification of the Christian symbol XP (monogram) on the bottom side of a pot, as well as the other paleo-Christian vestiges previously discovered at *Apulum*, doubtlessly prove that the autochthonous Romanian population in the mid basin drained by the river Mureș, politically organized into a principality type of state, embraced Christianity as early as 2nd — 3rd C (Roman epoch). Thus, the study of the faunistic and archaeological material at Alba Iulia provides us with evidence beyond doubt on the existence of a sedentary Romanian population stable

on the Bălgrad settlement at the end of first millenium, anterior to the penetration of the groups of Magyar warriors via Mureş river, in the central space of Transylvania.

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APPENDIX

Table 1

Measurements of mandible segments

Item	Measurements	mm
1	Length to mandible angle	320
2	Length to the condyle of the mandible	160
3	Length of diastema	35
4	Dental length	135
5	Length of molar row	85
6	Hight of mandibular branch up to condyle	170
7	Hight to premolar 1 (P 1)	60
8	Hight of molar 1 (M 1)	70

Table 2

Measurements of the thoracic member

Scapula		right (mm)	left (mm)
1	2	4	3
1	Total length	—	400
2	Length of scapular spine	—	235
3	Highest width	—	160
4	Width of infrascapular fossa	140	139
5	Width of scapula cell	61	60
6	Length of joint cavity	55	55
7	Width of joint cavity	49	48
8	Depth of joint cavity	10	9
Humerus			
1	Highest length	305	304
2	Length of diaphysis	188	187
3	Lowest width of diaphysis	41	41
4	Minimal circumference of diaphysis	140	138
5	Minimal thickness of diaphysis	46	44
6	Width of proximal epiphysis	100	98
7	Width of distal epiphysis	81	81
8	Thickness of proximal epiphysis	91	89
9	Thickness of distal epiphysis	80	77

1	2	3	4
Radius			
1	Highest length	295	293
2	Lowest width of diaphysis	45	45
3	Width of proximal epiphysis	83	83
4	Width of distal epiphysis	74	70
5	Thickness of proximal epiphysis	45	44
6	Thickness of distal epiphysis	44	41
7	Lowest thickness of diaphysis	26	26
Metacarpus			
1	Highest length	198	196
2	Width of proximal epiphysis	62	62
3	Width of distal epiphysis	64	63
4	Lowest width of diaphysis	40	38
5	Thickness of proximal epiphysis	40	40
6	Lowest thickness of diaphysis	28	27
7	Thickness of distal epiphysis	33	32
8	Minimal perimeter of diaphysis	116	115

Table 3

Measurement of pelvic members

Coxa		right (mm)	left (mm)
1	2	3	4
1	Length of ilium	230	—
2	Width of ilium body	46	—
3	Craniocaudal diameter of acetabulum	65	—
4	Dorso-ventral diameter of acetabulum	43	—
5	Acetabulum depth	31	—
Femur			
1	Length from joint head	330	330
2	Length of diaphysis	275	273
3	Width of proximal epiphysis	120	120
4	Lowest width of diaphysis	40	38
5	Lowest width of distal diaphysis	98	—
6	Thickness of proximal epiphysis	77	—
7	Lowest thickness of diaphysis	45	—
8	Thickness of distal epiphysis	130	—
9	Lowest perimeter of diaphysis	130	—

1	2	3	4
Tibia			
1	Highest length	375	373
2	Width of proximal epiphysis	103	99
3	Lowest width of diaphysis	30	30
4	Width of distal epiphysis	65	64
5	Thickness of proximal epiphysis	74	72
6	Lowest thickness of diaphysis	45	43
7	Thickness of distal epiphysis	44	42
8	Lowest perimeter of diaphysis	120	120
Metatarsus			
1	Highest length	234	—
2	Width of proximal epiphysis	50	—
3	Lowest width of diaphysis	33	—
4	Width of distal epiphysis	60	—
5	Thickness of proximal epiphysis	42	—
6	Lowest thickness of diaphysis	30	—
7	Thickness of distal epiphysis	32	—
8	Lowest perimeter of diaphysis	110	—
Phalanx I			
1	Highest length	38	36
2	Width of proximal epiphysis	31	30
3	Width of distal epiphysis	21	20
4	Thickness of diaphysis	25	24
Ulna			
1	Width of tuberosity of the ulna	56	—
2	Thickness of tuberosity of the ulna	23	—
3	Length of process of olecranon	85	—

Table 4

Measurements of toracle (T 1—8) and lumbar (L 1—3) vertebrae

Area		Length of body	Arch diameter	Length of spinous apophysis
1	T 1	48	51	82
2	T 2	55	41	—
3	T 5	52	42	120
4	T 7	42	35	210
5	T 8	35	32	200
6	T 9	45	32	192
7	T 10	56	34	163
8	T 13	56	52	81
9	L 1	50	31	50
10	L 2	55	30	60
11	L 3	56	30	55

Table 5

Measurements of molars (M)

Item		Highest length	Highest width	Thiekness
1	M 1	55	30	20
2	M 2	57	30	21
3	M 3	57	31	21

Table 6

Measurements of ossa torsi

Item		Highest length	Highest width
1	Calcaneum	140	55
2	Astragalus	60	45

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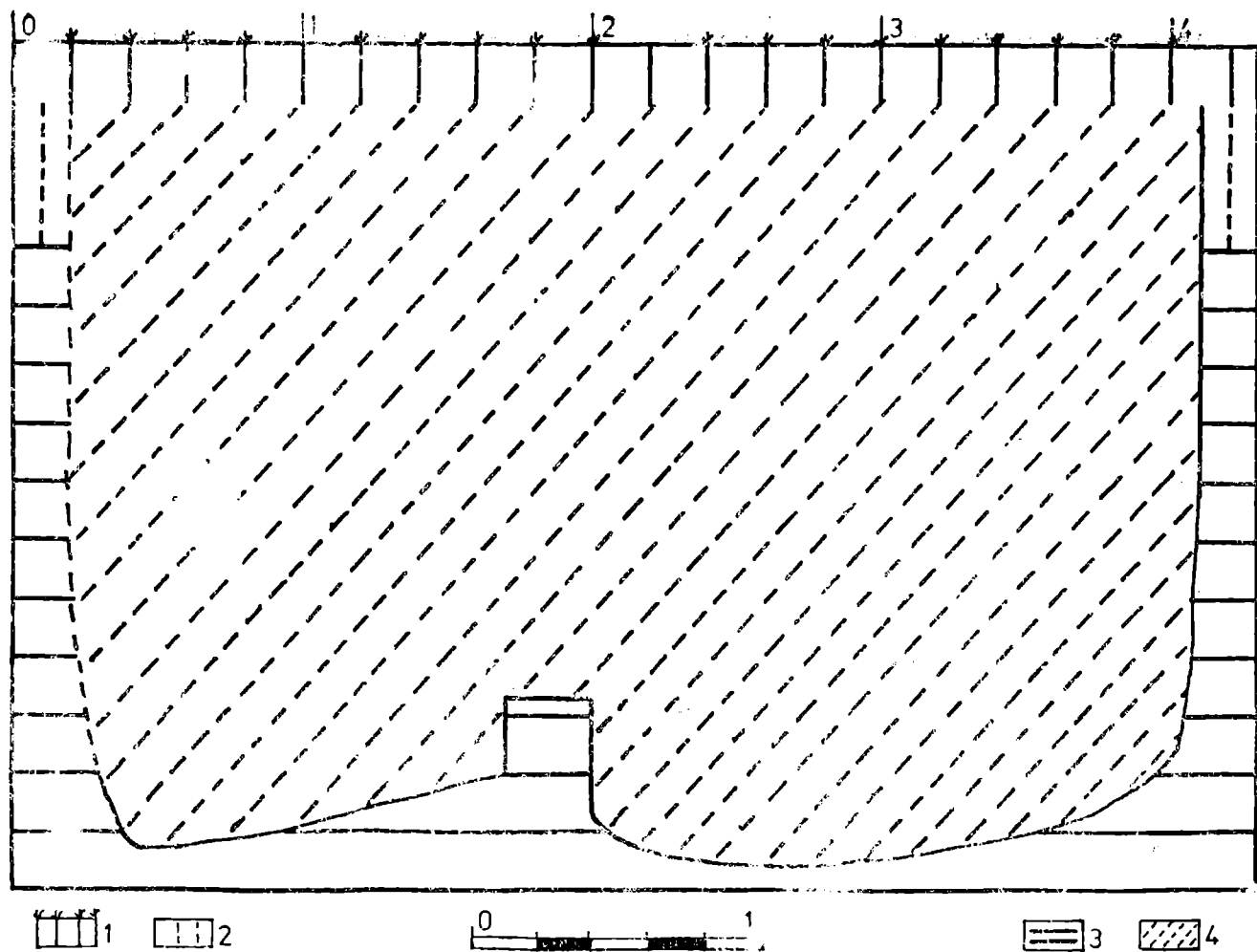


Fig. 1. Alba Iulia – „Romans' Tableland". Longitudinal profile of the grain pit: 1 vegetal humus; 2 brown-blackish stratum containing Roman vestiges; yellow alluvial clay deposit; 4 filling (black earth).

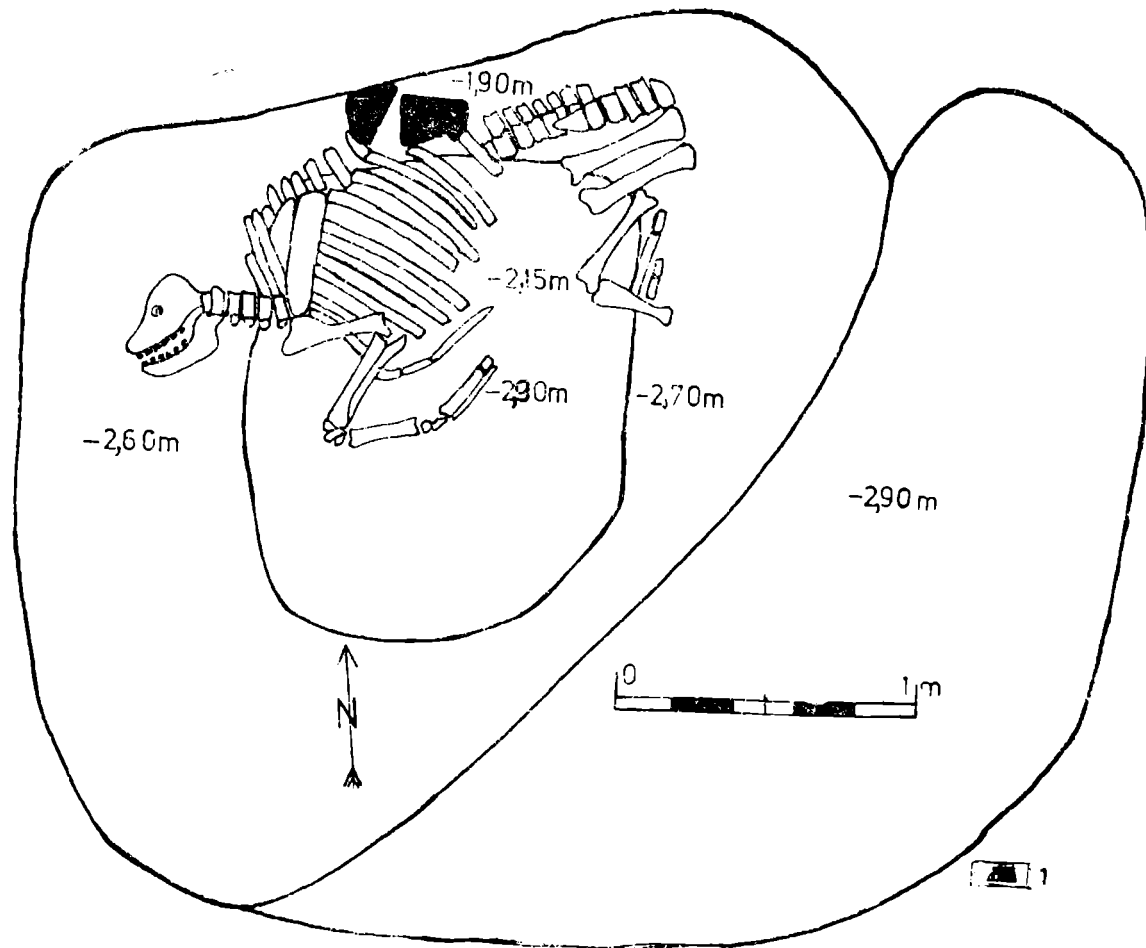


Fig. 2. Alba Iulia — „Romans' Tableland”. Layout of storage pit and *in situ* position of the bovine skeleton. 1 Roman bricks.

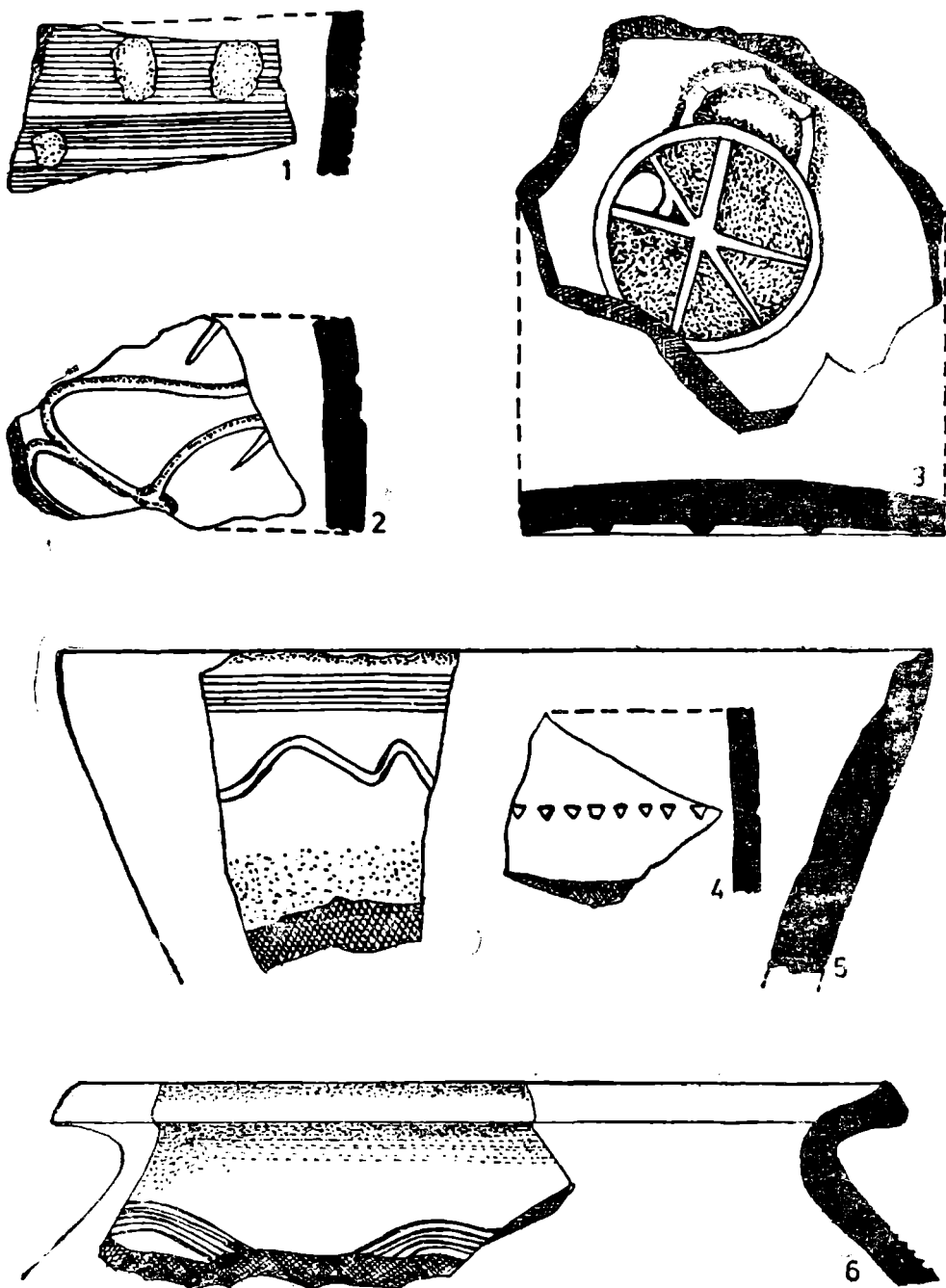


Fig. 3. *Alla In Fe* - „*Romans Tabliland*”. Pottery contained in the cereal pit (10th C):
 1–2, 4, 6 fragments of ornated pots; 3 bottom of pot bearing in relief the Christian symbol
 XP (Chrysmos); 5 tureen in the shape of truncated cone.

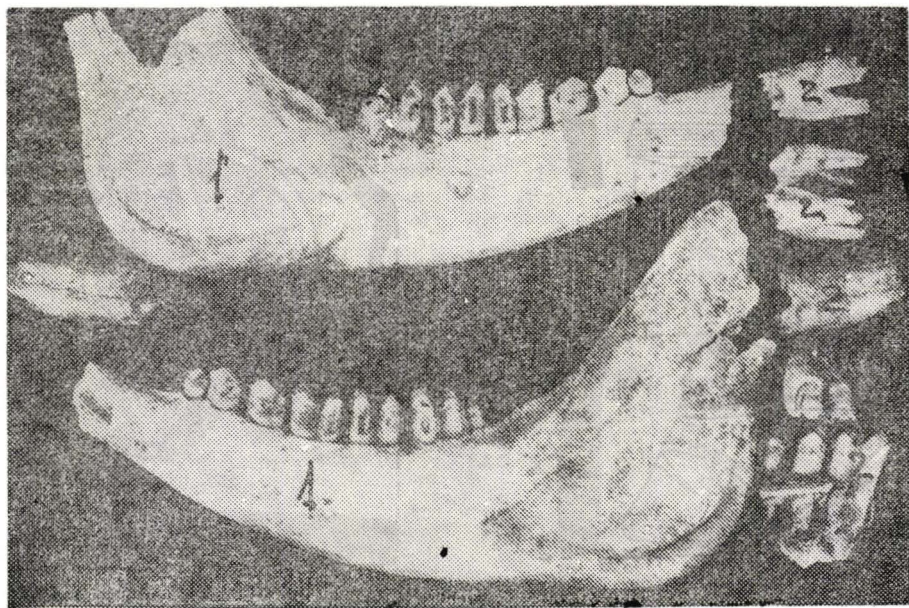


Fig. 4. *Alba Iulia* — „*Romans' Tableland*”. The mandible: 1 horizontal branches; 2 bent branches; 3 vertical branches; 4 arcades of molars and premolars



Fig. 5. Vertebral column: 1 cervical vertebrae; 2 thoracic vertebrae.



Fig. 6. Thoracic vertebrae.



Fig 7. Vertebral column 1 sacrum; 2 lumbar vertebrae; 3 coccygeal vertebrae.

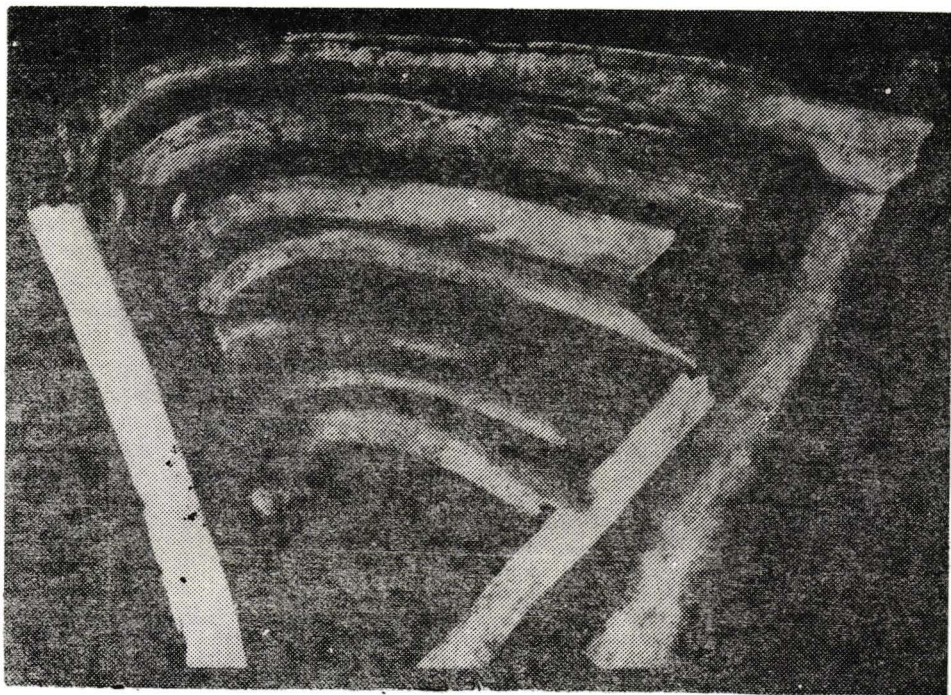


Fig. 8. Rib fragments in the right side of the trunk.

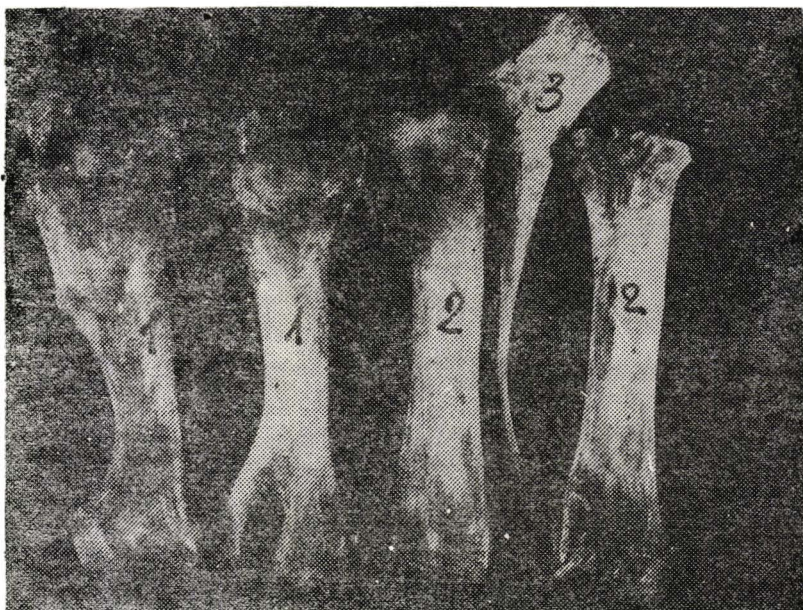


Fig. 9. Zone skeleton and left and right metapodium.

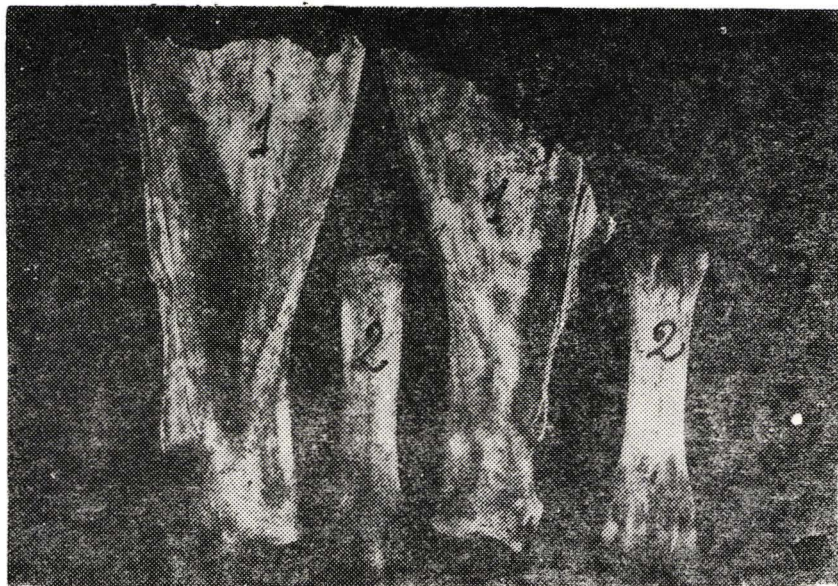


Fig. 10. Stylopodium and zeugopodium of left and right thoracic members.

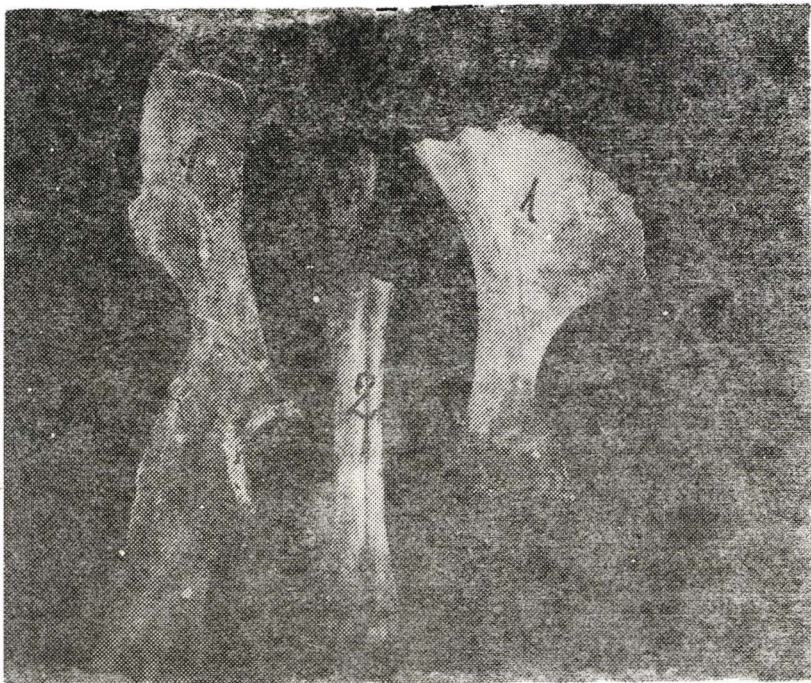


Fig. 11. Basipodium of thoracic and pelvic members and the acropodium (phalanx I and II).

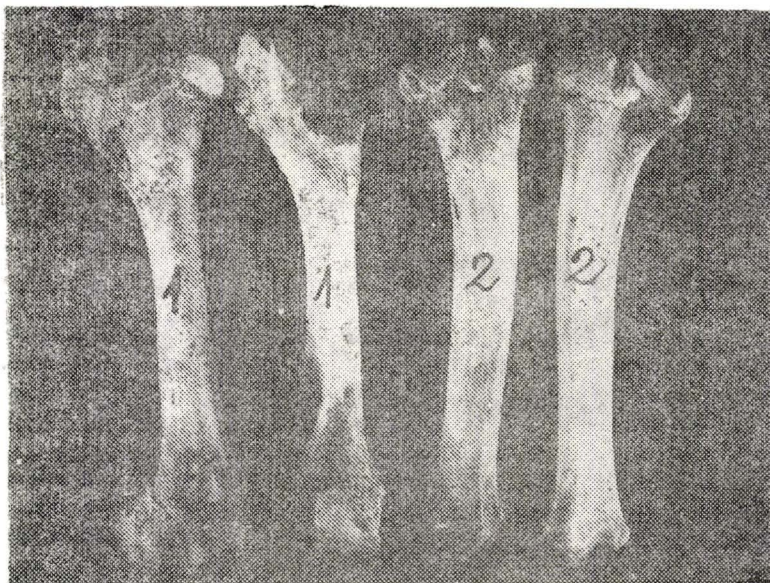


Fig. 12. Zonoskeleton of pelvic members; metapodium and patella.

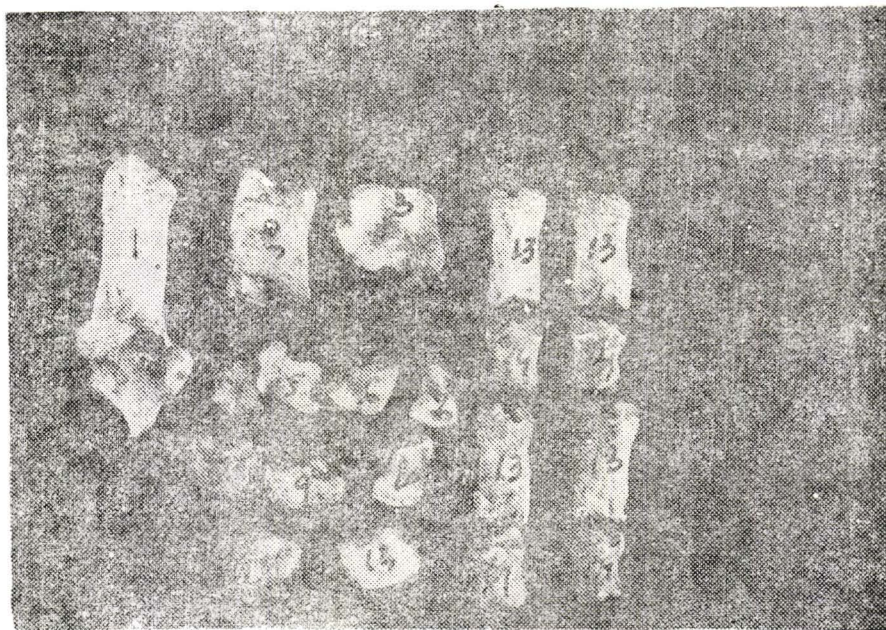


Fig. 13. Stylo- and zeugopodium of pelvic members.