Ancient Monuments Laboratory
Report 3589

THE ANIMAL BONES FROM THE MANOR SITE, GOLTHO, LINCS

R T JONES AND I RUBEN

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The Animal Bones from the Manor Site, Goltho Lincolnshire
(With some notes on differential sampling effects)

by R.T.Jones and I.Ruben (29th. January 1982)

Preamble

Goltho is the site of a deserted medieval village some 9 miles east of Lincoln. The site was excavated by Guy Beresford during the summer seasons of 1971 through to 1974 (G.Beresford 1976) and dates form circa 50 AD. to the early 15th. century.

Introduction

The animal bone material from the manor site were divided into five period groups and a further group to account for unstratified material. The groups were named following Beresford 1976 namely: Periods II (c.700-875), III/IV (c.875-1000), V (c.1000-1100), VI (c.1100-1150) and VII (mid 12th. century). Table 8. shows the context numbers associated with each of these periods.

Methods

The vertebrate remains from the manor site were examined at the Ancient Monuments Laboratory, Department of the Environment during December 1981 and January 1982. Full use was made of the Laboratories skeletal reference collection. Data recording follows the method outlined in Jones et al 1981, the initial data record being made on a semi-automatic vernier caliper attached to a teletype producing punched paper tape. The data was processed and analysed using both a Research Machines 380Z and a Cromemco Z2H utilising custom written software. Both metrical and nonmetrical archives of the animal bone information were produced and these are available at the Ancient Monuments Laboratory 23 Saville Row London W1. The bone material at the time of writing also resides with the Ancient Monuments Laboratory.

Results

A total of 2938 bones were recorded from the site. The following bones for each species were identified; cattle (Bos. sp. domestic) 550, goat (Capra hircus) 14, ovicaprid (Ovis sp./Capra sp.) 528, pig (Sus sp. domestic) 368, horse (Equus sp. domestic) 57, red deer (Cervus elaphus) 17, fallow deer (Dama dama) 33, roe deer (Capreolus capreolus) 75, large ungulate 531, small ungulate 571, dog (Canis sp. domestic) 15, rabbit (Oryctolagus cuniculus) 4, hare (Lepus sp.) 10, badger (Meles meles) 1, domestic fowl (Gallus sp. domestic) 100, goose (Anser sp.) 55, domestic duck/mallard (Anas sp.) 10, carrion crow (Corvus corone) 1, common buzzard (Buteo buteo) 1, cod (Gadus morhua) 17, unidentified mammal fragments 164 and unidentified bird bone fragments 4. Only species from this list upto and including dog are considered further (table 1.). Species listed after dog are presented in table 9. on a period by period basis. The representation of species for each period group are presented in tables 2. to 6 and in table 7. for the unstratified material.

Discussion

There are two main areas of interest associated with the faunal remains from Goltho, these are the seeming inconsistency of the sampling stategy and the changing proportions of species through time.

Sampling

It is clear from the bone assemblage that mainly whole bones and bones with an obvious joint on them have been selected for retention during excavation.Further, it is also apparent that only fairly large fragments of bone, greater than 6 centimetres long, have been selected at the time of

excavation. For this reason we have excluded from the analysis species which have bones less than 6 centimetres in length. These species are presented in table 9. All of the bone was well preserved. Normally the faunal collection from an average site has approximately 50 per. cent. unidentifiable fragments, this percentage increasing as the excavation progresses probably due to the increase in familiarity with the site of the "diggers". The yearly sequence of excavation at Goltho, table 10., viewed in this light is remarkable. It begins in 1971 with approximately expected levels of fragmentation, considering the low overall sample size and these are maintained through 1972. By 1973 the fragmentation proportion is dropping and by the final seasons' work in 1974 there is a dramatic reduction of fragments. It is also of interest that in 1974 three phases of the site were excavated, the last excavated having the least fragments. This changing fragmentation pattern from year to year and period to period nullifies all but the crudest interpretation for the faunal remains from the site.

The fauna

Considering the poor sampling of the Goltho animal bones it is possible tentatively to suggest the following proportions of different species. Taking the site as a whole the most well represented species were cattle (21.5%) and ovicaprids (20.6%). Pig representing 14.4% of the assemblage and considering its smaller size was probably of similar importance. Horse is not usually present in large numbers but at Goltho it seems to be fairly well represented, making up 2.2% of the collection. Considering the deer as a whole, they represent 4.9%, again an unexpectedly high proportion of the bones, roe deer being the predominant species. This pattern remains similar when the site is divided into its period groups but with horse dropping in numbers after period group III/IV, though this could be a reflection of the inconsistent samples. Some change occurs in period group VI in which the ovicaprid bones predominate (23.8%). In all there were nine goat horn cores from the site, they were all of the long curved form often seen in collections from sites of this date (plate 1.). However they only occurred in period groups II and V. They all appeared to have deliberately removed from the skull. This would indicate that there may have been some form of horn working on the site. Fowl occur in all periods and goose in all but period VII.

The changing importance of deer through time at Goltho is of interest. Considering tables 2 to 6 inclusive; no deer are recorded from period II (possibly due to the sampling). Red fallow and roe deer occur in period groups III to VI with the most frequent species changing from fallow in group III/IV to roe in groups V and VI. In periods V and VI a small number of roe deer bones show signs of butchery in the form of knife and chop marks. These marks are not apparent on the other species of deer or in other periods. Butchery marks were recorded on all the domestic species, though no attempt has been made to analyse them due to the poor fragment count. In plate 2. two interesting things can be seen: firstly, that three of the five ovicaprid tibia, on the left of the plate, are broken part way down the midshaft (this point of breakage was very common through-out the site). Secondly, that these five tibia and (from left to right) a roe deer metatarsal, a roe deer radius and an ovicaprid radius are all pierced to some degree, at the distal end in the case of the ovicaprid tibia and at the proximal end in the other three bones . These holes have been noted in other sites, Wall 1980. From the varying degree of perforation on either one side or both, our impression is that they are made by dogs using their canine teeth. Plate 3. shows a common form of splitting of metapodials, usually those of cattle and in some cases those of ovicaprid.In this case, a cow metatarsal has been cleaved from the distal articulation towards the proximal end along the bones' axis and the result is

that a reasonably large splinter of bone is cut off. It is possible that this is a primary stage in the manufacture of some form of bone object. Gnawing of the bones probably by dogs is also common, perhaps indicating that refuse was left lying around the site.

Pathology

There were 39 recorded pathological bones, 31 of which were of dental pathology and 8 were of axial pathology. Only four of these are of sufficient interest or severity to be described here. Plate 4. shows a horse metacarpal form context 916 that has exostosis around the distal midshaft. X-radiography showed that this extra bone was associated only with the outside of the bone. A cattle metatarsal and associated tarsal bones, from context 916, were ankylosed together. This condition is referred to in Baker and Brothwell 1980 fig. 11 page 119 and is relatively common . Plate 5. shows a large ungulate rib with large hole on the caudal intercostal surface immediately below the tubercle. The hole is smooth and penetrates almost through to the cranial surface.This may be a congenital abnormality. The absence of column three of the third lower molar in cattle is relatively common and at Goltho it occurs twice, once in period II and once in the unstratified group. The specimen in plate 6. shows a particularly nice example of this, with the column totally missing.

References

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Table 1. The numbers of mammalian bones from different species and different parts of the skeleton for the whole site.

	Cattle	Goat	Ovicaprid	Pig	Horse	Red Deer	Fallow Deer	Roe Deer	Large Ung	Small Ung	Dog	Total
Skull	14	-	11	51	2	-	1	2	1	-	-	82
Jaw	70	-	82	137	4	-	7	7	8	1	7	323
Scapula	32	-	38	12	1	-	1	4	9	21	-	118
Humerus	38	-	77	28	7	-	1	4	8	6	-	169
Radius	51	-	78	21	2	-	2	13	6	3	-	176
Ulna	20	-	7	22	-	-	-	-	2	-	-	51
Metacarpal	68	4	13	-	8	-	1	11	-	-	-	105
1st Phalanx	22	-	-	1	6	-	-	-	-	-	-	29
2nd Phalanx	5	-	-	-	1	-	-	-	-	-	-	6
3rd Phalanx	1	-	-	-	1	-	-	-	-	-	-	2
Os Coxae	29	-	41	10	2	-	-	3	13	23	-	121
Femur	24	-	16	1	2	2	-	-	19	30	2	96
Tibia	31	-	130	34	8	2	7	13	20	40	5	290
Fibula	-	-	-	6	-	-	-	-	-	-	-	6
Calcanium	9	-	8	3	1	4	3	3	2	-	-	33
Astragulus	27	-	4	-	2	5	-	-	1	-	-	39
Centroquartal	1	-	-	-	-	-	-	-	-	-	-	1
Metatarsal	77	1	13	-	6	-	7	11	-	-	-	115
Horn Core	26	9	10	-	-	-	-	-	-	-	-	45
Antler	-	-	-	-	-	2	2	4	-	-	-	8
Antler Tine	-	-	-	-	-	2	1	-	-	-	-	3
Rib	-	-	-	-	-	-	-	-	207	121	-	328
Cervical Vert	-	-	-	1	-	-	-	-	11	7	-	19
Atlas	1	-	-	1	-	-	-	-	4	4	-	10
Axis	-	-	-	-	-	-	-	-	5	6	-	11
Thoracic Vert	-	-	-	1	-	-	-	-	79	15	-	95
Lumber Vert	-	-	-	-	-	-	-	-	28	22	-	50
Sacrum	3	-	-	-	-	-	-	-	1	-	-	4
Caudal Vert	1	-	-	-	-	-	-	-	-	-	-	1
Hyoid	-	-	-	-	-	-	-	-	1	-	-	1
Metapodial	-	-	-	39	4	-	-	-	-	-	1	44
Fragments	-	-	-	-	-	-	-	-	106	72	-	178
Total	550	14	528	368	57	17	33	75	531	371	15	2559
% Contrbution	21.5	0.5	20.6	14.4	2.2	0.7	1.3	2.9	20.8	14.5	0.6	100

Table:2 Period II

	Cattle	Goat	Ovicaprid	Pig	Horse	Large Ung	Total
Skull	1	-	-	-	-	-	1
Jaw	11	-	10	2	-	-	23
Scapula	1	-	-	-	-	-	1
Humerus	2	-	-	-	1	-	3
Radius	4	-	-	-	-	-	4
Metacarpal	8	-	1	-	3	-	12
1st Phalanx	-	-	-	-	1	-	1
Femur	-	-	-	-	-	1	1
Tibia	-	-	-	3	-	-	3
Astragulus	1	-	-	-	-	-	1
Metatarsal	15	-	1	-	1	-	17
Horn Core	5	2	-	-	-	-	7
Rib	-	-	-	-	-	1	1
Total	48	2	12	5	6	2	75
% Contribution	64	2.7	16	6.6	8	2.7	100

Table:3 Periods III/IV

	Cattle	Goat	Ovicapid	Pig	Horse	Red Deer	Fallow Deer	Roe Deer	Large Ung	Small Ung	Dog	Total
Skull	-	-	-	1	-	-	-	-	-	-	-	1
Jaw	9	-	10	1	1	-	-	1	-	-	1	23
Scapula	2	-	-	-	-	-	-	-	-	-	-	2
Humerus	1	-	-	1	-	-	-	-	-	-	-	2
Radius	8	-	-	-	-	-	-	1	-	-	-	9
Metacarpal	11	1	-	-	1	-	-	-	-	-	-	13
1st Phalanx	-	-	-	-	1	-	-	-	-	-	-	1
Os Coxae	1	-	1	-	1	-	-	-	-	-	-	3
Femur	3	-	-	-	1	-	-	-	-	-	-	4
Tibia	2	-	1	1	1	-	-	-	-	-	-	5
Fibula	-	-	-	1	-	-	-	-	-	-	-	1
Calcanium	-	-	-	-	-	1	-	-	-	-	-	1
Astragulus	1	-	-	-	1	-	-	-	-	-	-	2
Metatarsal	10	-	4	-	1	-	-	-	-	-	-	15
Horn Core	7	-	1	-	-	-	-	-	-	-	-	8
Antler	-	-	-	-	-	-	2	-	-	-	-	2
Antler Tine	-	-	-	-	-	-	1	-	-	-	-	1
Rib	-	-	-	-	-	-	-	-	4	-	-	4
Thoracic Vert	-	-	-	-	-	-	-	-	4	-	-	4
Fragment	-	-	-	-	-	-	-	-	-	4	-	4
Total	55	1	17	5	8	1	3	2	8	4	1	105
% Contribution	52.5	0.9	16.2	4.8	7.6	0.9	2.9	1.9	7.6	3.8	0.9	100

Table:4 Period V

	Cattle	Goat	Ovicaprid	Pig	Horse	Red Deer	Fallow Deer	Roe Deer	Large Ung	Small Ung	Dog	Total
Skull	9	-	3	31	2	-	-	1	-	-	-	46
Jaw	35	-	20	73	2	-	6	6	3	-	6	151
Scapula	11	-	9	4	-	-	1	2	1	3	-	31
Humerus	20	-	20	16	2	-	1	3	2	1	-	65
Radius	13	-	20	8	-	-	2	10	2	-	-	55
Ulna	8	-	2	10	-	-	-	-	1	-	-	21
Metacarpal	24	-	4	-	1	-	1	8	-	-	-	38
1st Phalanx	10	-	-	1	1	-	-	-	-	-	-	12
2nd Phalanx	4	-	-	-	-	-	-	-	-	-	-	4
3rd Phalanx	-	-	-	-	1	-	-	-	-	-	-	1
Os Coxae	18	-	7	5	1	-	-	-	2	5	-	38
Femur	7	-	2	1	1	1	-	-	8	3	1	24
Tibia	15	0	47	11	4	2	6	3	7	10	3	108
Calcanium	4	-	3	-	-	1	2	3	-	-	-	13
Astragulus	15	-	1	-	-	1	-	-	1	-	-	18
Centroquartal	1	-	-	-	-	-	-	-	-	-	-	1
Metatarsal	28	-	4	-	3	-	6	8	-	-	-	49
Horn Core	11	7	3	-	-	-	-	-	-	-	-	21
Antler	-	-	-	-	-	1	-	3	-	-	-	4
Antler Tine	-	-	-	-	-	2	-	-	-	-	-	2
Rib	-	-	-	-	-	-	-	-	50	29	-	79
Cervical Vert	-	-	-	1	-	-	-	-	2	3	-	6
Atlas	1	-	-	1	-	-	-	-	2	2	-	6
Axis	-	-	-	-	-	-	-	-	2	1	-	3
Thoracic Vert	-	-	-	-	-	-	-	-	20	1	-	21
Lumber Vert	-	-	-	-	-	-	-	-	2	5	-	7
Metapodial	-	-	-	15	1	-	-	-	-	-	-	16
Fragments	-	-	-	-	-	-	-	-	13	10	-	23
Total	234	7	145	177	19	8	25	47	118	73	10	863
% Contribution	27.1	0.8	16.8	20.5	2.2	0.9	2.9	5.4	13.7	8.5	1.2	100

Table:5 Period VI

	Cattle	Ovicaprid	Pig	Horse	Red Deer	Fallow Deer	Roe Deer	Large Ung	Small Ung	Dog	Total
Skull	3	8	17	-	-	1	1	1	-	-	31
Jaw	7	30	55	1	-	-	-	5	1	-	99
Scapula	18	28	8	1	0	0	2	7	18	-	82
Humerus	11	57	11	2	-	-	1	6	5	-	93
Radius	19	58	13	1	-	-	2	4	3	-	100
Ulna	12	5	12	-	-	-	-	1	-	-	30
Metacarpal	10	6	-	1	-	-	2	-	-	-	19
1st Phalanx	5	-	-	2	-	-	-	-	-	-	7
2nd Phalanx	-	-	-	1	-	-	-	-	-	-	1
3rd Phalanx	1	-	-	-	-	-	-	-	-	-	1
Os Coxae	10	33	5	-	-	-	3	11	18	-	80
Femur	13	14	-	-	1	-	-	8	25	1	62
Tibia	9	74	18	-	-	1	10	13	30	2	157
Fibula	-	-	5	-	-	-	-	-	-	-	5
Calcanium	4	5	3	1	2	1	-	2	-	-	18
Astragulus	6	3	-	1	4	-	-	-	-	-	14
Metatarsal	13	1	-	1	-	1	2	-	-	-	18
Horn Core	1	6	-	-	-	-	-	-	-	-	7
Antler	-	-	-	-	1	-	1	-	-	-	2
Rib	-	-	-	-	-	-	-	151	92	-	243
Cervical Vert	-	-	-	-	-	-	-	8	4	-	12
Atlas	-	-	-	-	-	-	-	2	2	-	4
Axis	-	-	-	-	-	-	-	2	5	-	7
Thoracic Vert	-	-	1	-	-	-	-	53	14	-	68
Lumber Vert	-	-	-	-	-	-	-	23	17	-	40
Sacrum	3	-	-	-	-	-	-	1	-	-	4
Caudal Vert	1	-	-	-	-	-	-	-	-	-	1
Hyoid	-	-	-	-	-	-	-	1	-	-	1
Metapodial	-	-	24	2	-	-	-	-	-	1	27
Fragment	-	-	-	-	-	-	-	86	57	-	143
Total	146	328	127	14	8	4	24	385	291	4	1376
% Contribution	10.6	23.8	12.5	1	0.6	0.3	1.7	28	21.1	0.3	100

Table:6 Period VII

	Cattle	Goat	Ovicaprid	Pig	Horse	Fallow Deer	Large Ung	Small Ung	Total
Skull	1	-	-	1	-	-	-	-	2
Jaw	2	-	-	4	-	1	-	-	7
Scapula	-	-	1	-	-	-	1	-	2
Humerus	1	-	-	-	-	-	-	-	1
Metacarpal	1	2	-	-	1	-	-	-	4
1st Phalanx	2	-	-	-	-	-	-	-	2
Femur	-	-	-	-	-	-	2	-	2
Tibia	1	-	2	-	1	-	-	-	4
Astragulus	1	-	-	-	-	-	-	-	1
Metatarsal	2	-	1	-	-	-	-	-	3
Rib	-	-	-	-	-	-	1	-	1
Thoracic Vert	-	-	-	-	-	-	1	-	1
Lumber Vert	-	-	-	-	-	-	2	-	2
Fragment	-	-	-	-	-	-	7	1	8
Total	11	2	4	5	2	1	14	1	40
% Contribution	27.5	5	10	12.5	5	2.5	35	2.5	100

Table:Z Unstratified

	Cattle	Goat	Ovicaprid	Pig	Horse	Roe Deer	Large Ung	Small Ung	Total
Skull	-	-	-	1	-	-	-	-	1
Jaw	6	-	12	2	-	-	-	-	20
Humerus	1	-	-	-	2	-	-	-	3
Radius	7	-	-	-	1	-	-	-	8
Metacarpal	14	1	2	-	1	1	-	-	19
1st Phalanx	5	-	-	-	1	-	-	-	6
2nd Phalanx	1	-	-	-	-	-	-	-	1
Femur	1	-	-	-	-	-	-	2	3
Tibia	4	-	6	1	1	-	-	-	12
Calcanium	1	-	-	-	-	-	-	-	1
Astragulus	3	-	-	-	-	-	-	-	3
Metatarsal	9	1	2	-	-	1	-	-	13
Horn Core	2	-	-	-	-	-	-	-	2
Axis	-	-	-	-	-	-	1	-	1
Thoracic Vert	-	-	-	-	-	-	1	-	1
Lumber Vert	-	-	-	-	-	-	1	-	1
Metapodial	-	-	-	-	1	-	-	-	1
Total	54	2	22	4	7	2	3	2	96
% Contribution	56.2	2.1	22.9	4.2	7.3	2.1	3.1	2.1	100

Table: 8 Context numbers associated with each period

Period	II	III/IV	V	VI	VII	Unsrat.
Context Nos	955	879	869	843	802	946
	980	882	870	845	807	951
	983	952	871	848	808	971
	988	954	873	849	809	972
	991	956	874	852	810	975
	992	957	875	853	814	976
	993	958	876	854	815	1029
	994	959	877	857	816	
	996	963	878	858	833	
	1074	964	880	859	836	
		969	881	861		
		973	883	868		
		998	884	892		
		1005	885	898		
		1006	887			
		1007	889			
		1008	890			
		1012	891			
		1013	894			
		1015	895			
		1018	897			
		1026	899			
		1034	901			
		1064	908			
			910			
			911			
			912			
			913			
			914			
			915			
			916			
			918			
			919			
			921			
			922			
			923			
			928			
			930			
			931			
			933			
			937			
			938			
			939			
			940			
			942			
			945			
			948			
			949			
			950			
			968			
			974			
			1004			
			1031			
			1060			

Table:9 Number of bones per period of all species not in Table:1

	II	III/IV	V	VI	VII	Unsrat	Total
Hare	-	-	1	9	-	-	10
Rabbit	-	-	2	1	-	1	4
Badger	-	1	-	-	-	-	1
Fowl	1	1	36	57	1	4	100
Goose	2	1	15	47	-	-	65
Domestic Duck/ Mallard	-	1	5	4	-	-	10
Carrion Crow	-	-	1	-	-	-	1
Common Buzzard	-	-	1	-	-	-	1
Cod	-	-	1	16	-	-	17
Total	3	4	62	134	1	5	209

Table:10 Variation in fragment recovery

Year of excavation	Period	*Total of unident. fragments	Total fragments recovered	% of fragments
1971	VII	17	43	39.5%
1972	VI	698	1525	45.2%
1973	V	329	1066	30.9%
1974	III/IV	19	116	16.4%
	II	3	79	3.8%

* Unidentified fragments here are taken to include unidentified mammal fragments, large and small ungulate fragments.

Plate 1. Goat horn core

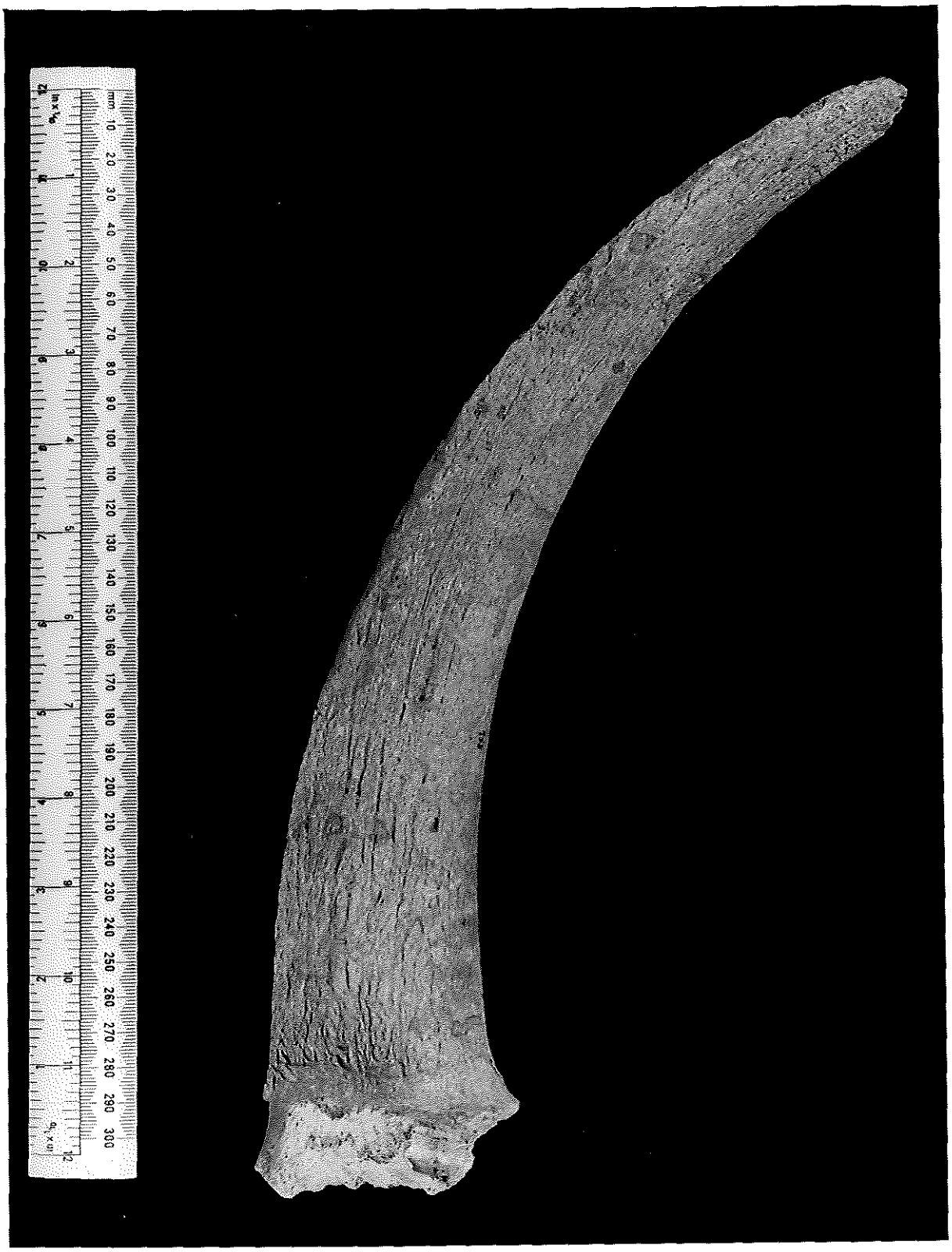

Plate 2. Perforated ovicaprid tibia and radii and roe deer metatarsal and ra

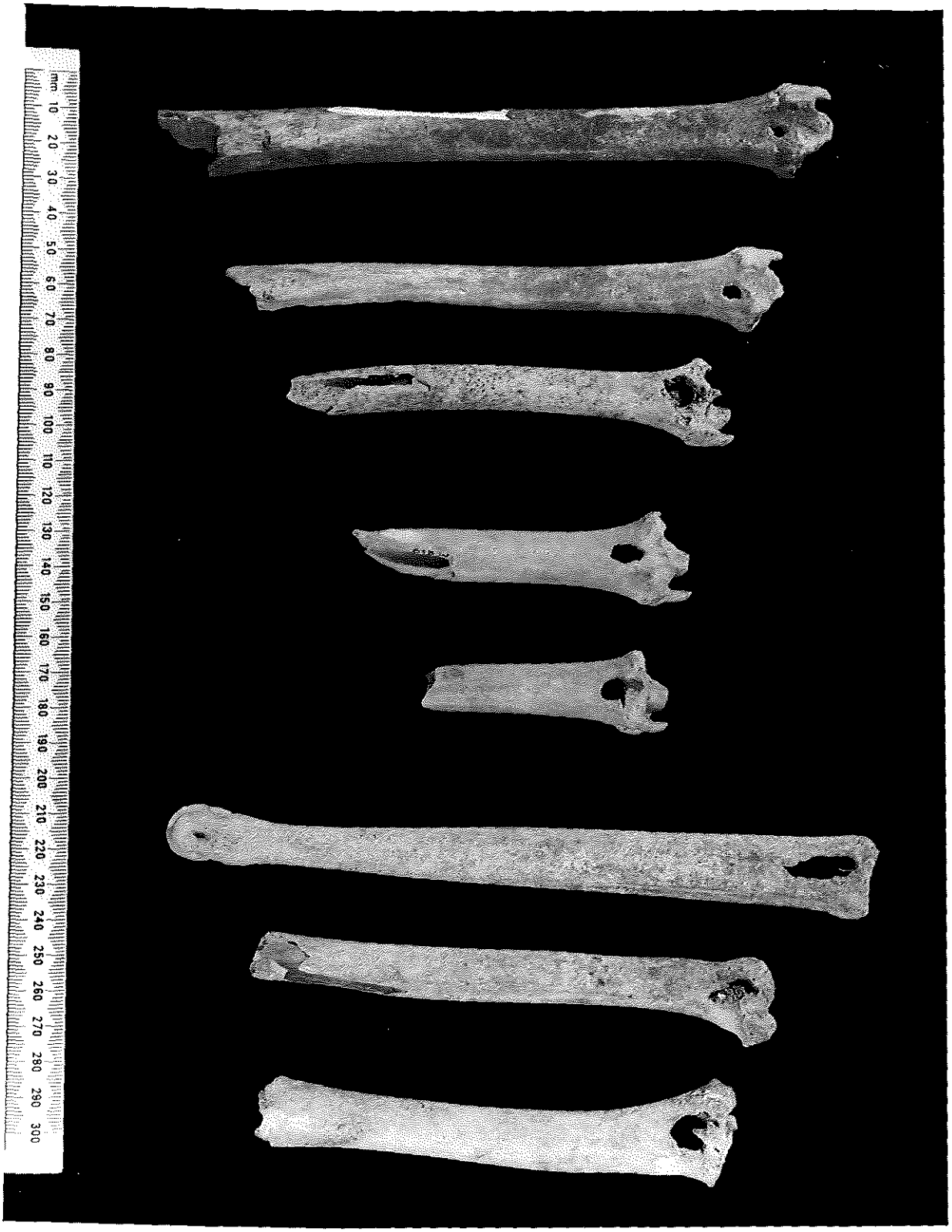

Plate 3. A split cattle metatarsal

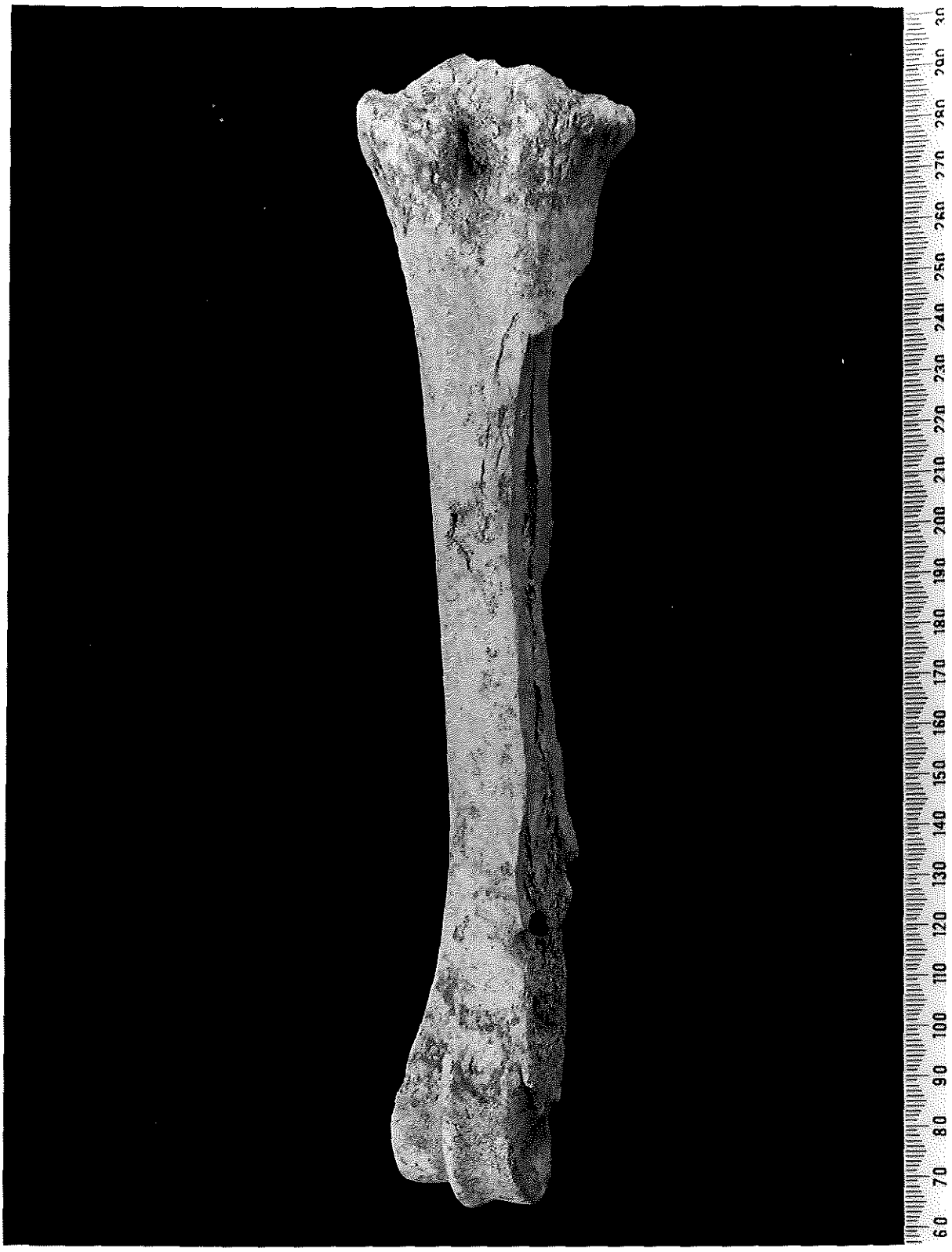

Plate 3. A split cattle metatarsal

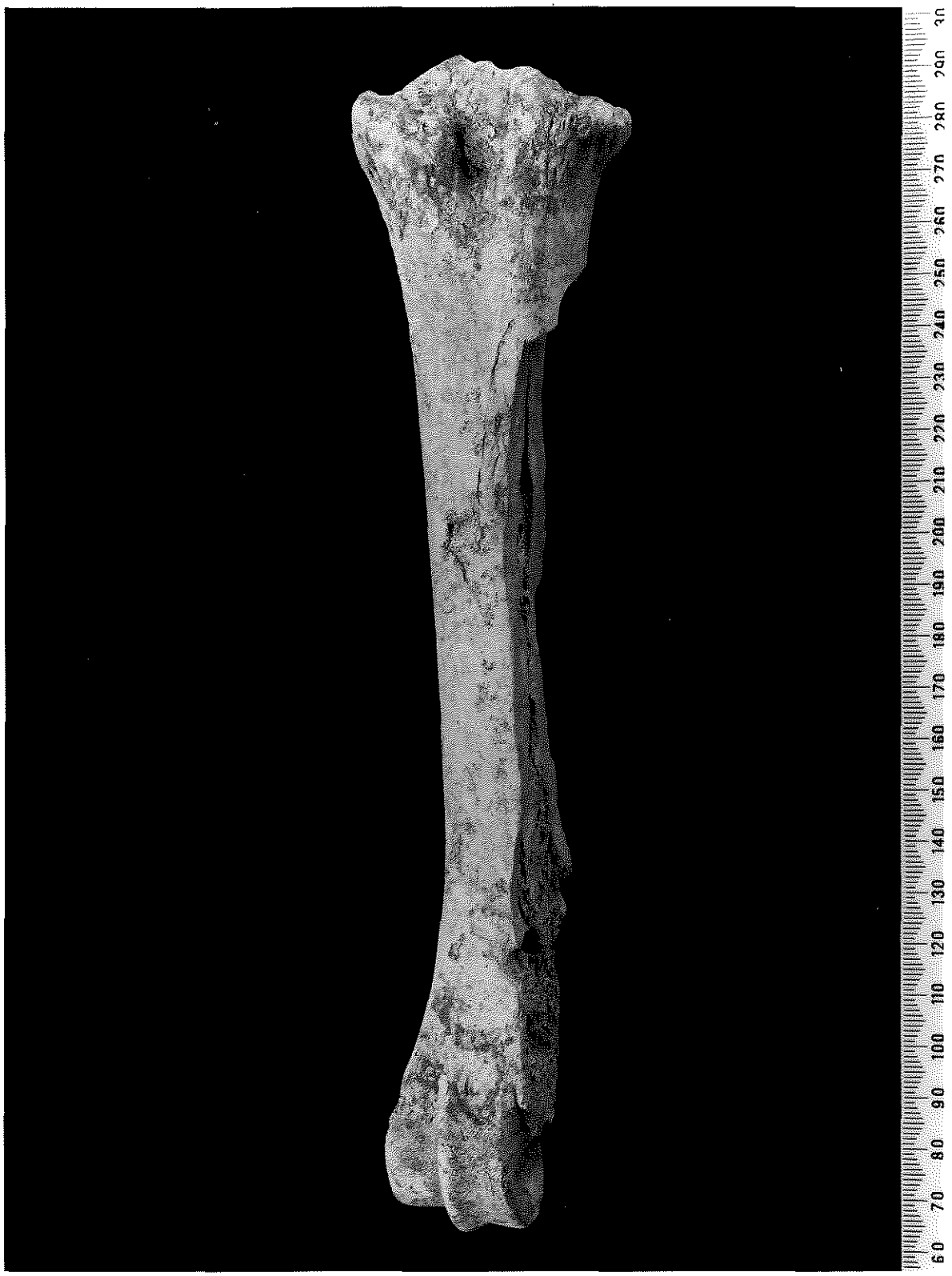

Plate 4. A pathalogical horse metacarpal

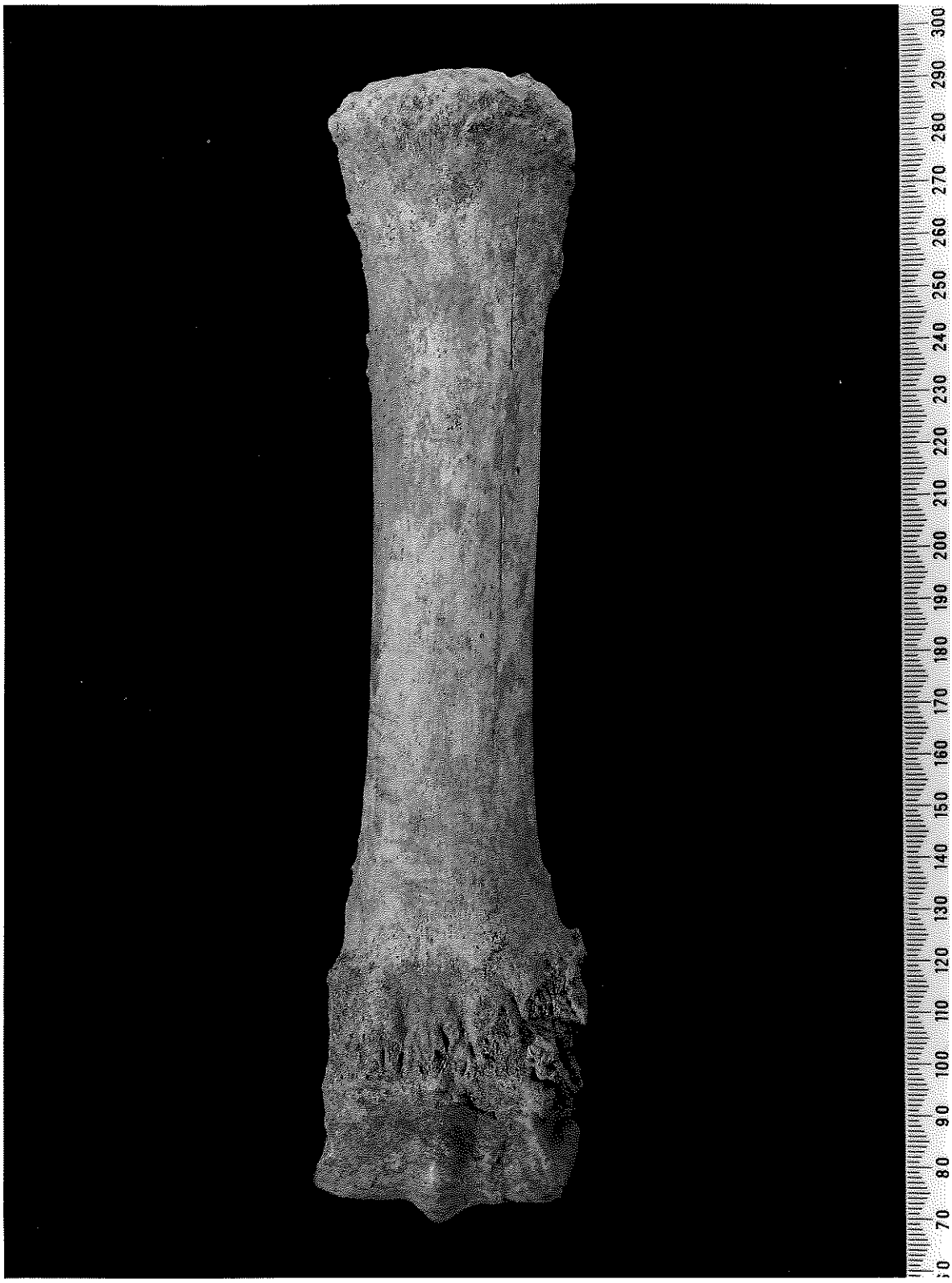

Plate 5. A pathological large ungulate rib

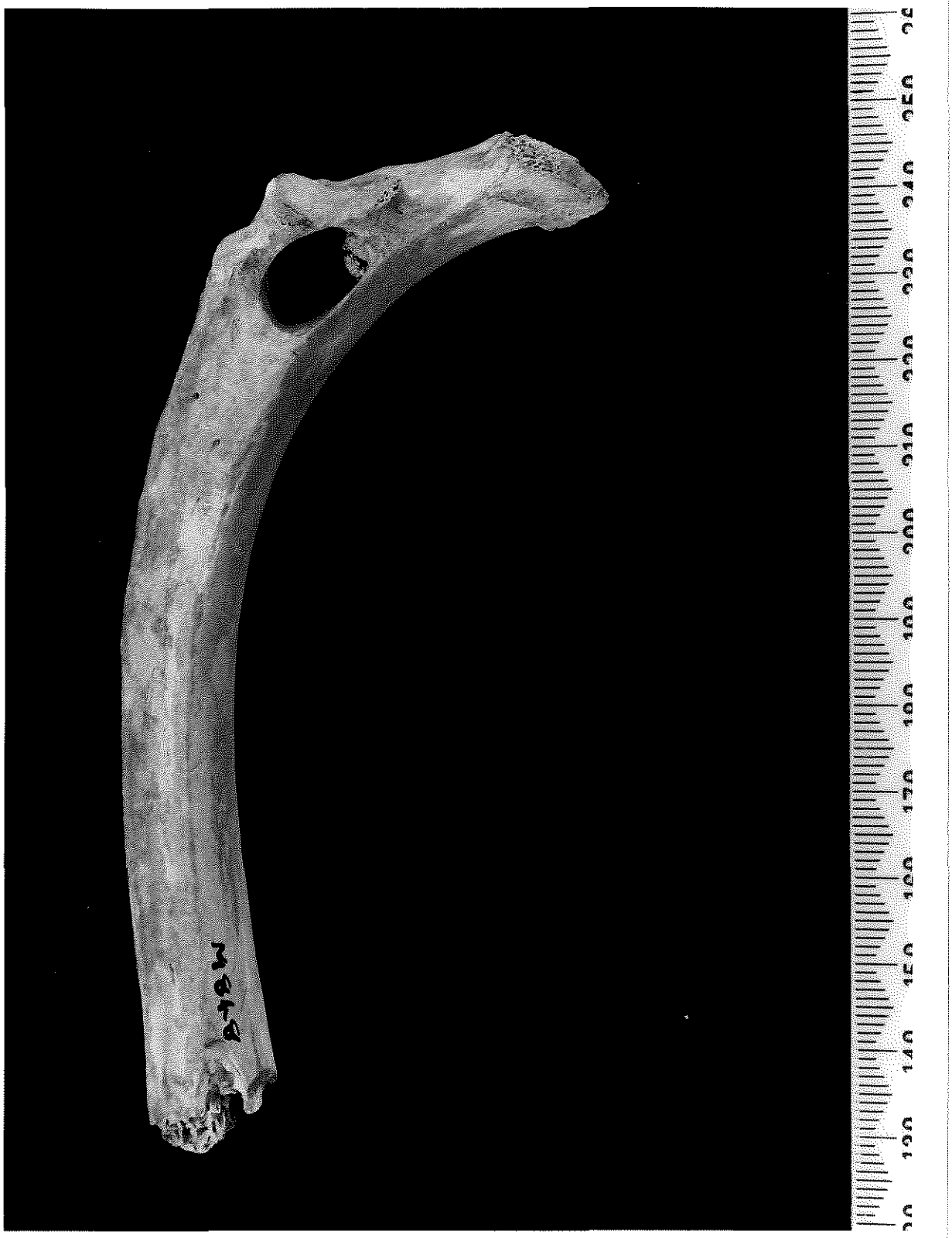

Plate 6. A cow mandible with the last column of molar three missing