

ANIMAL REMAINS FROM LUMBINI (NEPAL)

By

BHOLA NATH and M. K. BISWAS

Zoological Survey of India, Calcutta

(With 1 Plate and 1 Table)

INTRODUCTION

This report deals with the collection of animal remains from Lumbini, the birth place of Lord Buddha in Nepal excavated during the field season of 1970-1971 by the Department of Archaeology, Government of Nepal.

The following species are represented in this collection : A carp, *Lissemys punctata* (Bonnaterre), *Chitra indica* (Gray), *Sus scrofa cristatus* Wagner, *Bos indicus* Linn., *Bubalus bubalis* Linn., *Capra hircus aegagrus* Gmelin, *Ovis aries dolichura* Duerst, *Axis axis* Erxleben and *Equus caballus* Linn.

In almost all cases the animal remains from Lumbini are very fragile and fragmentary in nature. The organic materials of the bones have disappeared to a great extent and they are impregnated with inorganic material. Even the long bones such as humerus, radius, femur, tibia and canal bones consist of fragments only and hence are unsuitable for measurement etc.

The majority of the remains are domestic animals, the most prominent being those of Zebu or domestic humped cattle of India. The limited number of remains of the Indian buffalo indicate that probably the then human inhabitants did not maintain these animals in such large herds as humped cattle. The remains of goat and sheep are very small in number and that of the domestic pig are fairly represented. Amongst the remains, the presence of a single 1st phalanx of true horse is of great significance, showing that the horse was very useful animal in the daily life of the then inhabitants.

Amongst the wild animals, only the spotted deer (*Axis axis*) is represented.

Of the reptilian remains recorded are those of the common Soft-shelled Box Turtle (*Lissemys punctata*), the Soft-shelled River Turtle (*Chitra indica*) and a single vertebra of a snake.

These Lumbini remains resemble in their species those of Mohenjodaro (Sewell & Guha, 1931), Harappa (Prashad, 1936), Hastinapura (Nath 1955), Maski (Nath, 1957), Sarnath (Nath, 1958), Rangpur (Nath, 1963), Nagda (Nath, 1966), Rupar (Nath, 1968) and Brahmgi, (Nath, 1968).

SYSTEMATIC ACCOUNT OF THE ANIMAL REMAINS

Class PISCES

Order TELEOSTEI

A Carp

One dorsal spine and one abdominal vertebra of a fish. Locus : H₂₀-H₂₁, QD₁; Stratum : (6); Depth : 6' 9"; Reg. No. 2; Date : 18-2-72.

The dorsal spine and the vertebra appear to belong to some species of Carp. Not identifiable even generically, as the distinctive features are not well marked.

Class REPTILIA

Order CHELONIA

Family TRIONYCHIDAE

Lissemys punctata (Bonnaterre)

(Pl. I, Figs. 1 & 1A)

(Common Soft-shelled Box Turtle)

One fragment of plastron, Locus : H₂₀-J₂₀; Stratum : (3); Depth : 1' 6"; Reg. No. 1; Date : 29-12-70.

In pattern and vermiculations this fragment corresponds to those of Harappa (Prashad, 1936, p. 14), Mohenjodaro (Sewell & Guha, 1931, p. 663), Hastinapura (Nath, 1955, p. 108) and a Sarnath (Nath, 1958, p. 168) and belong to adult individual.

Chitra indica (Gray) (Pl. I, Fig. 2)

(Soft-shelled River Turtle)

One fragment of plastron. Locus : H₂₀-J₂₀, QD₄; Stratum : (7); 3' 2"; Date : 31-12-70.

The fragment of the plastron resembles in pattern and vermiculations those of Mohenjodaro (Sewell & Guha, 1931, p. 663), Harappa

(Prashad, 1936, p. 14), Hastinapura (Nath, 1955, p. 108), and Rupar (Nath, 1968, p. 72).

Order OPHIDIA

An abdominal vertebra of a snake. Locus : T₁₃-T₁₄, QD₁; Depth : 7'; Stratum : (11); Reg. No. 4; Date : 2-2-71.

Not identifiable, as distinctive features are not well marked. The zygosphene, a wedge-like process on the anterior side of the neural arch, and the zygantrium, a depression on the posterior surface of the neural arch, are well marked in it.

Class MAMMALIA

Order ARTIODACTYLA

Family SUIDAE

Sus scrofa cristatus Wagner (Pl. 1, Figs. 3, 3A)

(Indian Domestic Pig)

1. Distal fragment of humerus without distal condyles having supinator ridge. Locus : H₂₀-QD₂; Stratum : (5); Depth : 2' 5"; Reg. No. 1; Date : 31-12-70.
2. Distal fragment of the left humerus without epiphysis. Locus : K₂₀-J₂₀, QD₃; Stratum : (6); Depth : 3' 6"; Reg. No. 1; Date : 17-1-71.
3. Fragment of the left horizontal ramus of lower mandible with 3rd premolar and 1st & erupting molar of an young one. Locus : H₂₀-J₂₀, D₂; Stratum : (10); Depth : 6' 8"; Reg. No. 10; Date : 12-2-71.
4. Fragment of a proximal shaft of right tibia without proximal epiphysis of an young one. Locus : H₂₀-J₂₀, D₂; Stratum : (10); Depth : 6' 8"; Reg. No. 10; Date : 12-2-71.
5. Left upper 2nd molar. Locus : H₂₀-J₂₀; Stratum : (7); Depth : 5' 5"; Reg. No. 7; Date : 7-1-71.
6. Left upper 4th premolar. Locus : T₁₃-T₁₄, QD₁; Stratum : (5); Depth : 2' 3"; Reg. No. 9; Date : 11-2-71.
7. Fragment of the shaft of humerus without proximal and distal extremities. Locus : H₂₀-H₂₀, QD₁; Stratum : (6); Depth : 5' 1"; Reg. No. 1; Date : 17-2-71.
8. Distal fragment of humerus. Locus : H₂₁-Q₂, QD₂; Stratum : (5); Depth : 3'; Reg. No. 1; Date : 31-1-71.
9. Fragment of a shaft of femur. Locus : T₁₃-T₁₄, QD₁; Stratum : (11); Depth : 7' 3"; Reg. No. 7; Date : 5-2-71.
10. Fragment of the shaft of radius. Locus : H₂₀-J₂₀, QD₂; Stratum : (5); Reg. No. 15; Date : 19-1-71.
11. Upper canine tooth. Locus : T₁₃-T₁₃; Stratum : (7); Depth : 7' 10"; Date : 15-1-71.

These remains are mostly fragmentary in nature. It is difficult, therefore, to be certain about the size of this species. All bones are mostly of young individuals and thereby showing that the people practiced fullfledged domestication of this animal.

The remains of the domestic pig have been recorded from Harappa (Prashad, 1936, p. 54), Mohenjodaro (Sewell & Guha, 1931, pp. 660-661), Rupar (Nath, 1968, p. 103), Hastinapura (Nath, 1955, pp. 118—119), Rangpur (Nath, 1963, pp. 157—158) and Nagda (Nath, 1966, p. 183).

Family BOVIDAE

Bos indicus Linn. (Pl. 1, figs. 5, 5A, 5B)

(The Zebu or Domestic Humped cattle of India)

1. 1st phalanx of forefoot. Locus : K₂₀-J₂₀, QD₃; Stratum : (6); Depth : 3' 6"; Date : 11-1-71.
2. One fragment of proximal part of 3rd and 4th metatarsal. Locus : T₁₃-T₁₄, QD₁; Stratum : (11) Depth : 7' Reg. No. 4; Date : 2-2-71.
3. Slightly broken distally left lower molar tooth. Locus : T₁₃-T₁₄, QD₁; Stratum : (6); Depth : 4'3"; Reg. No. 10.
4. Distal fragment of 3rd & 4th metatarsal. Locus : T₁₃-T₁₄, QD₁; Stratum : (4); Depth : 3'5"; Reg. No. 11; Date : 11-2-71.
5. Body of a vertebra. Locus : T₁₃-T₁₄, QD₁; Stratum : (4); Depth : 3'5" Reg. No. 11; Date : 11-2-71.
6. Fragment of a blade of scapula. Locus : T₁₂-T₁₃, QD₁; Stratum : (3); Depth : 1'8"; Reg. No. 10; Date : 6-1-71.
7. Fragments of horizontal ramus of lower mandible. Locus : H₂₀-J₂₀, QD₁; Stratum : (10); Depth : 6'8"; Reg. No. 10; Date : 12-2-71.
8. Fragment of a rib. Locus : H₂₀-J₂₀, QD₂; Stratum : (10); Depth : 6'8"; Reg. No. 10; Date : 12-2-71.
9. Fragmentary piece of a cervical vertebra. Locus : T₁₂-T₁₃, Q₄; Stratum : unstratified; Depth : 7'7"; Reg. No. 9; Date : 28-1-71.
10. Proximal fragmentary portion of a scapula with a portion of glenoid cavity. Locus : T₁₂-T₁₃; Q₄; Stratum : unstratified; Depth : 7'7"; Reg. No. 9; Date : 28-1-71.
11. Fragmentary piece of a cervical vertebra with process of spine. Locus : T₁₂-T₁₃, QD₄; Stratum : (5); Depth : 2' 8"; Reg. No. 4; Date : 4-1-71.
12. Fragment of astragalus. Locus : H₂₀-J₂₀, QD₂; Stratum : (3); Depth : 1' 6"; Reg. No. 1; Date : 29-12-70.
13. Body of a lumbar vertebra. Locus : H₂₀-J₂₀, QD₄; Stratum : (5); Depth : 6' 7"; Date : 6-1-71.
14. Eroded left scaphocuboid bone. Locus : H₂₀-J₂₀, QD₄; Stratum : (5); Depth : 6'7"; Date : 6-1-71.

15. Fragment of a bone. Locus : T₁₃-T₁₄, QD₁; Stratum : (11); Depth : 7'3"; Date : 5-2-71.
16. 3rd phalanx of forelimb. Locus : H₂₀-H₂₁, QD₁; Stratum : (6); Depth : 5' 1"; Date : 17-2-71.
17. Proximal fragmentary bone of a radius. Locus : H₂₀-H₂₁, QD₁; Stratum : (6); Depth : 5'1" Date : 17-2-71.
18. Proximal eroded 1st phalanx. Locus : H₂₀-J₂₀, Q₄; Stratum : (7); Depth : 3'2"; Reg. No. 2; Date : 31-12-70.
19. 1st phalanx (Broken proximally and distally) of fore-limb. Locus : H₂₀-SE; Stratum : (2); Reg. No. 3; Date : 29-12-70.
20. Distal fragmentary piece of the humerus (medial condyle). Locus : H₂₁-Q₃; Stratum : (5); Depth : 3'; Reg. No. 1; Date : 31-1-71.
21. Eroded 3rd phalanx of fore-foot. Locus : T₁₃-T₁₄, QD₁; Stratum : (11); Depth : 7'-8' 6"; Reg. No. 6; Date : 3-2-71.
22. A fragmentary rib. Locus : T₁₃-T₁₄, QD₁; Stratum : (11); Depth : 7'-8' 6"; Reg. No. 6; Date : 3-2-71.
23. Proximal fragment of tibia. Locus : T₁₃-T₁₄, QD₁; Stratum : (11); Depth : 7'-8' 6"; Reg. No. 6; Date : 3-2-71.
24. Fragment of horizontal ramus of lower jaw. Locus : T₁₃-T₁₄, QD₁; Stratum (11); Depth : 7'-8' 6"; Reg. No. 6; Date : 3-2-71.
25. Fragment of a rib. Locus : H₂₀-J₂₀, QD₂; Stratum : (5); Date : 19-1-71.
26. Fragmentary piece of humerus. Locus : T₁₃-T₁₄, QD₁; Stratum : (9); Depth : 6'5"; Date : 28-1-71.
27. Fragment of a left astragalus. Locus : T₁₃-T₁₄, QD₁; Stratum : (3); Date : 12-2-71.
28. Fragment of a shaft of radius. Locus : H₂₀-J₂₀, QD₂; Stratum : (3); Depth : 1'6"; Reg. No. 6; Date : 2-1-71.
29. Body of a lumber vertebra. Locus : H₂₀-J₂₀, QD₄; Stratum : (5); Depth : 6'7"; Date : 6-1-71.
30. Eroded left scaphocuboid of the pes. Locus : H₂₀-J₂₀, QD₄; Stratum : (5); Depth : 6'7"; Date : 6-1-71.
31. 1st phalanx of right pes. Locus : T₁₂-T₁₃, Q₁₄; Stratum : (11); Depth : 5'6"; Date : 13-1-71.
32. One piece of distal end fragment of 3rd & 4th metatarsal. Locus : T₁₂-T₁₃ Q₁₄; Stratum : (11); Depth : 5'6"; Date : 13-1-71.
33. Fragment of the vertical ramus of left mandible with broken coronoid process. Locus : T₁₂-T₁₃, Q₁₄; Stratum : (11); Depth : 5'6"; Date : 13-1-71.
34. Fragment of a sacral bone. Locus : T₁₂-T₁₃, Q₁₄; Stratum : (11); Depth : 5'6"; Date : 13-1-71.
35. Fragment of horizontal ramus of left mandible. Locus : H₂₀-J₂₀, QD₂; Stratum : (10); Depth : 6'; Reg. No. 12; Date : 11-2-71.
36. Rib (fragment). Locus : T₁₂-T₁₃, QD₄; Stratum : (8); Date : 11-1-71.

37. Horizontal ramus of mandible c tooth (fragment). Locus : T₁₂-T₁₃, QD₄; Stratum : (8); Date : 11-1-71.
38. Two Ribs (fragments). Locus : T₁₂-T₁₃, QD₄; Stratum : (9); Depth : 6'6"
Date 19-1-71.
39. Five pieces of rib (fragments). Locus : H₂₀-J₂₀, QD₄; Stratum : (5); Date : 6-1-71.
40. 3rd & 4th metacarpal (fragment). Locus : H₂₀-QD₂; Stratum : (5); Depth : 2'5"; Date : 13-12-70.
41. Body of lumber vertebra. Locus : T₁₂-T₁₃; Stratum : (7); Depth : 7'10"; Date : 15-1-71.
42. Third broken phalanx. Locus : K₂₀-L₂₀, QD₃; Stratum : (6); Depth : 3'6"; Date : 11-1-71.

The remains of humped cattle of India, listed above, including the long bones are very fragmentary. The great frequency with which the remains of *Bos indicus* have been met with indicates that the inhabitants probably used to maintain large herds of this animal. In a number of cases the remains are those of the young ones which indicate that the people practised full-fledged domestication of the humped cattle of India.

The few teeth available resemble closely those from Harappa, Mohenjodaro, Hastinapura, Maski, Rupar and Brahmagiri and also the recent specimens of *Bos indicus* in the collection of the Zoological Survey of India.

These remains closely resemble the smaller humped, short-horned variety found from Mohenjodaro (Sewell & Guha, 1931, p. 654), Hastinapura (Nath, 1955, pp. 110-114), Maski (Nath, 1957, pp. 122-125), Rupar (Nath, 1968, pp. 80-95), Brahmagiri (Nath, 1968, pp. 69-72).

From the structural resemblance between the skeletal remains excavated at Lumbini and those of the modern domestic humped cattle of India present in the collection of the Zoological Survey of India, it is evidently clear that Lumbini remains are alike those of the domesticated cattle now found in India.

Bubalus bubalis Linn. (Pl. 1, Figs. 6, 6A)

(The Domestic Buffalo)

1. Fragment of the shaft of humerus. Locus : H₂₀-J₂₀, QD₂; Stratum : (7); Depth : 5'5"; Reg. No. 7; Date : 7-1-71.
2. Fragment of the distal part of right humerus. Locus : H₂₀-J₂₀; Stratum : (7); Depth : 5'5"; Reg. No. 7; Date : 7-1-71.

3. Fragment of a rib of thoracic region. Locus : H₂₀-H₂₁; Stratum : (6); Depth : 7'; Date : 5-3-71.
4. Fragment of a rib of lumber region. Locus : H₂₀-H₂₁; Stratum : (6); Depth : 7'; Date : 5-3-71.
5. 1st phalanx of right manus. Locus : H₂₀-J₂₀; Stratum : (7); Depth : 3'2"; Date : 31-12-70.
6. 2nd broken phalanx of fore-foot. Locus : K₂₀-L₂₀, QD₃; Stratum : (6); Depth : 3'6"; Date - 11-1-71.
7. A broken talus. Locus : H₂₀-J₂₀, QD₄; Stratum : (7); Depth : 3'2"; Date : 31-12-70.

The find of a smaller number of fragments of the bones of *Bubalus bubalis* indicates that the inhabitants probably did not maintain large herds of this animal as compared with the *Bos indicus* Linn.

These remains show very close structural resemblance with those of the specimens of modern domestic buffaloes present in the collection of the Zoological Survey of India. Thus the remains of the domestic buffalo are closely akin to the modern domesticated race of buffalo. They are similar to those of Mohenjodaro (Sewell & Guha, 1931, p. 659), Harappa (Prasad, 1936, pp. 32-37), Hastinapura (Nath, 1955, p. 115) and Rugar (Nath, 1968, pp. 97-98).

Subfamily CAPRINAE

Capra hircus aegagrus Gmelin

(The Domestic Goat)

1. One fragment of the shaft of femur. Locus : H₂₀-J₂₀, QD₂; Stratum : (10); Depth : 6'8"; Date : 12-2-72.
2. One fragment of radius. Locus : T₁₂-T₁₃, QD₂; Stratum : (5); Depth : 2'8"; Date : 9-1-71.
3. Fragment of the body of lumber vertebra. Locus : T₁₂-T₁₃, QD₄; Stratum : (6); Date : 10-2-71.
4. Fragmentary piece of femur. Locus : T₁₃-T₁₄, QD₁; Stratum : (9); Depth : 6'3"; Reg. No. 5; Date : 2-2-71.
5. Right lower second molar. Locus : T₁₃-T₁₄, QD₁; Stratum : (5); Depth : 2'3"; Reg. No. 9; Date : 11-2-71.
6. Fragmentary shaft of femur of an young one. Locus : T₁₃-T₁₄, QD₁; Stratum : (5); Depth : 2'3"; Reg. No. 9; Date : 11-2-71.
7. Fragment of a pelvic bone with acetabulum. Locus : T₁₃-T₁₄; Stratum : (5); Reg. No. 3; Date : 31-1-71.
8. A fragment of the horn-core. Locus : T₁₃-T₁₄, QD₁; Stratum : (11); Depth : 7'; Reg. No. 4; Date : 2-2-71.
9. Fragment of a body of lumber vertebra. Locus : T₁₂-T₁₃, QD₄; Stratum : (6); Date : 10-2-71.

10. Fragment of a skull. Locus : H₂₀-J₂₀, QD₂; Stratum : (5); Depth : 2'10"; Date : 18-1-71.

These remains are very fragmentary. The few available teeth do not show any specialized features and generally resemble those of the recent domestic goat.

These fragments resemble those of the goat from Harappa (Prashad, 1936, pp. 47-48), Hastinapura (Nath, 1955, p. 117), Maski (Nath, 1957, pp. 127-128) and Rupar (Nath, 1968, pp. 99-100).

Ovis aries dolichura Duerst

(The Domestic Sheep)

1. Left upper 1st molar. Locus : T₁₃-T₁₄, QD₁; Stratum : (11); Depth : 7'8' 6"; Reg. No. 6; Date : 3-2-71.

2. Fragment of the shaft of radius. Locus : T₁₃-T₁₄, QD; Stratum : (11); Depth : 7'-8' 6"; Reg. No. 6; Date : 3-2-71.

The two fragments generally resemble those of the recent specimens of domestic sheep in the collection of the Zoological Survey of India. These fragments from the Lumbini excavations resemble those of the remains of the domestic sheep from Harappa, Hastinapura, Maski and Rupar.

Family CERVIDAE

Axis axis Erxleben (Pl. 1, Fig. 4)

(The Chital or Spotted Deer)

1. One proximal fragment of 3rd & 4th metatarsal. Locus : K₂₀-J₂₀, QD; Stratum : (6); Depth : 3'6"; Reg. No. 1; Date : 17-1-71.

This solitary find shows the presence of chital at Lumbini.

Remains of chital have also been recorded from Prabhas (Nath, 1967, p. 66) and from Brahmagiri (Nath, 1968, p. 75).

Order PERISSODACTYLA

Family EQUIDAE

Equus caballus Linn. (Pl. 1, Figs. 7, 7A)

1. One 1st phalanx of the fore-foot proximally broken. Locus : H₂₀-J₂₀, QD₂; Stratum : (6); Depth : 2'10"; Reg. No. 8; Date : 9-1-71.

This solitary find shows that the inhabitants were acquainted with the horse at Lumbini. It resembles in size and shape the modern horse, *Equus caballus* of India (See Table 1).

Table 1.—Measurements (in mm.) of the 1st phalanx of fore-foot of the horse.

1st phalanx of the fore-foot	Lumbini	Rupar (RPR 2-7)	Harappa	Modern specimen (in the Zoological Survey of India)
1. Saggital length	86	87	79	81
2. Greatest breadth of the proximal end	—	56	52	52
3. Minimum breadth of diaphysis	33	32	33	32
4. Greatest distal breadth of bone	46	48	45	44
5. Greatest breadth of distal articular surface	43	45	42	42

Remains of the horse *Equus caballus* have been recorded from Mohenjōdaro (Sewell & Guha, 1931, p. 653), Harappa (Nath, 1962, pp. 1-14), Hastinapura (Nath, 1955, p. 109) and Rupar (Nath, 1968, p. 80).

ACKNOWLEDGEMENTS

The authors are thankful to Dr. S. Khera, Deputy Director-in-Charge, Zoological Survey of India, for his keen interest in the work and facilities provided; Shri A. K. Mandal, Sr. Artist, for proper arrangement and display of photographs in the plate and to Shri N. Roy, Photographer, for taking photographs.

SUMMARY

This report is based on the collection of animal remains excavated by the Department of Archaeology, Government of Nepal during the field season of 1970-1971 from Lumbini, Nepal. Altogether eleven species is represented. Amongst them, the domesticated animals are as follows:—*Bos indicus* Linn., *Bubalus bubalis* Linn., *Capra hircus aegagrus* Erxl., *Ovis aries dolichura* Duerst, *Equus cabalus* Linn. and *Sus scrofa cristatus* Wagner.

Amongst the wild animals, only the spotted deer, *Axis axis* Erxl. is represented. The reptilian fauna is represented by *Lissemys punctata* (Bonnaterre), *Chitra indica* (Gray) and snake.

A few bones of *Bos Indicus* Linn. bear definite chopping marks thereby showing that the inhabitants probably used this animal as food.

REFERENCES

- NATH, B. 1955. Animal remains from Hastinapura. *Ancient India*, (10 & 11) : 107—120.
- NATH, B. 1957. Animal remains from Maski. *Ancient India*, (13) : 111-120.
- NATH, B. 1958. Animal remains of 12th Century A. D. from Sarnath in Uttar Pradesh, India. *J. zool. Soc. India*, 10(2) : 165—175.
- NATH, B. 1963. Animal remains from Rangpur, Gujarat. *Ancient India*, (18 & 19) : 153-160.
- NATH, B. 1966. Animal remains from Nagda, Madhya Pradesh, India. *Proc. zool. Soc.*, 19 : 179—195.
- NATH, B. 1968. Animal remains from Rugar and Bara sites, Ambala district, E. Panjab, India. *Indian Mus. Bull.*, 3 (1 & 2) : 69—115.
- NATH, B. 1968. Animal remains from Brahmagiri (Mysore State, India). *Rec. zool. Surv. India*, 61 (1 & 2) : 65—88.
- PRASAD, B. 1936. Animal remains from Harappa. *Mem. Archaeol. Surv. India*, 51 : 1—61.
- SEWELL, R. B. S. and GUHA, B. S. 1931. Zoological remains. In : *Mohenjodaro and the Indus Civilization*, London, 2 : 649—673.