

45.74

DESCRIPTION OF THE PLATES

OF THE

FAUNA ANTIQUA SIVALENSIS

FROM NOTES AND MEMORANDA

BY

HUGH FALCONER, M.D.

LATE VICE-PRESIDENT OF THE ROYAL SOCIETY AND FOREIGN SECRETARY OF THE GEOLOGICAL
SOCIETY, AND FOR MANY YEARS SUPERINTENDENT OF THE H.E.I.C. BOTANIC
GARDENS AT SUHARUNPOOR AND CALCUTTA

COMPILED AND EDITED BY

CHARLES MURCHISON, M.D. F.R.S.

LONDON

ROBERT HARDWICKE, 192 PICCADILLY

1868

FAUNA ANTIQUA SIVALENSIS.

LONDON
PRINTED BY SPOTTISWOODE AND CO.
NEW-STREET SQUARE

DESCRIPTION OF THE PLATES
OF THE
FAUNA ANTIQUA SIVALENSIS

FROM NOTES AND MEMORANDA

BY

HUGH FALCONER, M.D.

LATE VICE-PRESIDENT OF THE ROYAL SOCIETY AND FOREIGN SECRETARY OF THE GEOLOGICAL
SOCIETY, AND FOR MANY YEARS SUPERINTENDENT OF THE H.E.I.C. BOTANIC
GARDENS AT SUHARUNPOOR AND CALCUTTA

COMPILED AND EDITED BY

CHARLES MURCHISON, M.D. F.R.S.

LIBRARY
MUS. COMP. ZOOLOGY,
CAMBRIDGE, MASS.

c
LONDON

ROBERT HARDWICKE, 192 PICCADILLY

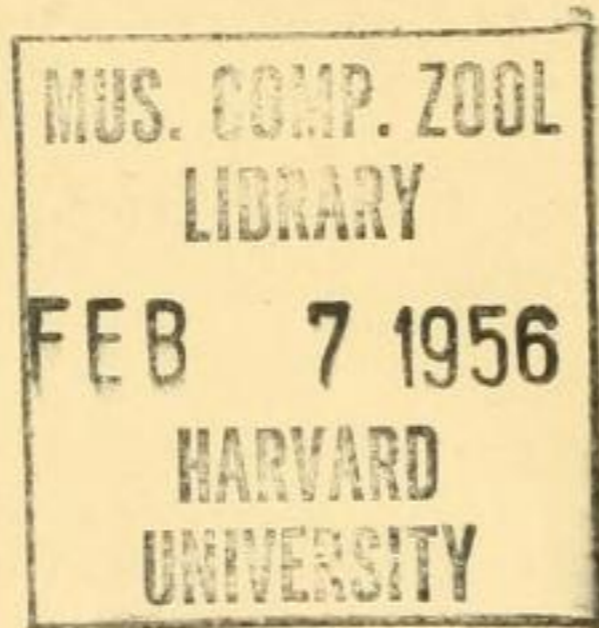
1867

P₂-F183

1872, March 6.
Minot Fund.

£. 7. 6

[Reprinted from Vol. I. of the posthumous edition of Dr. Falconer's
Palæontological Memoirs.]



LIBRARY
MUS. COMP. ZOOLOGICAL
CAMBRIDGE MASS.

Faint, mirrored text from the reverse side of the page, appearing as bleed-through.

ERRATA.

Page 82, line 5, *omit* The drawing shows the descending process of the jaw.

Pages 82 and 83, *substitute* upper jaw *for* lower jaw *in* descriptions of figures 1, 3, 11, and 15 of Plate LXII.

Page 104, line 4 of description of Fig. 4, *for* premolars *read* premolar.

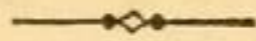
Falconer's Fauna.

A

DESCRIPTION OF THE PLATES

IN

THE FAUNA ANTIQUA SIVALENSIS.



[THIS description has been mainly compiled from the following sources:—1. Memoranda in Dr. Falconer's note-books and papers; 2. References to certain of the figures in his published memoirs on Elephant, Mastodon, &c.; 3. References to other figures in his correspondence with scientific friends; and 4. Labels in his handwriting on the specimens figured which are now in the British Museum. Although the figures are drawn to scale, the actual measurements have, as far as practicable, been introduced into the description of each figure. It has been thought that by their means, the value of the descriptions would be increased to those who have not an opportunity of consulting the Plates, and that even to those who possess the Plates the comparison of specimens would be facilitated. The measurements are given in English inches, and in tenths of an inch. The letters B.M. indicate that the specimen referred to is in the British Museum.]

Plates I., II., and III. are intended to represent, by careful copies of nature, the modifications in structure and form exhibited by the molar teeth of the *Proboscidea*. They show in vertical sections a series of gradations, commencing with *Dinotherium* and *Mastodon Ohioticus* at one extremity, and running through the other species to *Elephas primigenius*, in which the greatest deviation from the ordinary form of a grinding tooth is met with.

PLATE I.

Fig. 1.—*Elephas primigenius*, or the true Mammoth: longitudinal and vertical section of last upper molar, left side, from an English specimen found near Kingsland, and formerly in the Museum of the Geological Society. Shows the 'ridge formula' and the form and relative proportions of the alternate layers of ivory. The section closely resembles that of the corresponding tooth of the Indian Elephant, but the ivory segments are even thinner, more vertical, and more approximated. The disposition of the plates presents the

extreme degree of 'pectination' seen in the molars of any known species of elephant.—B.M.

Length, 11 in. No. of plates, 21. Depth of enamel at tenth plate, 6.2 in. Length of space to 10 plates, 4½ in.

Fig. 2 *a*.—*Elephas Indicus*. Vertical section of an upper penultimate molar of the existing Indian Elephant. It is composed of seventeen ridges, with a reduced talon splent behind, the anterior talon being confluent with the first ridge. The anterior eight plates are inclined forwards, and by the process of wear they are ground down, so that the front part of the tooth is truncated obliquely before the posterior lamellæ have come into use. The plates are very thin and vertical, and the enamel is thin. The gradual attenuation of the plates, successively exhibited from *E. insignis* to *E. Hysudricus*, is here carried to excess, eighteen being comprised within the space occupied by about nine in the equivalent tooth of the African species. The pectinated arrangement contrasts strangely with the chevron-formed ridges of *E. insignis* and the cuneiform plates of *E. planifrons*. The mass of ivory at the base of the tooth is much thinner than in the corresponding molar of *E. Hysudricus*.

Length of crown, 8.2 in. Space occupied by 10 plates, 4½ in. Height at tenth plate, 6 in.

Fig. 2 *b*.—*Elephas Indicus*. Vertical section of unusually large specimen of last lower molar of an Indian Elephant from Assam, in India House collection. The entire length of the crown is about fifteen inches, and it includes as many as twenty-seven ridges, of which the anterior thirteen are more or less abraded. The first five or six ridges incline a little forwards, while the posterior ridges incline so much in an opposite direction, that the hindermost are nearly horizontal, producing the flabelliform character that so readily distinguishes in most instances the last from the penultimate lower molar. The same disposition and proportions of the dental substances are observed as in the upper grinder.

Fig. 3 *a*.—*Elephas Hysudricus*, from the Sewalik hills. Vertical section of penultimate upper molar, left side. The tooth is in the middle stage of wear, eleven of the thirteen plates of which it is composed having been in use, and the two anterior ridges being worn out. The same vertical disposition of ivory, enamel, and cement is presented as in the African Elephant, but the plates are thinner and more vertical; the layer of enamel is proportionally thicker; and the interspaces occupied by the cement are wider in general than the ivory plates.—B.M.

Length, 7.7 in. Length of 10 plates, 5.75 in.

Fig. 3 *b*.—*Elephas Hysudricus*. Vertical section of portion of last molar of lower jaw, comprising about fifteen plates. The same general character, in the disposition and relative proportion of the ivory, enamel, and cement are exhibited as in the upper molar, bearing in mind that the latter is a younger and consequently smaller tooth. The layer of enamel, however, is thinner than in the upper molar. The ivory segments curve back near their base, and the apices of the posterior plates lean towards the front of the tooth, a disposition still more marked in the existing Indian Elephant. The dark shade below the ivory indicates a core of sandstone, occupying the place of the unossified part of the pulp nucleus, and of the undeveloped fangs.—B.M.

PLATE LXXII.

Figs. 1, 1 *a*, and 1 *b*.—*Rhinoceros platyrhinus*. (Falc. and Caut.) From the Sewalik hills. Mutilated cranium, anterior part, showing lateral, upper, and palate surfaces. The specimen is so worn that the teeth are scarcely distinguishable. The upper surface of the skull is broad and flat.—B.M.

Length of fragment, 17 in.; height posteriorly, 9.7 in.; height anteriorly, 8 in.; greatest breadth at anterior angles of orbits, 10.6 in.; depth of nasal notch, 6 in.; height of nasal notch anteriorly, 5.5 in.

In 1847 Dr. Falconer noted that *R. platyrhinus* partakes of the characters of both *R. leptorhinus* (*sic*) and *R. tichorhinus*, and on the 9th of August, 1860, he made the following note:—

‘Examined Baker’s large skull of the Sewalik *Rhinoceros platyrhinus* in B.M. The molars are in fine condition, six on either side. The last true molar only just touched by wear. The last t. m. exactly like *Rh. hemitæchus*, in having a posterior basal funnel-shaped pit! while the penultimate and antepenultimate t. m. and the penultimate and antepenultimate milk m. have each three distinct fossettes, as in *Rhinoceros tichorhinus*! the vertical ridges of the anterior side very well pronounced in three valleys. Had two large incisors above and four below: of the latter, the two outer big; the two inner small, as in the existing Indian Rhinoceros.’

Figs. 2, 2 *a*, and 2 *b*.—*Rhinoceros platyrhinus*. Fragment showing posterior part of cranium, with foramen magnum, occipital condyles and crest, portion of right zygomatic arch, and condyle of lower jaw.—B.M.

Length of fragment, 10.6 in.; height of occipital facet from lower margin of occipital foramen to summit of occipital crest, 12 in. Breadth of occipital facet above, 8.4 in.; ditto below, 13.2 in. Height of occipital foramen, 2.5 in.; breadth of ditto, 2 in. Between extreme points of occip. condyles, 5.3 in. Least width of cranium, 3.3 in. Breadth of condyle of lower jaw, 6.7 in.; ditto of ascending ramus, 6 in. Between inner angles of glenoid facets, 2.5 in. Depth of zygomatic process, 3.3 in.

Fig. 3.—*Rhinoceros platyrhinus*. Fragment of skull, upper jaw, with molar ridge, and large sub-orbital foramen.—B.M.

Length of fragment, 13.2 in. From root of molar origin of zygoma to sub-orbital foramen, 7.5 in. Length of molar series, 10.8 in. Greatest breadth of molar alveoli, 2.8 in.

show the two horizontal rami with the remains more or less of seven molars on either side, the bases of both canines and more or less of the six incisors. The specimen is still much covered with matrix; the four premolars on the left side show part of their crowns; on the right side the first premolar is close to the canine; the true molars are well worn; the canine on the left side shows a part of the tooth bending outwards, but the apex broken off. The other bones are so much covered by matrix as to be undeterminable.

No. 318. *Sus* —? Fragment comprising the posterior part of upper maxilla right side, containing the two last teeth *in situ*; the penultimate is well worn, showing a very complex pattern of crown; the last molar is half worn.

No. 319. *Sus* —? Fragment of lower jaw, right side, comprising posterior part of horizontal ramus, broken across horizontally near the base of the teeth, and containing the last two molars, the penultimate well worn with very flexuous enamel; the last molar in germ and of very large size.

No. 320. Mutilated fragment comprising part of the last true molar, much broken and cemented with matrix.

No. 321. Fragment comprising the posterior part of horizontal ramus lower jaw right side, containing the two last teeth *in situ*; they are in the same condition of wear as No. 319, but considerably smaller.

No. 54 (from Perim Island). Lower jaw, left side, fragment containing merely the last molar of *Sus Hysudricus*?

Fig. 4, 4 *a*, 4 *b*, and 4 *c*.—*Rhinoceros platyrhinus*. Fragment showing anterior portion of lower jaw, with symphysis and four anterior molars, and a portion of fifth; also a small inner and large outer incisor on both sides.—B.M.

Length of fragment, 13.5 in. Breadth of symphysis, 5.7 in. Length of symphysis inferiorly, 7 in. Depth of jaw, 4.7 in. Thickness of jaw, 3.3 in. Length of four anterior molars, 7.4 in. Between anterior premolar and external incisive alveolus, 3.1 in. Between incisive alveoli, .6 in. Width between molars posteriorly, 4 in.; ditto anteriorly, 3.4 in.

Figs. 5, 5 *a*, and 5 *b*.—*Rhinoceros platyrhinus*. Small fragment of lower jaw, with two molars.—B.M.

Length of fragment, 6.7 in.; greatest depth, 5.7 in.; Thickness, 3.2; length of molar, 3.1 in.; breadth, 1.7 in.

Figs. 6 and 6 *a*.—*Rhinoceros platyrhinus*. Fragment of molar.—B.M.

Length, 2.3 in. Width, 3.4 in.

Figs. 7 and 7 *a*.—*Rhinoceros platyrhinus*. Molar.

Length, 3.2 in.; breadth, 2.8 in.; height of crown, 3.1 in.

PLATE LXXIII.

Figs. 1, 1 *a*, 1 *b*, and 1 *c*.—*Rhinoceros Palæindicus*. (Falc. and Caut.) Mutilated specimen of cranium. The zygomatic arches and the anterior portion of the palate are broken off. On the right side the three true molars and three posterior premolars are present; on the left there are three molars and one premolar. All the teeth are much worn. The upper surface of the skull is very concave.—B.M.

Length of fragment, 21.8 in. Height of occiput (imperfect) from basilar process, 8.1 in. From occipital surface to posterior border of palate (imperfect), 12.5 in. Between mastoid angles, greatest diameter of occiput, 9 in. Transverse diameter of occipital foramen, 1.9 in. Vertical ditto, 1.3 in. Breadth of cranium at anterior orbital angles, 8.7 in. Between anterior angles of orbital margin, 3.9 in. Between sub-orbital foramina (posterior border), 4.8 in. Chord of nasal notch, 4.5 in. Length of three true molars, 6.1 in. Length of three posterior premolars, 5 in. Width of palate between posterior molars, 2.2 in. Ditto between second premolars, 2.5 in. Greatest width of alveolus, 2.8 in. Length of palatine notch, 5.5 in. Width of ditto, 2 in.

Figs. 2, 2 *a*, 2 *b*, and 2 *c*.—*Rhinoceros Sivalensis* (Falc. and Caut.), from the Sewalik hills. Tolerably perfect specimen of cranium. The upper part of the occiput and the left zygoma are absent. The left maxilla shows three molars and three premolars, and also the alveolus of the first premolar. The teeth are well worn; the palate is narrow. The upper surface of the cranium is concave, and the tip of the nasal shows the gibbosity of the base of a very large horn. The species was evidently unicorned.—B.M.

Extreme length of fragment, 22.5 in. From posterior plate of occipital condyles to anterior margin of first premolar, 20.4 in. From lower border of occipital foramen to posterior border of palate, 11.9 in. Length of molar series, 11.1 in. Length of three true molars, 5.8 in. Width of palate between posterior molars, 2.5 in. Width of palate at anterior angle of first premolars, 2.2 in. Greatest width of alveoli, 2.6 in. Length of palatine notch, 5.3 in. Width of ditto, 1.9 in. Between inner angles of articular surfaces for lower jaw, 3.2 in. Between most distant points of zygomatic processes, 13.7 in. Depth of zygomatic fossa, 3.1 in. Height of occiput (imperfect) from lower border of occipital foramen, 9 in. Between outer angles of occipital condyles, 4.8 in. Between mastoid angles, or greatest transverse diameter of occiput, 8.6 in. Breadth of occipital foramen, 1.7 in. Height of ditto,

1.9 in. Breadth of cranium at anterior orbital angle, 8.3 in. Between posterior borders of sub-orbital foramina, 5.2 in. Between anterior angle of orbital margin and posterior border of sub-orbital foramen, 4.7 in. Breadth of rostrum, 2.8 in.

Figs. 3 and 3 *a*.—*Rhinoceros Sivalensis*. Fragment of skull, comprising upper jaw, portion of orbit and prolongation of nasals for horn.—B.M.

Length of fragment, 14.8 in. From anterior angle of orbit to tip of nasal protuberance, 9.8 in. From concavity of nasal notch to tip of ditto, 6.8 in.

PLATE LXXIV.

Figs. 1, 1 *a*, 1 *b*, and 1 *c*.—*Rhinoceros Palæindicus*. Very perfect specimen of cranium, with both zygomatic arches entire. Shows two molars and two posterior premolars on either side. The third molar is still in germ. The palate is deficient in front.—B.M.

Length of cranium (fragment), 18.2 in. Between most projecting points of zygomata, 9.8 in. Breadth of occiput (behind the auditory foramina), 6.1 in. Least breadth of cranium (between the temporal fossæ), 3.4 in. Breadth of cranium at anterior orbital angles, 5.3 in. From anterior margin of second premolar to posterior border of pterygoid process, 9.7 in. Length of palatine fissure, 3.7 in. Distance between the internal angles of the glenoid facets, 3 in. Length of alveolar margin of exposed molars, 6.1 in. Between external alveolar margins of last exposed molars, 6.4 in. Between external alveolar margins of anterior molars, 3.7 in. Height of cranium from alveolar margin at anterior margin of third molar, 6.1 in. Width of palate anteriorly, 2.3 in.; ditto, posteriorly, 2.3 in.

Figs. 2, 2 *a*, 2 *b*, and 2 *c*.—*Rhinoceros Palæindicus*. Skull of a larger and older animal than fig. 1. Both zygomatic arches are deficient, and the portion in front of the fourth premolar is also broken off.—B.M.

Length of fragment, 20.1 in. From lower margin of occipital foramen to posterior border of palate, 12.2 in. From ear (anterior margin) to sub-orbital foramen, 13.5 in. From ditto to anterior angle of orbit, 10.6 in. Height of occipital facet from lower margin of occipital foramen to occipital crest, 7.7 in. Height of cranium at anterior angle of orbit from alveolar border, 7.2 in. Height of occipital foramen, 1.2 in. Breadth of ditto, 1.2 in. Between internal angles of glenoid facets, 3.3 in. Width of palate posteriorly and anteriorly, 3.1 in. Between extreme points of external alveolar borders of molars, 10 in. Least breadth of cranium (between temporal fossæ), 4.3 in. Breadth of cranium at anterior orbital angles, 8.5 in. From centre of occipital crest to posterior border of nasal notch, 16.7 in. Length of alveolar border of three true molars, 6.5 in. Breadth of alveoli, 3.2 in.

Figs. 3 and 3 *a*.—*Rhinoceros Palæindicus*. Fragment of lower jaw, left side, with four posterior molars.—B.M.

Length of fragment, 15.8 in. Length of alveolar border of molars, 8.3 in. Breadth of ascending ramus, 6 in. Depth of jaw anteriorly, 3.1 in. Thickness of ditto, 3.2 in.

Figs. 4 and 4 *a*.—*Rhinoceros Palæindicus*. Fragment of symphysis of lower jaw, with incisive alveolar ridge and large outer left incisor.—B.M.

Between external alveolar borders of incisive alveoli, 4.5 in. Length of existing portion of symphysis, 4.4 in. Interval between anterior premolar and incisive alveolus, 2.6 in. Greatest thickness of alveolus, 1.7 in. Great diameter of incisor, 1.3 in. Lesser diameter of ditto, 1.1 in. Length of tusk (projection), 1.9 in.

Fig. 5.—*Rhinoceros Sivalensis*. Portion of cranium, showing palate with molar ridges and nasal projections. The portion behind the second molar is broken off.—B.M.

Length of fragment, 14.8 in. Width of palate between second molars, 2.3 in. Width of palate between first premolars, 1.6 in. Length of four premolars and first and second molar series, 8 in. Length of four premolar series, 4.9 in. Supposed depth of nasal notch, 6.6 in. Breadth of cranium between anterior angles of orbit, 7.7 in. Between external alveolar borders posteriorly, 7.3 in. Between ditto anteriorly, 2.5 in.

Figs. 6 and 6 a.—*Rhinoceros Sivalensis*. Fragment of lower jaw, with symphysis and five anterior molars.—B.M.

Length of fragment, 9.4 in. Length of existing portion of symphysis, 3.1 in. Length of molar series, 7 in. Width between the posterior molars, 2.7 in. Between anterior ditto, 2 in. Greatest depth of jaw, 3.6 in. Thickness of ditto, 2 in.

PLATE LXXV.

Fig. 1.—*Rhinoceros Palæindicus*. Fragment of upper jaw, left side, with three true molars.

Length of first molar, 2 in.; of second, 2.15 in.; of third along anterior edge, 3.1 in. Width of first molar, 3 in.; of second, 3.2 in.; of third along anterior edge, 2.9 in.

Fig. 2.—*Rhinoceros Palæindicus*. Fragment of lower jaw, with three true molars and fourth premolar.—B.M.

Length of fourth premolar, 1.8 in.; of first molar, 2.15 in.; of second, 2.2 in.; of third, 2.2 in. Width of fourth premolar, 1.35 in.; of first molar, 1.3 in.; of second, 1.4 in.; of third, 1.3 in.

Fig. 3.—*Rhinoceros Palæindicus*.—Fragment of lower jaw, with four molars.—B.M.

Length of first tooth, .65 in.; of second, 1.3 in.; of third, 1.75 in.; of fourth, 1.75 in.

Fig. 4.—*Rhinoceros Palæindicus*. Premolar tooth detached.—No. 39,648 B.M.

Length along outer edge, 2.5 in. Width of grinding surface anteriorly, 2.5 in.

Fig. 5.—*Rhinoceros Sivalensis*. Fragment of upper jaw, right side, with three true molars and third and fourth premolar.—B.M.

Length of third premolar, 1.6 in.; of fourth ditto, 1.5 in.; of first molar, 1.75 in.; of second ditto, 2 in.; of third ditto along outer edge, 2.3 in. Width of third premolar, 2.3 in.; of fourth ditto, 2.6 in.; of first molar, 2.6 in.; of second ditto, 2.6 in.; of third ditto along anterior edge, 2.5 in.

Fig. 6.—*Rhinoceros Sivalensis*. Lower jaw, right side, with second, third, and fourth premolars, and first and second true molars.—B.M.

Length of second premolar along outer edge, 1.2 in.; of third premolar at centre of grinding surface, 1.2 in.; of fourth ditto, 1.7 in.; of first molar, 1.6 in.; of second ditto, 1.9 in. Width of second premolar, .75 in.; of third ditto, 1.0 in.; of fourth ditto, 1.15 in.; of first molar, 1.3 in.; of second ditto, 1.36 in. Width between anterior angles of second premolars, 2.4 in.

Fig. 7.—*Rhinoceros Sondaicus* (recent). Upper jaw, right side, with fourth premolar and three true molars.

Length of fourth premolar, 1.55 in.; of first molar, 1.6 in.; of second, 1.9 in.; of third along outer edge, 2.1 in.

Fig. 8.—*Rhinoceros Sondaicus* (recent). Lower jaw, right side, with third and fourth premolars and three true molars.

Length of third premolar, 1.2 in.; of fourth, 1.5 in.; of first molar, 1.6 in.; of second, 1.8 in.; of third, 1.7 in.

Fig. 9.—*Rhinoceros platyrhinus*. Upper jaw, right side, with third and fourth premolars and three true molars. The first true molar is imperfect.—B.M.

Length of third premolar, 1.6 in. ; of fourth ditto, 1.8 in. ; of fragment of first molar, extreme, 1.5 in. ; of second molar, 1.9 in. ; of third ditto along outer edge, 2.2 in. Width of third premolar, 2.7 in. ; of fourth ditto, 2.8 in. ; of second molar, 2.9 in. ; of third ditto along anterior edge, 2.55 in.

Fig. 10.—*Rhinoceros platyrhinus*. Lower jaw, right side, and symphysis, containing very large outer and small inner incisor of both sides, second, third, and fourth premolars, and first two true molars of right side.—B.M.

Length of second premolar, .7 in. ; of third ditto, 1.4 in. ; of fourth ditto, 1.65 in. ; of first molar, 1.46 in. ; of second ditto, 2 in. Width of second premolar, .45 in. ; of third ditto, .85 in. ; of fourth ditto, 1.1 in. ; of first molar, 1.05 in. ; of second ditto, 1.2 in. Width between second premolars, 3.5 in. ; ditto between outer margins of external incisors, 3.65 in. Oblique width of external incisor, 1.5 in. Thickness externally of ditto, oblique, .7 in. Length of exerted portion along outer edge, 2.1 in.

Fig. 11.—*Rhinoceros platyrhinus*. Penultimate true molar upper jaw, right side, detached, but shattered. Fig. 11 a.—Ditto, ditto, restored.—B.M.

Fig. 12.—Last true molar upper jaw, right side.—B.M.

Fig. 13.—*Rhinoceros (Acerotherium?) Perimensis* (from Perim Island). Fragment of lower jaw, with three true molars and first premolar.

Length of first true molar, 1.15 in. ; of second, 1.4 in. ; of third, 1.5 in.

Fig. 14.—*Rhinoceros Perimensis*. Premolar tooth, detached.

Fig. 15.—*Rhinoceros Perimensis*. Molar, detached and shattered.

Fig. 16.—*Rhinoceros Perimensis*. Molar, detached and shattered.

PLATE LXXVI.

Divers Indian Fossil Species of *Rhinoceros*.

Figs. 1 and 1 a.—Fragment of left humerus, near upper end, from the Niti Pass.—B.M.

Length of fragment, 5.9 in. Breadth, 3.5 in. Greatest thickness of fractured surface, 2.3 in.

Fig. 2.—Fragment of left humerus, near upper end, from the Niti Pass.

Length of fragment, 5.2 in. ; greatest breadth, 5.2 in. ; thickness, 2.3 in.

Fig. 3.—Upper extremity and portion of shaft of left radius, from the Niti Pass.—B.M.

Length of fragment, 6 in. ; greatest antero-posterior diameter of superior articular surface, 2.5 in. Transverse diameter of perfect portion, 2.1 in. Transverse diameter of shaft at fractured portion, 2.1 in. Antero-posterior diameter of ditto, 1.5 in.

Fig. 4.—Upper extremity and portion of shaft of tibia, from the Niti Pass.—B.M.

Length from anterior margin of the crista tibiæ to posterior border of articular surface, 4.8 in. Breadth of inner condyloid fossa, 2.6 in. Antero-posterior diam. of inner condyloid fossa, centre, 2.3 in.

Figs. 5, 5 *a*, 5 *b*, and 5 *c*.—Scaphoid bone of carpus, left side, from the Niti Pass.—B.M.

Greatest antero-posterior diameter, 2·2 in. Greatest transverse ditto, 3·3 in. Greatest vertical, 2·6 in.

Figs. 6, 6 *a*, and 6 *b*.—Fragment of scapula, including glenoid cavity and coracoid process, from the Niti Pass.—B.M.

Length of fragment, 5·8 in. Height of glenoid cavity, 2·9 in. Greatest breadth of ditto, 2·4 in. Height of coracoid process above glenoid cavity, 1·6 in.

Figs. 7, 7 *a*, 7 *b*, and 7 *c*.—First phalanx, from the Niti Pass.—No. 39,654 B.M.

Length (superiorly), 1·3 in. Transverse diameter of posterior surface, 2· in. Vertical ditto, 1· in. Transverse diameter of anterior surface, 1·7 in.

Figs. 8, 8 *a*, 8 *b*, and 8 *c*.—Second phalanx, from the Niti Pass.—B.M.

Length between centres of articular surfaces, 1·1 in. Greatest breadth, 2·5 in. Breadth of posterior articular surface, 1·8 in. Breadth of anterior articular ditto, 1·6 in. Height of posterior articular surface, ·8 in.

Fig. 9.—Fragment of bone of Rhinoceros, from the Niti Pass.

Length of fragment, 1·7 in. Breadth, 1·2 in.

Figs. 10, 10 *a*, and 10 *b*.—Fragment of lower end of femur, from the Niti Pass.—B.M.

Antero-posterior diameter internally, 6·6 in. Length of rotular surface ditto, 4·3 in. Length of rotular surface in centre, 2·8 in. Breadth of ditto in centre of height, 2·8 in.

Figs. 11, 11 *a*, and 11 *b*.—Fragment of head of humerus from Beloochistan.

Length of fragment, 6·4 in. Breadth of upper extremity, 3·5 in. Smallest antero-posterior diameter of ditto, 2·6 in. Greatest diameter of head (articular surface), 2·7 in. Length of crest of great tuberosity, 5·9 in.

Figs. 12, 12 *a*, and 12 *b*.—Fragment of lower end of right radius, from Beloochistan.

Breadth of inferior articular surface, 3·3 in. Length of ridge dividing scaphoid and semilunar surfaces, 1·4 in. Breadth of scaphoid surface, 1·8 in. Breadth of semilunar ditto, 1·5 in.

Figs. 13, 13 *a*, 13 *b*, and 13 *c*.—Scaphoid of right carpus, from Beloochistan.

Antero-posterior diameter, 2·9 in.; transverse, 3·4 in.; vertical, 2·8 in.

Figs. 14 and 14 *a*.—Fragment of adult lower jaw of *Rhinoceros Perimensis*, horizontal ramus, containing three true molars.—Col. Fulljames.

Length of fragment, 15·9 in. Depth of ramus, 4·5 in. Thickness, 3· in. Length of three true molars, 7·9 in.

Figs. 15 and 15 *a*.—Fragment of horizontal ramus of lower jaw of *Rhinoceros Perimensis*, containing three true molars, which agree closely with those of Kaup's *Acerotherium incisivum*.—B.M.

Length of fragment, 12·5 in. Depth of ramus, 5·2 in. Thickness, 2·1 in. Length of three true molars, 7· in.

Figs. 16, 16 *a*, and 16 *b*.—Upper articulating extremity of femur of *Rhinoceros Perimensis*.—B.M.

Length of fragment, 8·4 in. Breadth of upper extremity, including great trochanter, 9·1 in. Diameter of articular surface of head, 4· in.

Figs. 17, 17 *a*, and 17 *b*.—Metacarpal bone (medius) of *Rhinoceros Perimensis*.

Extreme length, 7·7 in. Smallest transverse diameter of shaft, 2·2 in. Breadth of posterior articular surface, 1·9 in. Height of ditto, 1·9 in.

Figs. 18, 18 *a*, and 18 *b*.—Astragalus of *Rhinoceros* from the Nerbudda Pass.—B.M.

Breadth of tibial surface, 3·in. Smallest antero-posterior diameter, 1·7 in. Breadth of scaphoid surface, 1·9 in. Greatest breadth of cuboid surface, ·9 in. Height of scaphoid surface, 1·8 in. Height of cuboid surface, 2· in.

Figs. 19, 19 *a*, 19 *b*, and 19 *c*.—Scaphoid bone of carpus of *Rhinoceros*.

Figs. 20, 20 *a*, and 20 *b*.—Head of humerus.

Figs. 21, 21 *a*, and 21 *b*.—Lower extremity of right radius.

PLATE LXXVII.

Bones of Anterior Extremity of divers Fossil Indian Species of *Rhinoceros*.

Figs. 1, 1 *a*, 1 *b*, and 1 *c*.—Humerus, radius, and ulna *in situ*. This specimen was described and figured by Messrs. Baker and Durand in the Journ. As. Soc. for August 1836, vol. v. p. 498, Plate XVII. figs. 1 and 2. The humerus is perfect, with the exception of the deltoid crest. The length of the humerus exceeds that of any of the existing species of *Rhinoceros*. Its thickness, in proportion to the length of the bone and the development of the articulating pulley, are intermediate between the Sumatra and Indian species. The breadth at the condyles is nearly in the same proportion as that of the Indian *Rhinoceros*. The length of the radius in proportion to the femur is a little less than in the Indian, and somewhat in excess of the small Sumatra species.—B.M.

Length of humerus from upper articular surface to lower surface of inner condyle, 17·3 in. Extreme length of humerus, 21· in. Greatest width of humerus at termination of deltoid crest, 6·3 in. Greatest width of humerus at upper extremity, 6·2 in. Greatest oblique diam. of humerus at lower extremity, 7·8 in. Greatest ant. posterior diam. of upper extremity, 6·3 in. Greatest ant. post. diam. of lower extremity, 5· in. Circumference of shaft beneath deltoid crest, 11·5 in. Diameter of upper articular surface, 4·2 in. Width of lower articular surface, 4·6 in. Length of radius, 15·5 in. Width of upper extremity of ditto, 4·8 in. Probable width of lower extremity of ditto, 4·8 in. Length of ulna (olecranon broken), 19·3 in. Width of conjoined lower surfaces of radius and ulna, 6·6 in. Circumference round centre of conjoined shafts, 11·7 in.

Figs. 2, 2 *a*, 2 *b*, and 2 *c*.—Humerus, with strongly-developed deltoid crest. This specimen also is described and figured by Messrs. Baker and Durand, Journ. As. Soc., vol. v. p. 499, Plate XVII. fig. 5.—B.M.

Length of fragment, 12·2 in. Width including deltoid crest (upper extremity), 8· in. Antero-posterior diameter of ditto, 6·1 in. Length of deltoid crest, 8·2 in. Greatest width of lower extremity, 7· in. Antero-posterior diameter of ditto internally, 4·6 in. Width of lower articular surface, 4·4 in.

Figs. 3, 3 *a*, and 3 *b*.—Fragment of head of humerus.—B.M.

Length of fragment, 12·5 in. Width of upper extremity, including deltoid crest, 7·9 in. Antero-posterior diameter of ditto, 5· in. Length of deltoid crest, 8·6 in. Diameter of articular surface of head, 3·6 in.

Figs. 4, 4 *a*, and 4 *b*.—Fragment of lower end of humerus, with articulating surface.

Length of fragment, 10.4 in. Width of lower extremity, 5.4 in. Antero-posterior of lower extremity internally, 4.7 in.

Figs. 5, 5 *a*, and 5 *b*.—Fragment of lower end of humerus, with articulating surface.—B.M.

Length of fragment, 9.2 in. Width of lower extremity, 5.3 in. Antero-posterior diam. of lower extremity internally, 4.3 in.

Fig. 6.—Upper articulating surface of ulna, with upper end of radius. The tip of the olecranon is broken off.—B.M.

Width of articulating surface, 4.3 in. Chord of sigmoid cavity, 2.4 in.

Figs. 7, 7 *a*, 7 *b*, and 7 *c*.—Upper end of ulna, with entire radius.—B.M.

Extreme length of conjoined radius and ulna, 15.3 in. Length of radius from upper surface to styloid process, 11.3 in. Width of upper extremity of radius, 4 in. Width of lower extremity of radius across epiphysial line, 4 in. Circumference of radius in centre of shaft, 5.5 in.

Figs. 8, 8 *a*, and 8 *b*.—Fragment of radius, with lower articulating surface.—B.M.

Length of fragment, 9.4 in. Circumference of shaft at fractured extremity, 6.7 in. Width of lower articular surface, 3.6 in.

Figs. 9, 9 *a*, 9 *b*, and 9 *c*.—Fragment of ulna, with lower articulating surface.—B.M.

Length of fragment, 12.2 in. Greatest width of lower articular surface, 2 in. Least transverse diameter of shaft of tibia, 2.7 in.

PLATE LXXVIII.

Bones of Posterior Extremity of divers Fossil Indian Species of Rhinoceros.

Figs. 1, 1 *a*, and 1 *b*.—Femur of fossil Rhinoceros from the Sewalik hills. The figures are copied from drawings by Messrs. Baker and Durand, in the Journ. Asiatic Soc. for Aug. 1836, vol. v. p. 499. The specimen was found in close proximity to the humerus and radius, Plate LXXVII., fig. 1, so that there could be no doubt that it belonged to the same animal. It is perfect except at the lower part of the great trochanter. The fossil has a greater development in its anterior, and a somewhat less development of its posterior, extremity, than in the Indian Rhinoceros, but the difference is not excessive. The third trochanter also differs from the existing species, as figured in Cuvier's 'Oss. Foss.,' in not possessing the double point, for it has a single well-defined ascending process, without any sign of the bicuspid termination.

Length from head to bottom of inner condyle, 24.5 in.; from head to bottom of third trochanter, 17.7 in. Breadth from head to most salient point of great trochanter, 10.6 in. Breadth across condyles, 6.82 in. Diameter of articulating head, 4.65 in. Antero-posterior diameter of inner condyle, 8.45 in.; antero-posterior diameter of outer, 6.35 in.

Figs. 2 and 2 *a*.—Mutilated fragment of upper end of femur.—B.M.

Extreme length of fragment, 11.5 in. Width across third trochanter, 6 in. Circumference below third trochanter, 9.5 in.

Figs. 3, 3 *a*, 3 *b*, and 3 *c*.—Tibia and fibula conjoined.—B.M.

Extreme length of tibia, 16·9 in. Extreme length of fibula, 16 in. Extreme transverse diameter of upper extremity of tibia, 6·1 in. Extreme antero-posterior diameter of upper, including tuberosity, 7 in. Extreme width of lower articular surface, 3·8 in. Extreme antero-posterior diameter of ditto, 3·1 in. Least circumference of shaft of tibia, 9·1 in.

Figs. 4, 4 *a*, 4 *b*, and 4 *c*.—Fragment of tibia almost perfect.—B.M.

Extreme length, 13·6 in. Least circumference of shaft, 8 in.

Figs. 5, 5 *a*, and 5 *b*.—Fragment of tibia, including lower articulating surface.—B.M.

Length of fragment of tibia, 11·8 in. Width of inferior articular surface, 3·4 in. Least circumference of shaft, 8·1 in.

Figs. 6 and 6 *a*.—Patella.—B.M.

Height, 4·1 in.

Figs. 7 and 7 *a*.—Patella.

Height, 4·7 in. Width of articulating surface, 4 in. Height of ditto, 2·9 in.

Figs. 8, 8 *a*, and 8 *b*.—Bones of tarsus (calcaneum, scaphoid, cuboid, and three cuneiforms) with index and medius metatarsals. The calcaneum and scaphoid do not belong to the remainder.—B.M.

Greatest width of scaphoid, 3·1 in. Greatest width of cuboid, 2 in. Greatest width of external cuneiform, 2·3 in. Greatest width of middle ditto, 1·3 in. Greatest width of inner ditto, 1·9 in. Greatest width of upper articular surface of medius, 2·35 in. Greatest width of upper extremity of index, 1·75 in.

Figs. 9, 9 *a*, and 9 *b*.—Calcaneum.—B.M.

Extreme length, 5·5 in. Height, 3·4 in. Width, 2·8 in.

Figs. 10, 10 *a*, and 10 *b*.—Calcaneum.

Extreme length, 6·5 in. Height, 2·9 in. Width, 3·9 in.

Figs. 11 and 11 *a*.—Calcaneum.—B.M.

Extreme length, 5·8 in. Height, 3·1 in. Width, 3·4 in.

Figs. 12, 12 *a*, and 12 *b*.—Astragalus.—B.M.

Width of anterior articular surface, 3 in. Greatest width of cuboid segment of ditto, 1 in. Width of trochlea, 3·6 in. Antero-posterior diam. of trochlea in centre, 2 in. Greatest height, 2·8 in. Greatest antero-posterior diameter internally, 3·6 in.

Figs. 13, 13 *a*, and 13 *b*.—Astragalus.

Width of anterior articular surface, 3·4 in. Greatest width of cuboid segment of ditto, 1·1 in. Width of trochlea, 3·3 in. Antero-posterior diam. of trochlea in centre, 2 in. Greatest height, 2·6 in. Greatest antero-posterior diameter internally, 3·5 in.

PLATE LXXIX.

Bones of Anterior and Posterior Extremities of divers Fossil Indian Species of Rhinoceros.

Figs. 1, 1 *a*, 1 *b*, and 1 *c*.—Left scaphoid bone of carpus.—B.M.

Height, 2·5 in. Width of inferior articular surface, 2·9 in. Greatest antero-posterior diameter, 2·6 in.

Figs. 2, 2 *a*, 2 *b*, and 2 *c*.—Left scaphoid of carpus.—B.M.

Greatest height, 2·6 in. Antero-posterior diameter, 2·35 in. Width of inferior articular surface, 2·7 in.

Figs. 3, 3 *a*, and 3 *b*.—Unciform bone of carpus.—B.M.

Greatest antero-posterior diameter of upper surface, 2·1 in.

- Figs. 4, 4 *a*, and 4 *b*.—Unciform bone of carpus.—B.M.
Greatest antero-posterior diameter of upper surface, 2·2 in.
- Figs. 5, 5 *a*, and 5 *b*.—Unciform bone of carpus.—B.M.
Greatest antero-posterior diameter of upper surface, 1·6 in.
- Figs. 6, 6 *a*, and 6 *b*.—Trapezoid bone of carpus.
Antero-posterior diameter of upper articular surface, 1·4 in.
- Figs. 7, 7 *a*, and 7 *b*.—Left index metacarpal bone.—B.M.
Extreme length, 6·5 in. Width of shaft in centre, 1·7 in.
- Figs. 8, 8 *a*, and 8 *b*.—Right index metacarpal bone.—B.M.
Extreme length, 6·5 in. Width of shaft in centre, 1·5 in.
- Figs. 9, 9 *a*, and 9 *b*.—Left index metacarpal bone.—B.M.
Extreme length, 6·6 in. Width of trapezoid surface, 1·1 in. Width of shaft in centre, 1·6 in.
- Figs. 10, 10 *a*, and 10 *b*.—Left medius metacarpal bone.—B.M.
Extreme length, 7·2 in. Greatest width of shaft, 2·3 in.
- Figs. 11, 11 *a*, and 11 *b*.—Left medius metacarpal bone.—B.M.
Extreme length, 7·3 in. Extreme width of shaft, 2·3 in.
- Figs. 12, 12 *a*, and 12 *b*.—Left medius metacarpal bone.—No. 39,655 B.M.
Width of surface for os magnum, 2· in. Width of surface for os unciforme, 1· in. Width of shaft, 2· in.
- Figs. 13, 13 *a*, and 13 *b*.—Left annularis metacarpal bone.—B.M.
Extreme length, 6·5 in. Width of shaft in centre, 1·7 in.
- Figs. 14, 14 *a*, and 14 *b*.—Left annularis metacarpal bone.—B.M.
Extreme length, 6·3 in. Width of facet for unciform, 1·5 in. Width of shaft in centre, 1·5 in. Width of distal articular surface, 1·65 in.
- Figs. 15 and 15 *a*.—Index and medius metatarsal bones conjoined.
b. Index. *c*. Medius.—B.M.
Extreme length of index, 6·5 in. Extreme length of medius, 7·5 in. Width of index shaft at centre, 1·3 in. Width of medius shaft at centre, 2·3 in.
- Figs. 16, 16 *a*, and 16 *b*.—Right index metatarsal bone.—B.M.
Extreme length, 6·95 in. Width of shaft in centre, 1·25 in.
- Figs. 17, 17 *a*, and 17 *b*.—Right medius metatarsal bone.—B.M.
Extreme length, 6·5 in. Width of shaft in centre, 1·9 in.
- Figs. 18, 18 *a*, and 18 *b*.—Left medius metatarsal bone.—B.M.
Extreme length, 6·7 in. Width of shaft in centre, 2·05 in.
- Figs. 19, 19 *a*, and 19 *b*.—Left annularis metatarsal bone.—B.M.
Extreme length, 5·6 in. Width of shaft in centre, 1·4 in.
- Figs. 20, 20 *a*, 20 *b*, 20 *c*, and 20 *d*.—Medius metatarsal bone.—B.M.
Extreme length, 6·1 in. Width of shaft in centre, 2·3 in.
- Figs. 21, 21 *a*, and 21 *b*.—Calcaneum.—B.M.
Extreme length, 5·8 in. Extreme height, 2·9 in. Extreme width, 3·6 in.
- Figs. 22, 22 *a*, 22 *b*, and 22 *c*.—Cuboid bone.—B.M.
Greatest antero-posterior diameter of upper surface, 1·8 in. Greatest width of ditto, 2·35 in. Greatest height, 3· in.
- Figs. 23, 23 *a*, 23 *b*, and 23 *c*.—Cuboid bone.
Greatest antero-posterior diameter of upper surface, 1·65 in. Greatest width of ditto, 2· in. Greatest height, 2·75 in.

PLATE LXXX.

Chalicotherium Sivalense (Falc. and Caut.).

Figs. 1, 1 *a*, 1 *b*, and 1 *c*.—Anterior half of an adult head, with the upper and lower jaws in natural apposition, and exhibiting the greatest portion of the dental series of both jaws. The greater part of the cranium proper is absent. The specimen demonstrates the very remarkable fact that the *Chalicotherium Sivalense* was entirely destitute of incisor teeth in either jaw. The intermaxillary bones are perfect to their tips, and consist of slender slips of bone converging to a sharp point; they show that no incisor teeth could have existed in the upper jaw at any period of the animal's age. The anterior portion of the lower jaw is perfect to the alveolar edge. A detached canine is seen on either side, but the intervening space is without a vestige of incisors, and is contracted in correspondence with the convergence of the intermaxillary bones, and sloped off to a fine edge. The upper jaw is also destitute of canines, or of any trace of canine alveoli; but the lower jaw contains two canines, as shown in figs. 1 *a* and 1 *b*, the crowns of which are thick, cuneiform, and somewhat triangular, and slightly inclined forwards, with a blunt apex. The specimen shows three premolars and the first true molar; the two back molars are absent. The characters of the molars are better seen in figs. 3 and 4, and are described in great detail in Dr. F.'s memoir on *Chalicotherium*.

This beautiful specimen was originally in the Dadoopoor collection of Messrs. Baker and Durand, and is now in the Museum of Marischal College, Aberdeen. Cast in B.M. Its dimensions are as follows:—

Length of intermaxillary bone of right side, 3 in. Greatest depth of ditto, .4 in. Length of three premolars and first molar, 2.6 in. Length of three premolars, 1.8 in. Breadth of fragment opposite last premolar, 3.2 in. Breadth of palate .5 in. in front of anterior premolar, 1.5 in. Breadth of palate 1.2 in. in front of anterior premolar, 1.1 in. Height of fragment of maxillary bone from alveolar border (right side), 2.5 in. Length of fragment of maxillary bone on right side, 3.9 in. Greatest breadth of anterior nares, 1.3 in. Extreme length of fragment of lower jaw, 5.5 in. Length of symphysis, 3.1 in. Depth of horizontal ramus at posterior border of first molar, 1.6 in. Greatest thickness of ramus at ditto, .8 in. Interval between the horizontal ramus at ditto, 1 in. Breadth of lower jaw at posterior border of symphysis, 2.2 in. Least breadth of symphysis, 1.1 in. From posterior border of symphysis to narrowest part of symphysis, 1.9 in. Between alveolar border of canines, 1.2 in. Breadth of incisive margin, .9 in. Width of palate posteriorly between first molars, 1.3 in. Length of first premolar, upper jaw, right side, .5 in. Length of second premolar ditto, .55 in. Length of third premolar (greatest) ditto, .7 in. Length of first molar ditto, .95 in. Breadth of first molar ditto, 1.03 in. Breadth of third premolar ditto, .9 in. Breadth of second premolar ditto, .76 in. Breadth of first premolar ditto, .53 in. Length of three premolars and first molar, 2.8 in. Length of three premolars, 1.8 in. Between opposed margins of canine and first premolar, .9 in. Between anterior margin of first premolar and incisive margin, 1.7 in. Length of first premolar, lower jaw, .5 in. Length of second premolar, ditto, .6 in. Length of third premolar, ditto, .8 in. Length of first molar, ditto, 1.0 in. Breadth of first molar, ditto, .6 in. Breadth of third premolar, ditto, .5 in. Breadth of second premolar, ditto, .43 in. Breadth of first premolar, ditto, .3 in. Length of crown of canine, .45 in. Breadth of crown of canine, .3 in.

Fig. 2.—*Chalicotherium Sivalense*. Upper jaw, right side, with part of orbit, three true molars and last premolar. The muzzle seems to have fined off rather abruptly in front of the molar protuberances,

and the orbit to have been more forward on the face and more depressed below the brow than in *Anoplotherium commune*. The upper surface of the sub-orbital canal is seen opening behind the anterior angle of the orbit, the floor of which seems to have extended behind the post-orbital processes.—B.M.

This specimen is also figured as *Anoplotherium Sivalense* in the Proceedings Geol. Soc., No. 98, 1843, Plate II. fig. 2.

Figs. 3 and 3 a.—*Chalicotherium Sivalense*. Horizontal and lateral view of left upper jaw, comprising the three true molars and three premolars. The true molars, and especially the two last, are enormously large in comparison with the other teeth, or with the dimensions of the head. If found isolated, they would seem suitable to an animal approaching the size of Rhinoceros, whereas the anterior part of the lower jaw and the muzzle do not reach the dimensions of the Indian Tapir. The outer surface of the molars presents both vertically and horizontally the double chevron or W form of *Anoplotherium*, but with this difference, that the surface of the re-entering angles is more inclined inwards. The characters of the teeth in this specimen are minutely described in the memoir on *Chalicotherium*.

This specimen is also figured in the Proceedings Geol. Soc. No. 98, 1843, Plate II. fig. 1.—B.M.

Figs. 4 and 4 a.—*Chalicotherium Sivalense*. Fragment comprising the left half of the lower jaw from the angle on to the commencement of the symphysis of an individual which was not quite full grown, containing three true molars and the last premolars, with the empty alveoli of the first two premolars. The last premolar is fully protruded, but unworn; the last molar is in the germ state. The characters of the teeth in this specimen are minutely described in the memoir on *Chalicotherium*.—B.M.

The dimensions of the specimen are as follows:—

Extreme length of fragment, 6·8 in. Greatest depth of ramus, 2·1 in. Greatest thickness (towards symphysis), 1·1 in. Depth of ramus at anterior margin of third premolar, 1·5 in. Length of alveolus of second premolar, ·55 in. Breadth of alveolus of ditto, ·35 in. Length of third premolar, ·7 in. Breadth of ditto, ·5 in. Length of first molar, ·8 in. Breadth of ditto, ·5 in. Length of second molar, 1·2 in. Breadth of ditto, ·65 in. Length of third molar, 1·5 in. Breadth of ditto, ·65 in.

PLATE LXXXI.

Figs. 1, 1 a, and 1 b.—*Equus Sivalensis* (Falc. and Caut.). Cranium. Upper, palate, and lateral views. The specimen is broken off transversely in front of the second premolar. The three true molars and two back premolars on the right side are well preserved. The left alveolar ridge is mostly deficient.—B.M.

Length of fragment, 15· in. Between extreme points of zygomata, 8·1 in. Between anterior angles of the orbits, 6·2 in. Breadth of nasal ridge at sub-orbital foramen, 2·7 in. Height of cranium from palate at ditto, 3·3 in. From anterior angle of orbit to nasal notch, 6· in. Great diameter of orbit, 2·6 in. Lesser diameter of orbit, 1·9 in. Depth of zygomatic fossa, 1·8 in. Greatest width of cranium at root of zygomata, 4·5 in. Height of cranium from base of occipital to summit of sagittal crest, 3·6 in. From lower border of occipital foramen to posterior border of palate, 8·5 in. Length of three true molars, 3·1 in. Length of two posterior premolars, 2·2 in. Width of palatine notch, 1·9 in. Width of palate posteriorly, 3·3 in. Width of palate anteriorly, 2·5 in. Width of alveoli, 1·2 in.

Figs. 2, 2 *a*, and 2 *b*.—*Equus Sivalensis*. Fragment comprising posterior portion of skull, broken off in front in a line with anterior angles of zygomatic arches. Shows occipital foramen, crest, condyles, and posterior roots of zygomata.—B.M.

Length of fragment, 7.5 in. Height of occipital facet from lower border of occipital foramen to summit of occipital crest, 4.8 in. Between inferior angles of occipital crest, 4.7 in. Breadth of cranium between roots of zygomata, 3.7 in. Length of ridge of occipital condyle, 1.7 in. Height of condyle (greatest), 2.1 in. Between inner margins of condyles, 1.5 in. Height of occipital foramen, 1.6 in.

Fig. 3.—*Equus Sivalensis*. Fragment of upper jaw, with whole series of six molars.—B.M.

Length of fragment, 9.3 in. Height of fragment (length of molar), 4.1 in. Length of molar series, 7.7 in. Length of three true molars, 3.4 in. Breadth of alveoli, 1.3 in.

Fig. 4.—*Equus Sivalensis*. Fragment of horizontal ramus of lower jaw with whole series of six molars.—B.M.

Length of fragment, 11 in. Depth of jaw at anterior border of fourth premolar, 3.6 in. Width of ditto, 1.2 in. Length of molar series, 7.8 in. Length of three true molars, 3.7 in.

Figs. 5, 5 *a*, 5 *b*, and 5 *c*.—*Equus Namadicus* (Falc. and Caut.), from the Nerbudda Valley. The occipital condyles and foramen and the left zygomatic arch are very perfect; also the whole series of six molars on left side. The specimen is broken off in front of first (permanent) premolar on left side; from this the line of fracture passes obliquely across the palate and through the middle of the hindmost right premolar. The three right true molars are present. The right zygomatic arch is absent.—B.M.

Extreme length of fragment, 17.6 in. From lower border of occipital foramen to posterior border of palate, 9.6 in. Greatest breadth of cranium at roots of zygomatic processes, 4.4 in. Between extreme points of zygomata, 7.9 in. Between anterior angles of orbits, 6 in. Height of cranium from palate at fractured extremity, 3.6 in. Great diameter of orbit, 2.8 in. Lesser diameter of orbit, 1.8 in. Height of occipital facet from lower border of occipital foramen, 4.2 in. Between inferior angles of occipital facet, 4.1 in. Depth of zygomatic fossa, 1.7 in. Width of palatine notch, 1.7 in. Width of palate posteriorly, 3 in. Width of palate anteriorly, 2.7 in. Width of alveoli, 1.1 in. Length of molar series, 7 in. Length of true molars, 3.3 in.

Fig. 6.—*Equus Namadicus*. Fragment of left upper jaw comprising whole molar series.—B.M.

Length of fragment, 9.2 in. Length of molar series, 7 in. Length of three true molars, 3.2 in. Breadth of alveoli, 1.2 in.

Fig. 7.—*Equus Namadicus*. Fragment of left lower jaw with entire molar series. The fracture exposes the fang of the last true molar.—B.M.

Length of fragment, 12.7 in. Depth of jaw at anterior border of fourth premolar, 3.8 in. Width, 1.2 in. Length of molar series, 8 in. Length of three true molars, 3.8 in.

PLATE LXXXII.

Fig. 1.—*Equus Sivalensis*. Upper jaw, right side, with entire molar series.—B.M.

Length of third molar, 1.16 in. Breadth of ditto, 1.03 in. Length of second molar, 1.16 in. Breadth of ditto, 1.2 in. Length of first molar, 1.16 in. Breadth