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IV.—CATALOGUE OF VERTEBRATE FOSSILS FROM THE SIWALIKS OF INDIA IN THE SCIENCE AND ART MUSEUM, DUBLIN.

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[Read, March 17, 1884.]

Having been recently engaged in naming and cataloguing the valuable collection of Vertebrate Fossils from the Siwaliks* of India which are contained in the Dublin Museum of Science and Art, I have thought it advisable to submit this Catalogue, with a few notes on the more important specimens, to the Royal Dublin Society, in the hope that they may deem it worthy of a place among their publications. I am induced to do this from the circumstance that the collection contains a considerable number of extremely rare and even unique specimens (many of which I have lately had an opportunity of figuring and describing in the "Palæontologia Indica"; and the figures of which, by the permission of the Superintendent of the Geological Survey of India, are here reproduced); whence it is extremely important that there should be a permanent and easily accessible record of the whole contents of the collection. It is only by the publication of catalogues like the present that collections of special interest and value contained in local museums can be made useful to students working on the subjects of such collections.

The present collection, as I am informed by the Director of the Museum, has been made by the fusion of five smaller collections; and in its present condition is probably second only to the collection of the British Museum, among the collections of the United Kingdom. The specimens from each of the five minor

* It may be well to mention that the Siwaliks of India, Burma, and Perim Island, in the Gulf of Cambay, correspond in the main to the pliocene of Europe, but may possibly also contain some representations of the upper miocene. For the distribution of the formation the reader is referred to Medlicott and Blanford's "Manual of the Geology of India" (Calcutta, 1879); and for the vertebrate fauna to Falconer and Cautley's "Fauna Antiqua Sivalensis" (London, 1846–49); to "The Palæontological Memoirs of the late Hugh Falconer," edited by Chas. Murchison (London, 1868); and to the works of the present writer in the Memoirs of the Geological Survey of India ("Palæontologia Indica," ser. x., vols. i., ii., iii.).

collections are indicated in this catalogue by a distinctive letter; the origin of the five collections being as follows:—

A. Specimens from the Sub-Himalayan Siwaliks, presented by the Board of Trinity College.

B. Specimens from the Sub-Himalayan Siwaliks, from the old collection of the Museum of Trinity College, presented by the Board.

C. Specimens from the Sub-Himalayan Siwaliks, purchased from Dr. Beatty by the Royal Dublin Society.

D. Specimens presented by Sir Proby T. Cautley to the Museum of the Royal Dublin Society.

G. Specimens from the Siwaliks of Perim Island, Gulf of Cambay, presented by the Board of Trinity College.

The specimens in the series A, B, D, and G, although interesting, and affording a number of specimens of good typical value, are not of especial value; since they consist entirely of remains belonging to species abundantly represented in the British Museum and other large collections. The case is, however, very different with series C, which contains the above-mentioned rare or unique specimens. This series is especially rich in the remains of Carnivora, which are, comparatively speaking, of extremely rare occurrence in the Siwaliks; it also contains some valuable remains of *Rhinoceros* and *Sus*, and a few reptilian and fish remains, which are probably new. Apparently all the specimens in this series were collected by the late Generals Sir W. E. Baker and Sir H. M. Durand, who were among the earliest collectors of Siwalik fossils, and obtained a large series of very valuable specimens. A large number of the Dublin specimens, together with other specimens now in the British Museum, were described and figured by those palæontologists in the "Journal of the Asiatic Society of Bengal."* How these valuable specimens came into the possession of Dr. Beatty is not recorded; and the present writer had long been fruitlessly endeavouring to discover what had become of them, until he was informed of their existence in Dublin, by the present Director of the Museum, when Professor of Geology at Trinity College.

In general the present catalogue merely records the name of each specimen, but in the case of some of the more important specimens in series C a brief *resumè* of some of the most striking specific characters is appended. The collection, like all collections of Siwalik bones, embraces a large number of the remains of bovoid, antelopoid, and cervoid ruminants, which it is in most cases impossible to determine even generically: these are, therefore, very generally entered in the catalogue merely as belonging to undetermined ruminants.

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SUB-ORDER 3: PERISSODACTYLA.

Family I.—*Rhinocerotidæ.*

C. a. RHINOCEROS PLATYRHINUS, Falc. and Caut.—First or second left upper true molar, in a well-worn condition. This specimen is figured on a smaller scale in "Journ. Asiat. Soc., Bengal," vol. v., pl. xix., figure 6; and of the full size in figure 2, plate III., accompanying this catalogue. The teeth of the present species, which is a two-horned form, are of extremely rare occurrence; and the present specimen is the most perfect known example in this stage of wear. This specimen exhibits in great perfection the accessory fossette (*o*),* formed by the union of the large crochet (*e*) and combing-plate (*n*), and thus differs from the corresponding tooth of the one-horned *R. palæindicus* (see "Pal. Ind.," vol. iii., p. 4, woodcut), which in the same state of wear has no fossette. The two teeth are, however, otherwise very similar, especially in the form of the two colles (*a*, *b*).

C. b. RHINOCEROS PALÆINDICUS, Falc. and Caut.—First or second left upper true molar, in an early stage of wear. This specimen is figured on a small scale in "Journ. Asiat. Soc. Bengal," vol. v., pl. xix., fig. 5; and of full size in figure 3, plate III., accompanying this catalogue. The teeth of this species are nearly as rare as those of the last, and the present tooth is the most perfect known specimen in an early stage of wear. It exhibits very clearly the characteristic points, viz., the apposition of the two colles (*a*, *b*); the large size of the anterior collis (*a*); the absence of a "buttress" at the antero-external angle of the crown, and the slight prominence of the costæ (*c*, *d*); the well-developed crochet (*e*); and the absence, in this stage of wear, of an accessory fossette at the extremity of the median valley (*g*).

C. c. RHINOCEROS PALÆINDICUS, Falc. and Caut.—Right upper milk-molars, partially worn. This specimen is figured on a small scale in "Journ. Asiat. Soc. Bengal," vol. v., pl. xix., figure 2, and of the full size in figure 1, plate III., accompanying this catalogue. The only other known example of the upper milk-dentition of this species is in the British Museum, and is figured in "Pal. Ind.," ser. x., vol. ii., pl. vii., fig. 3: it is contained in an immature skull, figured in plate lxxiv., figs. 1, 1 *a*, 1 *b*, 1 *c*, of the "Fauna Antiqua Sivalensis." The Dublin example is the more perfect of the two. The grounds for referring these specimens to

* The letters employed in the figures are the same as those used in "Pal. Ind.," ser. x., vol. iii. pt. i., where the terms here used are explained.

R. palæindicus are—firstly, that the cranium in the British Museum indicates that the species to which it belonged was a one-horned form: and secondly, that the milk-molars are of too large a size to have belonged to *R. sivalensis*—the other one-horned form. The Dublin specimen shows that the structure of the milk-molars is rather more complex than that of the true molars of *R. palæindicus*.

C. d. RHINOCEROS, sp.—Left ramus of mandible of young individual. This specimen is figured in "Journ. Asiat. Soc. Bengal," vol. v., pl. xvi., fig. 2, and may possibly belong to the same individual as the last.

A. $\frac{5}{17}$. RHINOCEROS, sp.—Part of mandible.

C. e. RHINOCEROS, sp.—Bones of fore-foot. This specimen is figured in "Journ. Asiat. Soc. Bengal," vol. v., pl. xvii., fig. 14, and is one of the few Siwalik specimens that exhibit several bones in their original connexion.

A. 78. RHINOCEROS, sp.—Bones of foot.

C. 24. RHINOCEROS, sp.—Astragalus; figured in "Journ. Asiat. Soc. Bengal," vol. v., pl. xvii., fig. 8.

A. 85. (?) RHINOCEROS, sp.—Astragalus. This bone is more elongated vertically than the last, and indicates a different species.

D. 61. RHINOCEROS, sp.—Head of femur.

G. 41. RHINOCEROS, or ACERATHERIUM, sp.—Lower canine.

A. $\frac{3}{33}$. RHINOCEROS, sp.—Fragment of mandible, without teeth.

D. 62. RHINOCEROS, sp.—Distal extremity of metacarpal or metatarsal.

C. 18. RHINOCEROS, sp.—Fragment of mandible, with two broken molars.

Family 2.—*Equidæ*.

D. 28–9. EQUUS NAMADICUS, Falc. and Caut.—Anterior portion of maxillæ of both sides, similar to specimen figured in "Pal. Ind.," ser. x., vol. ii., pl. xiv., fig. 3.

A. a. EQUUS, sp. Last right upper molars.

D. 58.	TRIONYX, sp.	Costal plate of a very large species.
D. 58*a*.	,,	Extremity of a costal plate of a still larger individual.
D. 58*b*.	,,	Costal plate.
A. 158.	,,	Extremity of costal plate of a young individual.
A. 158*a*.	,,	Part of costal plate.
A. 157.	,,	Part of costal plate.
D. 60.	EMYDA, sp.	Part of anterior costal plate.
C. t.	,,	Part of anterior costal plate.

CLASS: *PISCES*.

C. 92. Head of undetermined teleostean fish. This specimen is unique.
A. $\frac{3}{4\,3}$. Fragments of vertebræ and other bones of a fish.

For the dates of the publication of the names of the various species of mammalia mentioned in the foregoing catalogue, see "Palæontologia Indica," ser. x., vol. iii., p. 128, *et seq.* (1884).

EXPLANATION OF PLATE III.

Fig. 1. *Rhinoceros palaindicus*, Falc. and Caut.—Fragment of right maxilla, containing three milk-molars (No. C. c.).

Fig. 2. *Rhinoceros platyrhinus*, Falc. and Caut.—First or second left upper true molar, in a well-worn condition (No. C. a.).

Fig. 3. *Rhinoceros palaindicus*, Falc. and Caut.—First or second left upper true molar, in an early stage of wear (No. C. b.).

All the figures natural size—*a*, anterior collis; *b*, posterior collis; *c*, second costa; *d*, first costa; *e*, crochet; *g*, median valley; *i*, posterior valley; *n*, combing-plate; *o*, accessory fossette.

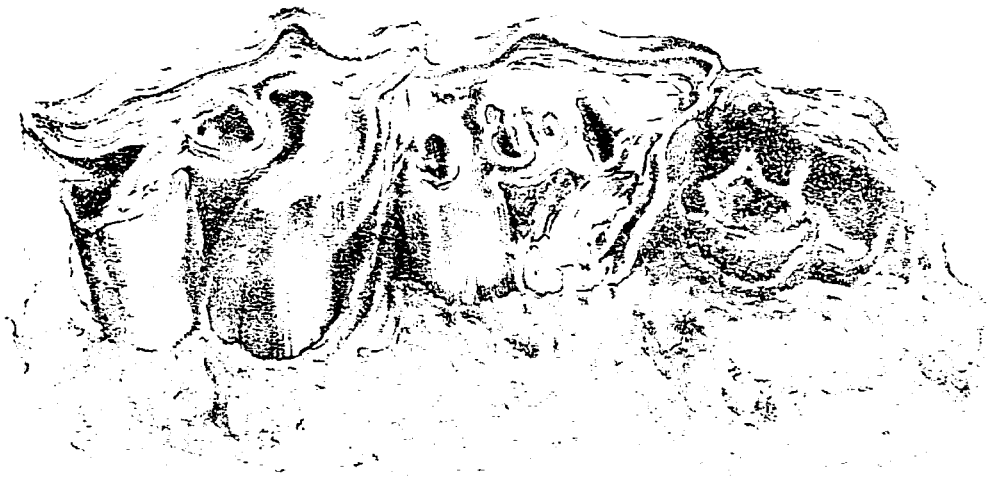

Fig 1

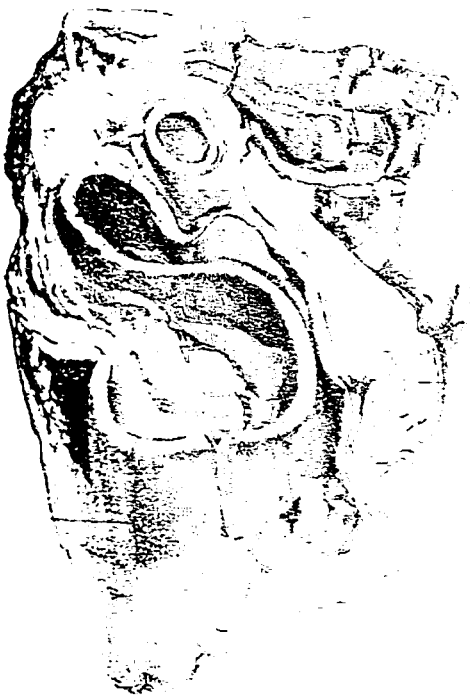

Fig 2.

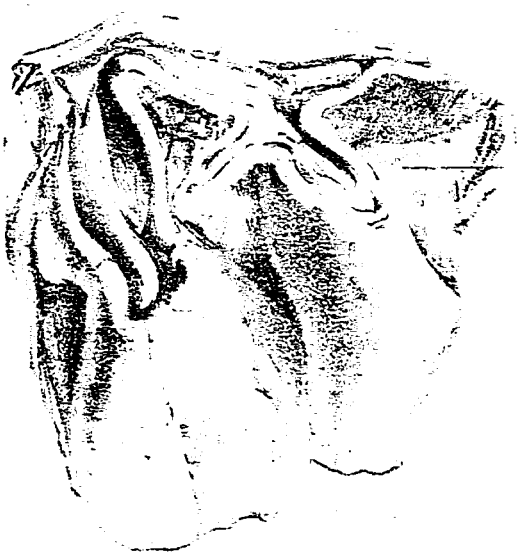

Fig 3.