ON A COLLECTION OF MAMMALS FROM CHOTA NAGPUR, BIHAR.

By BHOLA NATH, M.Sc., *Research Scholar, Zoological Survey of India, Calcutta.*

INTRODUCTION.

The published accounts of Mammals of the Chota Nagpur Division are very scanty. The only noteworthy report on the mammals of the Chota Nagpur is from the collection of mammals made by the Bombay Natural History Society's Mammal Survey (*vide* Wroughton[1]).

Early in April 1948, a party of the Zoological Survey of India was sent out for general faunistic survey to Parasnath Hill and Ranchi in Chota Nagpur, Bihar, for a period of about 3 weeks. Later, in November 1948, another party was sent to Manbhum district, Bihar, and the adjoining eastern areas on the Bihar-Bengal border which form the eastern part of Chota Nagpur Division, for a period of one and a half months from early November to middle December 1948. The party especially surveyed those areas where dam construction projects are located, with a view to know the fauna before the dams are actually constructed and, later after the construction of dams in order to study the animal ecological succession. A total of 160 specimens of mammals, comprising 18 species (Insectivora 3, Chiroptera 5, Carnivora 3, Primates 1 and Rodentia 6) were collected and examined.

Measurements of skins and skulls were taken as described by Roonwal[2] (1948 ; 1949). The abbreviations used are as follows : H. & B. (Head and Body) ; Tl. (Tail) ; H. F. (Hind-Foot) ; E. (Ear).

The physiography[3], etc. of the areas visited in Parasnath Hills and Ranchi are described below.

(*a*) *Parasnath Hill* is situated in the east of the Giridih subdivision of Hazaribagh District, Bihar, and adjoining Manbhum. It lies between the lat. 23° 58′ N. and long. 86° 8′ E. The hill consists of a central narrow ridge with several craggy peaks rising solitarily from a vast flat plain and reaching an altitude of 4,477 ft. above sea level and extend to south-east forming boundary between Hazaribagh and Manbhum where it subsides eventually into an extended belt of high land with peaked hills. The hill is devoid of any large spurs on the south-west where it is somewhat precipitous, but to the north and west the spurs are very extensive and extending as far as the Barkar river. The slopes except for a few grass covered spaces near the summit are covered with dense

[1] Wroughton, R. C., *Journ. Bombay Nat. Hist. Soc.* XXIV (1), pp. 96-110 (1915).
[2] Roonwal, M. L., *Proc. Nat. Inst. Sci. India* XIV, p. 385 (1948) & *Rec. Ind. Mus.* XLVII, pp. 2-4 (1949).
[3] Adopted from the *Imperial Gazetteer of India.*

jungles which periodical forest fires prevent from reaching any great length and its atmosphere damper than the atmosphere of the surrounding country. The area towards the western slope of Parasnath Hill is clothed with scrub jungles, including much stunted Sal (*Shorea robusta*) but to the south the ground is flat and divided into endless paddy fields with plenty of tanks and here and there a low jungle-covered hillocks, abruptly rising from the plain.

The period from April to June is the hottest with very low humidity. The mean temperature increases from 76°F. in March to 85°F. in April and May, the mean maximum from 89°F. in March to 99°F in May, and the mean minimum from 64°F. to 76°F. In winter season from November to February the mean temperature is 60° and mean minimum 51° The annual rainfall averages 53 inches.

Collections were made at the following places adjoining the Parasnath Hills :—

Nimiaghat—in and around the village ; also near the bank of adjacent Rosan river.

Madhuban—in and around the village and also from the adjoining jungle.

Top-Chanchi—from fields and adjoining jungle.

(*b*) *Ranchi* is situated on the high central plateau of Ranchi district lying between the lat. 22° 20′ and 23° 43′ N. and long. 84° 0′ and 85° 54′ E. The general surface of the ground is undulating and rugged rocks are found here and there covered with scrub. The district is cut across by a number of rivers and rivulets which form the tributaries of Subaranrekha.

The average temperature of the year is 68°F (min.) and 88°F. (max.) During the cold season the mean temperatue is 63°F. and the mean minimum 51°F. The annual rainfall averages 52 inches.

Collections were made from fields.

Physiography[1] *of the Manbhum district and the adjoining areas on the border of Bihar-Bengal.*—The Manbhum district of the Chota Nagpur Division of Bihar lies between the lat. 22° 43′ and 24° 4′ N. and long. 85° 49′ and 86° 54′ E. In the north and east the ground is flat, covered with scrubs and divided into endless paddy fields with plenty of tanks, dotted here and there with isolated concial hills, while in the west and south the country is more broken and covered with rocks, hills and dense jungles. The hills are covered almost to their summits with large and heavy forest. The district is cut across by a large number of rivers and rivulets which form the tributaries of Damodar and Barakar rivers.

The temperature is moderate except during the hot months of April, May and June when the country presents a scorched and dreary appearance. The mean temperature increases from 82°F. in March to 89°F. in April, May and June, the mean maximum from 95°F. in March to 101°F. in May, and the mean minimum from 68° to 76° During the cold months the mean temperature is 62°F. and the mean minimum 51°F. The annual rainfall averages 53 inches.

In this district collections were made from the following hills: —

Maithon Hill, alt. *ca* 725 ft. above sea level. Collected from the jungle and understones at the base of Hill.

Durgapur (Kanja Pahar), alt. *ca* 1,480 ft. above sea level. Collected from the jungle and at the base of hill.

Panchet Hill, about 3 miles in length, alt. 1,600 ft. above sea level. Collected from jungle and at the base of the hill.

The other collections were made from villages situated along the Grand Trunk Road and Barakar-Purulia Road.

The acompanying map (Text-fig. 1) shows the positions of the different localities surveyed.

[1]Adapted from the *Imperial Gazetteer of India.*

ACKNOWLEDGMENTS.

I am grateful to Dr. M. L. Roonwal, Zoological Survey of India for checking some of the identifications and for constant guidance throughout the preparation of this report. My thanks are also due to Dr. S. L. Hora, Director, Zoological Survey of India for the encouragement given throughout the period of this work.

SYSTEMATIC ACCOUNT.

Order 1. INSECTIVORA.

Family (i) SORICIDAE.

Suncus caeruleus caeruleus (Kerr).

(The Common Indian Musk-shrew.)

1792. *Sorex caeruleus*, Kerr, *Anim. Kingd.*, p. 207 (Java and other islands of E. Indies).

1929. *Suncus caeruleus caeruleus*, Lindsay, *Jour. Bombay Nat. Hist. Soc.* XXXIII(2), p. 329.

Specimens collected.—3 (1 ♂ and 2 ♀♀), thus ; 1 ♂ (26-11-1948) and 1 ♀ (27-11-1948) from village Inanpur, about 2 miles E. of Panchet. Hill ; and 1 ♀ (8-12-1948) from Purulia, about 35 miles S. of Inanpur Manbhum district, Bihar (Chota Nagpur Survey).

Measurements (in mm.).—1 ♂ : H. & B. 128 ; Tl. 73·5 ; H.F. 22, E. 11·5. 2 ♀♀ ; H. & B. 131-132, Tl. 79-86 ; H.F. 20-21 ; E. 11-14.

Skull : Greatest length or occipito-premaxillar length : 1 ♂ 31·5, 1 ♀ 31·9 ; condylo-basal length : 1 ♂ 32·2 ; 1 ♀ 32·7 ; cranial width ; 1 ♂ 13·1, 1 ♀ 14·2 ; intra-orbital width : 1 ♂ 6·2, 1 ♀ 6·2 ; zygomatic width : 1 ♂ 11·65, 1 ♀ 11·7 ; breadth of rostrum over canines : 1 ♂ 3·8, 1 ♀ 4 ; maxillary teeth row (exclusive incisors) : 1 ♀ 11·9, 1 ♀ 12·1 ; mandibular length : 1 ♂ 15·5, 1 ♀ 15·5.

Remarks.—These shrews were quite common at Inanpur and Purulia about 2 and 35 miles respectively from Panchet Hill, Manbhum district, Bihar.

Suncus caeruleus giganteus (Geoffroy).

(The Indian Grey Musk-shrew.)

1837. *Sorex giganteus*, Is. Geoffroy, *Voy. Belang.*, p. 117 (Darbhanga district, Bihar).

1929. *Suncus caeruleus giganteus*, Lindsay, *Jaur. Bombay Nat. Hist. Soc.* XXXIII(2), pp. 329-330.

Specimens collected.—3 (2♂♂ & 1 ♀), thus : 1 ♂ from Begunia about 1 mile from the Barakar railway station. 8-11-1949 ; and 1♂ and 1♀ from Barakar Inspection bungalow, about 1½ miles from Barakar railway station, Burdwan district, Bengal. 19 and 21-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).—2 ♂♂ : H. & B. 142-165 ; Tl. 90-105 ; H.F. 23·5-24 ; E. 12·5-17 ; 1 ♀ : H. & B. 135 ; Tl. 83·4 ; H.F. 21·2 ; E. 11.

Skull : Greatest length or occipito-pre maxillar length : 1 ♂ 35·7, 1 ♀ 34·2 ; condylobasal length : 1 ♂ 36·8, 1♀ 34·9 ; cranial width : 1 ♂ 15·8, 1 ♀ 14·3 ; inter-orbital width : 1 ♂ 6·4, 1 ♀ 6·3 ; zygomatic width : 1 ♂ 13·1, 1 ♀ 12·4 ; breadth of rostrum over canines : 1 ♂ 5·1, 1 ♀ 3·8 ; maxillary tooth row (exclusive canine) : 1 ♂ 13·7, 1 ♀ 12·39 ; mandibular tooth row : 1 ♂ 11·4, 1 ♀ 10·6 ; mandibular length : 1 ♂ 18·1, 1 ♀ 16·6.

Remarks.—These shrews were very common in houses at Barakar. In the night they used to come freely in rooms and gardens. Its musky smell and occasional shrill voice in the darkness are very characteristic.

Suncus perrotteti (Duvernoy).

(The Indian Pigmy Shrew.)

1842. *Sorex perrotteti*, Duvernoy, *Mag. Zool.*, p. 29, pl. XLVII (Nilgiris, S. India).
1888. *Crocidura perrotteti*, Blanford, *Faun. Brit. Ind.* Mam., p. 241.
1929. *Suncus perrotteti*, Lindsay, *Journ. Bombay Nat. Hist. Soc.* XXXIII, (2), p. 327.

Specimen collected.—1 (unsexed) from Maithon Dam site, 6 miles from Barakar Railway Station, Manbhum district, Bihar, 15-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).—1 (unsexed) : H. & B. 41 ; Tl. 29 ; H. F. 7·9 ; E. 6·5.
Skull : Greatest length or occipito-premaxillar length 11·1 ; condylobasal length 11·7 ; interorbital width 3·1 ; maxillary teethrow (exclusive incisors) 4·1 ; mandibular length 6.

Remarks.—This pigmy shrew was caught under a stone covered with dried leaves in the jungle of Maithon Dam site. Two were seen. Wroughton[1] did not obtain this shrew from Chota Nagpur. I believe this to be the first actual record from that area.

Order 2. CHIROPTERA.

Family (i) PTEROPODIDAE (Flying-foxes or Fruit-bats).

Pteropus giganteus giganteus (Brünnich.)

(The Common Flying Fox, a Fruit Bat.)

1792. *Vespertilio gigantea*, Brünnich, *Dyrénes Historie* 1, p. 45 (Bengal).

Specimens collected.—2 ♀♀ from the Barakar Inspection bungalow, 1 mile from Barakar Railway Station, Burdwan District, Bengal, 17-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).—2 ♀ ♀ : H. & B. 254·5-264 ; fore-arm 161 ; E. 36-37.

Skull : 2 ♀♀ : Occipito-premaxillar length 71·7-73·9 ; condylobasal length 69·7-72·4; zygomatic width 37·3-38·9 ; cranial width 25·8-26·6 ; inter-orbital width 18·3-19·1; maxillary width 12·5 ; upper tooth row 28·7 (in one), lower tooth-row 30·7 ; mandibular length 55·7-57·2 ; width outside m_2 18·15.

Remarks.—These flying-foxes were shot at night, while suspended on the branches of a *pipal* tree (*Ficus religiosa*). Several were seen. A colony of several hundred was seen suspended on a large *pipal* tree by the side of a tank in the villa.e Baturia, about 2 miles N. of Inanpur, Manbhum District, Bihar. The bats generally come after dusk in the orchards and gardens to feed on fruits. One bat (coll. No. BN[2] 17-11-1948) had its teeth so much worn out that its crown was hardly visible from the sockets. Wroughton[1] found these bats to be common at Nimiaghat, Hazaribagh district, and Sangajata in Singhbhum district, Bihar.

[1]Wroughton, R. C., *Journ. Bombay Nat. Hist. Sec.* XXIV (1), p. 100 (1915).

Family (ii) MEGADERMATIDAE.

Lyroderma lyra lyra (Geoffroy).

(The Indian Vampire Bat.)

1810. *Megaderma lyra*, Geoffory, *Ann. Mus.*, p. 190 (East Coast of Madras).
1918. *Lyroderma lyra lyra*, Wroughton, *Journ. Bombay Nat. Hist. Soc.* XXV, (4), p. 581.

Specimen collected.—1 ♂ from Inanpur village, 2 miles E. of Panchet Hill, Manbhum district, Bihar. 26-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).—1 ♂: H. & B. 92 ; fore-arm 65 ; H. F. 17 ; E. 39.

Skull : Occipito-premaxillar length 27·8 ; condylobasal length 25·2 ; zygomatic width 16·6; cranial width 12·3 ; inter-orbital width 4·8 ; palatal length 8·7 ; maxillary width 5·7 ; upper tooth row 12·2 ; mandibular length 19·8 ; width outside m_1 9·6.

Remarks.—This bat was fairly common in houses at Inanpur and the neighbouring villages. They live in colonies of four to six, and, generally come out at dusk. Wroughton[1] recorded it from Nimiaghat, Hazaribagh district and Sangajata in Singhbhum district, Bihar.

Family (iii). RHINOLOPHIDAE.

Rhinolophus lepidus Blyth.

(The Little Indian Horse-shoe Bat.)

1844. *Rhinolophus lepidus*, Blyth, *Jour. As. Soc. Bengal* XIII(1), p. 486, (Calcutta).
1918. *Rhinolophus lepidus*, Wroughton, *Jour. Bombay Nat. Hist. Soc.* XXV(4), p. 574.

Specimen collected.—1 ♂ from the Inanpur village, 27-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).— 1 ♂ : H. & B. 38 ; fore-arm 42 ; E. 16·5.

Skull : Occipito-premaxillar length 17·3 ; condylobasal length 14 9 ; zygomatic width 7·9 ; cranial width 8·1 ; inter-orbital width 2·3 ; palatal length 5·2 ; maxillary width 4·3 ; upper tooth-row 6·5, lower tooth-row 6·9 ; mandibular length 10·1 ; width outside m_2 6.

Remarks.—This particular bat was caught from a dilapidated house, one mile N. of Inanpur village. Wroughton[1] recorded it from Nimiaghat, Hazaribagh district and Luia in Singhbhum district, Bihar.

Family (iv). VESPERTILIONIDAE.

Pipistrellus coromandra (Gray).

(The Coromandel Pipistrel.)

1838. *Scotophilus coromandra*, Gray, *Mag. Zool. Bot.* 11, p. 498, (Coromandel Coast).
1918. *Pipistrellus coromandra*, Wroughton, *Jour. Bombay Nat. Hist. Soc.* XXV(4), p. 589.

Specimens collected.—2 (1 ♂ & 1 ♀) from village Muradih, 4 miles S. E. of Inanpur, Manbhum district, Bihar, 5-12-1948 (Chota Nagpur Survey).

[1] Wroughton, R. C., *Journ. Bombay Nat. Hist. Soc.* XXIV(1), p. 101 (1915).

Measurements (in mm.)—1 ♂ : H. & B. 40·7 ; Tl. 29 ; fore-arm 28·7 ; H. F. 6·4 E. 9·5. 1 ♀ : H. & B. 41·7 ; Tl. 30·1 ; fore-arm 30·8 ; H. F. 6·4 ; E. 11.

Skull : Greatest length or occipito-premaxillar length : 1 ♂ 12·1, 1 ♀ 12·5 ; condylo-basal length : 1 ♂ 11.4, 1 ♀ 11·8 ; zygomatic width : 1 ♂ 8·1, 1 ♀ 8·2 ; cranial width : 1 ♂ 6·3, 1 ♀ 6·4 ; inter-orbital width : 1 ♂ 3·5, 1 ♂ 3·3 ; palatal length : 1 ♂ 3·75, 1 ♀ 3·7 ; maxillary width : 1 ♂ 4·1, 1 ♀ 3·9 ; upper tooth-row : 1 ♂ 4·3, 1 ♀ 4·4 ; lower tooth-row : 1 ♂ 4·6, 1 ♀ 4·7 ; mandibular length : 1 ♂ 8·6, 1 ♀ 8·7 ; width outside m_3: 1 ♂ 5·35, 1 ♀ 5·4.

Remarks.—These pipistrels were quite common. They generally came out after sunset and flew up and down around trees or huts and cottages. They were caught from under the tiles of roof of a house. Wroughton[1] records it from Nimiaghat and Jagodih, in Hazaribagh district and from Sangajata and Luia in Singhbhum district, Bihar.

Family (v). EMBALLONURIDAE.

Taphozous longimanus Hardwicke.

(The Long armed Sheath-tailed Bat.)

1823. *Taphozous longimanus*, Hardwicke, *Tran. Linn. Soc. London.* p. 525, (Calcutta).
1918. *Taphozous longimamus*, Wroughton, *Journ. Bombay Nat. Hist.* XXVI(1), p. 24.

Specimens collected.—1 ♂ from the Inanpur village, 2 miles E. of Panchet Hill, Manbhum district, Bihar, 26-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).—1 ♂ : H. & B. 79 ; Tl. 16·5 ; fore-arm 60 ; H. F. 14·8.

Skull : Occipito-premaxillar length 18·8 ; condylobasal length 18·4 ; zygomatic width 12·85; cranial width 10·3 ; inter-orbital width 6·7 ; palatal length 5·6 ; maxillary width 4·5 ; upper tooth-row 8·7 ; lower tooth-row 9·5 ; mandibular length 15·5 ; width outside mm_3 8·8.

Remarks.—This bat was found in the clutches of a hawk which was shot on a tree near the road side, Inanpur, Manbhum district, Bihar. Its shrill piercing squeak attracted my attention. Two others were also seen on that tree. Wroughton[1] described it from Nimiaghat, Hazaribagh district, Bihar.

Order 3. CARNIVORA.

Family (i) VIVERRIDAE (Civets).

Viverricula indica bengalensis (Gray).

1832. *Viverra bengalensis*, Gray & Hardwicke, *Ill. Ind. Zool.* I, pl. iv. ("Most part of Bengal" according to Gray & Hardwicke ; Calcutta, as restricted by Robinson & Kloss).
1920. *Viverricula malacensis bengalensis*, Robinson & Kloss, *Rec. Ind. Mus.* XIX, p. 177.
1939. *Viverricula indica bengalensis*, Pocock, *Faun. Brit. Ind.*, Mam. I, p. 367.

Specimen collected.—One sub-adult ♂, from Inanpur village, about 2 miles E. of Panchet Hill, Manbhum district, Bihar, 12-12-1948 (Chota Nagpur Survey).

Measurements (in mm.).—1 ♂ (sub-adult) : H. & B. 425 ; Tl. 246 ; H. F. 75 ; E. 34.

Skull : Total length 74·8 ; condylobasal length 69·7 ; zygomatic width 32·9 ; post-orbital width 15 ; inter-orbital width 19·1 ; maxillary width 11·5 ; mandibular length 46·7 ; pm_4 6·5 ; m_3 5·5.

---

[1] Wroughton, R. C., *Journ. Bombay Nat. Hist. Soc.* XXIV(1), p. 102 (1915).

Remarks.—The specimen was shot at night in a rice-field by the road side where it was evidently feeding. Only one was seen. Wroughton[1] recorded it from Jagodih, Hazaribagh district, Bihar.

Family (ii). HERPESTIDAE (Mungooses).

Herpestes javanicus auropunctatus (Hodgson).

(The Small Indian Mongoose.)

1836. *Mangusta auropunctatus*, Hodgson, *Jour. As. Soc. Bengal* V, p. 235 (Nepal).
1941. *Herpestes Javanicus auropunctatus*, Pocock, *Faun. Brit. Ind.*, Mam. II, p. 29.

Specimen collected.—1 ♂ from the base of Parasnath Hill, 3 miles from Nimiaghat, Hazaribagh district, Bihar, 13-4-1948 (Chota Nagpur Survey).

Measurements (in mm.).—1 ♂: H. & B. 305; Tl. 258; H. F. 5·8.
Skull: Total length or occipito-premaxillar length 61·6; condylobasal length 61·3; zygomatic width 29·2; post-orbital width 11·2; inter-orbital width 11·7; maxillary width 10·3; mandibular length 37·3; pm_4 5·9×4; m_1 5·5.

Remarks.—This mongoose was shot in dense schrub at the base of Parasnath Hill. Two were seen. Wroughton[1] recorded it from Nimiaghat, Hazaribagh district, Bihar.

Family (iii). CANIDAE.

Vulpes bengalensis (Shaw).

(The Bengal Fox.)

1800. *Canis bengalensis*, Shaw, *Gen. Zool.* I, p. 330 (Bengal, India).
1941. *Vulpes bengalensis*, Pocock, *Faun. Brit. Ind.*, Mam. II, p. 129.

Specimens collected.—2 ♂♂. 1 ♂ from village Inanpur, 2 miles E. of Panchet Hill. 24-11-1948 and 1♂ from village Baturia, 1½ miles N. of Inanpur, Manbhum district, Bihar, 5-12-1948 (Chota Nagpur Survey).

Measurements (in mm.).—2 ♂♂ H. & B. 526-570; Tl. 297-304; H. F. 118-120; E 75-75·5.

Skull: 2 ♂♂: Total length 113·2-120·4; condylobasal length 109·8-116; zygomatic width 60·2-68; post-orbital width 17·5-17·9; inter-orbital width 19·1-21·3; maxillary width 16·7-19·3; mandibular length 84·5-89·3; pm_4 9·1-10·1; m_1 10·8-11·5.

Remarks.—The fox was quite common, in and around the village Inanpur, Manbhum district, Bihar. It was seen in groups of 3 or 4 generally coming out of dens after sunset in the open rice fields, breaking the silence of dusk and night by their familiar chattering bark. During the day too, they were seen in open rice fields or bushes either singly or in pairs, but not so frequently as at night. In one specimen (coll. No. BN_4/5-12-1948) only the tip of tail is black but in another (coll. No. 24-11-1948) the tail is black up to about one-third its total length. Wroughton[2] recorded it as very common near Daltonganj and in the south of Hazaribagh, but did not observe it in Singhbhum, Bihar.

[1] Wroughton, R. C., *Journ. Bombay Nat. Hist. Soc.* XXIV(1), p. 105 (1915).
[2] Wroughton, R. C., *Journ. Bombay Nat. Hist. Soc.* XXIV(1), p. 106 (1915).

Order 4. PRIMATES.

Family (i). COLOBIDAE.

Semnopithecus entellus entellus (Dufresne).

(The Langur or Hanuman Monkey.)

1797. *Simia entellus*, Dufresne, *Bull. Soc. Phill. Paris* I, p. 49, (Bengal).
1939. *Semnopithecus entellus entellus*, Pocock, *Faun. Brit. Ind.*, Mam. I, pp. 98-101.

Specimen collected.—1 adult ♀ from village Ram Kanali, 4 miles S. of Inanpur, Manbhum district, Bihar, 30-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).—1 adult ♀; H. & B. 725; Tl. 1025; H. F. 184; E. 46.

Skull: Total length or occipito-premaxillar length 120; condylobasal length 93·4; zygomatic width 100·5; orbital width 71; maxillary width 31; upper cheek teeth 42·7; mandibular length 90; upper molar crowns 35·5.

Remarks.—The monkeys were found to be very common in open country grooves or orchards near village Ram Kanali, 4 miles S. of Inanpur, Manbhum district, Bihar. They usually occur in groups of 5 to 8. Wroughton[1] recorded it as remarkably scarce in Parasnath Hill and Hazaribagh district but abundant in Singhbhum district, Bihar.

Order 5. RODENTIA.

Family (i). SCIURIDAE (Squirrel, etc.).

Funambulus pennanti pennanti (Wroughton).

(The Common Five-striped Squirrel.)

1905. *Funamubulus pennanti*, Wroughton, *Journ., Bombay Nat. Hist. Soc.* XVI(3), p. 411, (Mandvi Taluka, Surat dirtrict, Bombay).
1940. *Funambulus pennanti pennanti*, Ellerman, *Fam. & Gen. Living Rodents* I, p. 379.
1947. *Funambulus pennanti pennanti*, Ellerman, *Jour. Mamm.* XXVIII (3), p. 262.

Specimens collected.—3 (2 ♂♂ & 1 ♀) thus : 1 ♂(8-12-1948) from Purulia and 1 ♂ (6-12-1948) from Raghunathpur, about 37 and 14 miles respectively from Inanpur and 1 ♀ from Inanpur, about 2 miles E. of Panchet Hill, Manbhum district, Bihar, 24-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).—2 ♂♂: H. & B. 138-142; Tl. 127-136; H. F. 34-34·5; E. 11·5-13·5, 1 ♀ : H. & B. 149; Tl. ?; H. F. 38; E. 14.

Skull : Greatest length or occipito-premaxillar length ; 1 ♂ 34·2, 1 ♀ 35·6; condylobasal length ; 1 ♂ 33·7, 1 ♀ 34·29; occipitonasal length : 1 ♂ 36·5, 1 ♀ 37·1; greatest zygomatic width : 1 ♂ 20·8, 1 ♀ 20·9 ; least inter-orbital width : 1 ♂ 10·3, 1 ♀ 10·5, cranial width ; 1 ♂ 16·7, 1 ♀ 16·6; postmolar length : 1 ♂ 16·2, 1 ♀ 16·2, auditory length : 1 ♂ 10·2, 1 ♀ 10·1; length of tympanic bulla : 1 ♂ 7·2, 1 ♀ 7·5; nasal length. 1 ♂ 11·1, 1 ♀ 11·7; palatal length 1 ♂ 15·85, 1 ♀ 16·2 ; length of diastema : 1 ♂ 7·65,: 1 ♀ 8·3 ; length of anterior palatine foramina : 1 ♂ 2·2, 1 ♀ 2·1 ; max. length of upper molar crowns : 1♂ 7·6, 1 ♀ 7; mandibular length : 1 ♂ 21·5, 1 ♀ 21·6.

[1] Wroughton, R. C., *Journ. Bombay Nat. Hist. Soc.* XXIV(1), p. 100 (1915).

Remarks.—This squirrel was very common at Inanpur, Raghunathpur and Purulia, Manbhum district, Bihar. These were found in the avenues of trees along roads, especially on large *banyan* and *pipal* trees. They were also observed feeding on the ground round about trees, very rarely away from them. Wroughton[1] recorded it from Nimiaghat and Jagodih in Hazaribagh district, from Daltonganj in Palamau district and from Luia in Singbhum district, Bihar.

Family (ii). MUIRDAE.

Bandicota bengalensis bengalensis (Gray & Hardwicke).

(The Indian Mole-rat.)

1833. *Arvicola bengalensis*, Gray & Hardwicke, *Ill. Ind. Zool.* II, pl. xxi. (Bengal).
1941. *Bandicota bengalensis bengalensis*, Ellerman, *Fam. & Gen. Living Rodents* II, p. 278.
1947. *Bandicota bengalensis bengalensis*, Ellerman, *Jour. Mam.* XXVIII(4), p. 367.

Specimens collected.—15 (2 adult ♂♂, 2 adult ♀♀, 9 juvenile ♂♂ and 2 juvenile ♀♀) thus: 3 (1 ad. ♀ 2 juv. ♀♀) from village Balutunda, about 3 miles S. of Parasnath Hill, Hazaribagh district, Bihar, 17 & 18-4-1948; 1 ad. ♀ from Chirkunda, 1 mile W of Barakar, Manbhum district, Bihar, 19-11-1948; 11 (2 ad. ♂♂ & 9 juv. ♂♂) from Inanpur village, about 2 miles E. of Panchet Hill, Manbhum district, Bihar, 25 & 26-11-1948 and 3-12-1948 (Chota Nagpur Survey).

Measurements. (in mm.).—2 ♂♂: H. & B. 179-184; Tl. 158-162; H. F. 33; E. 21. 2 ♀♀: H. & B. 163-171; Tl. 138-153; H. F. 31-35; E. 18-22.

Skull: Occipito premaxillar length: 2 ♂♂ 39·4-39·6, 1 ♀ 38·7; condylobasal length: 2 ♂♂ 39·4-39·9, 1♀ 39·2; occipitonasal length: 2 ♂♂ 37·6-37·75, 1 ♀ 36·9; greatest zygomatic width: 1 ♂ 24·9, 1 ♀ 23·6; least inter-orbital width: 2 ♂♂ 5-5·2, 1 ♀ 5·75; cranial width: 2 ♂♂ 16·6-16·7, 1 ♀ 15·6; post-molar length: 2 ♂♂ 16·6-17·1, 1 ♀ 17·3; auditory length: 2 ♂♂ 10·9-11·1, 1 ♀ 11·8; length of tympanic bulla: 2 ♂♂ 8·3-8·6, 1♀ 8·2; nasal length: 2 ♂♂ 11·8-12·1, 1 ♀ 12; palatal length: 2 ♂♂ 20·7-20·95, 1 ♀ 20·2; length of diastema: 2 ♂♂ 11·7-11·9, 1 ♀ 12·1; length of ant. palatine foramina 2 ♂♂ 8·6, 1 ♀ 8; maximum length of upper molar crowns: 2 ♂♂ 6·3-6·4, 1 ♀ 6·1; mandibular length: 2 ♂♂ 24·7-25·1, 1 ♀ 23·8.

Remarks.—These mole rats were very common in open country, in rice fields and pastures. I examined a burrow located on the *bund* of a rice field at Inanpur. This burrow had three openings leading outside on the bund at the mouth of which large heaps of soil was found. The burrow contained special chambers at two or three places in which paddy was stored. In some burrows several young ones were found. I was informed by the local people that in rainly seasons these mole-rats migrate to nearby houses or in the hills. Wroughton[2] recorded this mole-rat from Nimiaghat, Hazaribagh district, from Daltonganj in Palamau district, and Sangajata and Luia in Singhbhum district. He found it a common rat in Bihar and Orissa.

[1] Wroughton, R. C., *Journ. Bombay Nat. Hist. Soc.* XXIV(1), p. 108 (1915).
[2] Wroughton, R. C., *Journ. Bombay Nat. Hist. Soc.* XXIV(1), p. 109 (1915).

1 Rattus rattus arboreus (Horsefield).

1851. *Mus arboreus*, Horsefield, *Cat. Mam. E. India Co. London*, p. 141, (Bengal).
1918. *Rattus rattus arboreus*, Hinton, *Jour. Bombay Nat. Hist. Soc.* XXVI(1), p. 74.
1941. *Rattus rattus arboreus*, Ellerman, *Fam. & Gen. Living Rodents* II, p. 176.
1947. *Rattus rattus arboreus*, Ellerman, *Jour. Mam.* XXVIII(4), p. 379.

Specimens collected.—75 (44 ♂♂ & 31 ♀♀), thus : 30 (11 ♂ and 19 ♀♀) were collected from the neighbouring villages, at 1 to 3 miles W of the base of Parasnath Hill, Nimiaghat, alt. 1015 ft., Hazaribagh district, Bihar ; 4-18 April 1948 ; 45 (34 ♂♂ & 11 ♀♀) were collected from the following locations.—Barakar and Begunia, about $1\frac{3}{4}$ miles respectively from Barakar Railway Station, Burdwan district, Bengal, 6-21 November 1948 ; Chirkunda,—1 mile W of Barakar Manbhum district, Bihar, 15-21 November 1948 ; Inanpur,—about 2 miles E. of Panchet Hill, Manbhum district, Bihar, 21-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).—See Table I for body measurements, and Table II for skull measurements.

TABLE I.

Body measurements of Rattus rattus arboreus (*Horsf.*) *adults.*

Sex.	H. & B.	Tl.	H. F.	E.	Tail as per cent. of H. & B.	H. F. as per cent. of H. & B.	E. as per cent. of H. & B.
(*a*) PARASNATH HILL COLLECTION, APRIL 1948.							
3 ♂♂	164—174	213—222	32—33	17—18·5	126·41—134·4	17·96—20	9·77—11·28
Mean	167·66	218·66	32·66	17·83	130·17	18·65	10·65
5 ♀♀	162—173	208—228	30—32	16—18	128·48—131·79	17·4—20	9·5—11·1
Mean	167·2	216·8	31	17	130·06	18·56	10·16
(*b*) CHOTA-NAGPUR COLLECTION, NOVEMBER-DECEMBER 1948.							
4 ♂♂	164—174	221—240	30·5—32	21·5—27	134·14—137·93	17·81—19·51	13·1—16·46
Mean	168	229	31·37	24·12	136·71	18·69	14·36
2 ♀♀	154—166	216—220	29—31·5	22	132·52—140·25	18·12—18·83	13 81
Mean	160	218	30·25	22	136·38	18·47	13·81

Table II.

Measurements of skulls (in mm.) *of* Rattus rattus arboreus (*Horsf.*).

Sex. etc.	Total length or occipito-premaxillar length.	Condylobasal length.	Occipitonasal length.	Greatest zygomatic width.	Least inter-orbital width.	Cranial width.	Post-molar length.
(A) Skull Measurements.							
(a) Parasnath Hill collection. (April 1948).							
Range	38·2—39·1	37·5—38·9	39·1—40·5	19·1—19·45	5·4—5·6	15·6—16·2	16·7—17·95
3 ♂♂							
Mean	38·61	38·3	39·66	19·3	5·53	15·83	17·41
Range	38·3—38·9	37·5—39·1	39—39·6	19·7	5·4—5·6	15·3—16·6	16·7—16·9
3 ♀♀							
Mean	38·45	38·33	39·26	19·7	5·5	15·85	16·8
(b) Chota Nagpur collection (November-December 1948) etc.							
Range	37·8—40·3	37·2—400	38·9—41·8	18·3—20·7	5·7—6	15·2—16·2	16·6—17·8
4 ♂♂							
Mean	38·94	38·6	40·08	19·53	5·82	15·78	17·26
Range	37·5—40·3	36·6—39·6	38·6—41·7	18·7—20·3	5·6—6	15·5—16	16·5—17·9
2 ♀♀							
Mean	38·95	38·34	40·15	19·5	5·8	15·75	17·2
(B) Skull measurements as percentage of Occipiton Nasal Length etc.							
(c) Parasnath Hill collection (from a above).							
3 ♂♂	(mean)	95·46%	..	49·04%	13·94%	39·91%	43·91%
3 ♀♀	(mean)	95·71%	..	49·41%	14·06%	39·97%	42·96%
(d) Chota Nagpur collection (from b above).							
4 ♂♂	(mean)	95·53%	..	48·33%	14·48%	39·11%	42·78%
2 ♀♀	(mean)	95·44%	..	49·65%	14·44%	39·25%	42·83%

TABLE II—*contd.*

Measurements of skulls (in mm.) *of* Rattus rattus arboreus (*Horsf.*)

Sex. etc.	Auditory length.	Length of tympanic bulla.	Length of nasals.	Palatal length.	Length of diastema.	Length of ant. palatine foramina.	Length of entire molar series (on crown).	Mandibular length.
(A) SKULL MEASUREMENTS								
(*a*) *Parasnath Hill collection.* (*April 1948.*)								
Range	9·9—10·3	6·9—7·2	13·1—15	17·9—19·1	10·1—10·7	7·1—7·7	5·8—6·3	21·4—22·5
3 ♂♂								
Mean	10·1	7·06	14·2	18·6	10·13	7·46	6·06	21·86
Range	10·1—10·5	7·2—7·6	13·8	18·5—18·7	10·1—10·6	7·3—7·6	6·1—6·3	21·9—22
3 ♀♀								
Mean	10·3	7·4	13·8	18·6	10·35	7·45	6·36	21·95
(*b*) *Chota Nagpur collection* (*November-December 1948*) *etc.*								
Range	10·1—10·6	6·6—7·3	13·5—15·7	18·3—19·4	10—10·9	7·2—7·4	6—6·5	20·9—21·6
4 ♂♂								
Mean	10·54	7·12	14·38	18·34	10·46	7·34	6·24	21·64
Range	9·8—10·2	6·9—7·1	13·7—14·6	17·8—19·3	10·1—11·1	7·3—7·6	6·2—6·3	21—22·7
2 ♀♀								
	10·0	7·0	14·15	18·55	10·6	7·45	6·25	21·46
(B) SKULL MEASUREMENTS AS PERCENTAGE OF OCCIPITO NASAL LENGTH ETC.								
(*c*) *Parasnath Hill collection* (*from* (*a*) *above*).								
3 ♂♂	25·45%	17·81%	35·77%	46·88%	26·36%	18·94%	15·29%	
3 ♀♀	25·54%	18·56%	35·29%	46·56%	26·49%	18·96%	15·73%	
(*d*) *Chota Nagpur collection* (*from* (*b*) *above*).								
4♂♂	25·63%	17·5%	36·01%	46·74%	26·18%	18·27%	15·48%	
2 ♀♀	24·92%	17·44%	35·25%	46·19%	26·38%	18·56%	15·58%	

Notes on systematics.—From the body measurement (Table I) it is evident that proportionately the size of body of Chota Nagpur specimens (collected from Barakar, Burdwan district, Bengal) (Manbhum district, Bihar) is greater than that of the rats from Parasnath Hill and Nimiaghat, Hazaribagh district, Bihar. In the skull, (Table II), the average occipitonasal length exceeds 40 mm. in the Chota Nagpur collection, while in Parasnath Hill and Nimiaghat specimens the average occipitonasal length approximates 40 mm. The condylobasal length and the nasal length and the greatest zygomatic width in the Chota Nagpur specimens are relatively slightly larger than that of Parasnath Hill and Nimiaghat specimens. The tooth-row, and cranial width are relatively larger in the Parasnath Hill and Nimiaghat specimens than in that of the Chota Nagpur collection. The tooth-row of course is less than 16 per cent of the occipitonasal lengths in all these specimens.

Remarks.—These rats were commonly collected in open country houses in the villages situated about 2 miles S. of the base of Parasnath Hill, Nimiaghat (altitude *ca.* 1015 ft.), Hazaribagh district, Bihar. One rat (colln. No. BN_2/18-4-48) was trapped in the Inspection bungalow, near the summit of Parasnath Hill, altitude *ca.* 4,477 ft. above sea-level. Others collected from Barakar and Begunia, Burdwan district, Bengal and Chirkunda and Inanpur, Manbhum district, were also more common in open country houses than in the thickly populated areas. The dorsum, in the case of the Chota Nagpur specimens collected from Barakar Chirkunda, and Inanpur, varies from tawny to dark greyish while the Parasnath brown, Hill specimens are greyish tawny with much more numerous black hairs. Beaven[1] collected these rats from Manbhum, Bihar. Hinton[2] recorded them from Nimiaghat and Parasnath Hill.

Mus musculus castaneus (Waterhouse).

1843. *Mus castaneus*, Waterhouse, *Ann. Mag. Nat. Hist.* (1) XII, p. 134 (Philippine Islands).
1943. *Mus musculus castaneus*, Schwarz & Schwarz, *Journ. Mam.* XXIV(1), p. 63.
1947. *Mus musculus castaneus*, Ellerman, *ibid.* XXVIII(4), p. 384.

Specimens collected.—12 (5 ♂♂ & 7 ♀♀) thus : 2 ♂♂ (1 ad. ♂ & 1 juv. ♂) and 7 ♀♀ (5 ad. ♀♀ & 2 juv. ♀♀) from the village Madhuban, ½ mile N. of the base of Parasnath Hill, Hazaribagh district, Bihar, 21 & 22-4-1948 ; 1 ad. ♂ from Barakar Inspection bungalow, 1 mile from Barakar Railway Station, Burdwan district, Bengal, 5-11-1948 ; and 2 (1 ad. ♂ & 1 juv. ♀) from Chirkunda, 1 mile W. of Barakar, Manbhum district, Bihar, 19 & 21-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).—3 ♂♂ : H. & B. 69-80 ; Tl. 75-91 ; H. F. 16 ; E. 10-13, ♀♀ : H. & B. 76-83 ; Tl. 75-81 ; E. 7-11.

Skull : Occipito-promaxillar length : 3 ♂♂ 18·7-20·7, 5 ♀♀ 18·5-20·7 ; condylobasal length : 3 ♂♂ 18·2-20·5, 5 ♀♀ 17·9-20·8 ; greatest zygomatic width : 3 ♂♂ 10·2-11, 5 ♀♀ 10·1-10·6 ; least inter-orbital width : 3 ♂♂ 3·3-3·7, 5 ♀♀ 3·3-3·6 ; cranial width : 3 ♂♂ 9·1-9·5, 5 ♀♀ 9·1-9·5 ; post-molar length : 3 ♂♂ 8·61-9·8, 5 ♀♀ 8·5-9·5 ; auditory length : 3 ♂♂ 5·3-5·4, 5 ♀♀ 5·1-5·4 ; length of tympanic bulla : 3 ♂♂ 3·3-3·4, 5 ♀♀ 3·1-3·71 ; length of nasal : 3 ♂♂ 6·6-7·3, 5 ♀♀ 6·6-7·7 ; palatal length : 3 ♂♂ 8·7-9·6, 5 ♀♀ 8·2-9·4 ; length of diastema : 3 ♂♂ 5·1-5·7, 5 ♀♀ 4·8-5·3 ; length of ant.

[1] Beavn, R. C., *Journ. Bombay Nat. Hist. Soc.* XXVI(1), p. 77 (1965).
[2] Hinton, A. C., *ibid.* XXVI(1), p. 74 (1918).

palatine foramina : 3 ♂♂ 4·3-5, 5 ♀♀ 4·4-4·9 ; maximum length of molar crowns: 3 ♂♂ 3-3·2, 5 ♀♀ 2·9-3·2 ; mandibular length : 3 ♂♂ 9·8-10·6, 5 ♀♀ 9·7-11.

Remarks.—These mice were very common in houses at Madhuban, situated at the base of Parasnath Hills and at Barakar, Burdwan district, Bengal as well as in Chirunda, one mile W of Barakar, Manbhum district, Bihar. The mice trapped from Madhuban, have shorter tails proportionately to body length than the mice from Barakar and Chirkunda.

Wroughton[1] found it common in all villages in Hazaribagh, Daltongunj in Palamau district and Luia in Singhbhum district, Bihar.

Mus platythrix gurkha (Thomas).

1914. *Leggadilla gurkha?* Thomas, *Journ. Bombay Nat. Hist. Soc.* XXIII(2), pp. 199-200 (Jerna, Ramnagar, Kumaon, N. India).
1941. *Mus gurkha*, Ellerman, *Fam. & Gen. Living Rodents* II, p. 254.
1947. *Mus platythrix gurkha*, Ellerman, *Journ. Mam.* XXVIII(4), p. 385.

Specimens collected.—2 (1 ♀ & 1 unsexed) from Inspection Bungalow at the top of Parasnath Hill, *ca.* 6 miles from Nimiaghat, altitude, 4225 ft., Hazaribagh district, Bihar, 14-4-1948 (Chota Nagpur Survey).

Measurements (in mm.).—1 ♀ : H. & B. 88 ; Tl. 68 ; H. F. 16 ; E. 11 ; 1 (unsexed) H. & B. 84 ; Tl. 70 ; H. F. 16 ; E. 11.

Skull : Greatest length or occipito-premaxillar length : 1 ♀ 24·2, 1 unsexed 23·9 ; condylobasal length : 1 ♀ 23·7, 1 unsexed 23·4 ; Occipitonasal length : 1 ♀ 25·9; greatest zygomatic width : 1 unsexed 12·1 ; least interorbital width : 1 ♀ 3·8, 1 unsexed 3·6 ; cranial width : 1 ♀ 10·8, 1 unsexed 10·1 ; post molar length : 1 ♀ 11, 1 unsexed 11·2 ; auditory length : 1 ♀ 6·2, 1 unsexed 6·2 ; length of tympanic bulla : 1 ♀ 3·6, 1 unsexed 3·6 ; nasal length 1 ♀ 9·9 ; length of ant. palatine foramina : 1 ♀ 11·6, 1 unsexed 11·2 ; length of diastema : 1 ♀ 7, 1 unsexed 6·7 ; length of ant. palatine foramina : 1 ♀ 5·1, 1 unsexed 5·1 ; maximum length of upper molar crowns : 1 ♀ 4·1, 1 unsexed 3·9 ; mandibular length : 1 ♀ 13·9, 1 unsexed 13·6.

Remarks.—These mice were trapped in the Inspection bungalow on the top of Parasnath Hill, (4225 ft.) Hazaribagh district, Bihar. They were more common on Parasnath Hill than in surrounding areas. Wroughton[2] also recorded it from the Parasnath Hill.

Mus booduga? lepidoides (Fry).

1931. *Leggada lepidoides*, Fry, *Journ. Bombay Nat. Hist. Soc.* XXXIV(4), p. 921 (Mt. Poppa, Burma).
1941. *Mus. lepidoides*, Ellerman, *Fam. & Gen. Living Rodens* II, p. 249.
1947. *Mus. booduga lepidoides*, Ellerman, *Journ. Mam.* XXVIII(4), p. 383.

Specimens collected.—1 ♂ from the rocky area of Mainthon Dam site, about 8 miles from Barakar Railway Station, Mabhum district, Bihar, 12-11-1948 (Chota Nagpur Survey).

Measurements (in mm.).—1 ♂ : H. & B. 71 ; Tl. 55 ; H. F. 13 ; E. 12.

Skull : 1♂ : Occipito-premaxillar length 18·3 ; condylobasal length 17·3 ; occipitonasal length 18·65 least inter-orbital width 3·1 ; cranial width 9·1 ; postmolar length 8 ; auditory length 5 ; length of tympanic bulla 3·2 ; length of nasals 6·6; palatal length 9·2 ; length of diastema 4·8 ; length of palatine foramina 3·8 ; maximum length of upper molar crown 10·2.

---

[1] Wroughton, R. C., *Journ. Bombay Nat. Hist. Soc.* XXIV(1), p. 108 (1915).
[2] Wronghton, R. C., *Journ. Bombay Nat. Hist. Soc.* XXIV(1), p. 109 (1915).

Remarks.—This specimen was caught under a stone in the rocky area. Its burrow was a very narrow, being only about 7 inches under the stone with a single opening.

Systematics note.—The specimen seems to be intermediate between *Mus booduga lepidoides* Fry and *Mus booduga booduga* Gray, but is more close to the former.

Family (iii) LEPORIDAE.

Lepus ruficaudatus (Geoffroy).

(The Common Indian Hare).

1826. *Lepus ruficaudatus*, Geoffroy, *Dict. Class. Hist. Nat.* IX, p. 381 (Bengal),
1920. *Lepus ruficaudatus*, Wroughton, *Jour. Bombay Nat. Hist. Soc.* XXVII(1), p. 67.

Specimen collected.—1 subadult ♂ from Panchet village, at the foot of Panchet Hill, 2½ miles S. W of Inanpur, Manbhum district, Bihare 9-12-1948 (Chota Nagpur Survey).

Measurements (in mm.).—1 sub-ad. ♂ : H. & B. 355·5 ; Tl. 72·5 ; H. F. 85 ; E. 75.

Skull: Condylobasal length 73·8 ; occipitonasal length 83·2 ; greatest zygomatic width 38·75 ; least inter-orbital width 13·2 ; post-orbital width 12·7 ; cranial width 27·8 ; post-molar length 32·8 ; auditory length 13·3 ; length of tympanic bulla 9·2 ; length of nasals 36·6 ; palatal length 31·6 ; length of diastema 23·9 ; length of ant. palatine foramina 21·7 ; maximum length of upper molar crowns 12·3 ; mandibular length 62·1.

Remarks.—This hare was found to be common in the bushes and cultivated fields at the foot of Panchet Hill. It also visited the nearby villages. Beavan[1] collected it at Manbhum and Wroughton[2] found it common at Daltonganj (Palamau District, Burdwan).

---

[1] Beavan, R. C., *Rec. Ind. Mus.* XV, p. 93 (1865).
[2] Wroughton, R. C., *Journ. Bombay Hat. Hist. Soc.* XXIV(1), p. 110 (1915).