

ON A COLLECTION OF MAMMALS FROM ASSAM (INDIA) WITH SPECIAL REFERENCE TO THE RODENTS.

By BHOLA NATH, M.Sc., *Vertebrate Zoologist, Dept. of Anthropology,
Indian Museum, Calcutta**

INTRODUCTION.

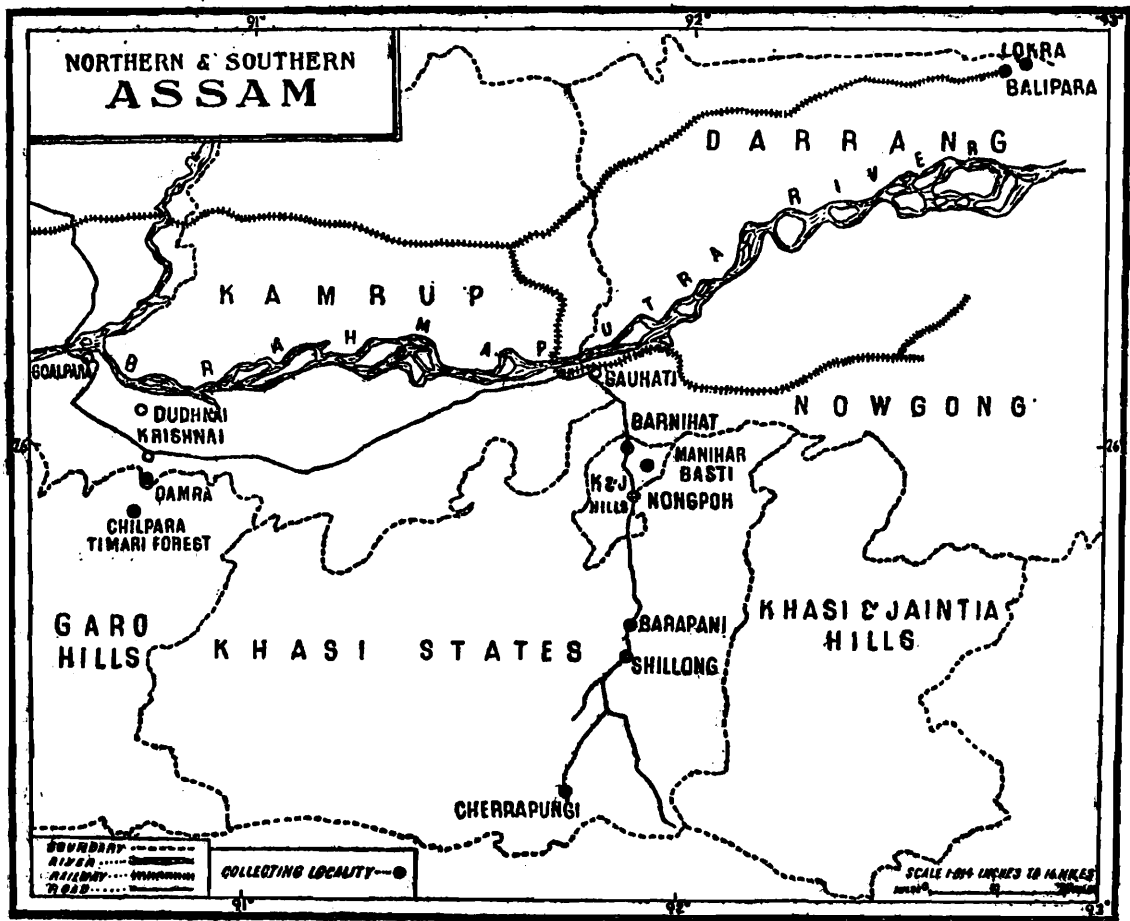
The taxonomy of mammals from Assam, especially of the larger mammals, is sufficiently known from the published accounts of various workers. However the systematics of medium sized and smaller mammals, particularly such inconspicuous ones as the Insectivora (moles, shrews, etc.), and the Muridae (rats, mice, etc.) from Assam is not sufficiently known. Thomas (1886) was the first to publish the systematic account of medium sized and the smaller mammals from Assam. Later, Thomas and Wroughton (1921) gave further report on the smaller mammals from the region. The other noteworthy account is the report on the collections of mammals made by the Bombay Natural History Society—Mammal Survey of India, Burma and Ceylon (*vide*, Hinton & Lindsay, 1926). Ellerman (1947 *a-d*) recorded a number of rodents especially rats from Assam. Recently, Roonwal (1948, 1949, 1950 *a-b*) has published an elaborate and detailed account with regard to systematics, ecology and bionomics of mammals especially the smaller mammals, which he studied in connection with tsutsugamushi disease (scrub typhus) in the Assam-Burma War Theatre during 1945. As regards large mammals Allen (1905, pp. 9-10), Higgins (1933, *a-c*; 1934, *a-b*), and as well as Hinton and Lindsay (1926) may be referred to.

The present report deals with three collections :—

- (1) One made by a party of the Zoological Survey of India in February-March 1936, during the "Naga Hills and Manipur Survey" from the Central and Western (along Imphal-Silchar Road) Manipur and immediately adjoining portions of the Naga Hills. The collection, which consists of 20 skins, in unaccompanied by any field notes.
- (2) A second very small collection consisting of only five skins was made by Drs. S. L. Hora & M. L. Roonwal during November—December, 1939, from Balipara frontier Tract, in Darrang District. This collection consists field data.
- (3) The third collection, made recently by a party of Zoological Survey of India during May-June, 1949, from the Khasi and Jaintia Hills and the Garo Hills. It consists of 50 skins and field notes.

*Formerly Government of India, Research Scholar, Zoological Survey of India, Calcutta.

The physiography, etc., of the areas visited in central and western Manipur and immediately adjoining portion of the Naga Hills has already



been described by Roonwal (*vide* Roonwal, 1950), while the physiography, etc., of the areas visited in the Darrang district, Assam has been given by Biswas (1949, p. 225).

As regards the physiography, etc., of the areas visited in the Khasi and Jaintia Hills, and the Garo Hills, *Imperial Gazetteer of India* may be consulted.

Below is given the names of different places surveyed in the Khasi and Jaintia Hills, and the Garo Hills.

Khasi & Jaintia Hills—

Nongpoh.—About 32 miles north of Shillong, alt. *ca.* 2,500-4000 ft. Collections were made in the valley and in the Jungle.

Manihar Basti.—8 miles north of Nongpoh, alt. *ca.* 2,500 ft. Collections were made from the Jungle.

Barapani.—6 miles north of Shillong, alt. *ca.* 3,250 ft. Collections were made in the surrounding Jungle.

Shillong.—alt. *ca.* 6,450 ft. Collected in the Jungle and field.

Garo Hills—

Damra.—5 miles from Dudhnai, alt. *ca.* 1,100 ft. Collected in the Jungle.

Chirpara Timari Reserve forest.—6 miles east of Damra, alt. ca. 1,150 ft. Collected in the surrounding Jungle and in a village adjacent to it.

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

The above three collections together, comprise 25 species and sub-species (Insectivora 1, Chiroptera 5, Carnivora 1, Primates 1, Rodentia 17). In the following list critical systematic remarks have been given wherever necessary and the following are the principal facts brought to light :—

A new species of mouse *Mus guhai*, from Nongpoh, Khasi Hills, Assam has been described, the full accounts and particulars of which has already been published separately in the *Journ. Zool. Soc. India* IV, No. 1, pp. 85-88, and may be referred to.

Myotis muricola (Hodgson).—The fresh record is now provided from north-east Assam, thus extending its distribution.

Petaurista petaurista albiventer (Gray).—The first record is provided from the Khasi Hills.

Rattus niviventer mentosus Thomas.—This is recorded for the first time from the Khasi Hills. Its distribution was known upto now from eastern Assam, but it is now extended westward to the Khasi Hills.

The following abbreviations have been used :—

Measurements.—All the measurements are in millimetre. H. & B. (Head and Body) ; Tl. (Tail) ; H. F. (Hind-foot) ; E. (Ear.)

Ad., adult ; av., average ; Juv., Juvenile ; alt., altitude.

All the specimens enlisted here are adults, unless otherwise stated.

Acknowledgments.

I am indebted to the authorities of the* Zoological Survey of India for the facilities provided to me in carrying out this work. I also wish to place on record my deep sense of gratitude to my Director Dr. B. S. Guha for his keen interest and encouragement given to me during the course of the preparation of this paper.

II. SYSTEMATIC ACCOUNT.

Order—INSECTIVORA.

Family—TALPIDAE.

Talpa micrura Hodgson.

(The short-tailed Mole).

1840. *Talpa micrura* Hodgson, *Journ. Asiat. Soc. Bengal* X, p. 910 (Darjeeling, North Bengal).

Specimen examined.—1♂ Manihar Basti, Khasi Hills, June 3, 1949 (Purchased).

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Measurements.—1♂ : H. & B. 118 ; Tl. 8. 1 ; H. F. 19.

Order—CHIROPTERA.

Family—RHINOLOPHIDAE.

Rhinolophus perniger Hodgson.

(The Himalayan Horseshoe-Bat).

1843. *Rhinolophus perniger* Hodgson, *Journ. Asiat. Soc. Bengal* XII, p. 414 (Nepal)

Specimen examined.—1♂ Khezhabama, Naga Hills, February 20, 1935.

Measurements.—1♂ : H. & B. 105 ; Fore-arm 71.7 ; E. 39.3 ; Skull : 1♂ : Occipito-premaxillar length 30.5 ; condylobasal length 27.1 ; Zygomatic width 16 ; mastoid width 13.8 ; inter-orbital width 2.9 ; maxillary width 8.5 ; width outside m_3 11.3 ; width of nasal swelling 8.7 ; upper tooth now 12.1 ; lower tooth now 13.2 ; mandibular length 22.1.

Remarks.—This specimen is somewhat intermediate between *Rhinolophus perniger* and *R. luctus* as regards skull characters, but resembles the former more closely. In other respects, however it closely agrees with *R. perniger*.

Family—VESPERTILIONIDAE.

Myotis muricola (Hodgson).

(The Mustachioed Bat).

1841. *Vespertilio muricola* Hodgson, *Journ. Asiat. Soc. Bengal* X, p. 908 (Nepal).

Specimen examined.—1♂ : from Lokra, Balipara Frontier Tract, November 7, 1939.

Measurements.—1♂ : H. & B. 43.5 ; Fore-arm 34.9 ; E. 5.1 ; Skull : 1♂ : Occipito-premaxillar length 13.6 ; Condylobasal length 12.5 ; Zygomatic width 8.6 ; cranial width 6.8 ; inter-orbital width 3.8 ; palatal length 6.6 ; maxillary width 3.3 ; width outside m_3 5.5 ; upper tooth row 5.2 ; lower tooth row 5.4 ; mandibular length 9.6 ;

Remarks.—This specimen was collected on pebbles along banks of Bhareli river. It has not been recorded upto now from this area and I consider it to be the first actual record from the above mentioned area.

Pipistrellus coromandra (Gray).

(The Coromandel Pipistrel).

1838. *Scotophilus coromandra* Gray, *Mag. Zool. Bot.* 11, pp. 498 (Coromandel Coast).

Specimens examined.—1♂ & 1♀ Chekrima, Naga Hills, February 17, 1935.

Measurements.—1♂ : H. & B. 40·9 ; Tl. 29·5 ; Fore-arm 31·5 ; H. F. 6·3 ; and 1♀ : H. & B. 41·2 ; Fore-arm 30·2 ; H. F. 6·4.

Scotomanes ornatus unbrensis Thomas.

(The Assam Harlequin Scotophil).

1922. *Scotomanes ornatus unbrensis* Thomas, *Journ. Bombay Nat. Hist. Soc.* XXVII, p. 772 (Konshnong, Jaintia Hills, alt. 3,000 ft., Assam).

Specimen examined.—1 unsexed, milestone 117, about 16 miles north of Imphal on Dimapur Road, Manipur, alt. ca. 3,500 ft., July 22, 1945.

Measurements.—1 unsexed : H. & B. 60·5 ; Fore-arm 52·8 ; E. 14·9.

Remarks.—This bat was found in open ground at the site of collection. It is the first record from eastern Assam (Manipur), thus extending the range of distribution of this bat.

Order—CARNIVORA.

Family—VIVERRIDAE.

Viverra zibetha picta Wroughton.

(The large Indian Civet).

1915. *Viverra zibetha picta* Wroughton, *Journ. Bombay Nat. Hist. Soc.* XXIV (1), p. 64 (H'Kamti, 500 ft., Upper Chindwin).

Specimen examined.—1♂ from Mohin Basti, Khasi Hills, May 28, 1949.

Measurements.—1♂ : H. & B. 800 ; Tl. 442 ; H. F. 127 ; E. 50. Skull : 1♂ : Total length 141·1 ; condylobasal length 136·6 ; zygomatic width 72·8 ; post-orbital width 22·7 ; inter-orbital width 24·3 ; maxillary width 25·3 ; mandibular length 90·5 ; pm° 14 ; m₁ 14.

Remarks.—This civet was shot while feeding on a dead caracass at night.

Order. PRIMATES.

Family. HYLOBATIDAE.

Hylobates hoolock (Harlan).

(The Hoolock Gibbon).

1834. *Simia hoolock* Harlan, *Tran. American Phil. Soc.* IV, p. 52, pl. ii. (Garo Hills, Assam).

Specimens examined.—2♂♂, 2♀♀ & 1 Juv. unsexed thus : 2♀♀ 5 & 7 miles west of Nongpoh, Khasi Hills, May 10 & 28, 1949 ; 2♀♀ & 1 Juv. unsexed from Manihar Basti, Khasi Hills, June 15, 1949.

Measurements.—1♂ : H. & B. 500 ; H. F. 147 ; 2♀♀ : H. & B. 500 ; H. F. 152-160. Skull : Total length 2♂♂ 104-107·5, 2♀♀ 108·5-110·5 ; condylobasal length : 2♂♂ 87·4—87·8, 2♀♀ 93·5—94·1 ; zygomatic width : 2♂♂ 63·8—71·6, 2♀♀ 69·5—69·6 ; orbital width : 2♂♂ 58·8—69·5, 2♀♀

69.8—62.7; maxillary width: 2♂♂ 27.8—29.6, 2♀♀ 29.8—30.3; upper cheek teeth: 2♂♂ 33.6—36.5, 2♀♀ 34.6—36; mandibular length: 2♂♂ 72.7—76.5, 2♀♀ 75.8.

Remarks.—These gibbons are quite common between 2,500 ft. and 4,000 ft. in the dense Jungles of Khasi Hills. One female (colln. No. H. 2/5.6.49) was collected with a young attached to its breast. They were seen generally in groups of four to five in number.

Family. COLOBIDAE.

Trachypithecus pileatus pileatus (Blyth).

(The Capped Langur).

1843. *Semnopithecus pileatus* Blyth, *Journ. Asiat. Soc. Bengal* XII, p. 174 (Type-locality-Unknown).

Specimen examined.—1♂ Manihar Basti, Khasi Hills, June 4, 1948.

Measurements.—1♂: H. & B. 570; Tl. 830; H. F. 178; E. 30, Skull: 1♂. Total length 105.3; condylobasal length 81.3; zygomatic width 77.8; orbital width 66.6; maxillary width 30.7; upper cheek teeth 36.4; mandibular length 73.8.

Remarks.—This langur was found to be common in the dense jungles. This specimen does not exactly correspond to the specimens in Zoological Survey of India collection in the colouration. It is pale slaty or smoky grey above and on the outside of the limbs, with the head a little darker; the underside and the whiskers are tinged with buff, and the hands darker than the feet. The outside of the leg above the knee is grey and the end of the tail blackish.

Order. RODENTIA.

Family. SCIURIDAE (Squirrels etc.)

Petaurista petaurista albiventer (Gray).

(The large red Flying squirrel).

1837. *Pteromys albiventer* Gray, *Charlesworth's Mag. Nat. Hist.* 1, p. 584 (Nepal).

Specimen examined.—1♂ from Nongpoh valley, Khasi Hills, June 15, 1949.

Measurements.—1♂: H. & B. 415; Tl. 570; H. F. 78.5; E. 45. Skull: 1♂: Occipito-premaxillar length 72.3; condylobasal length 69.7; least inter-orbital width 17.4; cranial width 35.15; post-molar length 32.9; auditory length 20.2; palatal length 34.7; length of diastema 14.5; length of palatine foramina 5; length of upper molar crowns 15.2; length of tympanic bulla 12.9; mandibular length 45.5.

Remarks.—This specimen was shot at night while coming out of a hole in a tree at a height of 40 ft. from ground. Two more flying squirrels were also seen in the same hole. The tail in this specimen is brownish rufous or rufous with a well defined black tip which is not so well defined in the specimens examined in the Zoological Survey of India collection. It is the first record from Khasi Hills.

***Hylopestes alboniger alboniger* (Hodgson).**

(The Particoloured Flying-squirrel).

1836. *Sciuropterus alboniger* Hodgson, *Journ. Asiat. Soc. Bengal* V, p. 231 (Kachin, North Burma).*Specimen examined.*—2♀♀ from Khezhabama, alt. ca. 4815 ft., Naga Hills, January 25, 1935.*Measurements.*—2♀♀ : H. & B. 264-270 ; Tl. 210-211 ; H. F. 39-41, Skull : 2♀♀ : Occipito-premaxillar length 42·8-46·4 ; condylobasal length 41·8-45·4 ; occipito-nasal length 45·5—48·8 ; greatest zygomatic width 1♀ 30·6 ; least inter-orbital width 8·5—10·15 ; cranial width 21·6—21·8 ; median depth of occiput 6·2—7·5 ; post-molar length 19·6—21·6 ; auditory length 12·8—13·4 ; length of nasals 12·5—13·7 ; palatal length 20·6—22·4 ; length of diastma 9·2—10·2 ; length of ant. palatine foramina 2·8—3·5 ; length of upper molar crowns 10—10·8 ; length of tympanic bulla 8·8—9·6 ; mandibular length 26·3—28·1.*Remarks.*—This specimen was collected in a hill forest.***Ratufa bicolor gigantea* (MacClelland).**

(The Large Malay squirrel).

1839. *Sciurus giganteus* McClelland, *Proc. Zool. Soc. London*, p. 150, (Assam).*Specimens examined.*—4♀♀ : Two from Luanglong Khunow and Regaious camp. alt. ca. 3,250 ft., on Silchar Road, Manipur, February 10 and 11, 1936 ; two from Nongpon, Khasi Hills, June 4 & 12, 1949.*Measurements.*—3♀♀ : H. & B. 360-389 ; Tl. 470-560 ; H. F. (in two) 71—81 ; E. 32 (in one). Skull : 2♀♀ : Occipito-premaxillar length 70·1—71·1 ; condylobasal length 68·9—69·7 ; occipito-nasal length 75·7—76 ; greatest zygomatic width 46·6—48·5 ; least inter-orbital width 28·9—31·1 ; cranial width 33·3—33·6 ; occipital breadth 33·3—33·4 ; median depth of occiput 9·3—9·6 ; post-molar length 32·1—32·6 ; auditory length 18·9—20·1 ; length of tympanic bulla 13·8—15·7 ; length of nasal 21·3—23 ; palatal length 28·2—28·7 ; length of diastema 16—16·7 ; length of ant. palatine foramina 6·9—7·6 ; length of upper molar crowns 14·6—15·1 ; mandibular length 44·9—45·5.*Remarks.*—These squirrels were found in pairs on a tall tree in dense forest on a steep hill side, alt. ca. 2,400-3,000 ft. in the Khasi Hills. They were quite common in the forest.***Dremomys lokriah macmillani* Thomas and Wroughton.**

(Macmillan's Squirrel).

1916. *Dremomys macmillani* Thomas & Wroughton, *Journ. Bombay Nat. Hist. Soc.* XXIV (2), p. 238 (Tatkon, on west bank of river Chindwin near kindat, Upper Chindwin district, Burma).*Specimens examined.*—2♂♂ from Luanglong khulen, alt. ca. 3250 ft., on Silchar Road, Manipur State, February 10, 1939.

Measurements.—1♂: H. & B. 175; Tl. 170; H. F. 45. Skull: 1♂: Occipito-premaxillar length 49.6; condylobasal length 44.6; occipito-nasal length 50.6; inter-orbital width 14.2; cranial width 21.6; post-molar length 20.9; auditory length 12; length of tympanic bulla 8.5; length of nasal 16.5; palatal length 21.1; length of diastema 11.3; length of ant. palatine foramina 3.8; length of upper molar crowns 8.2; length of orbit 16.7.

Remarks.—The above two specimens are marked by a very faint buffy yellowish median dorsal line (seen only by close examination) instead of the dark median dorsal line so prominent, and characteristic in the *macmillani*, and thus exhibiting an intermediate stage between premoult and moult stage of seasonal variation.

***Callosciurus maclellandi maclellandi* (Horsfield).**

(The Striped Himalayan Squirrel).

1839. *Sciurus maclellandi* Horsfield, *Proc. Zool. Soc. London*, p. 152 (Assam).

Specimen examined.—1♂ from Regailous Camp, alt. ca. 3,250 ft., on Silchar Road, Manipur State, February 11, 1936.

Measurements.—1♂: H. & B. 115; Tl. 95; H. F. 29.

The skull was too badly damaged for taking any measurements.

***Callosciurus erythraeus erythraeus* (Pallas).**

(Pallas Squirrel).

1778. *Sciurus erythraeus* Pallas, *Nov. sp. Quadr. Glir. ord.*, p. 317 (Locality not known).

Specimens examined.—9 (4♂♂ and 5♀♀) thus: 2♂♂ and 1♀ from Manihar Basti, Khasi Hills, June 4 & 5, 1949; 2♂♂ and 3♀♀ from Nongpoh valley and 2 miles and 9 miles east of Nongpoh, Khasi Hills, May 12 & 13 and June 13 & 27, 1949; and 1♀ from Chirpara Timari Reserve Forest, Garo Hills, June 22, 1949.

Measurements.—4♂♂: H. & B. 228–245 (av. 237.5); Tl. 202–228 (av. 216.1); H. F. 50–55 (av. 52.6); E. 20–22 (av. 21.3); and 4♀♀: H. & B. 225–238 (av. 232.1); Tl. 220–243 (av. 233.9); H. F. 51–52 (av. 51.6); E. 17–21 (av. 18.7). The skull measurements are as follows: Occipito-premaxillar length: 4♂♂ 53.8–55.9 (av. 55.07), 3♀♀ 52.5–54.6 (av. 53.66); condylobasal length: 4♂♂ 51.3–53.9 (av. 52.45), 3♀♀ 51.9–52.6 (av. 52.3); occipito-nasal length: 4♂♂ 56.2–57.4 (av. 66.75), 3♀♀ 54.3–57.1 (av. 55.7); greatest zygomatic width: 3♂♂ 32.8–33.7 (av. 32.2), 3♀♀ 32.3–33.9 (av. 33.1); least inter-orbital width: 4♂♂ 20.5–21.2 (av. 20.82), 3♀♀ 18.7–20.5 (av. 19.7); cranial width: 4♂♂ 25.1–25.6 (av. 25.2), 3♀♀ 24.6–26.4 (av. 25.53); median depth of occiput: 4♂♂ 8.2–9.2 (av. 8.7), 3♀♀ 7.4–8.5 (av. 8.13); post-molar length: 4♂♂ 24.8–25.1 (av. 24.85), 3♀♀ 23.65–24.6 (av. 24.11); auditory length: 4♂♂ 14.8–15.4 (av. 15.2), 3♀♀ 14.5–15.2 (av. 14.8); length of tympanic bulla: 4♂♂ 9.8–10.9 (av. 10.3), 3♀♀ 10–11.3 (av. 10.7); length of nasals: 4♂♂ 16.6–18 (av. 17.2), 3♀♀ 16.5–17.1 (av. 16.8); palatal length: 4♂♂ 23.3–24.5 (av. 23.8), 3♀♀ 23–23.4 (av. 23.2); length of diastema:

4♂♂ 12.6-13.2 (av. 12.85), 3♀♀ 11.8-12.3 (av. 12.2); length of ant. palatine foramina : 4♂♂ 3.3-3.9 (av. 3.62), 3♀♀ 3.7-3.8 (av. 3.73); length of upper molar crowns : 2♂♂ 10.3-10.5 (av. 10.4), 3♀♀ 10.7-10.8 (av. 10.66); post-orbital width : 4♂♂ 18.5-19.4 (av. 18.92), 3♀♀ 18.7-19.5 (av. 19.1); mandibular length 3♂♂ 32.7-33.4 (av. 33), 3♀♀ 32.6-33.1 (av. 32.86).

Remarks.—These squirrels were shot in thick jungles. All the females examined has only two pairs of abdominal mammae. The feet in all the specimens are horney black. The rufous colouration of the tail varies in extant in all these specimens. The tail in one specimen (colln. No. H1/2.6.1949) is rufous throughout, while in others the rufous colouration of the tail varies from the tip of tail to half or three-fourth of the length of tail.

***Callosciurus pygerythrus blythi* (Tytler).**

(Blyth's squirrel).

1854. *Sciurus blythi* Tytler, *Ann. Mag. Nat. Hist.* 2 (XIV), p. 172 (Dacca Bengal, India).

Specimens examined.—13 (6♂♂ & 7♀♀) thus : 1♂ from Lokra, Balipara Frontier Tract, November 9, 1936; 1♂ from Tangla, November 15, 1939; 1♂ & 1♀ from Manihar Basti, Khasi Hills, May 11 and June 4, 1949; 1♂ and 3♀♀ from Nongpoh Valley, June 8, 10, 12, 1949; 1♂ from Noon Mati, Khasi Hills, June 15 and 16, 1949; 2♀♀ from Burnihat, June 20 and 31, 1949; 1 sub-adult from chirpara Timari Reserve forest Garo Hills, June 21, 1949.

Measurements.—5♂♂ : H. & B. 180-197 (av. 190.2); Tl. 171-192 (av. 180.4); H. F. 40-44 (av. 42.2); E. 19-20 (av. 19.5); and 6♀♀ H. & B. 178-194 (av. 18.6); Tl. 181-194.5 (av. 188.2); H. F. 41-46 (av. 43.8); E. 18-20 (av. 19.1).

The skull measurements are as follows :—Occipito-premaxillar length : 2♂♂ 45.8-46.5 (av. 46.2), 6♀♀ 45.7-47.6 (av. 46.73); condylobasal length : 2♂♂ 43.5-43.8 (av. 43.65), 6♀♀ 43.2-45.3 (av. 44.5); occipito-nasal length : 2♂♂ 47.4-48 (av. 47.7), 6♀♀ 47.1-49.6 (av. 48.53); greatest zygomatic width : 2♂♂ 47.4-48 (av. 27.95), 5♀♀ 27.4-29.7 (av. 28.7); least inter-orbital width : 2♂♂ 15.8-15.9 (av. 15.85), 6♀♀ 16.1-17.1 (av. 16.7); cranial width : 2♂♂ 22.6-22.7 (av. 22.65), 5♀♀ 22.2-22.8 (av. 22.6); median depth of occiput : 2♂♂ 7.7-8 (av. 7.85), 6♀♀ 7.7-8.4 (av. 8.05); post-molar length : 2♂♂ 20-20.1 (av. 20.01), 6♀♀ 20-21.3 (av. 20.85); auditory length : 2♂♂ 12.4-12.6 (av. 12.5), 6♀♀ 12.3-12.9 (av. 12.65); length of nasal : 2♂♂ 12.4-12.6 (av. 12.5), 6♀♀ 12.9-14.3 (av. 13.77); palatal length : 2♂♂ 20.5-20.6 (av. 20.5), 6♀♀ 20.1-20.7 (av. 20.45); length of diastema : 2♂♂ 10.5-11.1 (av. 10.8), 6♀♀ 10.7-12.6 (av. 11.78); length of ant. palatine foramina : 2♂♂ 3.4-3.8 (av. 3.6), 6♀♀ 2.9-3.3 (av. 3.15); length of tympanic bulla : 2♂♂ 8.5-8.9 (av. 8.7), 6♀♀ 8.7-9 (av. 8.85); post-orbital width : 2♂♂ 16.5-16.6 (av. 16.5), 6♀♀ 16.2-17.2 (av. 16.72); mandibular length : 2♂♂ 28.5-28.7 (av. 28.6), 6♀♀ 27.5-29.6 (av. 28.6).

Colour of soft parts.—Iris black; feet light brown; nose brown.

Remarks.—These squirrels were collected in dense forest with thick undergrowth and rocks. One specimen (colln. No. H1/8.5.1949) was collected while making nest on a bamboo tree at a height of 21 ft., from ground. All the females collected have only two pairs of abdominal mammae. The colour of the thigh patches varies, out of 13 specimens examined five have them pure white, four have them buffy white and the rest greyish white.

***Callosciurus erythraeus erythrogaster* (Blyth).**

(The Manipur squirrel).

1842. *Sciurus erythrogaster* Blyth, *Journ. Asiat. Soc. Bengal* XI, p. 970 (Manipur, Assam).
 1916. *Callosciurus erythraeus nagarum* Thomas & Wroughton, *Journ. Bombay Nat. Hist. Soc.* XXIV (2), p. 228.
 1947. *Callosciurus erythraeus erythrogaster* Ellerman, *Journ. Mamm.* XXVIII (3), p. 270.

Specimens examined.—2 (1♂ and 1♀) thus: 1♂ from Regailous camp, alt. ca. 3,250 ft., on Silchar Road, Manipur State, February 10, 1936; and 1♀ from Luanglong Khunow, alt. ca. 3,250 ft., on Silchar Road, Manipur, February 10, 1936.

Measurements.—1♂: H. & B. 217; Tl. 274; H. F. 55; and 1♀: H. & B. 225; Tl. 270; H. F. 55. Skull: occipito-premaxillar length: 1♂ 53.7; condylobasal length: 1♂ 49.5; occipito-nasal length: 1♂ 53.9; greatest zygomatic width: 1♂ 31.9; least inter-orbital width: 1♂ 18.5; cranial width: 1♂ 25.6, 1♀ 24.4; post-molar length: 1♂ 23.1, 1♀ 24.2; auditory length: 1♂ 13, 1♀ 15.1; length of nasal: 1♂ 16.8, 1♀ 16.7; palatal length: 1♂ 22.5; length of diastema: 1♂ 11.6; length of ant. palatine foramina: 1♂ 3.9; length of tympanic bulla: 1♂ 10.2, 1♀ 10.7; length of upper molar crowns: 1♂ 10, 1♀ 10.1; mandibular length 1♂ 31.3.

Remarks.—These squirrels were obtained in dense jungles. In one specimen only the tail is black near the terminal end, but in other the tail is black to about two-third its total length.

Family. RHIZOMYDAE.

***Cannomys badius badius* (Hodgson).**

(The Bay Bamboo-Rat).

1842. *Rhizomys badius* Hodgson, *Calcutta Journ. Nat. Hist.* II, p. 60, 410 (Nepal).

Specimens examined.—1♂ and 2♀♀ (1 ad. ♀ and 1 Juv. ♀) from Luanglong Khulen, alt. ca. 3,250 ft., on Silchar Road, Manipur State, February 9, 1936.

Measurements.—1♂: H. & B. 198; Tl. 67; H. F. 33, and 1♀: H. & B. 180; Tl. 58; H. F. 28. The skull measurements are as follows:—Occipito-premaxillar length: 1♂ 44.6, 1♀ 40.5; condylobasal length 1♂ 46.4, 1♀ 41.8; occipito—nasal length: 1♂ 42.3, 1♀ 37.8; greatest

* The skull of the female specimen is very much damaged, and here the measurements of undamaged parts are given.

zygomatic width : 1♂ 35.7, 1♀ 32 ; least inter-orbital width : 1♂ 9.2, 1♀ 9.3 ; cranial width : 1♂ 22.5, 1♀ 22.3 ; median depth of occiput : 1♂ 8.9, 1♀ 8 ; post-molar length : 1♂ 16.5, 1♀ 15 ; auditory length : 1♂ 12.8, 1♀ 12.2 ; length of tympanic bulla : 1♂ 10.5, 1♀ 9.8 ; length of nasal : 1♂ 15.8, 1♀ 13.2 ; palatal length : 1♂ 27.6, 1♀ 24.3 ; length of diastema : 1♂ 16.6, 1♀ 14.9 ; length of ant. palatine foramina : 1♂ 5, 1♀ 4.9 ; length of upper molar crowns : 1♂ 9.8, 1♀ 8.2 ; mandibular length : 1♂ 32.4, 1♀ 29.4.

***Rhizomys pruinosus pruinosus* Blyth.**

(The hoary Bamboo-Rat).

1851. *Rhizomys pruinosus* Blyth, *Journ. Asiat. Soc. Bengal* XX, p. 519 (Cherrapunji, Khasi Hills, Assam).

Specimen examined.—1♀ from Luanglong khunow, alt. ca. 3,250 ft. on Silchar Road, Manipur, February 9, 1936.

Measurements.—2♂♂ : H. & B. 176–185 ; Tl. 161–194 ; H. F. 33–37 ; E. (in one) 21.5. Skull, 1♂ : occipito-premaxillar length 42.3 ; condylobasal length 42.2 ; occipito-nasal length 43.7 ; greatest zygomatic width 20.8 ; least inter-orbital width 6 ; cranial width 17 ; post-molar length 19.1 ; auditory length 10.3 ; length of nasal 17.6 ; palatal length 20.7 ; length of diastema 12 ; length of ant. palatine foramina 7.8 ; length of tympanic bulla 6.5 ; length of upper molar crowns 6.7 ; mandibular length 23.1.

Family—MURIDAE.

***Rattus nitidus nitidus* (Hodgson).**

(The Nepal Shiny Rat).

1845. *Mus nitidus* Hodgson, *Ann. Mag. Nat. Hist.* XV, p. 267 (Nepal).

Specimens examined.—2♂♂ Nongpoh Valley, Khasi Hills, May 15 and 19, 1949.

Measurements.—2♂♂ : H. & B. 176–185 ; Tl. 164–194 ; H. F. 33–37 ; E. (in one) 21.5. Skull : 1♂ : occipito-premaxillar length 42.3, condylobasal length 42.2 ; occipito-nasal length 43.7 ; greatest zygomatic width 20.8 ; least inter-orbital width 6 ; cranial width 17 ; post-molar length 19.1 ; auditory length 10.3 ; length of nasal 17.6 ; palatal length 20.7 ; length of diastema 12 ; length of ant. palatine foramina 7.8 ; length of tympanic bulla 6.5 ; length of upper molar crowns 6.7 ; mandibular length 23.1.

Colour of soft parts.—Irish black ; nose pinkish ; legs flesh colour.

Remarks.—These specimens were trapped in houses. In the check-teeth of one specimen (colln. no. H8/15.5.1949) m¹ has antero-external tubercle (cusp 1) greatly reduced than in the other specimen.

***Rattus niviventer mentosus* Thomas.**

(The Chin Hills Rat).

1916. *Epimys jerdoni* Wroughton, *Journ. Bombay Nat. Hist. Soc.* XXIV (2), p. 307 (Hakamti and Chin Hills, Upper Burma, Wrong identification *vide.*, Wroughton, 1916).

1916. *Rattus mentosus* Thomas, *Journ. Bombay Nat. Hist. Soc.* XXIV (4), p. 643 (Hkampti=Hakampti=Singkaling Hakampti=Zungkaling Hakampti, Upper Chindwin district, Upper Burma, 5,000 ft.).

Specimen examined.—1♀ from Barapani, Khasi Hills, June 22, 1949.

Measurements.—1♀: H. & B. 138.5; Tl. 186.5; H. F. 28; E. 23.7; Skull (partly broken): 1♀: Inter-orbital width 5.6; nasal length 13.8; cranial width 14.8; palatal length 15.9; length of diastema 9.5; length of ant. palatine foramina 6.6; length of upper molar crowns 5.7; mandibular length 19.5. The measurements of other parts of the skull could not be taken owing to the skull being damaged.

Colour of soft parts.—Irish black; feet and nose pinkish.

Remarks.—This example was trapped in jungle. It had two pairs of thoracic and two pairs of abdominal mammae. The western limit of this form has hitherto been known to be Naga Hills (Ellerman, 1947, p. 377). The present record from Barapani extends the limit of distribution further westward.

Rattus rattus tistae Hinton.

(The Himalayan Tree-Rat).

1918. *Rattus rattus tistae* Hinton, *Journ. Bombay Nat. Hist. Soc.* XXVI (1), p. 68 (Pashok, Sikkim).

Specimens examined.—5♂♂ thus: 2 sub-adult from Nongpoh Valley, May 11 and 12, 1949; and 3♂♂ from Burnihat, Khasi Hills, May 25, 26, 1949.

Measurements.—3♂♂: H. & B. 142–160; Tl. 150–185; H. F. 34–35.7; E. 21–22.5. Skull: 2♂♂: Occipito-premaxillar length 38.8–39.1; condylobasal length 37.9–38.3; occipito nasal length 40.1–40.2; least inter-orbital width 6.3; cranial width (1♂) 16.7; post-molar length 17.1–17.5; auditory length 9.5–10.5; length of nasal 15.7–15.8; palatal length 19.3; length of diastema 10.5–11.2; length of ant. palatine foramina 7.6–7.7; length of tympanic bulla 6.1–6.6; length of upper molar crowns 6.5–6.6; mandibular length 20.5–21.8.

Colour of soft parts.—Irish black; legs and nose light brown.

Remarks.—These specimens were trapped in houses.

Rattus rattus brunneusculus Hodgson.

1845. *Mus. brunneusculus* Hodgson, *Ann. Mag. Nat. Hist. Soc.* XV, p. 267 (Nepal).

Specimens examined.—2♀♀ thus: 1♀ from Manihar Basti, Khasi Hills, June 3, 1949 and 1♀ from Chirpara Timari Reserve Forest, Garo Hills, June 21, 1949.

Measurements.—2♀♀: H. & B. 155–158; Tl. 202–208; H. F. 29–31; E. 15–21. Skull: 2♀♀: occipito-premaxillar length 40.3–40.4; condylobasal length 38.4–39.5; occipito-nasal length 40.2–40.5; greatest zygomatic width 20–21.3; least inter-orbital width 5.3–5.5; post-molar length 1♀ 17.5; auditory length 1♀ 10.2; length of nasal 2♀♀ 14.6–15.6; palatal length 19.5; length of diastema 10.5–10.6; length

of ant. palatine foramina 7.3-7.8; length of tympanic bulla 6.5-7.2; length of upper molar crowns 6.7-6.9; mandibular length 22.9.

Remarks.—These specimens were trapped in jungle.

***Bandicota bengalensis bengalensis* Gray & Hardwicke.**

(The Indian Mole rat).

1833. *Arvicola bengalensis* Gray & Hardwicke, *Illust. Indian Zool.* II, p. 21 (Bengal).

Specimen examined.—1♂ from Sarengma village, Garo Hills, June 23, 1949.

Measurements.—1♂: H. & B. 194; Tl. 132; H. F. 34; E. 24. Skull: 1♂: Occipito-premaxillar length 42.3; condylobasal length 42.7; occipito nasal length 40.8; least inter-orbital width 5.3; post-molar length 18; auditory length 13; length of nasal 12.9; palatal length 21.4; length of diastema 12.9; length of ant. palatine foramina 8.3; length of tympanic bulla 9.6; length of upper molar crowns 6.8; mandibular length 26.6.

Remarks.—This species was not common and was found in evergreen jungle of Oak scrub.

***Mus guhai*, sp. nov.**

Specimens examined.—6 ad. ♂♂ from Nongpoh, alt. ca. 2,000 ft. Khasi Hills, Assam, July 15, 1949.

Type.—Zoological Survey of India, Calcutta. Registered No. 11439, adult ♂, Nongpoh, Khasi Hills, Assam; 16 May, 1949; collected by the Zoological Survey of India party.

Measurements of the Type.—1 ad. ♂: H. & B. 79; Tl. 87.5; H. F. 24.5; E. 16. Skull.—Occipito-premaxillar length 27.6; condylobasal length 26.5; occipito-nasal length 28.5; greatest zygomatic width 14.8; least inter-orbital width 5.2; cranial width 14.2; post-molar length 11.8; auditory length 7.6; length of nasal 8.4; palatal length 11.5; length of diastema 7; length of ant. palatine foramina 5.4; length of tympanic bulla 5.2; length of upper molar crowns 4.6.

Range.—Known only from the type-locality.

For further account, particulars and other details which has already been published separately the *Journal Zool. Soc. India* IV, No. 1, pp. 85-88 may be referred.

Family—LEPORIDAE.

***Lepus ruficaudatus* Geoffroy.**

(The Common Indian Hare).

1826. *Lepus ruficaudatus* Geoffroy, *Diet. d'Hist. Nat.* IX, p. 381, (Bengal).

Specimen examined.—1♀ sub-adult from Barapani, Khasi Hills, June 5, 1949.

Measurements.—1♀ sub-adult: H. & B. 365; Tl. 82; H. F. 96; E. 85. Skull: 1♀ sub-adult: condylobasal length 76.4; occipito-nasal length 74.5; greatest zygomatic width 39.3; least inter-orbital width 14.1; cranial width 28.3; post-molar length 30.8; auditory length 14.4; length of tympanic bulla 11.1; length of nasal 30.5; post-orbital width 11.8; palatal length 26.6; length of diastema 19.9; length of ant. palatine foramina 19.6; length of upper molar crowns 11.4; mandibular length 55.1.

Remarks.—This example was shot at night in a field.

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