

inner margin lobed before middle and excised towards tornus, with scale-teeth before middle and at tornus; veins 3 and 5 from near angle of cell; 6 from below upper angle; 7 from angle; 8, 9, 10 stalked from before angle; 11 from cell. Hind wing with veins 3, 4 shortly stalked; 5 fully developed from just above angle of cell; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

XIX. — *On new Mammals, mainly from Bandon and the adjacent Islands, East Coast of the Malay Peninsula.*
By HERBERT C. ROBINSON, C.M.Z.S., and C. BODEN KLOSS, F.Z.S.

THE following new races of mammals were obtained in the course of a collecting-expedition to the N.E. coast of the Malay Peninsula in the Siamese province of Bandon and the neighbouring islands of the Koh Samui and Koh Pennan, lying between latitude 9° N. and 10° N., roughly 300 miles south of Bangkok. Those not actually obtained in these localities have come to light in the course of working out the collections.

Petaurista nitida cicur, subsp. n.

Type.—Adult male (skin and skull), No. 58/13, Federated Malay States Museum, collected at Ban Kok Klap, Bandon, N.E. Malay Peninsula, 2nd July, 1913, by H. C. Robinson and E. Seimund. Original no. 5614.

Characters.—A member of the *Petaurista nitida* * section, more closely allied to the island forms of the species (*P. n. nitida* from Java, *P. n. rajah* from Borneo, and *P. n. marchio* from Sumatra) than to the South Malayan race (*P. n. melanotus*), from which it differs in its chestnut, not bay, pelage and the marked dark tips to the hairs of the back.

Colour.—Above rich chestnut, the head considerably paler, all the hairs of the upper surface, except those of the head, tipped with black; muzzle, a broad orbital ring, entire inner surface and posterior half of outer surface of ears, and a large patch behind them black. Black of hands and feet extending beyond the wrists and ankles. Margin of antebrachial membrane broadly black, this colour extending, to a diminishing extent, halfway up the tail. Distal half of

* Thomas, Ann. & Mag. Nat. Hist. (8) i. pp. 250-2 (1908).

tail, except a black tip, ochraceous orange, terminal half more chestnut. Under surface of body pale ochraceous orange.

Skull.—Closely resembles that of the adjacent form, *P. n. melanotus*, but differs in the longer and broader postorbital processes.

Measurements.—Collectors' external measurements (taken in the flesh):—

Head and body 417 (415*) mm.; tail 486 (445); hind foot 77 (74); ear 41.

Skull: greatest length 70.5 (70.1); condylo-basilar length 62.0 (60.0); interorbital breadth 14.0 (14.8); zygomatic breadth 47.9 (46.2); cranial breadth 31.6; median length of nasals 20.3 (21.0); diastema 15.1 (14.6); upper molar series including pm^3 16.2 (15.1).

Specimens examined.—Nine, all from the type-locality.

Remarks.—The series is remarkably constant in the characters above noted, and can be separated at a glance from the southern peninsular form by the greater extent of the black areas and by the marked black tips to the hairs of the back.

Sciurus erythræus youngi, subsp. n.

Type.—Adult male (skin and skull), No. 1823/11, Federated Malay States Museum, collected on Gunong Tahan, 5–6000 ft., Northern Pahang, by H. C. Robinson and C. B. Kloss, July 19th, 1911. Original no. 4428.

Characters.—Allied to *Sc. rubeculus*, Miller †, but somewhat smaller and duller in colour, the head and tail lacking the golden-orange suffusion so conspicuous in that race (metatype examined).

Colours.—Whole upper surface, chin, throat, chest, and narrow median ventral line from chest to vent grizzled black and buff, giving an olivaceous effect; a smaller proportion of black in the grizzling of the under surface. Hands and feet blackish, only slightly grizzled with buff; upper part of the ears clad with ochraceous hairs; basal portion of tail above like the back, but more coarsely grizzled, rest of the tail distinctly annulated with black and ochreous buff, the hairs with broad orange-buff tips. Under surface rufous chestnut.

* Measurements in parentheses are those of an adult male *Petaurista nitida melanotus* from Dusun Tua, Selangor, Federated Malay States Museum, No. 1259/08.

† Smithsonian Misc. Coll. 45, p. 22 (1903).

Skull and teeth.—Except in their slightly smaller size, the skull and teeth present no differential characters from *Sc. e. rubeculus*.

Measurements.—Collectors' external measurements (taken in the flesh) :—

Head and body 201 (210 *) mm.; tail 195 (208) ; hind foot 48 (50).

Skull: greatest length 51.8 (54.4) ; condylo-basilar length 43.9 (47.1) ; interorbital breadth 19.7 (20.1) ; zygomatic breadth 32.1 (32.2) ; cranial breadth 23.4 (23.7) ; median length of nasals 14.9 (16.1) ; diastema 11.9 (12.2) ; upper molar series, including pm^3 , 9.4 (10.3).

Specimens examined.—Sixty-five, including thirty from the type-locality.

Remarks.—We have long suspected that specimens of this type of squirrel from the mountain ranges of the southern two-thirds of the Malay Peninsula were not strictly conspecific with *Sc. rubeculus* from Trang. The receipt of a series of eight from the mountains of Bandon shows that the southern form is sufficiently distinct to merit separation, and we have accordingly named it after Sir Arthur Young, K.C.M.G., Governor of the Straits Settlements and High Commissioner, Malay States, who has recently ascended Gunong Tahan. Examination of the type of *Sc. griseopectus*, Blyth †, with which Bonhote has associated it, shows that the present animal cannot be assigned to that form.

Sciurus concolor fallax, subsp. n.

Type.—Adult male (skin and skull), No. 134/13, Federated Malay States Museum, collected on Koh Pennan, N.E. Malay Peninsula, 30th May, 1913, by H. C. Robinson and E. Seimund. Original no. 5504.

Characters.—A race of *Sciurus concolor* (with which is included *Sc. epomophorus*) most closely allied to *Sc. c. milleri* † from Trang, but somewhat duller above ; head, limbs, and under surface darker and clearer grey in tone.

Colour.—Upper surface grizzled black and buff, except on the fore limbs, head, and hind feet, where the grizzle becomes black and white, producing a grey effect ; shoulder-patches and flanks suffused with pale ochraceous, the colour of the

* Measurements in parentheses are those of an adult male *Sciurus erythræus rubeculus* from Kao Nawng, 3500 ft., Bandon, N.E. Malay Peninsula ; Federated Malay States Museum, No. 69/13.

† Journ. Asiat. Soc. Bengal, xvi. p. 873 (1847).

‡ Robinson & Wroughton, Journ. Fed. Malay States Mus. iv. p. 233 (1911).

flanks spreading on to the abdomen; rest of the under surface grizzled silvery-grey, a darker obsolescent median stripe down the abdomen more yellowish. Tail coarsely annulated with black and buffy-white, the colour of the back extending some distance down the basal portion above and below, pencil pure black.

Skull and teeth.—Present no differential characters from those of *Sc. c. milleri*, except the slightly larger size.

Measurements.—Collectors' external measurements of type (taken in the flesh):—

Head and body 226 (229*); tail 237 (214); hind foot 49.5 (48.0).

Cranial measurements: greatest length 55.5 (54.3); condylo-basilar length 47.9 (45.3); interorbital breadth 21.2 (18.9); zygomatic breadth 33.2 (31.7); cranial breadth 24.4 (24.3); median length of nasals 16.8 (15.8); diastema 12.4 (11.3); upper molar series, including pm^3 , 11.1 (11.0).

Specimens examined.—Thirty-five, all from the type-locality.

Remarks.—Somewhat closely allied to the adjacent mainland form, but very constant in its characters.

Sciurus concolor samuiensis, subsp. n.

Type.—Adult male (skin and skull), No. 201/13, Federated Malay States Museum, collected on Koh Samui, N.E. Malay Peninsula, 13th May, 1913, by H. C. Robinson and E. Seimund. Original no. 5341.

Characters.—Allied to *Sc. c. epomophorus* † from Salanga, and differing from the preceding race (*Sc. c. fallax*) in the much more strongly marked shoulder- and flank-patches and in the rufous-hazel colouring of the base of the under surface of the tail.

Colour.—Upper surface much as in *Sc. c. fallax*, but sides of neck, flanks and lower portion of abdomen, back of thighs, and base of tail beneath rufous-hazel. Outer surface of thighs and nuchal region slightly suffused with the same colour. Underparts much as in other forms of the species. Tail with clear black pencil.

Skull and teeth.—Do not differ from those of *Sc. c. fallax*.

Measurements.—Collectors' external measurements (taken in the flesh):—

Head and body 234 mm.; tail 242; hind foot, 49.

* Measurements in parentheses are those of an adult male *Sc. c. milleri* from Chong, Trang, Western Siamese Malay States; Federated Malay States Museum, No. 11/10.

† Bonhote, Ann. & Mag. Nat. Hist. (7) vii. p. 272 (1901).

Cranial measurements: greatest length 56.1; condylo-basilar length 48.2; interorbital breadth 19.9; zygomatic breadth 32.8; cranial breadth 25.2; median length of nasals 18.1; diastema 12.6; upper molar series, including pm^3 , 11.1.

Specimens examined.—Forty, all from the type-locality.

Remarks.—Amongst the series obtained are a large proportion which differ from the specimen described above in having the rufous hazel of the shoulders and flanks invading the dorsal area and coalescing on the nape. It is possible that this indicates that the form possesses two seasonal pelages, as is apparently the case in *Sc. caniceps*, but is almost certainly not so in *Sc. concolor* and allied races. Since the whole series before us was obtained within a period of one month it is at present impossible to make any definite pronouncement on the point.

Ratufa melanopepla decolorata, subsp. n.

Type.—Adult female (skin and skull), No. 251/13. Federated Malay States Museum, collected on Koh Samui, N.E. Malay Peninsula, 15th May, 1913, by H. C. Robinson and E. Seimund. Original no. 5356.

Characters.—Nearer in colour to *R. m. melanopepla* from the mainland than to the other island races, but very much smaller. Skull more slenderly built.

Colour.—Apparently as in *R. melanopepla melanopepla*.

Skull and teeth.—Interpterygoid space relatively wider than in the typical form and zygomatic much lighter.

Measurements.—Collectors' external measurements (taken in the flesh):—

Head and body 328 (342 *); tail 417 (455); hind foot 68 (75).

Cranial measurements: greatest length 68.7 (72.8); condylo-basilar length 57.1 (61.2); interorbital breadth 26.2 (29.3); zygomatic breadth 42.6 (45.8); greatest length of nasals 23.0 (24.8); diastema 14.1 (16.0); upper molar series 13.4 (14.1).

Specimens examined.—Thirteen, twelve from the type-locality and one from Koh Penan.

Remarks.—With one exception all the specimens are in highly bleached pelage, though some are assuming the new coat on the anterior half of the body. It is therefore difficult to state whether any colour-differences exist between this form and that of the mainland.

* Measurements in parentheses are those of an adult female from Kao Nawng, 1100 ft., on the adjacent mainland; Federated Malay States Museum, No. 250/13.

Epimys orbus, sp. n.

Type.—Adult male (skin and skull), No. 61/13, Federated Malay States Museum, collected on Kao Nawng, 3500 ft., Bandon, N.E. Malay Peninsula, 23rd June, 1913, by H. C. Robinson and E. Seimund. Original no. 5641.

Characters.—A rat with very spiny pelage and small flattened bullæ. Tail very greatly exceeding head and body in length. Lower pelage sharply defined from upper. Tail bicolor, but not markedly so, very slightly penicillate at tip.

Colour.—Pelage above, as in other rats of the group, composed of three elements: (a) long black piles, best developed on the lower back, (b) flattened spines with black tips, and (c) soft fur, grey at the base, rich ochraceous on the terminal half of the hairs, producing a grizzled ochraceous effect darkest on the median line of the back; cheeks and sides of the head and neck almost pure ochraceous. Under surface white with a creamy tinge, the white extending to the wrists but not to the ankles. Upper surface of hands and feet dirty white with a dark clay-brown median streak, not reaching the base of the digits. Tail bicolor, with fine annulations, clad with fine silky hairs longer at the tip.

Skull and teeth.—The skull is not markedly different from those of *E. jerdoni bukit* and *E. cremoriventer*, but rather larger, the palatal foramina broader, as also the infraorbital plate, and the zygomatic arches less flaring, so that the skull appears relatively narrower.

Measurements.—Collectors' external measurements (taken in the flesh):—

Head and body 153 (141 *) mm.; tail 235 (188); hind foot 32 (26); ear 20 (18.5).

Cranial measurements: greatest length 38.1 (36.4); basal length 30.1 (29.2); palatal length 16.8 (15.8); length of nasals 13.9 (13.0); greatest breadth of combined nasals 5.2 (4.6); shortest distance between tips of nasals and lachrymal notch 14.5 (13.1); diastema 9.8 (9.1); upper molar row 6.3 (6.3); length of palatal foramina 6.3 (6.2); breadth of combined foramina 3.3 (2.7); zygomatic breadth 17.0 (17.4); cranial breadth 15.9 (14.7).

Specimens examined.—Five, all from the type-locality.

Remarks.—The only rat with which this species requires comparison is *Mus cinnamomeus*, Blyth †, of which the only

* Measurements in parentheses are those of an adult male *E. cremoriventer* from Gunong Ijau, 4700 ft., Larut, Perak; Federated Malay States Museum, No. 1809/11.

† Journ. Asiat. Soc. Bengal, xxviii. p. 294 (1859).

specimens known are the types from the valley of the Sittang, Lower Pegu, over 500 miles distant. Amongst local forms it is readily distinguished from *E. cremoriventer* by its greater size and bicolor tail, not strongly penicillate at the tip, and from *E. jerdoni bukit* by longer less markedly bicolor tail, and by its richer colouring. It agrees with both and differs from all the other local forms in the greenish-grey bases of the dorsal spines.

Epimys jerdoni pan, subsp. n.

Type.—Adult male (skin and skull), No. 80/13, Federated Malay States Museum, collected on the hills of Koh Samui, N.E. Malay Peninsula, 15th May, 1913, by H. C. Robinson and E. Seimund. Original no. 5351.

Characters.—A spiny rat of the *jerdoni* group, with bicolor tail, considerably exceeding head and body in length, but relatively shorter than that of the mainland form.

Colour.—Above mingled ochreous buff and dark brown, the former predominating on the sides of the head and neck, below pure buffy white, sharply defined from the sides; hands and feet whitish, the median areas brownish. Bases of the spines greenish grey.

Skull and teeth.—Not differing materially from those of *E. j. bukit**, but with the anterior margin of the mesopterygoid space more abruptly truncate, less rounded; rostrum somewhat heavier, and nasals longer.

Measurements.—Collectors' external measurements (taken in the flesh):—

Head and body 149 (158†) mm.; tail 174 (192); hind foot 27·5 (30·0).

Cranial measurements: greatest length 37·7 (37·0); condylo-basilar length 31·5 (31·0); palatilar length 16·0 (15·0); length of nasals 14·7 (13·0); greatest breadth of combined nasals 4·4 (4·6); shortest distance between tips of nasals and lachrymal notch 14·2 (13·8); diastema 10·0 (9·4); upper molar row 5·6 (5·9); length of palatal foramina 6·4 (6·3); breadth of combined foramina 2·9 (2·7); zygomatic breadth 17·0 (16·9); cranial breadth 14·6 (15·0).

Specimens examined.—Five, all from the type-locality.

Remarks.—This form is somewhat closely allied to the mainland *E. jerdoni bukit*, but the differences, which seem constant, are sufficient to separate it as an insular race.

* Bonhote, Ann. & Mag. Nat. Hist. (7) xi. p. 125 (1903).

† Measurements in parentheses are those of an adult male *E. jerdoni bukit* from Chong, Trang, Western Siamese Malay States; Federated Malay States Museum, No. 30/10.

Epimys surifer manicalis, subsp. n.

Type.—Adult male (skin and skull), No. 351/13, Federated Malay States Museum, collected on Koh Pennan, N.E. Malay Peninsula, 27th May, 1913, by H. C. Robinson and E. Seimund. Original no. 5462.

Characters.—Distinguished from all the other local races by having the white area of the under surface extending over the upper surface of the forearms. Tail shorter than head and body.

Colour.—Upper surface ochraceous, darkened on the back and rump by the bistre tips to the spines. Below pale creamy white, this colour extending over the upper anterior half of the forearms. No tawny neck-collar; hands and feet white; tail bicolor.

Skull and teeth.—As in *E. surifer surifer*, the muzzle not heavier or the tooth-row reduced as in some of the island races.

Measurements.—Collectors' external measurements (taken in the flesh):—

Head and body 176; tail 173; hind foot 38; ear 23.5.

Cranial measurements: greatest length 43.4 (46.0*) mm.; basal length 36.9 (40.0); length of nasals 17.6 (18.6); greatest breadth of nasals 4.5 (5.0); shortest distance between tips of nasals and lachrymal notch 18.0 (—); palatal length 18.6 (19.0); diastema 11.9 (13.4); length of palatal foramina 6.3 (7.4); breadth of combined palatal foramina 3.5 (3.0); zygomatic breadth 19.1 (19.8); cranial breadth 15.1 (16.0); upper molar row 6.7 (7.0).

Specimens examined.—Twenty, all from the type-locality.

Remarks.—A medium-sized race of *E. surifer* with narrow nasals and with the white on the upper surface of the forearms more extensive than in any other form.

Epimys surifer spurcus, subsp. n.

Type.—Adult male (skin and skull), No. 288/13, Federated Malay States Museum, collected on Koh Samui, N.E. Malay Peninsula, 14th May, 1913, by H. C. Robinson and E. Seimund. Original no. 5352.

Characters.—Like *E. s. flavidulus* from Langkawi, but with the tail relatively and absolutely longer.

Colour.—Resembles that of the preceding race, but the white on the forearm reduced to a mere band.

* Measurements in parentheses are those of an adult male *Mus surifer surifer* (type) from Trang, Siamese Malay States; United States National Museum, No. 86,746.

Skull and teeth.—As in *E. s. manicalis*.

Measurements.—Collectors' external measurements (taken in the flesh) :—

Head and body 163 (197 *) mm.; tail 165 (158); hind foot 35 5 (36).

Cranial measurements : greatest length 43·3 (44·0); basal length 36 1 (37·0); length of nasals 17·0 (17·0); greatest breadth of nasals 4 7 (5·0); shortest distance between nasals and lachrymal notch 17·7; palatal length 18·6 (18·0); diastema 12·1 (12·6); length of palatal foramina 6 2 (6·4); breadth of combined palatal foramina 3 4 (3·6); zygomatic breadth 18·1 (20·0); cranial breadth 16·1 (17·0); upper molar row 6 1 (6 8).

Specimens examined.—Twenty-three, all from the type-locality.

Remarks.—Extremely closely allied to *E. s. flavidulus*, from which it is distinguished by the different proportions of the body and tail.

Epimys remotus, sp. n.

Type.—Adult male (skin and skull), No. 75/13, Federated Malay States, collected in the hills of Koh Samui, N.E. Malay Peninsula, May 17th, 1913, by H. C. Robinson and E. Seimund. Original no. 5366.

Characters.—A large rat with unicolor tail, spines in pelage very thin and flexible, piles very numerous and attaining the length of 70 mm. Underparts whitish, sharply demarcated from the flanks. Skull strongly ridged with moderately-sized bullæ, intermediate between those of the *validus* and *rattus* groups. Palatal foramina long and narrow, extending posteriorly beyond the roots of the anterior molar.

Colour.—Above mingled ochraceous and sooty brown, darkest on the back, where the long black piles are most numerous; sides of the body and flanks more earthy. Under surface creamy white, sharply defined from the sides. Feet clad with silky whitish hairs, darker down the centre; hands dirty white. Tail brownish black. Vibrissæ long and black.

Skull and teeth.—The skull, on the whole, is nearest to that of *validus*, from which it is at once distinguished by the narrow elongate palatal foramina, by the larger bullæ, by the outline of the occipital which is roughly semicircular and not pentagonal, with the parieto-occipital suture almost

* Measurements in parentheses are those of the type of *E. s. flavidulus* from Langkawi; U.S. National Museum, No. 104,330.

straight, not arched. From those of the *rattus* group it is separated by larger size and less dilated bullæ, which most resemble those of *E. fæderis*, and, therefore, are far smaller than those of *E. bullatus*. The teeth are decidedly larger than those of the *rattus* group.

Measurements.—Collectors' external measurements (taken in the flesh) :—

Head and body 225 (222 *) mm. ; tail 273 (251) ; hind foot 39 (41) ; ear 26 (23).

Cranial measurements : greatest length 49.1 (52.0) ; basal length 41.5 (45.0) ; length of palatal foramina 9.4 (8.25) ; breadth of combined palatal foramina 3.5 (3.25) ; length of nasals 18.9 (20.0) ; interorbital breadth 6.4 (7.0) ; zygomatic breadth 22.0 (24.0) ; cranial breadth 17.7 (18.0) ; diastema 13.3 (15.0) ; length of upper molar row 8.2 (9.0).

Remarks.—This rat is obviously quite distinct from any of the Malayan rats, though it may possibly be allied to *Mus bowersi*, of which we have only been able to examine figures of the skull. The external characters are, however, very different from the plate given by Anderson †.

Crocidura negligens, sp. n.

Type.—Adult male (skin and skull), No. 275/13, Federated Malay States Museum, collected on Koh Samui, N.E. Malay Peninsula, 12th May, 1913, by H. C. Robinson and E. Seimund. Original no. 5338.

Characters.—A very pale member of the genus, about the same size as *C. malayana* ‡, smaller than *C. klossii* §, and *C. aoris* §.

Colour.—Above and below uniform pale "Payne's grey" with no tinge of brown. Tail with a few scattered whitish hairs. Adpressed hairs of lateral scent-gland somewhat paler in colour than the rest of the pelage.

Skull and teeth.—Skull much damaged, but apparently not differing from those of the other local races. Smaller than that of *C. malayana*.

Measurements.—Collectors' external measurements (taken in the flesh) :—

Head and body 92 mm. ; tail 62 ; hind foot 14.7 ; ear 10.

* Measurements in parentheses are those of an adult male specimen of *E. bullatus* (Lyon), type of *E. villosus* (Kloss), from Singapore Island ; Selangor Museum, No. 1348/08.

† Anderson, Anat. & Zool. Res. p. 304, pl. xvii. (1878).

‡ Journ. Fed. Malay States Mus. iv. p. 243 (1911).

§ Ann. & Mag. Nat. Hist. (8) x. p. 589 (1912).

Cranial measurements: palatal length 9.4 (9.9*); lachrymal breadth of rostrum 4.2 (4.4); greatest breadth above molars 7.0 (7.3); maxillary tooth-row, including incisors, 10.1 (10.1); mandibular tooth-row, including incisors, 9.0 (9.3).

Specimens examined.—One, the type.

Remarks.—The pale coloration sufficiently separates this form from the other local races, while the maxillary tooth-row is relatively longer than in *C. malayana*, which it approaches in size.

Tupaia ferruginea operosa, subsp. n.

Type.—Adult female (skin and skull), No. 93/13, Federated Malay States Museum, collected on Koh Samui, N.E. Malay Peninsula, 12th May, 1913, by H. C. Robinson and E. Seimund. Original no. 5335.

Characters.—A small dull-coloured species resembling *T. f. wilkinsoni* † from the adjacent mainland, but smaller, in that respect closest to *T. f. obscura* ‡ from the Redang Islands, but with a shorter rostrum.

Colour.—Entire upper parts a speckle of ochraceous buff and black, brightest on the rump and thighs. Shoulder-stripe very slightly marked. Under surface rich buff. Tail like back above and below, but more coarsely annulated, lacking any pale median area on the lower surface.

Skull.—As in *T. f. belangeri* and *T. f. obscura*, but with a slightly shorter rostrum.

Measurements.—Collectors' external measurements (taken in the flesh):—

Head and body 163 (180 §) mm.; tail 155 (175); hind foot 40 (42); ear 17.

Cranial measurements: greatest length 47.2 (51.8); basal length 40.5 (44.9); palatal length 24.4 (28.0); palatal breadth at anterior molar 8.1 (9.5); zygomatic breadth 23.8 (25.9); least interorbital breadth 12.9 (14.5); cranial breadth 18.9 (20.9); breadth of rostrum at diastema 6.5

* Measurements in parentheses are those of the type of *Crocidura malayana* from Maxwell's Hill, Larut, Perak, 3300 ft.; Federated Malay States Museum, No. 1801/11.

† Robinson & Kloss, Journ. Fed. Malay States, iv. p. 173 (1911).

‡ Kloss, Ann. & Mag. Nat. Hist. (8) vii. p. 116 (1911).

§ Measurements in parentheses are those of the type of *T. f. wilkinsoni* from Ko Khau, Trang, Siamese Malay States; Federated Malay States Museum, No. 1138/10. British Museum no. 12. 10. 7. 1.

(7·2) ; lachrymal notch to tip of premaxillaries 18·8 (22·9) ; upper molar series 14·4 (15·9).

Specimens examined.—Twenty, all from the type-locality.

Remarks.—This race is a depauperated form of the adjacent mainland subspecies *T. f. wilkinsoni*, from which, apart from its smaller size, it may readily be distinguished by having the entire tail concolorous with the back, not blackish above.

Tupaia ferruginea ultima, subsp. n.

Type.—Adult female (skin and skull), No. 95/13, Federated Malay States Museum, collected on Koh Pennan, N.E. Malay Peninsula, 26th May, 1913, by H. C. Robinson and E. Seimund. Original no. 5450.

Characters.—In size and cranial characters similar to *T. f. operosa*, but pelage duller and paler throughout.

Colour.—Upper surface grizzled black and buff, darkest on the median line of back and rump, where the black hairs are numerous and conspicuous. Shoulder-stripes more marked than in the preceding race. Tail above and below similar to the flanks. Under surface buff.

Skull.—Resembles *T. f. operosa* and *T. f. belangeri*, but with an even shorter rostrum.

Measurements.—Collectors' external measurements (taken in the flesh) :—

Head and body 166 (173 *) mm. ; tail 162 (167) ; hind foot 38·5 (40·0) ; ear 16·5.

Cranial measurements : greatest length 45·5 (48·0) ; basal length 38·8 (42·0) ; palatal length 23·0 (25·8) ; palatal breadth at anterior molar — (8·2) ; zygomatic breadth 23·1 (25·8) ; least interorbital breadth 13·3 (14·0) ; cranial breadth 18·8 (19·1) ; breadth of rostrum at diastema 6·1 (7·0) ; lachrymal notch to tip of premaxillaries 17·6 (20·6) ; upper molar series 14·2 (14·6).

Specimens examined —Twenty, all from the type-locality.

Remarks.—This form is the smallest and shortest-muzzled of all the Malayan races of *T. ferruginea*, and entirely lacks any reddish wash on the upper surface.

* Measurements in parentheses are those of the type of *T. f. obscura* from Great Redang Island off the coast of Trengganu ; Federated Malay States Museum, No. 2279/10. British Museum no. 12. 10. 7. 3.



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