I.—A Revision of the Genera of Bats (Vespertilionidae), and the Description of some new Genera and Species. By John Edward Gray, F. R. S., President of the Botanical Society of London, &c. &c.

Some of the older authors placed these animals with the Birds, but Ray (Syn. Anim. Quad., p. 43,) properly arranged them with the Mammalia, and formed them into a particular group, of which he only knew a single species; Linneus divided the few species he knew into two genera, which, on account of the difference in the number of their teeth, he placed in two different orders, an error which he was not often guilty of committing, and which Pennant, Pallas, and Brisson corrected, by referring them back to a single genus; but the latter author (Le Règne Animal, 4to,) in 1762, divided in his specific characters, the fruit-eating bats from the insectivorous ones, by the number of their claws; and this group was long afterwards converted into a genus by Geoffroy, under the name of Pteropus; Daubenton in 1759 (Mem. Acad. Paris,) described several new species, and gave some figures of the heads of these animals, which greatly facilitated their determination. Pallas, in 1767, (Spic. Zool. 6,) when describing many new species, showed that the bats might be divided into sections by the number of their teeth; and Erxleben (Sys. Anim.) 1777, acting on Pallas's suggestions, divided the bats into two genera, giving to those that have four cutting teeth in the upper and lower jaw the name of Pteropus, and retained in the genus Vespertilio the other bats; which he divided into sections according
to the absence, presence, and number of these appendages. These
divisions were adopted by Gmelin (Syst. Nat. 1. 45.), who reduced
the genus established by Erxleben to the rank of a section. In
1805, M. Geoffroy St Hilaire, who was then employed in naming the
Mammalia in the Paris collection, commenced a series of papers in
the Annales du Museum, in which he established various genera of
these animals, described the different species which he referred
to them, and illustrated them with figures. Cuvier in 1817 (Règne
Animal,) placed the bats with the insectivorous Mammalia, and
divided the insectivorous genera into groups according to the number
of the phalanges of the index and middle finger; and his system has
been very generally followed, and from time to time new genera have
been added by Dr Horsfield, F. Cuvier, Charles Bonaparte, and
others. Dr Leach, in 1822, (Linn. Trans. xiii.) published two pa-
pers, in which he described and figured some new genera. One of
the papers is on those "bats with foliaceous appendages to the nose;"
and the other for those that were without these organs. In 1823,
Spix, in his work on the South American monkeys and bats, adopted
these divisions, and gave a Latin name to them, and he has been ge-
nerally quoted as the founder of these sections. Such was the state of
the science when, in 1826, I published a short paper in the Annals of
Philosophy, and in 1829 a second in the Zoological Journal (p. 242,)
in which I divided the bats into five natural sections; and in
the Philosophical Magazine for the same year I printed a revi-
sion of the genera from personal examination, and added to it an
artificial table, for the purpose of facilitating the discovery of them.
This paper was translated into Latin by Dr Fischer (Synop. Mamm.
659,) and into German by Oken in the Isis, and into French by Les-
son in his Manuel; and the arrangement has been adopted by Mr
Swainson in Lardner's Encyclopaedia; and, lastly, by the anonymous
writer on bats in the Penny Encyclopaedia, who, having merely trans-
lated the article from Lesson's Manuel, erroneously attributes it to
that author, though Lesson quotes me as the author of the tribes. The
accompanying paper may be considered as an abridgement of a further
revision and extension of that article; and for the purpose of writing
it, I have examined all the bats which have passed through my hands,
or that I have been able to see in the English collections and in the
Government museums of France, Germany, and Holland; and I
hope, that I shall not now hear persons complain of the difficulty they
experience in making out the species, much less the genera of these
interesting animals. I believe that the real cause of the difficulty is
the little attention that zoologists have paid to them, and, as a proof
of this inattention, I am induced to give a sketch of the history of
the discovery of the various species which inhabit this country. Ray and Merret, as I have before observed, only knew a single species, and this was the only one recognized as British, until the year 1738, when Albin first figured (Birds, t. 101.), and 1766, George Edwards again figured the long-eared bat in his work on Birds (t. 201. f. 3.); and Pennant recorded these two in his first edition of the British Zoology. In his succeeding editions he extended the number to 4, adding the Noctule on the authority of the Rev. Dr Buckworth, who had observed a large bat, which Pennant thought to be this species, (Brit. Zool. Illust. 1770–85,) at Queen's College, Cambridge; but the Rev. Gilbert White had written to him, and given him a good history of this bat in 1769, (Hist. Selborne, 1779, 75, 76,) and secondly, the horse-shoe bat, Rhinolophus ferrum equinum, which had been discovered by Mr (afterwards Dr) Latham at Dartford. In 1806 (Ann. Mus. viii. 198,) M. Adolphe Brongniart, when travelling from Dover to London, discovered a new species which was described under the name of V. emarginatus; and, in 1808, Montagu in the Linnaean Transactions (i. 71,) added to those already known, the little horse-shoe (Rhinolophus hipposideros), and the barbastelle (Vesp. Barbastellus;) but it is doubtful if the animal described by Montagu was the real barbastelle, for the remains of the specimen so named in his collection, was certainly Vesp. mystacinus of Kuhl, but the fact of the Barbastelle being British was fully established in 1805, by the figure of it given by Mr Sowerby in his British Miscellany, from a specimen found by Mr Peate at Dartford.

In 1825, Dr Leach described and figured in the Zoological Journal, (7, t. 22.) what he considered as a new species, under the name of Vespertilio pygmeus, sending the specimen described to the British Museum. In 1826, feeling from the experience that I had gained when studying with that great reformer of zoology in England Dr Leach, that the British bats had not had the attention paid to them that they deserved, I examined the various specimens collected by Dr Leach, myself, and our correspondents, which were then in the British Museum, and in the Zoological Journal (p. 108) for that year, I gave a list of the specimens then in the collection, and by that means added the four following species, viz. Vespertilio Bechsteinii, V. Nattereri, V. serotinus, and V. mystacinus. Dr Fleming having overlooked my paper in 1828, when his work on British Animals appeared, merely gave the species that were known before its publication; while the Rev. Leonard Jenyns and Mr Bell, in their works on the British Mammalia, have been able to add two more species to the list, viz. V. Leisleri and V. discolor, which I had added to the mu-
seum collection since the publication of my paper, the latter of them having been sent from Plymouth by Dr Leach. In 1833, Mr Leonard Jenyns (Lin. Trans. xvi. 55, t. 1, f. 2.) described what he considered as a species under the name of Plecotus brevimanus; but from the observations which I have been enabled to make on the development of the wings of these animals, (Phil. Mag. and Annals, vi. 1829–35,) which do not gain their full size until after the animal has done suckling. I am now certain that both the Vesp. pygmeus and Plecotus brevimanus are only the young states of other species, the latter being the young of the long-eared bat, and the former most probably the young of the pipistrelle; and I am borne out in this opinion by the soft state of the cranium, the large size of the joint arising from the epiphysis of the bones not being knit, of the specimen of both these animals which have come under my notice, and I may observe, that the first joint of the middle-finger of all the adult bats I have examined is as long as the arm-bone, which is not the case in these animals.

Fam. V. Vespertilionidæ.

The limbs elongated; fingers of the fore-hands and tail enclosed in a nearly naked membrane, serving for wings; fingers very long; thumb free, clawed; toes of hind-feet short, equal clawed; teeth variable.

A. Istiophori, or Leafnose bats. Nostrils placed in a bald space, often elevated behind into a leaf; teeth acutely tubercular; index-finger not clawed.

Tribe I. Leafnose kind. Phyllostomina.

Nose-leaf expanded into a leaf behind, simple and pierced with the nostrils in front; ears lateral, separate.

† Forehead pitted; ears close together. Old World.

1. Rhinopoma, Geoff. Tail long, exserted beyond the short interfemoral membrane; forehead with a deep pit; ears close together; nose-leaf small.


See also Rhinopoma Carolinensis, Geoff. if a true Rhinopome?

† † Forehead simple, ears lateral, tongue short, under lip entire with a triangular smooth space in front. New World.

2. Arctibeus, Leach.—Phyllostoma, Spix.—Tail round (none?) interfemoral membrane deeply cut in, forehead simple, ears far apart, lateral, nose-leaf simple lanceolate.
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* The inner edge of the lips not fringed.

Jamaica Arctibeus. Arctibeus Jamaicensis, Leach.—Phyllostoma Jamaicensis, Horsf. Zool. Journ.; young, Madateus Lewisii, Leach.—Tragus with 1 or 2 lobes on the middle of its hinder edge. Inhabits Jamaica, Cuba, Mr Redman.


Fringed-lipped Arctibeus. Arctibeus simbriatus, Gray.—Nose-leaf elongate, lanceolate, apex with a broad midrib; fur mouse-colour, very soft, with pale tips, rather paler beneath than above; fore-arm and under side of the wing near the fore-arm and side of the body with scattered fur; the front of the lower lip with a semi-ovate space, with a central tubercle surrounded by small warts. Expance 17". Inhabits Brazil.

Sooty Arctibeus. Arctibeus fuliginosus, Gray.—Fur sooty-black; wings and membrane black; chin with a triangular space, having 5 or 6 warts on each side; nose-leaf ovate-lanceolate, acute, with a deep groove parallel to the edge of each side, front part free on the edge; lips fringed; ears moderate, rather naked, black. Expance 16"; body and head 3", arm-bones 2" 6". Inhabits S. America. Museum Lyons.

See also Arctibeus lineatus, Gray.—Phyllostomus lineatus, Illiger, Licht Doub. 3, Phyll. lineatum, Geoff.

* * * Lips not bearded internally.


3. Vampyurus, Geoff. Vampire.—Tail none, interfemoral membrane large, with 3 diverging lines, truncated at the end; muzzle long; central upper cutting teeth lobed.


* Front of the lower lip with a triangular space, having a large wart on each side and a series on the edge.


Sooty Phyllostome. Phyllostoma fuliginosum, Gray.—Sooty-black, hair of head and neck with greyish tips, beneath greyer; nose-leaf ovate-lanceolate, quite entire, 1 1/2 as long again as broad; ears sharp; wings black; tail end free. Inhabits S. America. British Museum.

From Sir Everard Home.

** Lower lip with an half ovate group of crowded warts.

Children's Phyllostome. Phyllostoma Childreni, Gray.—Brown, slightly grizzled, with grey tips to the hairs, beneath greyer; ears large with rather membranaceous rounded at the ends; nose-leaf ovate-lanceolate, rather longer than wide; wings brown; warts of lower lip in 3 or 4 arched series, crowded. Expanse 12". Inhabits S. America. British Museum. From J. G. Children, Esq.

** * Front of lower lip with a small smooth ovate space formed of two small tubercles, as in Vampyrus.

Bennett's Phyllostome. Phyllostoma Bennetiii, Gray.—Fulvous brown, rather paler beneath; hair very long, soft, with greenish tips; ears very large, rather acute; nose-leaf very large, ovate-lanceolate, with a thick convex midrib; wings brown. Exp. 12"; nose-leaf 8". Inhabits S. America. British Museum. Named in memory of my excellent friend, whose early death all zoologists must deplore.

** ** * Front of the lower lip with a large central wart, having a series of large oblong transverse warts on the edge, the upper warts sometimes divided into 2 or 3.


5. CAROLLIA. Interfemoral membrane large, truncated; tail none; tragus very small.


Lophostoma sylvicola, Orbigny, Voy. Amer. Merid. t. 6. Inhabits S. America. Perhaps the same as the former.

7. **Edostoma**, Orbigny. Edostome. Tail none; interfemoral membrane very small, marginal; heel-bone none; nose-leaf double, erect, anterior pierced with the nostrils, hinder erect, larger, separated from the front one by a considerable space.


8. **Macrophyllum**, Gray. Macrophylle. Tail elongated, reaching to the truncated tip of the large interfemoral membrane, under lips ——?


9. **Brachyphylla**, Gray. Cavern Bat. Tail very short, interfemoral membrane deeply nicked, two rayed; nose-leaf small, surrounded by a deep groove, which separates it from the face; front of under lip with a smooth triangular space bearded on the edge.


10. **Diphylla**, Spix. Tail none; interfemoral membrane none; nose-leaf double, one being placed behind the other; tragus lanceolate; under lip ——?

Diphylla ecaudata, Spix, Braz. t. 36, f. 7. Glossophaga diphylla, Fischer. Inhabits Brazil.

11. **Stenoderma**, Geoff. Desmodus, Pr. Max.? Tail and interfemoral membrane none; nose-leaf very small, scarcely elevated; nostrils with an arched ridge behind; thumb long, free; under lip ——?


Mus. Paris, (bad state.) Is the Desmodus rufus, Pr. Max. Abbild. t. Rhinolophus ecaudatus, Schinz. distinct? Temminck considers this to be a young Dysopes!

† † † Forehead simple; ears lateral; tongue long, fitting into the notch of the chin; lower lip deeply cut in the centre of the front, and often fringed; head elongated; chin with reflexed whiskers. New World.

12. **Phyllophora**, Gray. Tail short; apex enclosed in the large truncated interfemoral membrane; apex superior.

13. Glossophaga, Geoff. Tail none; interfemoral membrane is large and deeply cut out.


14. Monophyllus, Leach. Tail short, prominent above the very small deeply cut interfemoral membrane; thumb elongated, thick; heel-bone rather elongated; head short.


15. Anoura, Gray. Tail-less Bat. Tail none, interfemoral membrane small, just margining the hind legs; heel bone very short; cutting teeth 2/2; thumb very small and slender.


†+††† Forehead simple; ears large, united over the forehead.

16. Megaderma, Geoff. Broad-winged bat. Nose-leaf simple, erect, front part flat, on the nose behind; lips simple; wings, interfemoral membranes and ears, large, membranaceous; tail none; cutting teeth 3. India.


17. Lavia, Gray. Nose-leaf simple, erect behind, with an expanded elevated edge in front, and a fold forming a canal in the upper edge of its centre; lips simple; tail none; cutting teeth 3. Africa.

Nose-leaf large, membranaceous, hairy, the hinder part elongated, with a deep fold on each side forming a broad central tapering kind of midrib, the lower part of each fold furnished with a membranaceous expansion covering the nostrils. The front of the leaf large, with a broad expanded free edge, furnished with a fold in centre of the front, forming a conical canal.

18. Mormoops, Leach. not F. Cuv. Nose-leaf simple; ears large, close together in front, united to the nose-leaf above, and to the membranaceous ridges round the mouth and chin; interfemoral membrane large, truncated; tail short, inclosed; apex free above; cutting teeth \( \frac{3}{4} \).

Mormoops Blainvillii, Leach, Linn. Trans. xiii. t. 7. Inhabits Jamaica.

The genus described by M. F. Cuvier under this name appears to be perfectly different. This genus differs from Vampyrus in the large ears, the mouth being fringed with membranes, wartiness of the chin, and in the under lip being entire in front.

TRIBE II.—RHINOLOPHINA.

Nose disk expanded into a leaf behind, and with a pit or process between the nostrils in front.

* Interfemoral membranes very small; tail none; disk with a large deep pit between the nostrils.

19. Ariteus, Gray. Istiophorus, Gray (not Cuv.) Nose-leaf erect, lanceolate, simple behind, rounded in front; ears lateral; separate tragus; lanceolate-toothed; interfemoral membrane only margining the legs; heel-bone, moderate.


* * Interfemoral membranes large; tail long. (Old World.)

20. Rhinolophus (Noctilio, Bechst.) Horse-shoe Bat. Nose-leaf thin, extended into a transverse lanceolate leaf, with 4 cells at its base, and with a toothed longitudinal crest in the middle space, between the nostrils in front, and a slight pit in its front; ears large, separate; pubes with distinct false teats. Tragus small.

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21. Hipposideros, *Gray*. Phyllorhina, *Bonap.* The nose disk extended into a short reflexed leaf behind, with a thick cross rib on the front of its base, to which it is attached by 3 longitudinal bands, the front part flat, simple, pierced with the nostrils. Tragus none.

a. Forehead pierced with an expansile pore; pubal teats distinct.

*Face leafy on the sides of the nose disk.*


Dr Horsfield’s specimen of Rhin. deformis, (t. 7, f. 9, head,) appears to be a specimen of this species, the base of the tail of which has been drawn out when the animal was skinned.

Hipposideros apiculatus, *Gray*. Ears acute, front edge hairy, hinder edge plicated; last joint of the tail elongated and produced; fur soft, silky; base whitish; tips dark-brown. Inhabits India. W. Elliot, Esq. British Museum.

* Face not leafy on the sides of the nose disk.*

Hipposideros fulvus, *Gray*. Fur reddish fulvous; silky, rather paler beneath; ears very large, rounded, dark, with a few short scattered hairs on the outsides, and 2 or 3 lines of long hairs on the front edge; last joint of tail slightly produced. Inhabits India, (Madras,) W. Elliot, Esq. British Museum.

Mouse-coloured Horse-shoe-Bat. Hipposideros murinus, *Gray.*
Fur pale mouse-colour; hairs with brown ends, and very small white tips; whitish beneath; ears very large, rounded, with 2 or 3 lines of long hairs on the front edge; tail, last joint slightly produced. Inhabits India, (Madras.) W. Elliot, Esq. British Museum.

This difference of colour is not sexual, as Mr Elliot had male and female of each. See also Rhinolophus armiger, Hodgs. from Nepal.

b. Forehead concave, deep, with a tuft of rigid brown hair in the front, in the place of the frontal pore; (tail destroyed;) sides of face leafy.

Pencilled Horse-shoe Bat, Hipposideros penicillatus, Gray. Brown, with a tuft of brown hair on each side over the eyes, and a small pencil of rigid brown ones on the front of the forehead. Inhabits India, (Madras.) W. Elliot, Esq.

c. Forehead simple; nose leaf entire, rounded; tail as long as the membrane; muzzle leafy on side of nose disk. (India.)


See also Rhinolophus Commersonii, Geoff. Ann. Mus. xx. t. 5, head. Only known from Commerson's drawings; tail half as long as the thigh. Inhabits Madagascar. See also R. torquatus, Hodgs. of Nepal.

d. Forehead simple; nose leaf 3-toothed; tail longer than membrane; pubal teats none. Asellia.—Gray.


The difference in the form of the front part of the nose-leaf, on which Dr Horsfield founded part of his specific character, appears to depend on the drying of the specimens. All the specimens described by that excellent zoologist were in a dry state. I have made the foregoing references to his species after the examination of
his own specimens in the India House, and those which he sent to the British Museum as types of his species.

B. ANISTIOPHORI, or Simple nosed bats. Nostrils simply pierced in the end of the muzzle without any nasal leaf.

Tribe III.—VESPERTILIONINA.

Grinders acutely tubercular, wings broad, large; tail elongated, as long as, and enclosed in, the large conical interfemoral membrane, upper cutting teeth near the canines, with a central space.

† Ears united or approximate; nostrils each placed in the front of a groove, the grooves are close together in front, diverging from one another behind, and are covered by their spirally convolute outer margin, which is lobed in front for the passage of the air.

22. Nycteris, Geoff. Ears large, united over the forehead; tragus distinct; wings and interfemoral membrane large; tail long, forked at the tip.

* Ears united on the forehead. Africa.


Inhabits Africa. (Egypt and Guinea?) Brit. Mus.


* * Ears not united in front, forehead with a large deep oval naked concave pit, having a naked groove in front running down between the nostrils. Asia. (Petalia, Gray.)


† † Ears united; nostrils in the front part of a short lunate groove.


24. Barbastellus, Gray. Nasal groove simple lunate, extending a short distance behind the nostrils; forehead flat with an oval bald longitudinal line; ears large, broad, subquadrate; skull convex; face narrow.
Common Barbastelle. Barbastellus communis, Gray, B. Dau-
bentonii, Bell. Plecotus barbastellus, Lesson. Vesp. barbastel-
2. f. 8. Buffon, H.N. viii. t. 19, f. 1, copied, Schreb. t. 559, En-
Brit. Mus.

25. Plecotus, Geoff. Nasal groove simple, lunate; forehead with
a linear bald streak; forehead flat; ears and tragus very large, elong-
gate.

Common long-eared bat, Plecotus communis, Lesson. Plecotus
Shaw's Zool. t. 40. Young, Plecotus brevimanus, Jenyns, Linn.
Trans. xvi. t. 1, f. 2 ⁦. Europe. Var. a. Egyptiacus, Geoff. β. Aus-

See also 1. Plecotus cornutus, Lesson. Vesp. cornutus, Faber,
Isis 1826. Inhabits Jutland.  2. P. Bonapartii, P. brevimanus, Bo-
Inhabits——?  4. Plecotus leucomelas, Ruppell, Atlas t. 28 b. In-
habits N. Africa.  5. P. Macrotais, Le Conte.

Christie's long-eared bat, Plecotus Christii, n. s. Fur pale, hairs
whitish with dusky tips; beneath white; spur very long; interfem-
oral membrane with 11 or 12 cross lines of vessels on the back of
the thigh and skin; tragus half as long as the ears. Inhabits N.
Africa. Dr Turnbull Christie. British Museum.  
+  +  Ears lateral, separate; nostrils in the front of a long simple
edged groove.

26. Romicia, Gray.—Nostrils small, ovate, apical; each in the
front of a converging groove, which are united behind into a groove
on the centre of the nose between the swollen cheeks.

Long-spurred Romicia, Romicia calcarata, Gray.—Chin with two
small warts on each side, and a large one on the front part of the
throat; fur brown with grey tips; the tips of the hair on the under
side longer and whiter, tragus elongated, oblong, blunt; ears rounded;
wings black; interfemoral membrane with regular muscular bands;
heal-bones very long, two-thirds the length of the margin, with a
lobe on the outer edge of the base; the other third of the margin
with a strong muscular band. Inhabits——? British Museum.  
+  +  +  Ears lateral separate; nostrils with only a very short nasal
groove behind them.

27. Vespertilio. Head round; forehead convex; face small, pro-
duced, nearly covered with hair; wings and ears thin, membranaceous; body covered with woolly hairs; tail long, the whole length of the interfemoral membrane, cutting-teeth $\frac{4}{3}$; skull globular; jaws produced, narrow; eyes large, exposed.

† Thumb moderate; ears short.

Vesp. mystacinus, Leisl. (Kuhl. 1. c.) Europe. British Museum.


See also 1. V. fuliginosa, Hodgs. 2. V. capaccini, Bonap. 3. V. emarginatus, Brong.

** Thumb moderate; ears large.


*** Thumb very long.


*** * Thumb moderate, end of tail rather produced.


28. Furia, Fr. Cuv. Furipterus, Bonap,—Head round; forehead compressed, convex; face small, broad, produced, nearly covered with hair; wings and ears thin membranaceous; tail bony for half its length, cartilaginous at tip, cutting teeth $\frac{4}{3}$, upper acute.

Furia horrens, Fr. Cuv. Mem. Mus. xvi. t. 9. Vesp. Furia, Fischer. Inhabits S. America. Does not the peculiarity of the tail arise from the bones having been partly withdrawn when the animal was skinned?

29. Natalus, Gray. Head small; face depressed; nostrils apical, ovate, separated by a central ridge; lower lip callous, grooved; hind legs and tail very long; the heel-bone extending the whole length of the interfemoral membrane.

30. Miniopterus, Bonap. 1837. Head subglobose; forehead convex; face short; ears small, thick, rounded; tragus lunate; eyes partly hid; feet long; tail very long; interfemoral membrane very large, folded on each side.


31. Scotophilus, Leach. Nycticejus, Rafin? Horsf. Pipistrellus, Bonap. V. Pachyote, Gloger. Head oblong; forehead flat; face swollen on the sides, naked in front; wings and ears thick, rather coriaceous; body covered with short fine adpressed thick-set hairs; cutting teeth $^2_6^2$, when young $^1_6^1$; when adult; skull flat above; forehead shelving; eyes small, hid in the fur.

The genus Nycticejus, Rafinesque, from an old specimen, as Scotophilus, Leach, is from a young specimen of this genus; Nyctalus, Bowdich, is only a species with ticks in its ears, and interfemoral membrane nearly bald.


Scotophilus discolor, Gray. Vesp. discolor, Kuhl. Wett. Annal. iv. t. 25, f. 2. Inhabits Europe (Bucharia.)


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**Upper surface of interfemoral membrane slightly covered with hair.**

(Pachyotus.)

† Face villose.


† † Face partly bald.


* Upper surface of interfemoral membrane covered with close hairs.

Lasiurus—Atalapha, *Rafin.?*


**Tribe IV. Noctilionina.**

Grinders acutely tubercular; wings long and narrow; body thin; tail thick.

* Tail short, tip on the upper surface of the large interfemoral membrane.

32. Taphozous, *Geoff.* Saccopteryx, *Illiger.* Head conical, de-
pressed; forehead with a large pit; cutting-teeth, $\frac{3}{4}$; throat of males with a transverse slit. Inhabits Old World.


Taphozous lepturus, Geoff. Saccopteryx lepturus, Illiger, from Vesp. lepturus, Schreb. t. 57. Vesp. marsupialis, Müller, Naturf. 19. Said to come from Surinam; scarcely appears to differ from the former.


Taphozous rufus, Harlan, from the Red bat, Wilson. (Am. Orn. vi. t. 50. f. 4.) is a Scotophilus from the manner in which it bends its tail, perhaps Scot. pruniosus.

33. Noctilio, Linn. Celaeno, Leach. Head conical; forehead flat; muzzle acute warty; lips dependent; cutting-teeth, $\frac{1}{2}$ young, $\frac{2}{3}$ adult. America.

The genus Celaeno of Leach is only a specimen in which the bones of the tail have been withdrawn out of the skin. The original specimen is in the museum of the University College, London.


? Noctilio rufus, Spix, Brazil, t. 35, f. 1. Inhabits S. America.

34. Phorosidea, Spix. Embalanura, Kuhl. Head long, conical; muzzle sharp, produced; forehead flat; upper jaw longest; cutting teeth $^{2} \cdot 2$.

* Interfemoral membrane truncated. (Phorosidea, Spix.)

Phorosidea saxatilis, Spix, Braz. t. 35, f. 8, bad. Vesp. naso, Pr. Max. Abbild. t. Embalonura saxatilis? Temm.?

Phorosidea rivalis, Spix, Braz. Inhabits Brazils.


* * Interfemoral membrane produced conical; heel-bone very long, Centro nycteris.


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**Interfemoral membranes, &c.**—(Embalanura, Kuhl.)

Proboscidea monticola. Embalanura monticola, Kuhl. Face depressed; forehead rounded; wings brown; expanse 6 inches; heel-bone 4 lines. Inhabits Java. Museum, Leyden.

35. **Aello, Leach.** Head subconic; forehead flat; ears large, separate; cutting-teeth \( \frac{2}{3} \); upper, chisel-shaped, 2 cut; tail rather elongated with a membranous band to the tip of the large truncated interfemoral membrane; heel-bone very slender.

Aello Cuvieri, Leach. Linn. Trans. xiii. 71. Inhabits ——? Museum University College of London.

†† Tail produced beyond the bend of conical interfemoral membrane.

36. **Pteronotus, Gray.** Ears lateral; tragus elongate lobed; chin with a reflected cartilaginous edge to the lower lip, and an erect membranaceous ridge across its lower part; wings only affixed by a narrow line to the middle of the back, which is covered with fur beneath them; hind-feet long; the ankle rather produced and exposed; the lower angle of the wing lies folded over it.

Pteronotus Davyi, Gray. Mouse-coloured, wings baldish; exp. 12 inches. Inhabits Trinidad. Museum Fort Pit, Chatham. Tail imperfect. In honour of Dr John Davy, so well known for his physiological papers.

†† Tail thick, produced beyond the end of the short transversely-folded interfemoral membrane; thumb large, swollen beneath; cutting-teeth very variable in number.

37. **Cheiromeles, Horsf.** Dysopes, Temm. not F. Cuv. Ears small, separate, lateral; back nearly naked; great toe very large, versatile, bearded.


38. **Nyctinomus, Geoff.** Ears very large close together, or folded down on the forehead; muzzle obliquely truncated, bristly; lips very large, transversely grooved, and with scattered bristle-like hairs; thumb and little toe with a patch of white tufted hairs.


The upper edge of the nose disk surmounted by a series of short close processes; face, with scattered flattened hairs, which are curv-
ed at the tip, some of them forming a tuft on the front of the lip; ears united in a common tubercle in front; the pad of the great and little toes narrow, hairs slender, long. Inhabits India (Bengal) Java. British Museum.

Nyctinomus Rüppelli. Dysopus Rüppelli, Temm. Mon. t. 18, t. 23, f. 6, 8. Molossus Rüppelli, Lesson. Upper lip with scattered straight black bristles, intermixed with flat hooked ones; pad of great and little toes very large. Inhabits Egypt and Fernando Po. British Museum.


Nyctinomus murinus, Gray, Griff. A. K. v. 187. Molossus murinus, Fischer. Petit chauve-souris obscure, Azara? Face hairy, with black bristles; upper lip simple in front; ears round, separated at the base in front; tragus slender; pad of great and little toes large, broad. Inhabits South America, (Brazils;) West Indies, (Jamaica.) British Museum.


39. Molossus, Geoff. Ears very large, close together and folded down on the forehead; face conical; nose rounded at the end; lips smooth or hairy; great and little toe with a pad of hooked hairs; throat with a central pouch in front; lower joint of thumb swollen.

Molossus velox, Lesson. Dysopus velox, Temm. Mon. t. 22, f. 1. t. 23, f. 22; upper lip with a roundish group of close slender hooked hairs in front; throat-pouch large. Inhabits Brazil, Cuba. British Museum.

Molossus fuliginosus. Face naked, black with a bunch of hairs on each side, just before the eyes; upper lip with a triangular patch of hooked white hairs in front; lips smooth, inner edge slightly fringed with rather stiff hairs in front; tragus long pointed; tail half free; nose-disk convex with denticulations on the edge, with a triangular bunch of hair below the nostril; end of face hairy; throat-pouch small. Inhabits ——? British Museum.


Molossus australis. Dark-brown, rather paler beneath, with a broad pure white streak down each side, between the wing and the body, and a narrow white streak round the edge of the rump beneath; ears large, broad, rounded; tail nearly one-half free. In-
40. *Thyroptera*, Spix. Ears large, close together, and folded down over the forehead; lips thick; muzzle obliquely truncated; thumb thin, with a large rounded dilatation at the middle-joint; hind feet weak, small.

*Thyroptera tricolor*, Spix, *Braz.*, t. 36, f. 1, evidently young. Black-brown above, beneath pale-white; wings and ears black. Inhabits Brazil.

41. *Myopteris*, Geoff. Ears large, lateral; muzzle short and blunt; cutting teeth, $\frac{3}{2}$, upper pointed, close together.


* * * Tail very short, many-jointed, enclosed in a two-valved sheath, placed at the base of the extended interfemoral membrane.

42. *Diclidurus*, Pr. Max.


**Tribe V.—Pteropina.**

Grinders bluntly tubercular; nose simple; nostrils slightly produced; end of index finger-clawed; head conical; ears simple, lateral; tragus none; wings long; lower joint of thumb long, united to the wing by a membrane; interfemoral membrane short; tail none, or short; living on fruit in Indian islands and Polynesia.

43. Ternate Bat, *Pteropus*. Head long, conical; muzzle acute; grinders $\frac{5}{6}$ or $\frac{4}{6}$; tongue short; wings from the side of the body; tail none, or short.

* * Tail none; ears large.


Indian Ternate Bat, *Pteropus medius*, Temm. Inhabits India, (Calcutta, Pondicherry.)

* * Tail none; ears small.


Pale Ternate Bat, Pteropus pallidus, Temm. Mon. t. 15, f. 8, 9. Inhabits Banda.


Masked Ternate Bat, Pteropus personatus, Temm. Mon. 189. Inhabits Ternate Islands.

See also Pteropus leucocephalus, Hodgson. Inhabits Nepal.

* * * Tail very short.


* * * * Tail rather elongated. (1/2 inch.)

Pteropus Leschenaultii, Desm. Inhabits Pondicherry.


44. Cynopterus, Fr. Cuv. Pachysoma, Isid. Geoff. Head short broad; lips thick on the sides; grinders $\frac{1}{2}$; tail short, free; wings from the side of the back.


Inhabits Sumatra. Tail very short. This and the next are probably varieties of the former.


The Vespertilio Sphinx, *Vahl.* Natur. Selsk. Skriv. iv. 130, from Tranquebar, probably belongs to this genus.

45. Epomophorus, *Bennett.*—Head very large, muzzle acute long; grinders $\frac{3}{4}$ front lower small; tail none? wings far back.

a. *Tuft of white hair near the ears, and another on the sides of the body, false grinders $\frac{3}{4}$."


b. *Tuft of white hairs at the base of the ears; head very long."


c. *Tuft of white hairs at the front base of the wing, head moderately long."


46. Macroglossa, *Lesson.* Macroglossum, *F. Cuv.* not *Fabr.* Head elongated; muzzle slender, subcylindrical; tongue long, slender, exsertile, smooth; wings from the sides of the back; live chiefly on the fruit of *Eugenia.*


47. Harpyia, *Illiger.* not *Cuv.* Head short broad; lips thick; grinders ——? wings arising from the centre of the back; index-finger clawed; tail very short.


See also Cephalotes taniotis, *Rafin.* from Sicily.

Botanical Excursion to the Alps of the Valais. 505


II.—Account of a Botanical Excursion in the Alps of the Canton of Valais, Switzerland, in August 1835; and Catalogue of the Plants collected, with occasional Remarks. By R. J. Shuttleworth, Esq. (Continued from p. 196.)


H. a. In dumetis inter Thermas Leucenses et Inden; β. in colibus apicis inter Varen et Siders.

Obs. Folia radicalia in spec. meis var. α, 6 ad 8 uncialia lacinio terminali 2-3 uncias lata et 3-5 longa. Caulina etiam maxima sublyrata profundissime pinnatifida, laciniis etiam integerrimis ar-cuatiss, recurvis. In var. β. capitula fere duplo minora quam in var. α., involucro majis ovato, et phyllis pallidis breve ciliatis. Varietatem inter α. et γ. fere medium in segetibus Hiberniae legi, foliiis subbipinnatifidis, laciniis ovo-lanceolatis inciso-dentatis.

236. Carlina vulgaris, L.

H. In apricis inter Inden et Varen.

237. Xeranthemum inapertum, Willd.

H. In arvis inculitis inter Varen et Siders, copiose.


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