

Museum are few in number, and not in a very perfect state; but I can scarcely think that this Cat can be the young state of *Felis affinis* from Nepal. It is doubtless the Cat that Mr. Blyth confounds with the Egyptian Cat (*F. chaus*, Geoff.), stating that it is "the common animal of Bengal" (see P. Z. S. 1863, p. 186), and that, as in the case of many common animals, its skins are rarely brought to Europe. It seems spread over various parts of India, as the specimens in the British Museum were sent from the Matoralla territory by Sir Walter Elliot, and from Gangootra.

The third species of *Chaus* in the British Museum is the beautiful animal that I figured in the 'Illustrations of Indian Zoology' as *Felis ornata*. The small specimen of the species in the British Museum is not in a very good state. *Chaus ornatus* is of a pale, more or less bright, yellow-brown colour, with transverse bands of nearly uniform-sized roundish blackish spots on the body. The spots are larger, darker, and closer together on the thighs and upper parts of the legs. The tail has some black rings near the end, and a small black tip.

Hab. Northern India (*Capt. Boys*).

This does not appear to be a common Cat in India, as we have only received a single half-grown example, which was purchased at the sale of Capt. Boys's specimens; and I do not find it described in any systematic work, nor do I recollect to have seen any specimens of it in continental collections.

In his crude paper on the Asiatic species of the genus *Felis* (P. Z. S. 1863, p. 185), Mr. Blyth places *Felis ornata* under *Felis torquata*, observing that the figure is "very bad." If he had compared the specimen in the British Museum with the figure, he must have reversed this note; for it is very characteristic, but is taken from a larger and brighter specimen. Mr. Blyth, when he saw the specimen in the Museum collection, in his usual offhand manner, said it is only one of the numerous varieties of the common Indian Cat. This species is quite distinct from the Cat that Sir William Jardine afterwards figured as *Felis ornata* in the 'Naturalist's Library,' *Felidæ*, t. 28.

9. Notice of a New Species of American Tapir, with Observations on the Skulls of *Tapirus*, *Rhinochærus*, and *Elasmognathus* in the Collection of the British Museum.
By Dr. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S.

(Plate XLII.)

The British Museum having recently received the skulls of some specimens of American Tapirs in different states of development, I have been induced to reexamine the series of skulls in the collection, and herewith send the notes which I have made during the process.

Mr. Sclater has kindly presented to the Museum the skull of an

adult Baird's Tapir from Central America, which had been sent to him by Capt. Dow*; and more lately Mr. Salvin has obtained for the Museum the skin and the skull of a half-grown specimen of the same animal. Thus we have the skull of this interesting genus in two very distinct states of development. Mr. Sclater has also kindly shown me a photograph of the very young animal, in its spotted and banded state, which is on its way to the Gardens of the Society. These materials have enabled me to study this very interesting animal in considerable detail. To understand its characters more completely I have compared the skull with the series of skulls of Tapirs in the British Museum and in the Museum of the College of Surgeons, and with the figures of the skulls to be found in Cuvier's 'Ossemens Fossiles' and De Blainville's 'Ostéographie.'

These examinations have enabled me to point out the craniological characters by which the species may be distinguished, and also to record the differences which occur in the skulls of the different kinds as the animal passes from youth to adult age.

These researches have induced me to believe that one of the skulls of Tapirs in the British Museum indicates the existence of a South-American species that has not yet been observed in the living state.

This is not extraordinary when we recollect that the Tapir of Central America, which belongs to a peculiar group, was not distinguished from the common Tapir until the very peculiar formation of its skull was observed and figured.

Fam. TAPIRIDÆ.

Nose produced into a short proboscis. Toes two or three, subequal, all reaching the ground, without any prehensile process on the upper edge, nail short; each with a separate hoof. Face not horned. Neck short. Cutting-teeth in each jaw, erect, normal.

Tapirina, Gray, List Mamm. B. M. p. 184.

Multungula genuina, Giebel, Säugeth. p. 177.

Onguligrades, Blainville.

There is a peculiarity in the change of the teeth of the Tapirs which I do not find noticed in Owen's 'Odontographia,' or in De Blainville's 'Ostéographie,' or in any work that has occurred to me. In most mammalia the second series of the cutting-teeth are developed rather within the base of the milk series; but in the Tapirs they are developed so far within their hinder edge that, when the milk series are about to be shed and the permanent series are just about being developed, there are two distinct series of apertures to be observed in the intermaxillaries and the front edge of the lower jaw.

The skulls of the American Tapir and of Baird's *Elasmognathus* in the British Museum show this peculiarity.

The skull of a young American Tapir in the Museum Collection shows the same peculiarity. In this specimen, which has lost all its

* See Mr. Sclater's remarks on exhibiting this skull, *antèa*, p. 473.

milk-teeth, the development of the alveoles is not so uniform, the cavities left by the milk-teeth being much larger and more or less broken away on the outer edge; while the inner series of pits, from which the permanent teeth are to be developed, are much smaller, shallower, and far apart; perhaps they would have been larger and more developed if the animal had been allowed to live until the permanent teeth were more developed.

The space between the two series is much larger in the skull of the *Elasmognathus bairdi*. The skull of the younger specimen of *E. bairdi* in the British Museum has lost all its milk cutting-teeth in each of the jaws, each leaving a well-marked, regular, circular, conical cavity on the edge of the jaw. Just within these cavities, but well separated from them by a bony plate, and alternating with the cavities of the milk-teeth, is placed a regular series of six well-developed similar, but not quite so large, circular, conical cavities. At the base of each cavity is to be observed the commencement of a tooth, being the teeth of the permanent series. The front of the lower jaw exhibits the same peculiarity; but the cutting-teeth of the lower jaw are more unequal in size, the cavities of the central series being the largest, and gradually diminishing in size to the outer one. In the skulls of the young American Tapir and of the *E. bairdi* there is a second cavity on the inner side of the base of the milk-canine. In the skull of *T. americanus* one of the milk-canines is remaining; it is of a very small size, and compressed lancet-shaped in form. In the *E. bairdi* the milk-canines are shed.

In the skull of the young *Tapirus americanus* in the British Museum, which has shed its cutting-teeth, there is an abnormal tooth (probably a false grinder) to be observed on each side of the maxilla, rather in front of the middle of the space between the base of the canine and the front edge of the first grinder. They are each placed on the outer side of the jawbone, near the lower edge, and are covered with well-developed enamel, and are similar in form and size. Are these teeth similar to the front or false grinders in *Anoplotherium*?

The family may be divided into two groups or tribes:—

Tribe I. TAPIRINA.

The nasal aperture elongate, gradually contracted into a narrow opening in front, extending nearly to the root of the upper canines. The upper jaws only united in front as far as the root of the canines; the upper part on the sides of the nasal aperture broad, rounded. The internasal cartilage only ossified at the hinder part under the nasal bone.

M. Cuvier, in the 'Ossemens Fossiles,' vol. ii. p. 145, gives the osteology of the American Tapir (*T. americanus*) with considerable detail, and devotes a chapter to the comparison of the bones of the Indian Tapir (*T. indicus*) with those of the American Tapir (p. 156); he figures the skeleton and skull of the two species and some of the other bones. The figures of the separate skull and of the skeleton

of the American species are very incorrectly drawn; they are very unlike, and both give a very false idea of the form of the nose. It is to be observed they are some of Cuvier's earliest works, drawn and etched by Cuvier himself, and certainly not to be compared with those drawn and engraved by his humble but talented colleague M. Laurillard.

Blainville, in his 'Ostéographie,' "Mammifères Onguligrades," figures:—the skeleton of *Tapirus indicus* (t. 1), and the details of the skull (t. 2), details of the members (t. 4), and of the dentition (t. 5); the skull of *Tapirus americanus* (t. 3), details of the members (t. 4), and of the dentition (t. 5); the skull of *Tapirus pinchacus* (t. 3), and details of the dentition (t. 5).

1. TAPIRUS.

The internasal cartilage ossified just at the hinder part under the base of the nasal; foramen maximum nearly circular. Occipital crest narrow, high. Forehead small, narrow. Canines in the maxilla just behind the intermaxillary suture. The hinder upper edges of the intermaxillaries produced behind, and forming part of the upper margin of the nasal aperture.

Teeth 42:—In. $\frac{3-3}{3-3}$. C. $\frac{1-1}{1-1}$. Pm. $\frac{4-4}{3-3}$. M. $\frac{3-3}{3-3}$. Milk-molars $\frac{4-4}{3-3}$.

Hab. South or Tropical America.

Tapirus, Cuv. Oss. Foss. iv. p. 293; Owen, Odont. p. 604, t. 96. f. 4, 5.

Rhinochærus, part., Wagner, Syst. Amph. p. 19.

These animals are generally brown, with white edges to the ears. The hinder part of the back above the tail is generally more or less destitute of hair.

1. TAPIRUS TERRESTRIS.

Fur short, dark brown, rather paler beneath. Skull with a high regularly arched crest over the brain-case; nasal bones over the back of the orbits elongate, triangular, acute; the front edge of the cavity of the internal nostrils in a line with the hinder edge of the sixth grinder in the adult series, or with the back edge of the last well-developed grinder in the imperfect series of grinders; the front part of the nasal apertures contracted, and gradually tapering in width towards the front end; face rather elongated; the space between the grinders and canines rather longer than the length of the outer edge of the two true grinders; the occipital end of the skull triangular, arched above, higher than broad; lower jaw with an arched lower edge.

Var. 1. The front edge of the cavity of the internal nostrils in a line with the middle of the inner edge of the penultimate or sixth grinder in the complete series.

Var. 2. The space between the grinders and the canines larger.

In other respects both these skulls are exactly like the normal skull of *T. terrestris*.

Var. 3. With a small additional premolar close in front of the base of the usual first premolar on the right side of the lower jaw.

Hippopotamus terrestris, Linn. S. N. p. 174.

Tapirus americanus, Schreb. Säugeth. t. 319; Cuvier, Oss. Foss. iii. p. 277, t. 66-68; Blainv. Ostéog. Ongulig. t. 1, 5; P. Z. S. 1850, p. 102; 1851, p. 121; 1859, p. 51; 1860, pp. 181, 261.

T. anta, Zimm.

T. terrestris, Gray, List Mamm. B. M. p. 184; Gerrard, Catal. Bones, B. M. p. 275.

T. suillus, A. Wagner, Schreb. Säugeth. iv. p. 777, t. 319; P. Z. S. 1860, p. 261.

Tapirete, Marcg. Bras. p. 229, fig.

Tapirou l'anta, Buff. H. N. xi. p. 444, t. 43.

Junior. *Cabani éléphantipède*, Geoff. Mus. Paris; Desm. N. Dict. H. N. p. 503.

The British Museum possesses six skulls of this species. Four skulls are of full-grown or nearly full-grown animals; one is young, with only four grinders; and another is young, with only the milk-teeth.

These skulls show that this species is found in Brazil (where it was obtained by Mr. Miers), and also in Berbice and Demerara. The specimen from the latter country was obtained by Sir Robert Schomburgk.

The skull of the younger animal, which has only the four or five grinders developed (even when the other grinders are being developed), has the front edge of the hinder nasal aperture in a line with the hinder edge of the last well-developed grinder—that is to say, the fourth or fifth, as that tooth may happen to be the last well-developed one. A skull in this state is figured by Cuvier, Oss. Foss. ii. t. 2. f. 2; but the last or fifth grinder, canines, and cutting-teeth are represented more developed than they ought to be to agree with our specimens. This position of the aperture has been verified in a series of five skulls of animals with the teeth in five different states of development. The aperture is figured in its proper position in the adult skull.

In the skull of the nearly adult animal, in which the last or seventh grinder is not completely formed, but of a moderate size and nearly ready to pass through the gums, the front edge of the internal nasal aperture is in a line with the back edge of the sixth or penultimate grinder, as in the skulls of the adult animals which have cut the last or seventh grinder. The internal nasal aperture probably slightly changes its place when the animal increases in age, or is sometimes liable to variation.

In the skull of an adult (perhaps rather aged) animal, which has all the seven grinders well developed, in the British Museum, and which agrees with the adult skull of the common Brazilian Tapir, the front edge of the hinder nasal aperture is rather more forward than in the other adult skull; that is to say, the front edge is in a line with the middle of the sixth or penultimate middle grinder. The

skull figured by M. de Blainville in his 'Ostéographie,' t. 3, as that of *Tapirus americanus* agrees much better with this skull than with any of our skulls of *T. americanus*, as, in this skull, the face is more elongated and slender. The upper line of the central crest of the skull is regularly arched, and not arched in front and with a nearly straight line on the hinder part of the crown. It differs from the skull of *T. laurillardii* in the nasal bones being long, tapering, and acute, as in the skull of the normal *T. americanus*.

The length of the space between the hinder edge of the canine and the front edge of the first grinder in the figure agrees with that found in the *T. americanus*; that is to say, it is only rather longer than the length of the first two grinders.

There is a skull of an American Tapir in the Museum of the College of Surgeons which is rather more elongate than the rest of the skulls; and in this respect it bears some resemblance to the skull of *Tapirus laurillardii*.

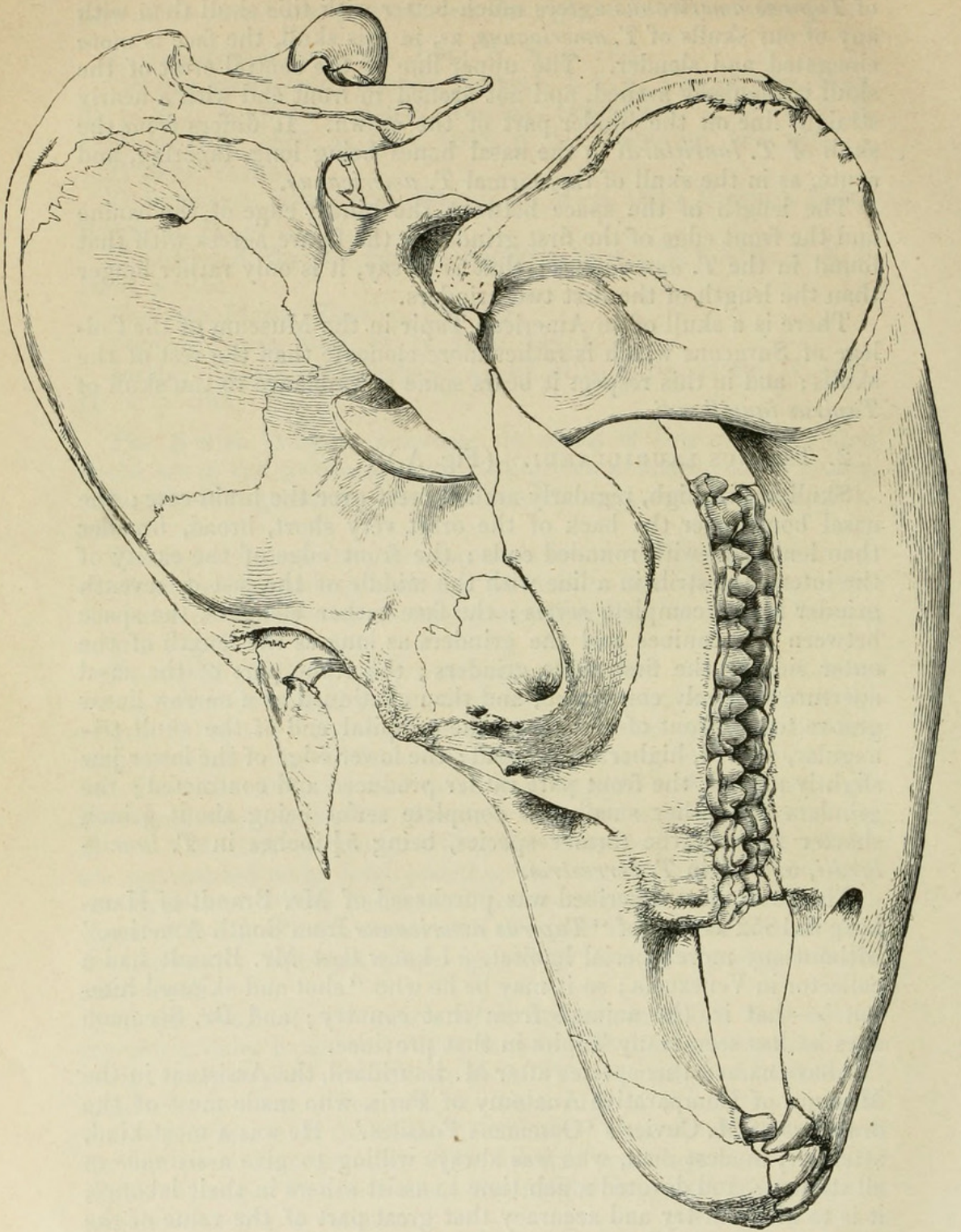
2. TAPIRUS LAURILLARDI. (Fig. A.)

Skull with a high, regularly-arched crest over the brain-case; the nasal bones over the back of the orbit very short, broad, broader than long, and with rounded ends; the front edge of the cavity of the internal nostrils in a line with the middle of the last or seventh grinder in the complete series; the face rather elongate, the space between the canines and the grinders as long as the length of the outer side of the first three grinders; the front part of the nasal aperture suddenly contracted, and then continued as a narrow linear groove to the front of the nose; the occipital end of the skull triangular, arched, higher than broad; the lower edge of the lower jaw slightly arched, the front part rather produced and contracted; the grinders are rather small, the complete series being about $\frac{1}{4}$ inch shorter than in the former species, being $5\frac{1}{4}$ inches in *T. laurillardii*, and $5\frac{1}{2}$ in *T. terrestris*.

The skull here described was purchased of Mr. Brandt of Hamburg in 1852 as that of "*Tapirus americanus* from South America," without any more special habitat. I know that Mr. Brandt had a collector in Venezuela; so it may be he who "shot and skinned himself"—that is, the animals from that country; and Dr. Seemann says he has seen many Tapirs in that province.

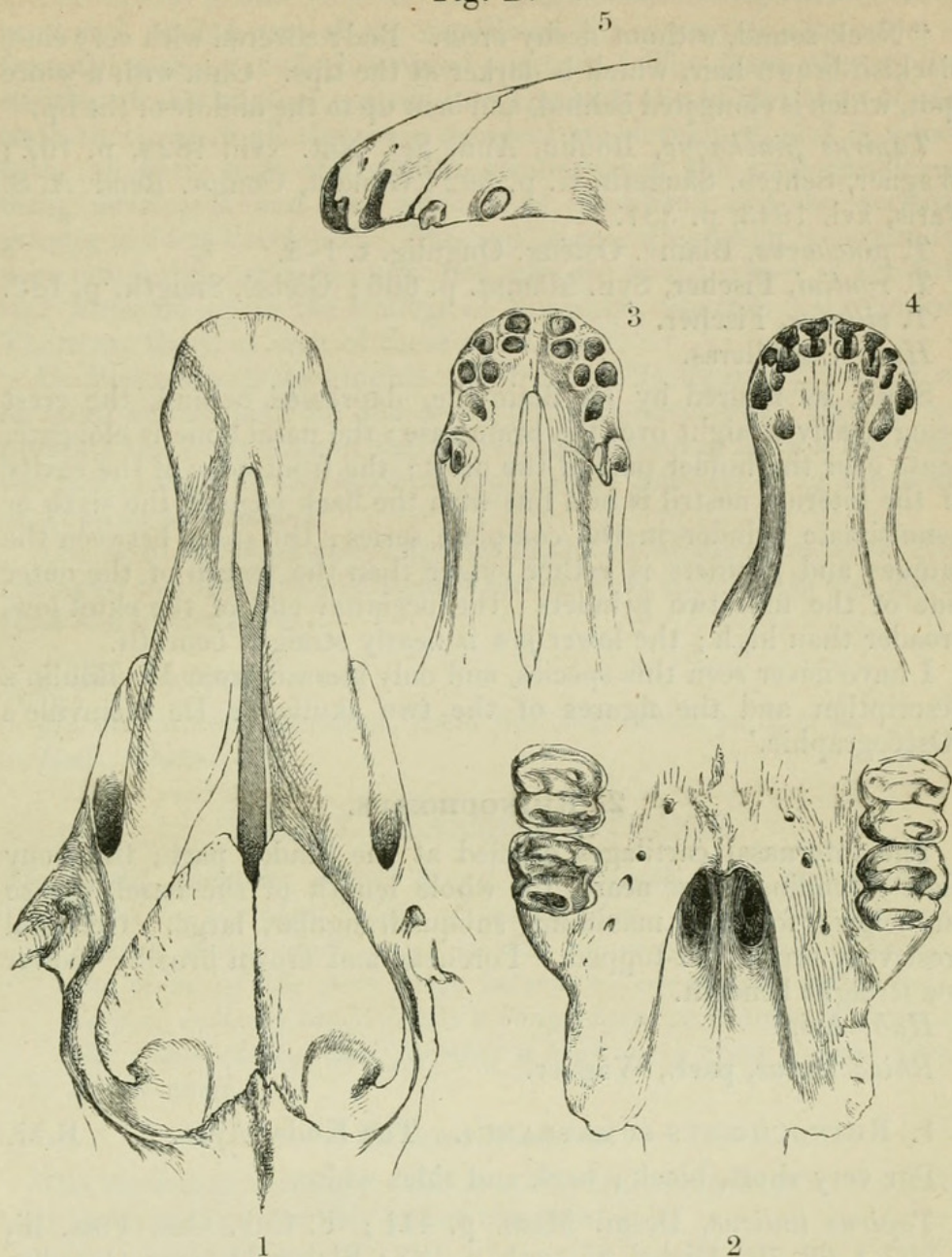
I have named this species after M. Laurillard, the Assistant in the Museum of Comparative Anatomy of Paris, who made most of the drawings of M. Cuvier's 'Ossements Fossiles.' He was a most kind, attentive, modest man, who was always willing to give assistance to all students, and devoted much time to assist others in their labours; it is to his industry and accuracy that great part of the value of the 'Ossements Fossiles' is to be attributed. I am personally indebted to him for great kindness and an unceasing desire to facilitate any researches that I might have in hand. He was one of those men who seem satisfied—so that the work of science progressed, any one might claim the reputation of doing it; and few men have done more for osteology and palæontology than M. Laurillard.

Fig. A.

Skull of *Tapirus laurillardii*.

This skull, in the length of the front of the face and in the comparative straightness of the lower edge of the under jaw, agrees in some respects with the skull figured by De Blainville under the name of *Tapirus pinchacus* (t. 3). It differs from the figure of that skull

Fig. B.



1. The nasal bones and upper part of the skull of *T. laurillardi*.
2. Internal nasal opening of *T. laurillardi*.
3. End of the upper jaw of *T. laurillardi*.
4. End of lower jaw of *T. laurillardi*.
5. Front of the upper jaw of *Tapirus terrestris*, showing the rudimentary premolar.

in the shortness and breadth of the nasal bones, and also in the front of the upper jaw not being so much produced, and in the lower edge of the lower jaw not so straight, and in the narrow linear form of the grooves between the maxillæ forming the internasal cartilages. The position of the internal nostril on the palate at once separates it from the other American Tapirs.

3. TAPIRUS PINCHACUS.

“Neck round, without fleshy crest. Body covered with very close blackish-brown hair, which is darker at the tips. Chin with a white spot, which is elongated behind, and bent up to the middle of the lip.”

Tapirus pinchaque, Roulin, Ann. Sci. Nat. xvii. 1829, p. 107; Wagner, Schreb. Säugeth. vi. p. 392; Goudot, Compt. Rend. A. S. Paris, xvi. 1843, p. 331.

T. pinchacus, Blainv. Ostéog. Ongulig. t. 1-5.

T. roulini, Fischer, Syn. Mamm. p. 606; Giebel, Säugth. p. 182.

T. villosus, Fischer.

Hab. Cordilleras.

Shull, as figured by De Blainville, depressed behind, the crest being nearly straight over the brain-case; the nasal bone is elongate, acute over the hinder part of the orbit; the front edge of the cavity of the internal nostril is in a line with the back edge of the sixth or penultimate grinder in the complete series; the space between the canines and grinders is rather longer than the length of the outer side of the first two grinders; the occipital end of the skull low, broader than high; the lower jaw is nearly straight beneath.

I have never seen this species, and only know it from M. Roulin's description and the figures of the two skulls in De Blainville's 'Ostéographie.'

2. RHINOCÆRUS.

The internasal cartilages ossified at the hinder part; the bony plate extending above nearly the whole length of the nasal, not so far below; foramen maximum subquadrangular, large. Occipital crest very broad, flat-topped. Forehead and crown broad. Lower jaw straight beneath.

Hab. Asia.

Rhinochærus, part., Wagner.

1. RHINOCÆRUS SUMATRANUS. The Kuda, Ayer. B.M.

Fur very short, black; back and sides white.

Tapirus indicus, Desm. Mam. p. 411; F. Cuv. Oss. Foss. iii. p. 297, t. 69, 70; Giebel, Säugth. p. 183; Blainv. Ostéogr. Ongulig. t. 1-5.

T. sumatranus, Gray, Med. Repos. p. 1821.

T. malayanus, Raffles, Linn. Trans. xiv. p. 270; Griffith, A. K. iii. t.; Horsf. Zool. Journ., Zool. Java, t.; Gerrard, Cat. Bones, B. M. p. 276.

T. bicolor, A. Wagner, Schreb. Säugeth. vi. p. 400.

Cuvier (Oss. Foss.) states that the Malay Tapir was discovered in India by M. Duvaucel. It does not inhabit India; and M. Duvaucel only knew the animal from the drawing of it that was in General Hardwicke's collection, from a specimen obtained by Major Farquhar in Malacca, and from a skull which he obtained from the same source.

The upper hinder edge of the intermaxilla triangular, narrow, produced, with a part of the maxilla on the inner side separating it from the margin of the internasal aperture. The front edge of the cavities of the internal nostrils in a line with the hinder edge of the sixth tooth when all the seven grinders are developed, and in a line with the back edge of the fifth grinder when the sixth grinder is being developed, and also when it is completed and the seventh grinder is being developed. This last or seventh grinder is developed very late in life; indeed I have not seen any skulls, either in the British Museum or in the College of Surgeons, where it is developed. There are three in each of these collections.

De Blainville (*Ostéographie*, *Tapirus*, pl. 2) figures the skull of an adult animal with all the seven grinders developed; and he represents the front edge of the hinder nasal opening as in a line with the hinder edge of the *sixth* or penultimate grinder, as in the skull of *Tapirus americanus*.

The skull of the skeleton figured in plate 1 of the same work, like the skull in the British Museum, has only six grinders in the upper (and five in the lower).

2. RHINOCHÆRUS ME.

Me des chinois, Remusat, *Ann. Sci. Nat.* xviii. p. 5, t. 1.

Hab. China.

Tribe II. ELASMOGNATHINÆ.

The nasal aperture short, broad, subcordate, and truncated in front by the bony ridges of the maxilla. The upper jaw with a high sharp-edged crest on the upper inner edge, embracing the sides of the very large internasal cartilages, which early become entirely ossified into a bony plate, permanently dividing the nasal cavity, and forming a high bony crest on the front of the skull.

ELASMOGNATHUS.

The internasal cartilages ossified nearly the whole length, the bony part produced beyond the end of the nasal.

Elasmognathus, Gill.

ELASMOGNATHUS BAIRDII. (Pl. XLII.)

Fur very short, close, dark black brown; lower part of the cheeks and sides of the neck bay brown; chin, throat, chest, and front edge of the shoulders greyish white.

Young, born with pale stripes, Verrill, *Silliman's Amer. Journ. Sci.* July 1867; *Ann. & Mag. N. H.* 1867, xx. p. 232.

Elasmognathus bairdii, Gill (?), *fide* Verrill.

Hab. Panama; skull, Mus. Coll. Surgeons; Brit. Mus., adult and young skull.

The internasal septum is continued between the elevated sharp upper edges of the maxillæ, and even between the upper edges of the

intermaxilla. It remains cartilaginous until it reaches its adult size, and then becomes ossified, forming a thick bony erect plate.

In the younger skull the cartilaginous septum is produced nearly to the root of the cutting-teeth; but in the older skull, where the septum has become ossified, the front parts of the intermaxilla are produced, and the septum ends over the root of the canines. The shortness of the nasal cavity and the sharp-edged crest of the maxillæ distinguishes the skull from those of the Tapirs in all ages.

The sides of the face of the skull are flattened; the zygomatic arch and the front of the orbit over the preorbital foramen is expanded, flattened, and compressing the foramen into an oblong erect shape; the upper edge of the orbit is narrow and flat, not produced into lobes as in the American Tapir; the nasal bones are narrow, longer than broad at the base, with an oblong deep concavity on each side of their base, which is continued upwards behind it, so as to be only separated by a small central ridge; the hinder palatine nasal opening varies in size in the two sexes, or it becomes much wider and broader in front as the animal increases in age. In the skull with the cartilaginous internasal septum, and only four grinders in each side, the concavity containing the internal nostrils is narrow and oblong. In the older skull with the septum entirely bony, and with seven grinders in each side, the concavity containing the internal nostrils is much broader, being nearly as wide as long, and the vault is more evenly rounded.

The young animal, like the young of the Brazilian and other Tapirs, is spotted and striped with white. Mr. Selater has kindly lent me a photograph of a young Panama Tapir, which is on its way to the Society's Gardens; and a copy of the photograph has been added to Mr. Wolff's figure (Pl. XLII.) of the half-grown animal, which Mr. Salvin has obtained for the British Museum.

The young animal is described by Mr. Verrill as above quoted; and the description is printed in the 'Annals and Magazine of Natural History' for 1867, xx. p. 232.

The animal is similar to the Brazilian Tapir externally; indeed all the naturalists and zoologists who have observed it at Costa Rica regarded it as the same as that species until the skull was examined; and it is said that one was exhibited alive in the Jardin d'Acclimatation at Paris for some time as a Brazilian Tapir; but it is easily distinguishable by the bay cheek and white chest.

10. On New Species of Birds from South Africa.

By Rev. H. B. TRISTRAM, M.A., F.L.S., C.M.Z.S.

Among a collection of birds recently sent to me from the Cape Colony by Mr. E. L. Layard I find two specimens of a Swift labelled by Mr. Layard *Cypselus melba*.

These birds are clearly distinct from *C. melba*. In size and form there is no difference, excepting that the wing of the South-African



M & N Hanhart imp.

ELASMOGNATHUS BAIRDI.

J. Wolf lith.



Gray, John Edward. 1867. "9. Notice of new species of American tapir, with observations on the skulls of Tapirus, Rhinochoerus, and Elasmognathus in the collection of the British Museum." *Proceedings of the Zoological Society of London* 1867, 876–886.

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