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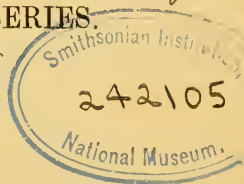
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head. Snout very short, one third of the diameter of the eye. Pectoral long and pointed, as long as the head; dorsal small, its origin nearly midway between the end of the snout and the extremity of the caudal. The silvery band is narrow, bordered above and below by a very conspicuous series of black dots; a third series of similar dots runs along the middle of the row of scales below the silvery band.

Two specimens, $3\frac{1}{2}$ inches long, from Cebu; we have received also two others from Amboyna.

Salarias holomelas.

D. 30. A. (2 +) 19.

Allied to *Salarias fuscus*.

Body comparatively short, its depth being contained thrice and one eighth in the total length (without caudal). Anterior profile of the forehead nearly vertical. Canine teeth none. No orbital tentacle, no crest on the head. The dorsal fin is not notched; this fin, as well as the anal, is elevated, all the spines and rays terminating in very fine filaments; both fins connected by a short membrane with the caudal, which is also produced. Entirely black.

One example, 3 inches long, from Cebu.

LVII.—*On the Species of Asiatic two-horned Rhinoceros.*

By EDWARD BLYTH, Hon. Memb. As. Soc. &c.

IN some remarks on two species of Asiatic two-horned rhinoceros (*Ceratorhinus* of Gray) which appeared in the 'Annals' (*anteà*, p. 208), Dr. Gray awards to me the discredit of supposing "that the one inhabits the east coast of the Bay of Bengal and the series of islands extending to Sumatra, and the other the Malay peninsula and Tenasserim, separated in Burmah by the Irrawaddy river." Now as that is a part of the globe with the geography of which I happen to be tolerably familiar, and as, moreover, I have especially studied the fauna of the Andaman and Nicobar Islands and was the first to bring to notice sundry species inhabiting those islands, it is therefore somewhat unlikely that I should have suspected them of harbouring such an animal as a rhinoceros, or that I should have ignored the fact that the Tenasserim provinces and northern part of the Malayan peninsula constitute, equally with the provinces of Chittagong and Arakan, portions of the eastern boundary of the Bay of Bengal.

I do know for certain that the small blackish and coarse-haired rhinoceros procured at Malacca, an example of which died lately in the Regent's Park, is identical with one of those

inhabiting the Tenasserim provinces,—also that a two-horned species of some kind inhabits the province of Arakan, which I presume to be the same as that obtained in the contiguous province of Chittagong, viz. *R. lasiotis*, Selater. But at present there is no evidence to show that the latter exists southward (or to the south-east) of the Gulf of Martaban, unless the figure of a Tenasserim skull published in the ‘Journal of the Asiatic Society of Bengal’ (vol. xxxi. p. 156, pl. iii. fig. 1) represents that of *R. lasiotis*, which is not improbable. That the latter is the two-horned species which has been killed (as I was assured by a planter) in Assam, where it is considered an exceedingly great rarity, is very highly probable; and Dr. J. Anderson mentions that while at Bhamô, in Upper Burmah, he “was informed by an intelligent native that two-horned rhinoceroses are found in the Mogonny district, which is close to the confines of Assam, and as far north as the twenty-sixth degree of north latitude” (Proc. Zool. Soc. 1872, p. 129).

The larger of the two obviously distinct species which we have seen alive in London (*R. lasiotis*, Selater) is considered by Dr. Gray to exemplify the true *R. sumatrensis*; while the smaller of the two he imagines to be identical with the animal which bore the long and much-curved anterior horn upon which *R. Crossii*, Gray, is founded (*vide* figure in Proc. Zool. Soc. 1854, p. 250). Mr. Selater with much better reason, as it appears to me, assigns the smaller species to the veritable *sumatrensis*; but this can hardly be the same Sumatran animal as is figured under that appellation by Professors Temminck and H. Schlegel.

That *R. Crossii* and *R. lasiotis* are the same I think extremely probable; for I have seen well-developed horns attached to the skin of the head of a Tenasserim male of the small blackish species, the skull of which was afterwards cleansed, and is figured together with those horns in ‘Journ. As. Soc. Beng.’ (*loc. cit.* pl. iv. fig. 1). Though of similar peculiar character, the anterior horn curves much less than in *R. Crossii*; while that the very remarkable amount of curvature of the latter is normal is shown by the existence of a second, though less developed, specimen of a horn in the museum of the London Royal College of Surgeons, bearing the number 3086. In both cases (or species) the horns are very slender except at the base, and the structure of them is very much harder and more compact than in other rhinoceros-horns; for which reason they command so high a price among the Chinamen (to be elaborately carved upon) that fine specimens are hardly ever procurable by Europeans; and therefore it is that we do not see them in our museums. The size of the *R. Crossii* horn

would suit *lasiotis* rather than the other; and I think it probable that the second or posterior horn will prove to be much shorter than in the smaller species. The British-Museum specimen, upon which the name *Crossii* was founded, measures 32 inches over the curvature, and is 17 inches in span from base to tip.

R. sumatrensis was originally described, and somewhat rudely figured, by Surgeon Bell in the 'Philosophical Transactions' for 1793 (p. 282, pl. 2). His specimen is stated to have been a male; "the height of the shoulder was 4 feet 4 inches" (over the curvature of the body?); "from the tip of the nose to the end of the tail 8 feet 5 inches. From the appearance of the teeth and bones it was but young, and probably not near its full size. The general colour was a brownish ash; under the belly, between the legs and folds of the skin, a dirty flesh colour. . . . The ears were small and pointed, lined and edged with short black hair. . . . The whole skin of the animal is rough, and covered very thinly with short black hair." Sir T. Stamford Raffles remarks of the animal, as observed by himself in Sumatra, that "its hide is much softer and more flexible than in the Indian one, and is not, like it, corrugated into plates of mail; it has, however, some doublings or folds, particularly round the neck, shoulders, and haunches, rather more distinct and defined than in Bell's drawing" (Trans. Linn. Soc. vol. xiii. p. 268). Upon the whole, this description applies fairly to the stuffed specimen in the British Museum, which is believed to have been procured at Pinang, meaning the adjacent mainland of province Wellesley; but it does not suit *R. lasiotis*, either as regards the prevailing shagginess of the hide, the length and colour of the hairy vesture, the very conspicuous long pendent fringe of hair bordering (but not lining) the ear-conch, and the copiously tufted tail. But the latter is represented in Bell's figure as being slightly tufted, and not so long and tapering as in the animal from Malacca, the tail of which had some scattered hairs upon it but was not distinctly tufted; in the British-Museum specimen the tail is mutilated. Moreover the skin of *R. lasiotis* would rather be described as smooth than as rough; and in this respect it contrasts remarkably with that of the smaller species.

In his 'Histoire Naturelle des Mammifères' M. Frédéric Cuvier supplies two figures assignable to this type of rhinoceros (*Ceratorhinus*, Gray), one of which is obviously from a drawing from life of a very young calf, which he erroneously refers to the conspicuously distinct single-horned rhinoceros of Java; and in his supposition of its representing the latter, he either overlooked or possibly ventured to suppress the indication of

a second and posterior horn, which could scarcely fail to have been shown in the original drawing. Even at that early age a rudiment of the posterior horn must needs have been sufficiently apparent in the living animal, as shown by Schlegel's figure of a still younger calf. The comparatively rough skin (although in so very juvenile an individual), the blackish-brown colour of that skin, and especially the length and peculiar form of the tail combine to identify the animal with the small blackish species inhabiting the Tenasserim provinces and Malayan peninsula; but still I do not understand its being represented as so very slightly hairy, especially upon the ears, which is hardly to be sufficiently accounted for by the youth of the particular specimen.

M. Frédéric Cuvier's other figure, which he assigns to *R. sumatrensis*, appears to me to have been made up from that of Bell, aided and partly misled by the remark of Raffles concerning the plaits or creases of the skin. I do not believe that any original figure of a *Ceratorhinus* would have represented the crease on the flanks as extending upwards across the loins. The attitude and position of the limbs are essentially the same as in Bell's figure; and so also is the amount of development of the horns; and the accompanying descriptions and measurements of both *sumatrensis* and supposed *javanicus* are compilations. Moreover it is erroneously asserted that *R. sumatrensis* was named *R. sondaicus* by Messrs. Raffles and Horsfield, inasmuch as that name was first applied by George Cuvier to the lesser one-horned species, which is the only rhinoceros that inhabits Sunda, *i. e.* the western half of Java. It follows that F. Cuvier's figure assigned to *sumatrensis* is of no authority whatever in determining whether either or which of the species in question is properly entitled to that designation.

Lastly, the figures assigned to *R. sumatrensis* (adult and young) by Professors Temminck and H. Schlegel were made up from stuffed specimens in the Royal Museum of Natural History at Leyden; and the fore limbs of the adult are represented as being much too slender. Otherwise those figures resemble *R. lasiotis* rather than the small blackish species, and have the comparatively short tail of the former; but they are represented as being very inconspicuously clad with minute hairs, which would scarcely be remarked unless especially looked for. I remember distinctly that the stuffed adult specimen in the Leyden Museum is hairless (unless to a very slight extent where least exposed), and that the young (under glass) was well clad; but not suspecting at the time a plurality of species of the particular type, nor how such species have

since proved to differ, I did not examine those specimens so critically as I should now do, though I retain the impression that the adult is notably larger than the stuffed male in the British Museum, or than the aged female of the same species which lately died in the Zoological Gardens. The skeleton of a Sumatran female in the museum of the Royal College of Surgeons agrees in size with the last mentioned; but although a very old animal, it retains its front teeth, which the others had lost. But the skull of a Sumatran male in the same collection indicates a considerably larger animal, which may even be of a different specific race, corresponding to Schlegel's figure; but this is a matter for further investigation, and to which I can only recommend attention. The Leyden beast is certainly not so large by a good deal as is the living *R. lasiotis*, which appears to be still growing, and has much increased in size since its arrival in this country; but it is not likely to become so large an animal as the adult of the lesser single-horned species (*R. sondaicus*), of which a skull, said to be undoubtedly from Sumatra, has lately been received at the British Museum.

I was assured at Leyden by Professor Schlegel that *R. sumatrensis* existed in Borneo; but an anterior horn said to be from Borneo, in the possession of Mr. A. D. Bartlett, would seem to indicate a species of still more diminutive size than that which I believe, with Mr. Sclater, to be the real *sumatrensis* of Bell, the mere difference of size of horn being not the only reason for suspecting that the Bornean rhinoceros will eventually have to be recognized as a peculiar species.

I may also here mention that upon looking over a portfolio of drawings at the India House, belonging formerly to the Earl of Mornington (Governor-General of India and subsequently Marquis of Wellesley), I found two of single-horned rhinoceros. One of these is a fair representation of a very young individual of *R. sondaicus*; the other—which, however faulty in general outline (being much too deep in the body), is finished elaborately as regards details—appears to me to represent a peculiar and undescribed species. The folds of the cuirass are the same as in both *indicus* and *sondaicus*, except the one which crosses the nape in the latter, and is deflected backward across the shoulder-blade in the former; this one is intermediate in its direction, for it is deflected backward much higher upon the shoulder than is regularly the case in *R. indicus*. The most remarkable peculiarity, however, consists in the cuirass being throughout conspicuously studded with uniformly small tubercles (as in *R. sondaicus*), while the head and limbs are represented as wrinkled, but the skin quite smooth and devoid of tubercles, and in this respect contrasting remarkably with the adjacent parts of the cuirass. I cannot think that

any one who looks at the elaborate finish of this drawing from a living animal can readily suppose the peculiarities described to be freaks of the native artist; and in the other figure (of indubitable *R. sondaicus*) the head and limbs are represented as being tuberculated uniformly with the cuirass. Moreover, in the figure of very juvenile *R. sondaicus*, a slight hairiness is represented upon the back, between the shoulder-fold and that which crosses the loins; and I doubt not that this is correctly copied from the living specimen. No habitat is assigned to either, nor ought given to guide respecting the dimensions; but, without desiring to attach undue importance to any drawing made by an unscientific artist, I still cannot help thinking that the one in question indicates, in all probability, a species hitherto unsuspected—as much so as were, until quite recently, the additional species of Asiatic two-horned rhinoceros, which must now be generally recognized and accepted. Be it remembered that for many years a male of *R. sondaicus* existed in this country which was never recognized as differing from the large *R. indicus*; and we only know it now from the two figures of it, assigned to *R. indicus*, in the ‘Naturalist’s Library;’ while the skeleton of an adult *R. sondaicus* in the anatomical museum of Guy’s Hospital, in Southwark, is in all probability that of the same individual, which was exhibited about the country and finally deposited in the Zoological Garden of Liverpool, at a time when the larger of the two Indian species was much less familiarly known to us than it is at present. That particular specimen of *R. sondaicus* was received from Calcutta; and it is the only species which is known to inhabit the Sundarbáns of Lower Bengal, as it is also the only single-horned species known to inhabit the Indo-Chinese countries and contiguous Malayan peninsula. Although the commonest and most widely diffused of any Asiatic rhinoceros, I can learn of no other example of it having ever been exhibited in Europe.

Note.—Since the above was in print I have seen Mr. Sclater’s paper on the Asiatic two-horned rhinoceroses, published in ‘Nature’ for October 24th, 1872 (pp. 518, 519), and accompanied by figures of *R. lasiotis* and *R. sumatrensis*. Unfortunately they are not on the same scale, so that the former is made to appear the larger of the two, and the attitude of *lasiotis* does not permit of the distinctions being sufficiently shown. At present the tail of the living animal is much more largely tufted, and the long hair fringing the ears is more developed, than appears from Mr. Sclater’s figure taken from the animal when younger; nor is the different quality of the hair upon the body sufficiently apparent. In *R. sumatrensis* this is shorter, much coarser, suberect, and of a black colour—in

R. lasiotis longer, more appressed (or tending to lie flat on the skin), of a light greyish-brown colour, and somewhat glistening at certain angles of vision. In *R. sumatrensis* the muzzle anterior to the nasal horn is much broader, and the space between the ears is proportionally much less. Moreover Mr. Sclater states that "the tail of the Malacca animal is shorter and nearly naked; in that from Chittagong it is longer and tufted at the extremity;" on the contrary, it is conspicuously shorter in *R. lasiotis*, and even with its tuft does not descend so low as in the other. That of *R. sumatrensis* is correctly represented in Mr. Sclater's figure of the species, in which also the very strongly marked crease behind the shoulders is not at all exaggerated.

MISCELLANEOUS.

Varieties of the Tiara (Galera barbata).

By Dr. J. E. GRAY, F.R.S. &c.

THIS animal is generally brown, with a pale head and a large white or yellow blotch on the throat. It has a large distribution in the tropical or subtropical parts of America.

The British Museum has lately received two half-grown specimens, which have the whole head, neck, and front of back between the shoulders pure white; one of the specimens has the chin and middle of the throat grey. These come from Xalapa in Mexico.

Mr. Salvin sent to the Museum a specimen from Costa Rica, which is entirely black, without any pale colour on the head and neck; and there is a young specimen in the Museum which is entirely of a pale white-brown colour.

On Branchipus and Artemia. By C. VOGT.

At the meeting of the "Société Helvétique des Sciences Naturelles" held at Fribourg in August last, M. Vogt gave a summary of the results of his researches upon these genera. The first species investigated by him was *Branchipus diaphanus*, found in August 1871 near the summit of the Reculet (Jura), in artificial ponds dug by the herdsmen for the use of their cattle. M. Vogt obtained several hundred individuals of this species, among which the males and females were nearly in equal numbers. When placed in an aquarium they lived there very well at first, and produced a multitude of eggs, from which larvæ issued; but towards the end of September they all perished by degrees. At the approach of cold weather the water was emptied out of the aquarium, leaving only the mud at the bottom, which was completely frozen during the winter. Towards the end of February the aquarium received some new inhabitants, namely about 50 larvæ of *Petromyzon*, which concealed themselves in the mud. In the month of May of the present year a certain number of larvæ of *Branchipus* made their appearance, being hatched, no doubt, from eggs which had remained in the mud. M. Vogt succeeded in rearing several generations of them, which enabled him to follow all the phases of their development. Several