

Note.—In the genus *Cyclina*, there are usually placed several species with no denticulated inner margin, with thin valves, very fine transverse lines at the surface, and which seem to have always a superficial lunula circumscribed by an impressed line. These species are :—*Venus kröyeri*, Philippi, *Abbild. etc.* iii. p. 26. 78. No. 9. t. 7. f. 9; *Dosinia tenuis*, Recluz, *Journ. de Conch.* tome 3^{me}, 1852, p. 250. t. 10. f. 1, which is decidedly no *Dosinia*; *Artemis inflata*, Sow., *Thesaur. Conch.* p. 661. No. 22. t. 171. f. 25; *Artemis tenuis*, Sow. *ibid.* No. 23. t. 141. f. 22; *Cyclina subquadrata*, Hanley, *B.M. Maz. Cat.* p. 66. No. 91 (*Artemis saccata*, Gould); *Cyclina producta*, Carpenter, *Proc. Z. S. L.* 1856, p. 161. No. 6. I think these species do not agree very well with *Cyclina*, and that it would be justifiable to separate them as a subgenus. These observations show the importance of studying the animals of both groups, between which, when examined, I am convinced there will be found to exist considerable differences.

February 28th.

John Gould, Esq., F.R.S., V.P., in the Chair.

The following papers were read :—

1. NOTE ON THE PUNJAB SHEEP LIVING IN THE SOCIETY'S GARDENS. BY PHILIP LUTLEY SCLATER, M.A., SECRETARY TO THE SOCIETY.

(Mammalia, Pls. LXXIX., LXXX.)

In August 1854 the Society received from Brigadier-General Harsey, of the Bengal Army, and Lieut. Bartlett, a fine living pair of Wild Sheep, which had been obtained by those gentlemen in the Salt-range of the Punjab in 1853. The female has twice bred in the Gardens, in 1858 and 1859, and produced on each occasion two female kids, so that we now possess a male and five females of this animal, all in a robust state of health, and likely to continue to propagate their species.

This Sheep has hitherto been labelled Vigne's Wild Sheep (*Ovis vignii*), under the supposition that it belonged to the species described under that name by Mr. Blyth in our 'Proceedings' (1840, p. 70), and subsequently in the 'Annals and Magazine of Natural History' (vii. p. 251). My present object is to prove that we have misnamed this animal, and that it is really quite distinct from the *Shapoo* or Wild Sheep of Ladakh and Thibet, which should more properly bear the name of *Ovis vignii*.

My attention was first called to this point by my friend Captain





Speke, who, upon seeing the present animals in the Gardens, at once declared them to be very different from those which he had himself pursued and shot in the higher regions of Little Thibet. There seems to be little doubt that Mr. Blyth's original name, *Ovis vignii*, comprehends both species. He associates together under the same scientific appellation "the *Shá*" (Shapoo) "of Little Thibet," and the "*Koch* of the Sulimani range between India and Khorasan*." His description is perhaps rather referable to the latter, being the animal which we have alive in our Gardens. Now I think that the name *Ovis vignii* should be restricted to the Tibetan animal for two reasons: first, because the Sheep discovered by Mr. Vigne in "Little Tibet, where the river breaks through the chain of the Himalayas†," and dedicated to its discoverer by Mr. Blyth, was doubtless the *Shá*poo; secondly, because the other animal, the *Koch*, or *Oorial* of the Sulimani range, has already been well described by, and received another scientific name from, Capt. Hutton; so that by this course the objectionable necessity of proposing a new name is obviated.

I now proceed to endeavour to show the differences between these two species:—



1. *OVIS VIGNII*. The Shapoo. (Pl. LXXIX.)

Ovis vignii, Blyth, P. Z. S. 1840, p. 70; Ann. N. H. vii. p. 251; Journ. As. Soc. Beng. x. p. 873 (*partim*); Horsfield, Cat. Mus. E. I. C. p. 175 (specimen A, from Strachey's collection); Gray's Cat. Ungulata in Brit. Mus. (1852) p. 172; Adams, P. Z. S. 1858, p. 526 (*partim*).—*Shá* of Little Thibet (Blyth).—*Shapoo* of the Tibetans (Speke).

Male.—Horns subtriangular, rather compressed laterally, rounded

* P. Z. S. 1840, p. 70.

† P. Z. S. 1840, p. 72.

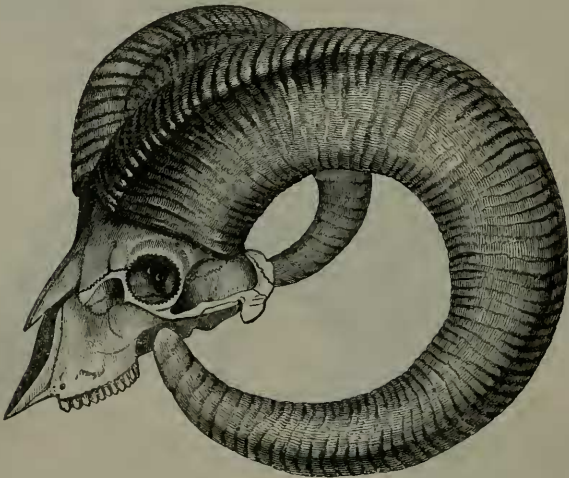
posteriorly, transversely sulcated, curving outwards and backwards from the skull, points divergent; general colour above brownish-grey, beneath paler; belly white; beard short, of stiffish brownish hairs.

Female.—Very similar to the male, but with the horns shorter (?).

Hab. Ladakh, at an alt. of 12–14,000 feet (*Speke*) (*Strachey*).

Mus. Brit., East India Company.

This Wild Sheep inhabits the elevated regions of Ladakh, where it has been pursued and obtained by Capt. Speke, Capt. Strachey, and others since its discovery by Vigne. There are examples in the British Museum and in the collection of the East India Company, from the latter of which the figure is taken, being the specimen procured in Ladakh by Capt. Strachey.



2. OVIS CYCLOCEROS. The Oorial. (Pl. LXXX.)

Wild Sheep of Hindoo Koosh, Capt. Hay, Journ. As. Soc. Beng. ix. p. 440.—*Ovis cycloceros*, Hutton, Calcutta Journ. N. H. ii. 1842, p. 514. pl. 19 (1842).—*Ovis vignii*, Blyth (*partim*): Adams, P. Z. S. 1858, p. 526; Horsfield, Cat. Mus. E. I. C. p. 175 (spec. B.).

Male.—Horns subtriangular, much compressed laterally and posteriorly, transversely sulcated; curving outwards and returning inwards towards the face, points convergent; general colour rufous-brown, face livid, side of mouth and chin white; belly, legs below the knees, and feet white; blotch on flanks, outside of legs, and strong lateral line blackish; a profuse black beard from throat to breast, intermixed with some white hairs, reaching to the level of the knees.

Female.—More uniform pale brown, beneath paler, belly whitish, no beard; horns quite short and straight, about 3 inches long.

Hab. Sulimani, range of Punjab, altitude 2000 feet, and extending into Afghanistan; Kojch Amraun, Hindoo Koosh, and Huzarreh Hills (*Hutton*).

Mus. East India Company (horns).

Vivario, Soc. Zool. Londinensis.

The very fact of this animal inhabiting the low Salt range of the Punjab, at an altitude of 2000 feet, would indicate the probability of its distinctness from the preceding, which is not found under an elevation of 12,000. The Oorial has been well described by Major Hay, Captain Hutton, and Dr. Adams, as above referred to, and it is hardly necessary to repeat the details of its habits and manners. The differences in the horns, as well as those of its general external appearance, are sufficiently obvious, as will appear on examination of the figures, to leave no doubt as to its specific difference from the *Shapoo*. The skull and horns from Griffith's Afghanistan collection, referred to in Dr. Horsfield's 'Catalogue of Mammalia' (p. 175), belong to this species. On comparing the skull with that of the *Shapoo*, we observe a general resemblance. But it may be noted that the suborbital pits in the present species are smaller, deeper, and more rounded, the nasal bones are considerably shorter and more pointed, and the series of molar teeth (formed in each skull of three premolars and three true molars) measures only 2·85 instead of 3·20 inches in total length.

At least *two* other distinct species of Wild Sheep are found within the limits of our Indian possessions. Through the kindness of Mr. Leadbeater, Capt. Speke, Mr. F. Moore, and others, I am enabled to exhibit a tolerably complete series of the skulls, the horns of these, and those before alluded to, by which the differences of all four species are appreciable at first glance.

1. The *Ovis hodgsoni*, Blyth, P. Z. S. 1840, p. 65; *Ovis ammon* et *O. ammonoides*, Hodgk.; *Ovis argali*, ex Mont. Himalay., J. E. Gray, the Ammon or Argali of the higher Himalayan ranges, the *Banbhera* of Nepal, and *N'yan* of Thibet. It is, I believe, not yet quite certain that this magnificent Sheep is identical with the *Ovis ammon*, Linn. (*Ægoceros argali*, Pallas), of Siberia. Mr. Blyth's appellation appears to be the first given to the Himalayan animal. Two fine males and a female of this species are in the Museum of the East India Company.

Hab. Cachar region of Nepal (*Hodgs.*); Ladakh (*Speke*).

2. *Ovis nahoor*, Hodgson (*O. burrhel*, Blyth?); the *Burrhel* or *Bhārāl* of English sportsmen; *Nahoor* of Nepal.

I confess I am not able at present to appreciate thoroughly the differences between the *O. nahoor* and *O. burrhel* as insisted on by Mr. Blyth*. There are not sufficient specimens of the whole animal at present accessible to enable one to express a decided opinion on

* P. Z. S. 1840, pp. 66, 67.

the subject. But, comparing the horns of *O. nahoor* in the British Museum, sent by Mr. Hodgson from Nepal, with those of the only example of the Burrhel in the same collection (being the specimen noticed by Mr. Ogilby in P. Z. S. 1838, p. 79, as obtained by Lieut. Thomas Smith near the Barinda Pass, and referred to as belonging to this species by Mr. Blyth himself, P. Z. S. 1840, p. 68), I can see but slight grounds for distinction, as far as the horns go. The specimen in question is certainly coloured in an extraordinary way, being of a "dark and rich chestnut-brown." The ordinary Burrhel (*Ovis nahoor*), as may be seen by the fine skins of both sexes of this species, obtained by Capt. Townley Parker, now before us, is of a light brownish ash-colour, white below, with the breast-mark, a stripe on each side, and a stripe down the front of each leg, dark chestnut. According to "Mountaineer," who has given an excellent account of the Burrhel and its habits in the 'India Sporting Review' (vol. vi. p. 152), these chestnut markings become black in fully adult males, and are "most observable immediately after the animal changes his coat, which happens in July." With reference to the *Ovis burrhel* of Mr. Blyth, "of a dark mahogany colour," the same experienced observer remarks, "Amongst some hundreds I have killed and many thousands I have seen in my excursions I have never met with but one variety." This he describes nearly in the same terms as I have mentioned above.

The horns of the *Ovis polii* of Central Asia are sometimes brought to this country from the Himalayas; but there is no reason to believe that this animal occurs nearer to India than the plateau of Pamâr.

2. NOTES ON SOME YOUNG HYBRID BEARS BRED IN THE GARDENS OF THE ZOOLOGICAL SOCIETY. BY A. D. BARTLETT.

In the Bear-pit in the Gardens a male Black Bear of America (*Ursus americanus*) has been kept for a long time with a female of the European Brown Bear (*Ursus arctos*). In the month of May these bears were seen to copulate, and on the 31st of last December the female produced three young ones; which, when born, were *naked* and *blind*, and about the size of a full-grown rat.

The mother was seen to carry one of these young ones in her mouth a day or two after they were born, and, as it disappeared, it is supposed that she devoured it. Probably it was not healthy. The other two remained and continued to grow, and at the age of five weeks were as large as a common rabbit. Their eyes began to open by this time; they were covered with a short thick fur, and were nearly black.

On examining these young bears it was found they were male and female, and the number and situation of the teats appears somewhat remarkable. They have six teats, four of them placed in front between the fore legs, and two of them in the lower part of the abdomen. Another singular fact is, that the female during the time she

was suckling these young ones fed most sparingly, and rarely took any drink. From the before-mentioned observations we may infer that the period of gestation of the Bears is about seven months.

3. NOTE ON THE SUPPOSED OCCURRENCE OF THE *HIRUNDO BICOLOR* OF NORTH AMERICA IN ENGLAND. BY ALFRED NEWTON, M.A., F.Z.S., &c.

I venture to send for exhibition a skin of the North American *Hirundo bicolor* of Vieillot, which was formerly the property of my late very good friend Mr. John Wolley, and which there can be little doubt was obtained from a bird killed in this country, though Mr. Wolley, with that admirable caution which distinguished him in recording the reported occurrence ('Zoologist,' 1853, p. 3806), was careful to mention that there was "a possibility of mistake" in the matter.

I think that perhaps some members of the Society will view this specimen with a certain amount of interest; but, apart from this, my object in its exhibition is mainly to draw the attention of naturalists to a matter which is every day becoming of greater consequence to those ornithologists who chiefly occupy themselves with the Avifauna of any one district. I refer to the occurrence within particular limits of strong examples of exotic species. It is not only "British bird" students who find in these alien immigrants a great cause of perplexity. To whatever country we go, we are, perhaps before we have well ascertained the number of the *bonâ fide* species, puzzled by some wanderer turning up exactly where he was least wanted. In my own opinion, the ornithologist must accept his position with all its responsibilities; he chooses to study a class of beings, some of whom, for all sublunary purposes at least, are blest with almost infinite powers of locomotion. He must, therefore, not complain if in the course of a morning's walk here in England, an Australian Swift flies in his face, or he picks up a dead Crossbill of a Transatlantic species; and he must invoke no *Deus ex machina* in the shape of an auxiliary-screw clipper or a careless aviary-keeper to account for the incident. Facts like these hardly admit of a doubt, and force themselves day by day more and more upon the notice of the thoughtful naturalist. For some time, indeed, European ornithologists have been accustomed to regard the properly authenticated appearance of an exotic species, which there may be good reason to suppose have reached our shores without intentional human aid, as sufficient ground for including it in the list of our birds. But as observers have of late so largely increased, so have these occurrences been more frequently noticed; and it seems absolutely necessary to prescribe some limit to prevent our really native species from being outnumbered by these foreigners. The difficulty is to know where to draw the line; and to this point I would invite the careful consideration of naturalists. It may be all very well to call *Thalassi-*

droma wilsoni and *Mergus cucullatus* European birds; but because a single individual of *Regulus calendulus* or *Dendroica virens* has reached the Old World, it is absurd to include either of those species in its Fauna. I cite these instances, because they are all from that continent whence most of our occasional visitants arrive; so much so, that one is almost driven to the conclusion that there is no *prima facie* reason why examples of the greater number of birds of Eastern North America should not, *favente zephyro* (the prevailing strong wind in Western Europe), make their appearance on our shores in course of time. Then, on the other hand, the last two additions to the list of so-called "British birds" have been from the opposite quarter. Are *Syrnhaptes paradoxus* and *Xema ichthyaëtus* to take their places in the books elucidating British Ornithology by the side of the Red Grouse and the Peewit Gull? It appears to me that we gain nothing by deferring a decision on the subject, and I trust that these remarks will not be deemed unnecessary by those who are competent to deal with the matter.

Elveden, 28 February, 1860.

4. DESCRIPTION OF A NEW GENUS OF BOIDÆ DISCOVERED BY MR. BATES ON THE UPPER AMAZON. BY DR. J. E. GRAY.

(Reptilia, Pl. XXIV.)

Fam. BOIDÆ.

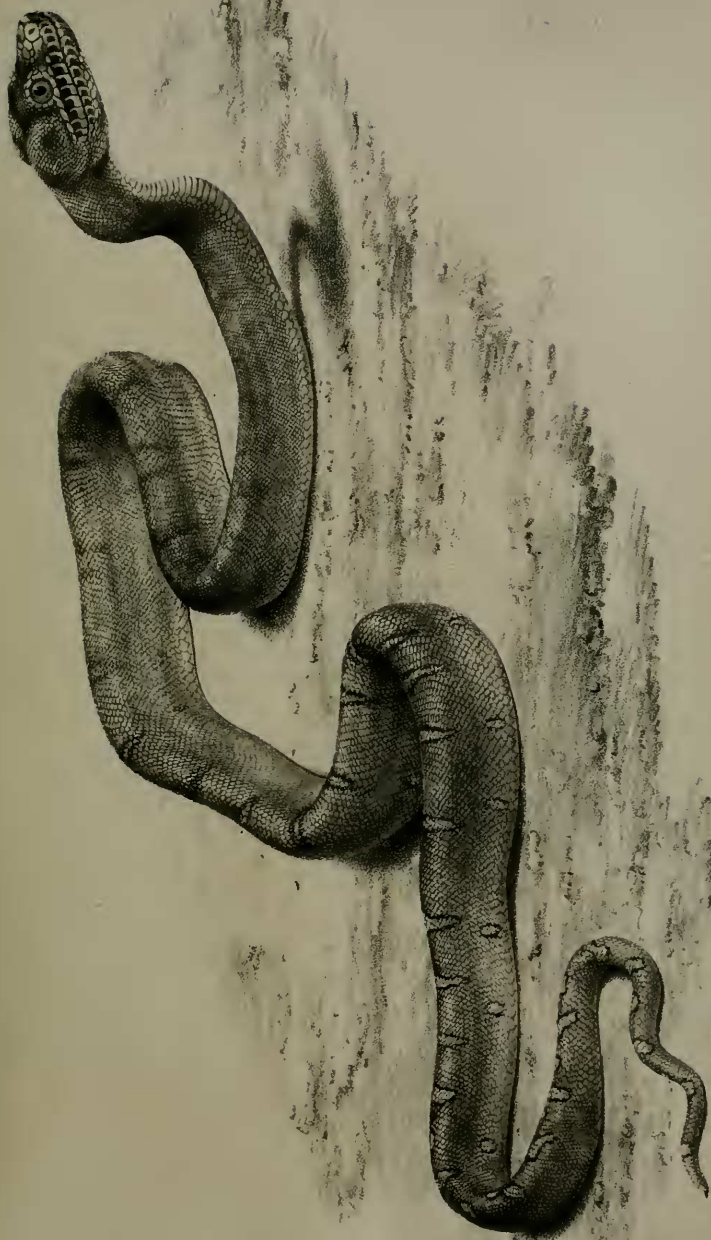
CHRYSENIS, n. g.

Head rather large, rather depressed, covered with scales, the front half covered with small symmetrical shields, as follows:—two pair in an arched series behind the rostral and nasal, and four pair forming a ring round the pair of small central frontal shields; loreal shields two; eyes surrounded by a series of small shields, with a series of four or five small superciliary shields above them; forehead, crown, and cheeks covered with small granular scales; rostral plate with a pit on each edge; upper labial shields low, with a large deep pit on their hinder edge; front lower labial shields simple, high, the hinder short, with a very deep pit on the hinder edge of each of them; nostrils situate between two moderately sized, nearly equal, nasal shields; pupils erect, oblong; body compressed, rounded above and below; tail conical, with a single series of subcaudal plates.

This genus resembles *Epicrates* as to the shields on the muzzle, but differs in the distinctness and form of the pits on the labial shields.

CHRYSENIS BATESII (Pl. XXIV.).

Pale brown, with a series of oblong subangular black-edged pale spots on the hinder part of the back, which become broader and more distinct as they approach the end of the tail, and with a series of distant small roundish black-edged spots on the lower part of the



Chrysenis batesii







G B Sowerby, lith

Vincent Brooks, lith

1. *Cyhdrella splendida* Pfr. 2 *C. arctospira*, Pfr. 3 *C. grandis*, Pfr.
 4. *Helix acmella*, Pfr. 5. *H. mouhoti*, Pfr. 6. *H. æquatoria*, Pfr.
 7. *H. bougainvillei*, Pfr. 8. *H. isis*, Pfr. 9. *H. apollo*, Pfr.





G B Sowerby lith

Vincenz Brocks. imp

1 *Cypræa conpta* P. asc. 2 *Murexica coreensis*. Pse. 3 *Neptunia fraseri* Neata, Esc.
 4 *Bulmus colabrinus* Pfr. 5 *B. fraseri* Pfr. 6 *B. satianus* 7 *B. boucardi* Pfr
 8 *B. stutshburyi* Pfr. 9 *B. schmidburgi*, Pfr. 10 *B. turris* Pfr.

middle of the body, the hinder spot largest and nearest to the edge of the ventral shield.

Hab. Upper Amazon.

5. DESCRIPTIONS OF THIRTY-SIX NEW SPECIES OF LAND-SHELLS FROM MR. H. CUMING'S COLLECTION. BY DR. L. PFEIFFER.

(Mollusca, Pls. L., LI.)

1. *HELIX BOUGAINVILLEI*, Pfr. (Pl. L. fig. 7.) *T. imperforata, globoso-conoidea, solidiuscula, striatula, irregulariter malleata et sulcis nonnullis spiralibus notata, nitida, saturate castanea; spira conoidea, vertice subtili, obtusulo; sutura pallide marginata; anfr. 5 modice convexi, regulariter accrescentes, ultimus rotundatus, periphæria obtuse angulatus; columella lata, oblique substrictè descendens; apertura diagonalis, rotundato-lunaris, intus nitide cærulescens; peristoma albo-callosum, breviter expansum, marginibus callo crassiusculo junctis, dextro regulariter arcuato.*

Diam. maj. $62\frac{1}{2}$, min. 51, alt. 39 mill.

Hab. Bougainville Island.

2. *HELIX APOLLO*, Pfr. (Pl. L. fig. 9.) *T. imperforata, turbinate-depressa, solida, carinata, oblique striata et sub lente minutissime granulata, opaca, lutea, lineis fuscis irregulariter circumdata; spira breviter conoidea, obtusa; anfr. 4 vix convexiusculi, ultimus acute carinatus, antice leviter descendens, basi convexus; apertura diagonalis, rhombéo-lunaris, intus lactea; perist. crassum, album, breviter reflexum, margine basali dilatato, in regione umbilicali adnato, tuberculo elongato prope insertionem prædito.*

Diam. maj. $46\frac{1}{2}$, min. $87\frac{1}{2}$, alt. 22 mill.

Hab. Isle of Cuba.

3. *HELIX ISIS*, Pfr. (Pl. L. fig. 8.) *T. umbilicata, depressa, solidula, striatula, unicolor castanea; spira vix elevata; anfr. 5 vix convexiusculi, sensim accrescentes, ultimus antice subdeflexus, periphæria obsolete angulatus, subtus convexior; apertura obliqua, late lunaris, intus submargaritacea; perist. album, marginibus vix convergentibus, supero subhorizontali, expanso, basali late reflexo, ad insertionem breviter ascendente, umbilicum mediocrem lamina dilatata semioccultante.*

Diam. maj. 45, min. 38, alt. 19 mill.

Hab. Admiralty Islands.

4. *HELIX ÆQUATORIA*, Pfr. (Pl. L. fig. 6.) *T. imperforata, conoideo-depressa, solida, striatula et subtilissime punctato-granulata, subcarinata, saturate castanea; spira convexo-conoidea; anfr. 5, convexiusculi, ultimus antice deflexus, rotundatus, turgidus; apertura perobliqua, sinuato-lunaris; perist.*

fusco-carneum, incrassatum, reflexum, marginibus callo funiculari junctis, supero arcuato, intus calloso (callo ad dextram abrupte desinente), dextro acute unidentato, basali dilatato subappresso, intus medio tuberculo valido compresso munito.

Diam. maj. 38, min. 32, alt. 20 mill.

Hab. Republic of Ecuador (*Mr. Fraser*).

5. *HELIX LIVESAYI*, Pfr. *T. umbilicata, lenticularis, carinata, solidiuscula, capillaceo-striata et striis spiralibus obsolete granulata, sericea, corneo-albida, fasciis castaneis superne 2, basi unica ornata; spira conidea, obtusa; sutura albomarginata; anfr. 5 convexiusculi, ultimus carina acuta, prominente, alba munitus, aperturam versus superne convexior, inde angustatus, subito deflexus, subtus scrobiculatus; apertura fere horizontalis, transverse subrhombico-ovalis; perist. continuum, album, expansum et reflexum, margine basali intus valide unidentatum, umbilicum angustum senitegente.*

Diam. maj. 25, min. 21, alt. 10 mill.

Hab. Philippine Islands.

6. *HELIX CASEUS*, Pfr. *T. umbilicata, depressa, tenuiuscula, irregulariter striata et sub lente minutissime granulata, diaphana, albido-cornea vel pallide rufescens; spira vix elevata; sutura impressa; anfr. 4½ planiusculi, ultimus superne obtuse carinatus, antice deflexus, basi turgidus, circa umbilicum conicum angulatus; apertura diagonalis, subelliptica; perist. album, undique sublata reflexum, marginibus approximatis, basali leviter arcuato, juxta umbilicum dilatato.*

Diam. maj. 18, min. 15, alt. 9 mill.

Hab. Siam.

7. *HELIX ALBICOSTIS*, Pfr. *T. sublata umbilicata, depressa, tenuis, granulato-rugosa et pilis brevibus obsita, cornea, costulis obliquis albidis munita; spira parum elevata; anfr. 4 convexiusculi, ultimus superne subangulatus, supra angulum leviter sulcatus, antice deflexus; apertura perobliqua, ovalis; perist. tenue, marginibus fere contiguis, supero expansiusculo, basali breviter reflexo.*

Diam. maj. 9½, min. 8, alt. 4½ mill.

Hab. Ahmednuggur, India.

8. *HELIX HETÆRA*, Pfr. *T. mediocriter umbilicata, conoideo-depressa, tenuiuscula, oblique irregulariter rugulata et undique minute granulata, pallide lutescens, fasciis 3 rufis, 1 suturali, 2 approximatis periphericis cincta; spira breviter conoidea; anfr. 6 modice convexi, lente accrescentes, ultimus antice vix descendens; apertura obliqua, lunaris, intus submargaritacea; perist. fusco-carneum, breviter reflexum, juxta umbilicum dilatatum.*

Diam. maj. 19, min. 16, alt. 10½ mill.

Hab. Unknown.

9. *HELIX ACMELLA*, Pfr. (Pl. L. fig. 4.) *T. subobtecte perforata, turbinata, solidula, lævigata, nitida, lutea, sursum pallidior; spira regulariter turbinata, vertice minutissimo, acuto; anfr. 6 convexi, ultimus non descendens, basi planior; apertura diagonalis, subquadrangulari-ovalis; perist. album, reflexum, margine dextro subflexuoso, columellari longe adnato, umbilicum canaliformem fingente.*

Diam. maj. 26, min. 22, alt. 25 mill.

Hab. Admiralty Islands.

10. *HELIX LIRATULA*, Pfr. *T. umblicata, trochiformis, tenuiuscula, striata et liris filiformibus subconfertis cincta, diaphana, oleoso-micans, pallide corneo-lutescens; spira conica, apice obtusa; sutura impressa; anfr. 7½ convexiusculi, ultimus angulatus, non descendens, basi lævior, convexior; apertura vix obliqua, subangulato-lunaris; perist. simplex, rectum, margine columellari declivi, juxta umbilicum perangustum subdilatao.*

Diam. maj. 6, min. 5½, alt. 4 mill.

Hab. Ceylon, 6000', under decayed woods (Mr. Thwaites).

11. *HELIX BATESII*, Pfr. *T. umblicata, depressa, tenuis, dense et oblique plicatula, cornea, pliculis albidis; spira convexa, parum elata; anfr. 5 convexiusculi, regulariter accrescentes, ultimus non descendens, subdepressus, basi convexior; umbilicus latus, ¼ diametri subæquans; apertura diagonalis, rotundato-lunaris; perist. simplex, rectum, margine basali arcuato, ad insertionem vix patente.*

Diam. maj. 11, min. 9½, alt. 5 mill.

Hab. Upper Amazon (Mr. Bates).

12. *HELIX TURNERI*, Pfr. *T. anguste et clauso-umblicata, depressa, subdiscoidea, tenuiuscula, conferte plicato-costata, diaphana, nitidula, corneo-lutescens, rufo variiegata et ad suturam distincte maculata; spira vix elevata; sutura denticulata; anfr. 4 convexiusculi, regulariter accrescentes, ultimus, subdepressus, non descendens, loco umbilici lamina vitrea obtectus; apertura fere diagonalis, subtriangulari-lunaris; perist. simplex, rectum, marginibus distantibus, supero antrorsum arcuato, basali medio denticulo albo munito, ad insertionem subdilatao.*

Diam. maj. 7¼, min. 6¼, alt 3 mill.

Hab. New Caledonia (Mr. Turner).

13. *HELIX NAGPORENSIS*, Pfr. *T. latissime umblicata, depressa, tenuiuscula, oblique striata, opaca, carneo-albida; spira medio vix prominula; anfr. 4 convexiusculi, ultimus subtus vix lator, antice deflexus et subtus subconstrictus; apertura perobliqua, transverse ovalis; perist. tenue, marginibus convergentibus, supero recto, basali breviter reflexo.*

Diam. maj. 10, min. 8, alt. 4 mill.

Hab. Nagpore, India (Mr. Jerdon).

14. *HELIX TRISTRAMI*, Pfr. *T. late umbilicata, perdepressa, acute carinata, tenuis, oblique plicato-strata, opaca, sordide albida, corneo obsolete variegata; spira vix elevata; sutura carina leviter exserta marginata; anfr. 5 planiusculi sensim accrescentes, ultimus infra carinam compressam, crenulatum convexus, antice non descendens; apertura obliqua, subsecuriformis; perist. rectum, intus sublabiatum, margine supero antrorsum arcuato.*

Diam. maj. 12, min. $10\frac{1}{2}$, alt. 4 mill.

Hab. Interior of Tunis (Mr. Tristram).

15. *HELIX MENDICARIA*, Pfr. *T. mediocriter umbilicata, conoideo-semiglobosa, solidula, striata et sub lente breviter pilosa, cornea; spira conoidea, vertice subtili nitido; anfr. $4\frac{1}{2}$ turgidi, ultimus vix descendens; apertura parum obliqua, lunato-sub-circularis; perist. simplex, rectum, marginibus convergentibus, columellari vix dilatato, non reflexo.*

Diam. maj. 8, min. 7, alt. $4\frac{2}{3}$ mill.

Hab. Interior of Tunis (Mr. Tristram).

16. *HELIX (NANINA) DÖHRNIANA*, Pfr. *T. perforata, depressa, suborbicularis, tenuiuscula, sublævigata, parum diaphana, lutescenti-grisea; spira breviter conoidea, vertice minuto, obtuso; anfr. $6\frac{1}{2}$ convexiusculi, regulariter accrescentes, ultimus non descendens, supra medium obsolete subangulatus, basi vix convexior, nitidior; apertura fere verticalis, transverse lunaris; perist. simplex, rectum, margine columellari declivi, levissime arcuato, ad perforationem reflexiusculo.*

Diam. maj. $31\frac{1}{2}$, min. 28, alt. 15 mill.

Hab. Siam (Mr. Mouhot).

17. *HELIX (NANINA) MOUHOTI*, Pfr. (Pl. L. fig. 5.) *T. perforata, orbiculato-depressa, tenuiuscula, minute costulato-striata et superne lineis spiralibus impressis decussata, superne pallide cinnamomea, basi nitida, corneo-albida; spira convexa; sutura rufulo-marginata; anfr. 6 convexiusculi, lente accrescentes, ultimus non descendens, subtus convexior; apertura obliqua, lunaris; perist. simplex, rectum, margine columellari leviter arcuato, ad perforationem apertam triangulatim reflexo.*

Diam. maj. 26, min. 23, alt. 14 mill.

Hab. Siam (Mr. Mouhot).

18. *BULIMUS SATURANUS*, Pfr. *T. imperforata, subfusiformi-oblonga, solida, lilaceo-carnea, fusco-flammulata; spira conica, apice acutiusculo, albo; anfr. $6\frac{1}{2}$, summi lævigati, sequentes oblique striati, ultimus lævior, rarioribus nonnullis latis nigricantibus munitus, spira paulo brevior, basi attenuatus; columella crassa, torta, nigra; apertura subverticalis, acuminato-oblonga; perist. nigrum, breviter reflexum, marginibus callo nigro junctis.*

Long. 76, diam. 33 mill.

Hab. Pallatanga, Republic of Ecuador (Mr. Fraser).

19. *BULIMUS FRASERI*, Pfr. (Pl. LI. fig. 5.) *T. imperforata, oblongo-fusiformis, solida, longitudinaliter conferte striata et lineis impressis remotis cincta, sub epidermide virenti-fulva, non nitente, carnea, fasciis interruptis sagittatis vel fulguratim confluentibus atrofuscis ornata; spira conica, apice obtusula; anfr. 6 convexiusculi, ultimus spiram subæquans, basi attenuatus; columella violacea, superne plica valida munita, basi subtorta; apertura obliqua, semielliptica, basi subangulata, intus lactea; perist. roseum, incrassatum et expansum, marginibus callo nitidissimo, lilacino, intrante junctis, columellari angusto, adnato.*

Long. 89, diam. 37 mill.

Hab. Province of Cuenca, republic of Ecuador (Mr. Fraser).

20. *BULIMUS SCHOMBURGKI*, Pfr. (Pl. LI. fig. 9.) *T. subim-perforata, dextrorsa vel sinistrorsa, solida, striatula, sub epidermide viridi, saturatius lineata et radiatim detrita alba; spira conica, vertice acutiusculo, atro-violaceo; anfr. 7 convexiusculi, supremi violaceo-fasciati, ultimus spira brevior, basi attenuatus; columella inflata, substricta, violacea; apertura parum obliqua, truncato-ovalis, intus alba; perist. incrassatum, reflexum, lilaceum, marginibus callo nigro-castaneo junctis, columellari dilatato, fornicatim reflexo, subadnato.*

Long. 48, diam. 23 mill.

Hab. Siam.

21. *BULIMUS STUTCHBURYI*, Pfr. (Pl. LI. fig. 8.) *T. subumbilicata, ovato-fusiformis, tenuiuscula, striata, striis spiralibus subtilissime decussatula, nitida, fulva, lineis saturatioribus radiata; spira subregulariter conica, obtusula; sutura albollosa; anfr. 5 vix convexiusculi, ultimus $\frac{2}{3}$ longitudinis adæquans, antice arcuatim breviter ascendens, basi attenuatus; apertura subauriformis, superne acuminata, sæpe tuberculo parietali nodiformi coarctata, intus margaritacea; columella alba, leviter plicata; perist. carneo-fulvum vel album, margine dextro subregulariter arcuato, expanso et reflexo, columellari dilatato, plano, fere adnato.*

Long. 53, diam. 11 mill.

Hab. Erumanga, New Hebrides.

22. *BULIMUS PYROSTOMUS*, Pfr. *T. profunde rimata, ovato-conica, solidula, striata et striis spiralibus levibus irregulariter rotata, castanea, saturatius strigata; spira conica, acutiuscula; sutura mediocris, simplex; anfr. 5 modice convexi, ultimus spiram paulo superans, medio inflatus; columella substricta; apertura vix obliqua, acuminato-ovalis, intus igneo-fusca, nitida; perist. incrassatum, rectum, igneum, marginibus callo junctis, dextro leviter arcuato, columellari dilatato, libero.*

Long. 42, diam. 19 mill.

Hab. Erumanga, New Hebrides.

23. *BULIMUS TURNERI*, Pfr. (Pl. LI. fig. 10.) *T. imperforata, ovato-acuta, succinoidea, tenuis, striatula, corneo-albida, fasciis olivaceo-fuscis, saturatius strigatis, ornata; spira conica, acutiuscula; anfr. 4 convexiusculi, ultimus $\frac{2}{3}$ longitudinis superans, basi vix angustatus; columella compressa, callosa, filaris; apertura parum obliqua, acuminato-ovalis, intus nitida; perist. simplex, tenue, breviter expansum, margine dextro subflexuoso, columellari adnato.*

Long. 32, diam. 17 mill.

Hab. Erumanga, New Hebrides (Mr. Turner).

24. *BULIMUS COLUBRINUS*, Pfr. (Pl. LI. fig. 4.) *T. umbilicata, fusiformi-oblonga, solidula, striata et sulculis obliquis et spiralibus irregulariter granulata, nitida, fulva, strigis fulminantibus, nigro-castaneis ornata; spira conica, acuminatiuscula, superne nuda, purpurascens; anfr. 5 convexi, ultimus spiram paulo superans, basi saccatus; columella albida, crassa, torta, leviter prominens; apertura subverticalis, oblongo-ovalis, intus ignea, nitidissima; perist. subincrassatum, albido-limbatum, marginibus callo igneo junctis, dextro breviter expanso, columellari dilatato, patente.*

Long. 56, diam. 23 mill.

Hab. New Caledonia (Mr. Turner).

25. *ORTHALICUS BOUCARDI*, Pfr. (Pl. LI. fig. 7.) *T. conico-ovata, solidula, striatula, striis spiralibus sub lente vix conspicuis decussata, opaca, alba, strigis latis fuscis picta et varicibus nigris instructa; spira conica, obtusula; sutura subcrenata, albo-marginata; anfr. $5\frac{1}{2}$ convexiusculi, ultimus spiram æquans; columella pilaris, alba, stricte recedens; apertura obliqua, angulato-ovalis, intus alba, nigro-strigata; perist. rectum, nigro-limbatum, marginibus callo nitido, nigro-castaneo junctis.*

Long. 43, diam. 25-26 mill.

Hab. Mexico (Mr. Boucard).

26. *ACHATINA GREVILLEI*, Pfr. *T. ovato-oblonga, solida, striatula, sub epidermide tenui, fuscule olivaceo-lutescens; spira conica, obtusa; sutura crenulata, late impresso-marginata; anfr. 6-7, supremi minutissime decussati, ultimus spiram superans, sublævigatus, periphæria obsolete angulatus; columella subtorta, purpurea, anguste truncata; apertura parum obliqua, angulato-ovalis, intus margaritaceo-albida; perist. tenue, expansiusculum, marginibus callo purpureo, sursum pallidiore, junctis, dextro repando.*

Long. 105, diam. 55 mill.

Hab. Old Calabar.

27. *OLEACINA INDUSIATA*, Pfr. *T. ovato-oblonga, solidula, angulis longitudinalibus et striis confertis decussata, fulva, epidermide castanea, irregulariter detrита, oblecta; spira conica,*

apice obtusa; sutura subcrenata; anfr. 5½ convexiusculi, ultimus subinflatus, a medio deorsum striis spiralibus destitutus; columella arcuata, basi late truncata; apertura verticalis, acuminato-ovalis, intus margaritacea; perist. rectum, acutum.

Long. 43, diam. 22 mill.

Hab. La Parada, Oajaca, Mexico (Mr. Sallé).

28. *CYLINDRELLA GRANDIS*, Pfr. (Pl. L. fig. 3.) *T. profunde rinata, turrata, late truncata, solidiuscula, oblique filostriata, interstitiis sub lente oblique striatulis, nitidula, fuscorubella; sutura sub-albo-marginata; anfr. superst. 8 convexiusculi, ultimus basi obtuse carinatus, antice vix protractus; columella subplicata; apertura vix obliqua, ovalis, superne subangulata; perist. continuum, breviter expansum, vix reflexiusculum.*

Long. 56, diam. 17 mill.

Hab. Juquila, Mexico (Mr. Boucard).

29. *CYLINDRELLA MEXICANA*, Cuming in litt. *T. sulcato-rinata, turrata, truncata, leviter arcuato-striata et sub lente punctulata, parum nitens, violaceo-fusca; sutura levis, subalbida; anfr. superst. 10 planiusculi, ultimus infra medium obtuse angulatus, antice protractus, dorso carinatus; columella plica compressa, dentiformi munita; apertura vix obliqua, irregulariter ovalis, superne angulata; perist. continuum, undique reflexum, margine dextro incrassato, regulariter arcuato, sinistro sinuoso.*

Long. 55, diam. 15 mill.

β. Minor, anfr. superst. 8. Long. 32½, diam. 10 mill.

Hab. Mexico.

30. *CYLINDRELLA SPLENDIDA*, Pfr. (Pl. L. fig. 1.) *T. rimata, turrata, late truncata, solidula, oblique filoso-costulata, nitidula, carneo-violacea; sutura sub-albo-filosa, crenulata; anfr. superst. 8-8½ modice convexi, ultimus obsolete filo-carinatus, antice breviter solutus; columella subplicata; apertura fere verticalis, oblique ovalis; perist. continuum, album, breviter reflexum, superne subangulatum.*

Long. 46, diam. 15 mill.

Hab. Zacatepec, Mexico (Mr. Boucard).

31. *CYLINDRELLA ARCTOSPIRA*, Pfr. (Pl. L. fig. 2.) *T. rimata, cylindraneo-turrata, late truncata, solidula, confertim subarcuato-costata, subopaca, albida; sutura profunda, subnodulosa; anfr. superst. 18, arcte voluti, convexi, ultimus angustior, filo-carinatus, antrorsum breviter protractus; apertura parvula, obliqua, oblique ovalis; perist. continuum, nitidum, undique breviter reflexum, margine sinistro lateraliter producto.*

Long. 38, diam. 10 mill.

Hab. Juquila, Mexico (Mr. Boucard).

32. *CYLINDRELLA CRETACEA*, Pfr. *T. rimata, oblongo-turrita, cretacea; spira medio ventrosior, apice subtruncata, vel in conum brevem abiens; sutura levis; anfr. 13-14 vix convexiusculi, lævigati, penultimus semiplicatus, ultimus valide costatus, basi compresso-carinatus, antice horizontaliter et breviter protractus; apertura verticalis, subtriangularis; perist. continuum, undique rectangulæ patens.*

Long. 24, diam. 7 mill.

Hab. Mexico.

33. *CLAUSILIA ADAMSIANA*, Pfr. *T. vix rimata, turrito-fusi-formis, solidula, oblique distincte et confertim striata, oleomicans, diaphana, fusco-cornea; spira medio subinflata, apice obtusula; anfr. 8 convexiusculi, ultimus angustus, solutus, deorsum protractus, basi rotundatus; apertura obliqua, pyriformi-subcircularis; lamellæ approximatae, subparallelae, superior producta, acuta, inferiore minor, profundior; lunella distincta, filaris, arcuata; plica palatalis 1 supera, subcolumellaris inconspicua; perist. tenue, fuscum, undique subæqualiter expansum.*

Long. 18-19, diam. $4\frac{1}{3}$ - $4\frac{1}{2}$ mill.

Hab. South America.

34. *CLAUSILIA TRISTRAMI*, Pfr. *T. vix rimata, subfusiformi-turrita, solidula, conferte filoso-striata, opaca, sordide liliacea; spira convexiusculo-turrita, apice cornea, obtusula; sutura levissima, subsimplex; anfr. 12 planiusculi, ultimus basi compresso-gibbosus; apertura verticalis, elliptica, intus carneo-fusca; lamellæ tenues, convergentes; lunella crassa, albida, arcuata; plica palatalis 1 supera, elongata; subcolumellaris inconspicua; perist. album, continuum, breviter reflexum, superne adnatum, margine externo intus subdentato.*

Long. 21, diam. $4\frac{1}{3}$ - $4\frac{1}{2}$ mill.

Hab. Southern slope of the Atlas, Interior of Tunis (*Mr. Tristram*).

35. *CYCLOPHORUS CONFLUENS*, Pfr. *T. late umbilicata, depressa, solida, striis confertis confluentibus et cruciatis superne sculpta, lutea, fasciis castaneis, pallide punctatis, superne confluentibus, subtus distinctis ornata; spira subplana; sutura impressa; anfr. $4\frac{1}{2}$ convexiusculi, ultimus antice ad insertionem cucullatim dilatatus; apertura diagonalis, subcircularis, intus albida; perist. subinterruptum, margine supero elevato, sinuato, dextro expansiusculo, basali reflexiusculo, columellari angusto. Operc. corneum, arcispirum.*

Diam. maj. 25, min. $20\frac{1}{2}$, alt. 9 mill.

Hab. Borneo.

36. *PARTULA TURNERI*, Pfr. *T. profunde rimato-umbilicata, ovato-conica, solidula, sub lente spiraler undulato-striata, nitida, pallide lutescens, strigis saturatioribus radiata; spira conica, acutiuscula; anfr. 5 convexi, ultimus spira vix brevior,*

basi subcompressus; columella simplex, leviter arcuata; apertura parum obliqua, oblonga; perist. album, nitidum, undique latiuscule expansum, marginibus conniventibus, columellari patente.

Long. 22-23, diam. 11-12 mill.

β. Paulo ventrosior, albido et isabellino radiata.

Hab. Erumanga, New Hebrides (Mr. Turner).

6. DESCRIPTIONS OF NEW SPECIES OF MOLLUSCA FROM THE SANDWICH ISLANDS. BY W. HARPER PEASE. (COMMUNICATED BY DR. J. E. GRAY.) (Part II.)*

Genus POLYBRANCHIA.

Body oblongo-ovate, provided with several rows of lobes, commencing at anterior portion of the body, and extending in continuous series around the posterior part; lobes deciduous. Branchiæ imbedded in the lobes. Cephalic tentacles bifurcate.

52. POLYBRANCHIA PELLUCIDA.

Animal.—Oblong-ovate, pellucid. Cephalic tentacles long, cylindrical, slightly tapering to a blunt point, bifurcate from the base, one part curving slightly anteriorly and the other posteriorly, grooved (?), on the inside, opposite each other. Labial tentacles of same shape, shorter. The body furnished with four rows of lobes, commencing opposite the cephalic tentacles, and passing in continuous series around hinder part of the body, leaving a narrow space on dorsal region bare; lobes deciduous, pellucid, of a jelly-like consistency, close, disposed alternately, those on the edge of the mantle smallest, increasing in size as they ascend over the sides and back of the body, cylindrical at the base, spreading out in a fan-like shape, overlapping each other. Branchiæ imbedded in the substance of the lobes, ramose; the stem commencing at the base of the lobes and branching out, following their form, not extending to the edges of the lobes. Foot same size as the mantle.

This singular species was very active, when handled casting off its upper lobes; and when plunged in alcohol instantly detaching the whole.

53. VEXILLA FUSCO-NIGRA.

Shell abbreviately fusiform, ventricose, solid; spire moderately produced, acute, and less than half the length of the shell; whorls six, convex, furnished with close transverse granular ribs; suture impressed; body-whorl large, ventricose, and marked with coarse, remote, revolving impressed lines, and fine longitudinal striæ and wrinkles; canal short, slightly recurved; aperture oblong-ovate; outer

* See P. Z. S. for January 11, *antea*, p. 18.

lip thick, somewhat dilated, and furnished with six or seven intramarginal tubercular teeth, sinuated at its junction with body-whorl; columella-lip smooth, flattened, slightly callous above. Colour black or brownish-black, impressed lines on body-whorl light chocolate-colour; lips purplish-brown; teeth white or bluish.

Animal.—Foot oblong, truncated in front, rounded behind. Tentacles cylindrically tapering. Eyes lateral and sessile, at about two-thirds of the length of the tentacles. Siphon long. Colour dark greenish-slate, and closely punctured with black and white. Tentacles zoned with brown, tips white.

54. *ENGINA COSTATA*.

Shell solid, fusiformly ovate, attenuated at both ends; spire acute, half the length of the shell; whorls seven or eight, convex, longitudinally ribbed; ribs coarse, rounded, and crossed with numerous transverse spiral ridges, which become somewhat nodulous on the ribs; interstices between the transverse ridges cancellated with raised striæ; sutural lines undulated; canal produced and slightly recurved; aperture narrow, widest above; outer lip much thickened externally; edge sharp, furnished with five or six intramarginal tubercular teeth; columella-lip with a thin callosity, and transversely ribbed on the middle. Colour yellowish-brown; aperture white.

55. *ENGINA MONILIFERA*.

Shell solid, ovate, slightly attenuated at both ends; spire acute, half the length of the shell; whorls six or seven, convexly angulated, ribbed longitudinally; ribs coarse, rounded, crossed with spiral transverse granular ridges, two on each whorl of the spire; suture faintly defined, bordered by a single row of golden-coloured granules; body-whorl sculptured same as the spire; canal short, slightly recurved; aperture narrow, oblong; outer lip nearly straight, thickened externally, and provided with four internal teeth, and three small tubercular teeth on the lower half of columella-lip. Colour white, with a broad, broken, purplish transverse band on the body-whorl, and a narrow one at the margin of the sutures.

56. *ENGINA ALBOCINCTA*.

Shell ovate, brownish red, with a white transverse band on body-whorl; apex acute, longitudinally ribbed, transversely nodosely ridged, finely striated between the ridges; aperture narrow; outer lip denticulated within; canal slightly produced and recurved.

57. *HINDSIA ANGICOSTATA*.

Shell ovate; spire blunt; whorls rounded, longitudinally ribbed, and transversely nodosely ridged; interstices finely striated; aperture oval; outer lip thickened externally; edge of lip sharp, ridged internally; columella-lip arched, slightly callous, wrinkled striæ on upper part; canal slightly produced and recurved. Colour light brown, longitudinal ribs darker, white band on body-whorl.

✓ 58. *BORSONIA LUTEA*.

Shell fusiform, solid, shining; whorls convex, angulated at the sutures, longitudinally regularly and closely ribbed, crossed by regular transverse ridges; aperture narrow; outer lip thick, denticulated within; canal produced and recurved. Colour light yellowish-brown.

1962 ✓ 59. *BORSONIA CRASSICOSTATA*.

Shell fusiform, shining, longitudinally coarsely ribbed, crossed by transverse raised striæ; whorls rounded; sutures well impressed; aperture narrow; outer lip denticulated within; canal short, slightly recurved. Colour light yellow.

✓ 60. *BORSONIA BIFASCIATA*.

Shell fusiform, shining, longitudinally coarsely ribbed, crossed by coarse raised striæ; whorls rounded at the sutures; outer lip thick, incurved, serrated on the edges at the termination of the transverse striæ; canal short and slightly recurved. Colour white; two light brown bands on each whorl.

✓ 61. *CLATHURELLA BALTEATA*.

62 Shell fusiformly ovate, longitudinally coarsely ribbed; ribs disposed alternately on the whorls, crossed by transverse raised striæ; whorls roundly angulated at the sutures; outer lip incurved, serrated on its edge by the termination of the transverse striæ. Colour light brown, ornamented by one white band on centre of each whorl.

62. *BORSONIA NEBULOSA*.

Shell fusiformly oblong, finely ribbed longitudinally, striated transversely, forming regular granules; sutures slightly angulated and smooth; aperture oval; outer lip slightly incurved and serrated on its edges, striated internally; canal slightly produced and recurved. Colour white, marked with irregular, interrupted, longitudinal brown lines.

✓ 63. *CLATHURELLA PRODUCTA*.

Shell fusiformly elongate, longitudinally ribbed, finely striated transversely; whorls convex; suture impressed; aperture oval; outer lip denticulated; canal short. Colour yellowish-brown; a darker band of same colour on each whorl.

✓ 64. *CLATHURELLA BRUNNEA*.

962 Shell fusiformly elongate, ornamented with transverse granular ribs, and fine longitudinal raised striæ; whorls slightly convex; aperture elongate-oval; canal short. Colour dark brown.

✓ 65. *CLATHURELLA CYLINDRICA*.

1962 Shell cylindrically fusiform, shining; apex blunt, longitudinally strongly ribbed, transversely ornamented with raised striæ, forming

deep cancellations; whorls slightly convex, angulated at sutures aperture oval. Colour white.

66. *CLATHURELLA EXILIS*.

1962 ✓
Shell elongately fusiform, ornamented with transverse ribs and longitudinal striæ; whorls slightly convex; aperture oblong-oval; canal short, slightly recurved. Colour white, with irregular yellowish-brown longitudinal spots on upper whorls, and two bands of same colour on body-whorl.

67. *CLATHURELLA ELEGANS*.

✓
Shell elongate-pyramidal, yellowish, with chestnut-brown spots on the centre of varices of each whorl; remote varices extending whole length of the shell, transversely granosely ribbed, interstices finely granulated; whorls convex, rounded; suture well impressed; aperture wide, ovate; outer lip acute; canal produced and recurved.

68. *CLATHURELLA HARPA*.

✓
Shell pyramidally ovate; body-whorl ventricose, longitudinally strongly ribbed; ribs rather distant; interstices finely striated longitudinally; whorls roundly angulated at the sutures; outer lip acute, somewhat dilated; aperture large, oval; columella-lip striated obliquely on lower part; canal short, slightly recurved. Colour white.

69. *CLATHURELLA PULCHELLA*.

1962 ✓
Shell fusiform, acuminate, shining, longitudinally ribbed, crossed by transverse raised striæ; whorls rounded; suture impressed; aperture oval; canal slightly produced and recurved; pinkish-white, irregular pink spots over the surface; apex red.

70. *CLATHURELLA PAUCICOSTATA*.

✓
Shell elongately fusiform, thin, shining; whorls ornamented with varices, remote, and fine transverse raised striæ; outer lip thin; aperture elongate-oval; canal long and slightly recurved. Colour white, with irregular orange-brown spots or blotches; varices white.

71. *CLATHURELLA FUSCOMACULATA*.

✓
Shell acuminate turreted, ornamented with transverse raised striæ, slightly granulose; outer lip thin; aperture oval; canal straight and slightly produced. Colour white, with irregular longitudinal bands of reddish-brown.

72. *CLATHURELLA BUCCINOIDES*.

✓
Shell pyramidally ovate, shining; whorls rounded, longitudinally ribbed, crossed by transverse striæ; aperture ovate; outer lip serrated at edge; canal short, slightly recurved. Colour yellowish white.

73. *NASSA MICROSTOMA*.

Shell oblong-ovate, rather solid, white, sparingly stained with ferruginous brown; spire rather long, acute; whorls six or seven, strongly convex, ribbed longitudinally, ribs stout, close set, rounded and crossed with numerous close spiral ridges; aperture small, rounded, lyrated within; outer lip thick; columella arched, transversely wrinkled above, one or two faint spiral plicæ near the base.

74. *DRILLIA NODIFERA*.

Shell elongate-ovate, smooth, plicately noded longitudinally; outer lip thin, acute; canal short; nodules white, interstices reddish brown, base white.

✓ 75. *OLIVA SANDWICENSIS*.

Shell oblong-ovate; spire somewhat acuminate; columella-plaits few in number, extending two-thirds of the length of the aperture; outer lip slightly thickened internally. Colour minutely freckled and blotched with white, reddish brown and cinereous, the lower half of the body-whorl being much the darkest; apex white, encircled beneath the suture with a light fawn-coloured or whitish band, blotched with dark reddish brown or cinereous; aperture white, two broad, equidistant dark brown bands on the interior, reaching to the thickened portion of the outer lip.

B 11
1962
76. *BLAUNERIA GRACILIS*.

Shell elongate fusiform, thin, corneous, fragile, semipellucid. Whorls seven or eight, flatly convex, finely longitudinally obliquely striated; suture faintly impressed, outer lip thin; columella-lip flexuous; one oblique plait near the centre, truncated; aperture oblong-ovate, contracted posteriorly.

Animal.—Small, subpellucid, uncoloured, excepting a yellow tinge around the mouth. Tentacles short, stout, approximating at their bases. Eyes conspicuous, black, immersed at the posterior bases of the tentacles. Head deep, narrow above, and much dilated below. Mouth a simple longitudinal slit. Foot small, short, bluntly rounded behind, truncated in front, divided by a transverse groove; posterior portion slightly the longest.

77. *TURRICULA BELLA*.

Shell fusiform; spire acuminate; whorls convexly angulated; sutures rather deep, longitudinally ribbed, ribs somewhat angular, irregular in size and finely striated longitudinally, also the interstices, and crossed by numerous transverse striæ; base slightly recurved; columella four-plaited, a callosity posteriorly; aperture lyrated within. Colour light chestnut brown, with broad lighter or whitish bands, and spotted remotely and irregularly with reddish brown; base white.

78. *TURRICULA APPROXIMATA*.

Shell ovate, turreted; whorls convexly angulated at the sutures, longitudinally ribbed, crossed by impressed striæ; interstices punctured; aperture striated within; columella four-plaited. Colour white, banded and blotched irregularly with chestnut brown.

79. *MITRA PALLIDA*.

Shell fusiform; spire elongate, slender, pointed, surface latticed by fine longitudinal and transverse striæ; columella five-plaited. Colour white or light yellow.

80. *MITRA PUDICA*.

Shell ovate; spire short, transversely ribbed; interstices finely cancellated, longitudinally remotely ribbed, white, variegated with smoky brown; columella four-plaited.

81. *MITRA ERICEA*.

Shell fusiformly ovate, attenuated at both ends, transversely ribbed; body-whorl crossed by longitudinal striæ, rather remote. Colour light brown; apex white; columella three-plaited.

82. *STRIGATELLA PICEA*.

Shell small, ovate, longitudinally ribbed, row of granules bordering suture, transversely finely striated. Colour dark brown; whorls encircled by a single narrow light-brown belt; columella five-plaited; aperture purplish white.

83. *STRIGATELLA FUSCESCENS*.

Shell ovate, thick, finely crenulated at borders of suture, transversely faintly grooved, the grooves becoming more distinct towards the base; columella five-plaited. Colour brown; aperture white.

84. *MELAMPUS (TRALIA) SEMIPLICATA*.

Shell elongate-ovate, dark reddish brown, with an olive shade; apex acute; whorls eight or nine; spire and upper part of body-whorl plicate; rough striæ of growth on body-whorl; aperture narrow, acute above; two transverse folds on base of columella; one plait on the inner lip below the centre, and three on outer lip.

85. *PEDIPIES SANDWICENSIS*.

Shell ovate globose, brownish yellow; aperture white, solid, ribbed transversely, ribs rather remote and irregular; whorls four, convexly angulated at the sutures, the last whorl ventricose; outer lip flexuous, thickened in the middle; aperture subquadrate; columella-lip flat, furnished with three plaits, of which the upper is the largest, and slightly oblique; remaining two transverse, lower one the smaller.

86. *ERATO SANDWICENSIS*.

Shell pyriform, smooth, shining, white, with a broad band of yel-

lowish brown on lower part of the body-whorl, and a narrower one of same colour bordering the sutures beneath; columella and outer lip white; apex and base tinged with pink; aperture narrow, contracted; outer lip denticulated its whole length; inner lip about one-half its length.

87. MARGINELLA ORYZA.

Shell small, subpyriform, thin, transparent, white; aperture narrow; outer lip denticulate; inner lip four-plaited, finely striated longitudinally.

88. MARGINELLA SANDWICENSIS.

Shell minute, subconoidal, thin, transparent white; aperture narrow, contracted; apex obtuse; inner lip three-plaited.

89. CYTHARA GARRETTII.

Shell fusiform, attenuated at both ends, longitudinally ribbed, ribs becoming nearly obsolete on body-whorl, transversely finely and closely striated, a deeply impressed line encircling the whorls just beneath the sutures. Colour white, variegated with reddish brown, which colour extends over the greater part of the body-whorl.

90. CYTHARA VARIA.

Shell fusiform, minute, attenuated at both ends, longitudinally ribbed. Colour variable, light brown with transverse lines of a darker colour encircling the whorls, or with longitudinal undulating lines, or ornamented with oblong square brown spots, or light brown dotted with white.

91. CYTHARA PUSILLA.

Shell oval, white, stained with purplish brown; whorls longitudinally ribbed, ribs somewhat oblique, striated transversely, whorls angulated at the sutures; outer and inner lip denticulated; spire short, outer lip thickened.

92. DAPHNELLA BELLA.

Shell fusiform; whorls angulated at the sutures, nodosely ribbed; body-whorl ribbed longitudinally somewhat obliquely, transversely finely striated. Colour yellowish brown, nodules white, ornamented with a row of dark brown spots between the interstices, encircling the whorls, and one following the sutures.

93. DAPHNELLA INTERRUPTA.

Shell elongate fusiform, thin, yellowish white, ornamented with transverse, interrupted, chestnut-brown lines transversely marked with interrupted granulose raised lines, finely striated longitudinally; aperture rather long; sinus deep.

94. *DAPHNELLA SANDWICENSIS*.

Shell ovate; spire short, smooth or obsoletely striated, slightly granulose at the sutures; aperture long, open, base subtruncate, white, stained with chestnut-brown; body-whorl ornamented with reticulated lines of same colour; apex reddish brown.

95. *DAPHNELLA MACULOSA*.

Shell elongate fusiform, transversely and longitudinally finely striated, giving the surface a granulose appearance; aperture long; base subtruncate. Colour white, ornamented with broad, interrupted longitudinal lines of a reddish brown.

7. CONTRIBUTIONS TO A KNOWLEDGE OF THE REPTILES OF THE HIMALAYA MOUNTAINS. BY DR. ALBERT GÜNTHER.

(Reptilia, Plates XXV., XXVI., XXVII., XXVIII.)

The following paper has been suggested by a collection of Reptiles made by MM. Hermann, Adolphe and Robert von Schlagintweit during their scientific mission to India and High Asia from 1854 to 1858, and submitted by those gentlemen to my examination. The value of the collection is highly increased by very accurate statements of the localities and altitudes at which each specimen was obtained, and which were kindly communicated to me for this paper. This is the first information of the kind we have received on the Reptiles of the Himalayas, and it is of the utmost importance, since it not only augments our knowledge of the vertical distribution of these animals, but embraces a larger number of facts, respecting the altitudes at which species of reptiles are known to exist in the different mountainous systems of the globe, than the whole of our previous information on the subject. I, however, have thought it advisable to take this opportunity of giving at once a complete list of the Reptiles known to inhabit the Himalayas, and to collect also those notes referring to them, which, if deficient in statements of the altitudes, yet give much information as to their horizontal distribution. In doing this, I have gathered my information from British collections and publications only, not finding the slightest data on the subject in foreign works treating of the physical history of these mountains. One of the chief resources for this list has been a collection made by Dr. J. Hooker in Sikkim and Khasia, partly described by Dr. J. E. Gray (*Ann. and Mag. Nat. Hist.* 1853, xii. p. 386), and partly by myself in my Catalogue of Colubrine Snakes. Finding a great congruity between the species obtained in the Khasia Hills and those collected by MM. von Schlagintweit at considerable altitudes in the Himalayas, I have not hesitated to admit the former into the list, although every other information on their habitat is wanting. But I have not admitted the numerous species mentioned by Dr. Cantor and others as being found in Assam; they were evidently col-

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A. BARYCEPHALUS SYKESII, Gthr. B. TIARIS ELLIOTTI, Gthr
C. TILIIQUA SCHLEGELII, Gthr.

W West, Imp.



lected in the plains of this country; and even those said to have been obtained from hills (their height is not stated) belong entirely to the lowland fauna. On the Reptiles inhabiting High Assam we have no information whatever. Another contribution to the Himalaya fauna has been given by Mr. Blyth in Journ. As. Soc. Beng. vols. xxii. and xxiii.*, containing an account of several Reptiles from Nepal and Sikkim. Some of the latter have been found by Capt. Sherwill at Darjeeling, which locality is, as we know, 7100 feet above the level of the sea. Finally, Mr. Hodgson has sent numerous specimens from Nepal to the British Museum, but it is much to be regretted that he has not paid the same attention to their altitudinal distribution as he has done in the higher classes of Vertebrata; and I have been obliged to make a cautious selection from among the species sent by him, in order not to admit those which, although from Nepal, belong exclusively to the lowland fauna.

The collection of Messrs. von Schlagintweit is composed of 118 specimens, nearly all of which are in the best state of preservation; they have been transferred to the British Museum, together with the large Collection of the East India Company. A few only were collected in Ceylon, at Calcutta and Kurrachee, and are not mentioned in this paper, with the exception of one Snake from the latter place, which, with no other difference than a few very slight variations in the small additional shields of the head, so completely agrees with *Zamenis cliffordii* as to leave no doubt as to the identity of both. This species therefore appears to be found along all the coasts of North Africa through Egypt, and to extend to the banks of the Indus!

I shall first give the descriptions of the new species †.

I. Descriptions of the New Species.

BARYCEPHALUS ‡, Gthr.

Head, body, and tail rather depressed, the latter tapering; tympanum circular; throat with a deep transverse fold; præanal or femoral pores none; head covered above with very small shields; back with very small square, keeled, and imbricate scales; sides granular, with scattered spines; belly with small square plates in transverse series; extremities and tail with oblique transverse series of strongly keeled scales; teeth laterally compressed, triangular, without lobes.

This genus is to be referred to the family of *Agamidæ*.

* I am very sorry not to have had earlier knowledge of this paper, which contains valuable detailed descriptions of numerous species. So much cannot be said of a herpetological paper by another author in the twenty-second volume of the Asiatic Journal, which, in its present shape, is of no value whatever to science.

† The discoverers of these Reptiles have requested me to dedicate the new species to gentlemen who have taken a particular interest in their travels.

‡ From *βαρυκέφαλος*, with depressed head.

BARYCEPHALUS SYKESII, Gthr. (Pl. XXV. fig. A.)

Diagnosis.—Temple, sides of the throat and trunk, and the posterior part of the hind legs with scattered spines; a transverse series in the middle of the belly contains about fifty shields. Upper parts dusky, variegated and speckled with black, the lower parts whitish; throat reticulated with greenish.

The following specimens are in the Collection:—

- a. Adult. Simla, Himalaya; 2500 feet above level of the sea.
- b. Half-grown. Simla, Himalaya; 7200 feet above level of sea.
- c. Adult. Gärhvál, Himalaya; 8200 feet above level of the sea.
- d. Young. Balti, Tibet; 6100 feet above level of the sea.
- e. Half-grown. Ladak, Tibet; 15,250 feet above level of the sea.

Description.—The *head* is rather depressed and flat, with the canthus rostralis distinct, and with the snout of moderate length; it is covered above with numerous very small shields; there is a shield in the middle of the occipital region, which is rather larger than the others, but it is not present in all the specimens; a series of slightly keeled shields runs along the median line of the snout. The width of the space between the bony orbits is one-half that of the upper eyelid. The rostral shield is low, twice as broad as high; there are twelve upper labials. The nostril is in a single shield, which is situated between the canthus rostralis and the first upper labial. The loreal region is concave, and covered with minute shields. The median shield of the lower jaw is subpentagonal, and longer than broad; the lower labials are eleven in number, and higher than those of the upper lip; several other series of very small shields run parallel to that of the labials, the remainder of the throat being covered with minute granules. A low spiny crest proceeds from below the eye to the tympanum, the anterior circumference of which also is provided with spinous scales; several other groups of spines are between the tympanum and the fold of the throat, and on the sides of the neck, which is exceedingly finely granulated.

The *trunk* is depressed and flattened; the back is covered with small imbricate scales, each being provided with a strong keel; they gradually pass into the granulations of the sides, which, however, are intermixed with small scattered spines. The belly is covered with smooth square shields, arranged in transverse series; they are so small that I count fifty of them in one of the series in the middle of the belly.

The *tail* is considerably depressed at the base, assumes gradually a more conical form, and tapers posteriorly into a fine point; it is verticillated. The scales form rings, are quadrangular and strongly keeled, each keel terminating posteriorly in a small spine. The scales which are the largest and provided with the strongest keels are those on the anterior and superior parts of the extremities; the scales round the joints and on the posterior and inferior sides are smaller, and smooth. The fore leg reaches to the loin, if laid backwards; the third and fourth fingers are the longest, and equal in

length; the second and fifth are shorter, and equal each other in length; the first is the shortest. All the fingers and toes are slightly compressed and armed with strong claws. The hind leg reaches to the end of the snout, if laid forwards; the fourth toe is the longest, somewhat longer than the third and fifth, which are nearly equal; the second is considerably shorter, and the first is the shortest.

The ground-colour of the upper parts is dusky-brown or greenish-brown, the back being irregularly speckled with black; two of the specimens exhibit also some lighter, indistinct spots; the lower parts are whitish, the throat is reticulated with greenish; one specimen has the breast dotted with bluish-green.

	inches.	lines.
Total length	11	0
Length of the head (to the hinder edge of the tympanum)	1	0½
Greatest width of the head	0	9
Length of the trunk (to the anus)	3	0
— of the tail	7	0
— of the humerus	0	11
— of the fore-arm	0	8½
— of the fourth finger	0	7
— of the first finger	0	4½
— of the entire fore extremity	2	6
— of the femur	1	1
— of the lower leg	1	0
— of the foot	1	3
— of the fourth toe	0	10
— of the fifth toe	0	8
— of the first toe	0	4½
— of the entire hinder extremity	3	4

This genus has a remarkable resemblance in many points to *Microphractus** (*Hopluridæ*), from the Andes; but there is a generic difference in the dentition. The species is named in honour of Colonel Sykes.

TIARIS ELLIOTTI, Gthr. (Pl. XXV. fig. B.)

Diagnosis.—Crest of the nape and of the back exceedingly low, formed by a series of larger keeled scales; neither a longitudinal nor a transverse gular fold; a very small detached tubercle behind the margin of the upper eyelid, which is not armed; a series of tubercles from above the tympanum, bent towards the nuchal crest. Above brownish, uniform or varied with darker.

Hab. Sikkim, Himalaya, One adult female specimen procured in an altitude of 9200 feet is in the Collection. Three other specimens, from the same country, have been presented to the British Museum by Dr. J. Hooker.

Description.—The head is rather high, with a sharp canthus rostralis, short snout, and convex upper eyelids; it is covered with

* Cfr. *Proceed. Zool. Soc.* 1859, p. 90.

numerous slightly keeled scales, and one situated in the middle of the occiput appears to be rather larger than the others; the width of the space between the bony orbits is very narrow; the canthus rostralis and the margin of the upper eyelid form one continuous sharp edge. The rostral shield is very low, like the upper labials, which are five in number. The nostril is very small, in a single shield, which is situated between the canthus rostralis and the first labial. The loreal region is a little concave, and covered with small irregular shields. The median shield of the lower jaw is subtriangular and longer than broad; there are five lower labials on each side, the remainder of the throat being covered with imbricate and keeled scales. There is a small conical tubercle behind, and detached from the orbital edge; another similar tubercle is on each side of the throat below the tympanum; a series of tubercles proceeds from above the tympanum, and is bent inwards to the nuchal ridge. The tympanum itself is small and subcircular. There is no fold across the throat, but a transverse band of rather smaller scales.

The *trunk* is rounded, in the female depressed; a series of larger, keeled scales runs along the middle of the neck and back to the base of the tail, and forms a sort of dorsal crest; the back and the sides are covered with small scales of unequal size and quite irregularly arranged; they are intermixed with scattered, considerably larger scales, and these are distinctly keeled. The scales of the belly are imbricate, rhombic, more equal in size and more regularly arranged and slightly keeled; the præanal scales are like those of the belly; præanal pores none.

The *tail* is very long, slender, rounded at the base, and covered on all sides with rhombic, keeled, imbricate scales; it is not verticillated.

The upper parts of the extremities are covered with very large and strongly keeled scales; some scales on the hinder side of the femur have even two or three keels. The fore leg reaches to the loin, if laid backwards; the hind leg, if laid forwards, nearly to the end of the snout. The fingers and toes are armed with strong claws, and have the usual relative length. There are no femoral pores.

The ground-colour of the upper parts is brownish; uniform in the females, variegated with darker in the males. Some of the large scales of the back appear to have been iridescent during life. The lower parts are uniform dull-yellowish.

	inches.	lines.
Total length	6	7½
Length of the head (to the tympanum)	0	6½
Greatest width of the head	0	5
Length of the trunk (to the anus)	1	7
——— of the tail	4	6
——— of the humerus	0	4
——— of the fore-arm	0	4
——— of the fourth finger	0	4⅓
——— of the first finger	0	1½
——— of the entire fore extremity	1	0

	inches.	lines.
Length of the femur	0	6 $\frac{1}{3}$
— of the lower leg	0	5 $\frac{1}{3}$
— of the foot	0	3
— of the fourth toe	0	6
— of the fifth toe	0	4
— of the first toe	0	2
— of the entire hinder extremity	1	9

The species is dedicated to Walter Elliott, Esq., Member of the Council of Madras.

TILQUA SCHLEGELII, Gthr. (Pl. XXV. fig. C.)

Diagnosis.—Uniform black. Scales rather large, smooth, striated, not keeled, in four or five longitudinal series on the back. Four præanal shields, the two middle ones being the larger; a series of broad shields along the lower side of the tail. Ear-opening small, deep, round, with smooth margins.

Hab. Sikkim. One specimen, apparently not full-grown, has been found at an altitude of 8930 feet.

Description.—This species does not differ in general habit from the other *Tiliquæ*. Its snout is of moderate extent, and not produced. The series of shields covering the upper surface of the head is as follows:—1, the rostral shield is rounded; 2, the anterior frontal is single, subquadrangular, broader than long; 3, a pair of posterior frontals, which are not in contact with each other; 4, the vertical shield is quadrangular, with the anterior angle obtuse and the posterior very acute, and with the two anterior sides much shorter than the two posterior ones; the shield reaches backwards to the level of the pupil. 5. There are five superciliary shields on each side of the vertical; 6, five occipital shields, viz. an anterior pair, a single central one, and a posterior pair; the anterior pair form a suture with the vertical, separating it from the central occipital. The latter is quadrangular, similar in form to the vertical, but much shorter, so that the anterior pair of its sides are not much longer than the posterior. The anterior pair of the occipitals form together with the central shield a perfect square. The posterior pair is obliquely situated, subelliptical in form, and larger than any of the other occipitals; the inner side of those shields is in contact with an anterior and with the central occipital.

The nostril is in a single shield between the first labial and the anterior frontal; there are three shields between nostril and eye, covering the loreal region. Seven upper labials, the fifth of which is the largest, and extending upwards to the eyelid. The posterior part of the orbit is formed by three small shields, behind which are some large temporals. The median lower labial is broader than long, truncated posteriorly, forming a straight transverse suture with another single broad shield situated immediately behind the median labial. There are five narrow lower labials, with an interior series of five other much larger shields; the remainder of the throat

is covered with scales like the belly. The opening of the ear is small, round, and deep.

The scales are finely striated, without keels, and rather large on the back, whilst those on the belly are of moderate size, and those on the sides rather small. I count in the middle of the trunk five longitudinal series on the back, seven on each side, and six on the belly; so that that part of the body is surrounded by twenty-five series. There are four præanal shields, the middle pair being considerably the largest.

The greater portion of the tail is broken off; a band of broad shields begins to cover its lower side at a short distance from its origin; the tail is surrounded by eight series of scales, which exhibit no keel whatever. The tail itself is rounded, not compressed, and tapering.

The extremities are covered with scales similar to those of the body; the fore extremity reaches to the anterior margin of the eye, if laid forwards; the third and fourth fingers are the longest, and nearly equal; then follow the second, the fifth and the first. The length of the hinder extremity is rather more than one-half that of the trunk; the fourth toe is the longest; the third and fifth are equal in length, and the first is shorter than the second. All the fingers and toes are slightly compressed and well armed with claws.

The upper parts are uniform black, the lower ones blackish. Palatine teeth none.

	inches.	lines.
Total length	4	4
Length of the head (to the tympanum)	0	4½
Greatest width of the head	0	3
Length of the trunk (to the vent)	1	6
——— of the tail (restored)	2	6
——— of the fore extremity	0	6
——— of the fourth finger	0	1½
——— of the hinder extremity	0	9½
——— of the fourth toe	0	3

The species is called after Prof. H. Schlegel of Leyden.

ABLABES RAPPPI, Gthr. (Pl. XXVI. fig. B.)

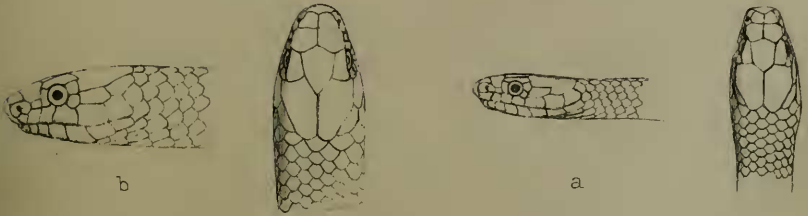
Diagnosis.—Scales in fifteen rows; six upper labials, the third and fourth of which enter the orbit: Above uniform blackish; below yellowish.

Hab. Sikkim (5340 feet above the level of the sea). Another specimen, sent by Mr. Hodgson from Nepal, and rather injured, is in the Collection of the British Museum.

Description.—The head is of moderate length, and continuous with the neck; the body and tail are rather slender. The rostral is a little broader than high, rounded superiorly, and reaching to the upper surface of the head. The anterior frontals are smaller than the posterior ones, which are bent downwards to the side of the head. The vertical is not twice as long as broad, and has the posterior



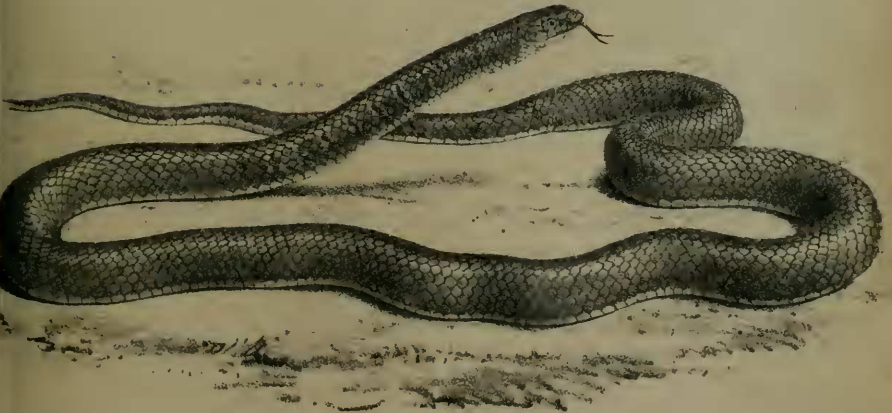
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b

a

B



A a. ABLABES OWENII, Gthr
B b. _____ RAPII, Gthr.



angle pointed in the specimen from Sikkim, and obtuse in those from Nepal. The occipitals are of moderate extent. The nostril is between two shields; one loreal, one anterior and two posterior oculars; six upper labials, the third and fourth of which enter the orbit; two temporals, one behind the other, the anterior elongate; seven lower labials, those of the first pair forming a suture behind the triangular median shield; two pairs of chin-shields, those of the anterior pair being the largest.

The scales are rhombic, perfectly smooth, in fifteen rows in the middle of the body; anals and subcaudals bifid.

Sikkim specimen: ventrals 191, subcaudals 60.

Nepalese specimen: ventrals 198.

The colour has been described above. The teeth are small, equal, smooth. The specimen from Sikkim is an adult female with mature eggs in the oviduct; its total length is $16\frac{1}{2}$ inches, the length of the head $4\frac{1}{2}$ lines, that of the tail $3\frac{1}{2}$ inches.

The species is called after Prof. von Rapp, of Tübingen.

ABLABES OWENII, Gthr. (Pl. XXVI. fig. A.)

Diagnosis.—Scales in fifteen rows; six upper labials, the third and fourth of which enter the orbit. Greyish-brown, with a broad black collar and many black transverse spots on the anterior part of the body.

Hab. Sikkim, Himalaya (10,200 feet above the level of the sea).

Description.—The head is of moderate length, flat and depressed, not distinct from the neck; the snout is rather broad; the rostral much broader than high, and not extending backwards on the upper surface of the head. The frontals are broader than long, the anterior ones half the size of the posterior, which are bent downwards on the side of the head. The vertical is pentagonal, with the anterior margin convex and equal in length to the lateral one, and with the posterior angle pointed. The occipitals are of moderate extent and rounded posteriorly. The nostril is between two shields. One loreal, one anterior, and two posterior oculars; six upper labials. There are two narrow temporal shields of nearly equal length, one behind the other. Six lower labials, those of the first pair forming a suture together behind the median shield, which is triangular and longer than broad. The two pairs of chin-shields are of equal size. The trunk is rounded, of moderate length, surrounded by fifteen rows of rhombic, perfectly smooth scales. Ventrals 200, anal bifid; subcaudals 59. The upper parts are greyish-brown; there is a broad black collar immediately behind the occipitals, and not extending on to the abdominal side; the anterior portion of the trunk exhibits many narrow and rather irregular black transverse spots, gradually disappearing towards the middle of the length of the body. The lower parts are uniform yellowish.

	inches.	lines.
Total length	7	9
Length of the head	0	$3\frac{1}{2}$
— of the tail	1	4

This species is called in honour of Prof. Richard Owen.

SPILOTES HODGSONII, Gthr. (Pl. XXVII.)

Diagnosis.—Body elongate, slightly compressed. Scales indistinctly keeled, in twenty-three rows; the fifth upper labial shield hardly reaching upwards to the posterior margin of the orbit; eight upper labials, two posterior oculars, anal bifid. Uniform olive, the skin between the scales black.

Hab. Ladak, Tibet (15,200 feet above the level of the sea). Two other specimens have been sent by Mr. Hodgson from Nepal.

Description.—This species is closely allied to *Spilotes melanurus*, Schleg., and *Sp. reticularis*, Cant., which, however, have considerably larger scales, in nineteen, and sometimes in twenty-one series, and exhibit a different coloration. *Sp. melanurus* has the sixth (fifth) upper labial differently shaped; but in all have the shields of the head the same tendency to irregularities, two or three being often united. This is the case in the Nepalese specimens of the present species, whilst that from Tibet has all distinctly separated. The form of the head and of its shields is exactly the same as in the other species mentioned. The ante-ocular reaches to the upper surface of the head, without touching the vertical. The scales are small, especially those on the neck, where they are arranged in twenty-three rows, as in the middle of the body. Those of the dorsal series are indistinctly keeled.

	Ventrals.	Anal.	Caudals.
Tibetan specimen	256	1/1	90
Nepalese specimen, no. 1	226	1/1	79
Nepalese specimen, no. 2	233	1/1	85

The colour of the upper parts is uniform olive, the skin between the scales being black; the belly is whitish, and the margin of each ventral shield blackish on each side. The tail is coloured like the body.

	inches. lines.	
Length of the head	1	2
— of the tail	11	0
Total length.	51	0

This Snake is called after B. H. Hodgson, Esq.

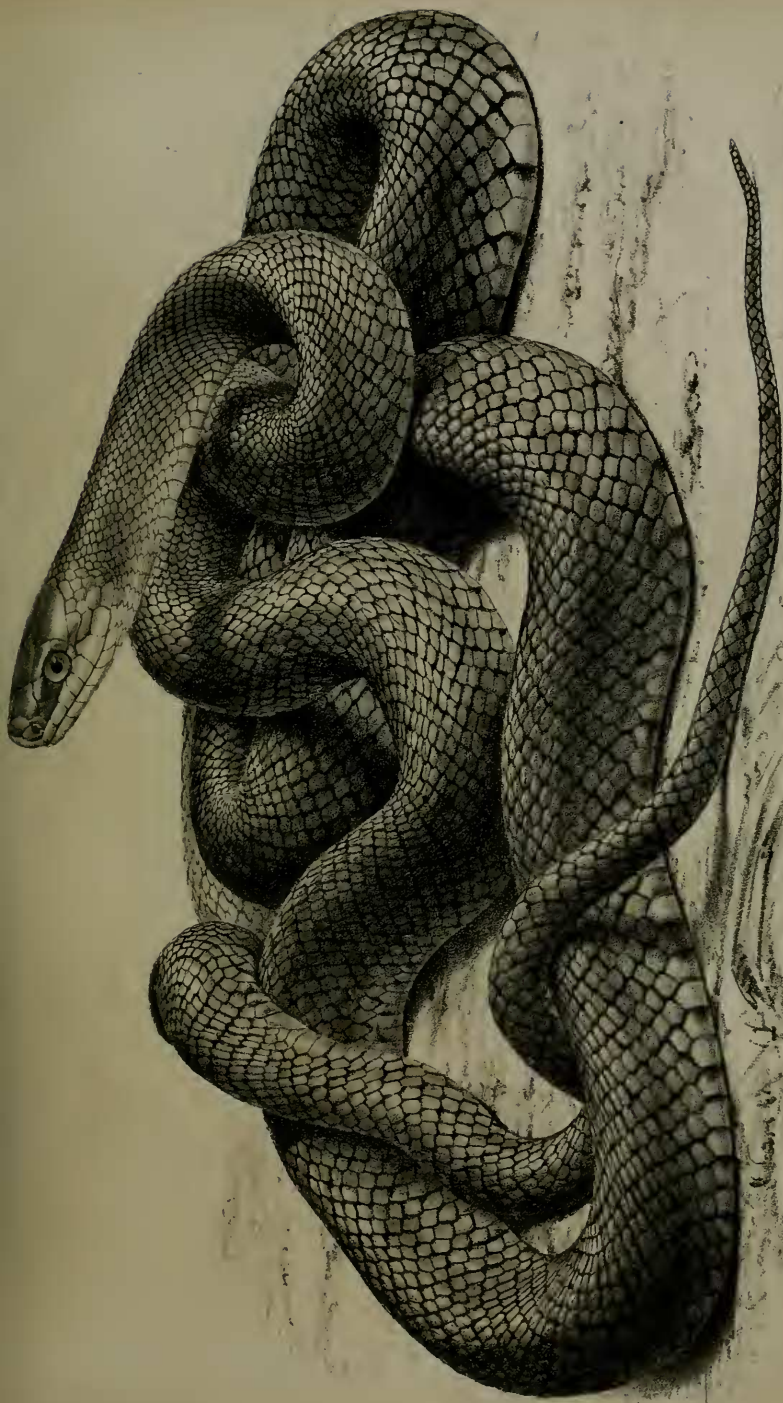
HERPETOREAS, Gthr.

Diagnosis.—The posterior maxillary tooth longest, in a continuous series with the anterior ones. Body and tail slender, compressed. Two nasals, one loreal, one anterior, two posterior oculars. Scales moderately elongate, keeled, in nineteen rows. Eye of moderate size.

This genus is to be referred to the family of the *Dryadidae*, and is distinguished from the other genera by its dentition.

HERPETOREAS SIEBOLDII, Gthr.

Diagnosis.—Vertical shield five-sided, with the lateral margins nearly parallel, and with the posterior sides very short. Scales in



SPIROTES HODGSONII, *Gth*



nineteen rows, slightly keeled. Above uniform greenish-brown; below yellowish, with a darker stripe on each side, formed by short streaks.

Hab. Sikkim, Himalaya (7500 feet above the level of the sea).

Description.—Although the head of the single specimen sent is somewhat injured, and does not admit of a fully detailed description, I do not hesitate to found a new genus and species on it, as those parts which are in a better state of preservation exhibit peculiarities sufficient for its recognition. From some few remarks made by Mr. Blyth in Journ. As. Soc. 1855, p. 292, it would appear that he also has seen this Snake. He, however, describes it as having seventeen rows, and applies to it the name of *Herpetodryas helena*, Daud., which is entirely incorrect, the Snake of Daudin being a common species from Ceylon with twenty-seven rows of scales (*Cynophis helena*).

The head is somewhat elongate, rounded in front and flat above. The rostral shield is broader than high, and rounded superiorly; the anterior frontals are pentagonal, one-half the size of the posterior, which are bent downwards on the side of the head. The vertical is pentagonal, much broader than the superciliary, and not quite twice as long as broad; its lateral margins are nearly parallel, the posterior ones very short, and meeting at a right angle. The occipitals are slightly elongate and rather narrow, subtruncated posteriorly. Nostril between two plates; one loreal, one anterior, and two posterior oculars; eight upper labials, the third, fourth, and fifth of which enter the orbit. There appear to be five temporal shields. Ten lower labials, those of the first pair being in contact with each other, behind the median shield, which has the posterior margin obtusely rounded. Two pairs of chin-shields, the anterior being the smaller.

The trunk is compressed, especially towards the tail, and slender; it is surrounded by nineteen series of scales, those of the back being slightly keeled; they are rather elongate, and assume a rhombic form towards the tail. The ventral and subcaudal plates are bent upwards to the sides, but not keeled. Ventrals 216, anal bifid, caudals 90.

The two posterior teeth are twice as long as the anteriors, with which they form a continuous series; they are not grooved. The upper parts are uniform greenish-brown, the lower ones yellowish; the ventrals have an elongate spot on each side. Total length 3 feet 1 inch; length of the head 10 lines, of the tail 9 inches.

This species is called after Prof. von Siebold of Munich.

RANA LIEBIGII, Gthr. (Pl. XXVIII. fig. A.)

Diagnosis.—Tympanum hidden; a strong tubercular fold from the eye to the axil, another along each side of the back; sacral region tubercular. Head broad; muzzle obtuse, with the canthus rostralis flattened. A slight groove across the occiput, uniting both the posterior angles of the eye-lids. Vomerine teeth in two oblique series, convergent posteriorly. The fifth toe not quite one-third the

length of the third and fourth. Metatarsus with one tubercle. Tips of the fingers and toes truncated. (Brown, a dark streak along the canthus rostralis; the hinder side of the thigh with white spots; the lower parts brown, or whitish marbled with brown.

Hab. One specimen, found by Messrs. von Schlagintweit in Sikim (3800 feet); another from Nepal is in the Collection of the British Museum.

Description.—The upper surface of the head is flat, with indistinct canthus rostralis; the loreal region is oblique, the snout short and broad, the distance between the angles of the mouth being very much more than the length of the head. The tympanum is hidden by the skin, but its outlines become somewhat visible in exsiccated specimens only; the species may be readily distinguished by this character. The nostril is situated midway between the eye and the end of the snout. The eye is of moderate size, prominent above the level of the crown, and with a slight groove behind. The space between the eyes is as wide as an upper eyelid. The inner nostrils are a rather narrow transverse cleft, and in size about equal to the openings of the eustachian tubes. The lower jaw without prominences; there are no vocal sacs, both the specimens being females. Two tubercular folds arise from the eye; the stronger one running above the tympanum to the axil, the other along the side of the back towards the loin; the back and the belly are smooth; the sacral region, the sides of the body, and the upper parts of the thigh are more or less covered with broad tubercles. The toes and fingers are truncated or ending in small knobs. The former are webbed to their extremities, the membrane being slightly emarginate. The fourth toe is one-fourth longer than the third, which is rather longer than the fifth. One metatarsal tubercle. The colours have been stated above.

	inches.	lines.
Length of head and body	3	9
— of the head	1	2
Width of the head	1	5
Length of the fore leg	2	1
— of the hind leg	6	0
— of the fifth toe	1	4
— of the fourth toe	1	8
— of the third toe	1	5

This species is called after Dr. von Liebig, jun.

DICROGLOSSUS, Gthr.

Fingers free, toes broadly webbed; tongue rather elongate, deeply notched behind; vomerine teeth none; eustachian tubes moderate, tympanum indistinct; vocal sacs of the male external and lateral.

This genus is to be referred to the *Ranidae*, and differs from *Oxyglossus* in the shape of the tongue.

DICROGLOSSUS ADOLFI, Gthr. (Pl. XXVIII. fig. B.)

Diagnosis.—Skin smooth or warty; toes webbed to their tips by



B.



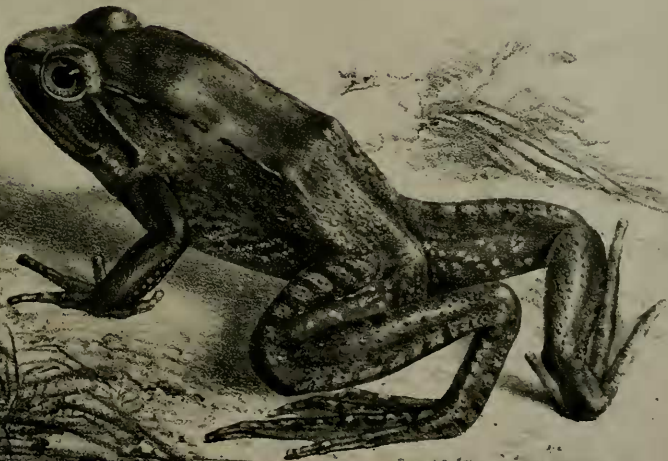
b



a



A





a very extensible membrane; a cylindrical tubercle at the metatarsus, very much like the rudiment of a sixth toe. Above greenish or greenish-brown, uniform or spotted with darker; belly with dark specks. Size of *Bombinator igneus*.

Hab. Kulu and Simla, Himalaya (2400–4200 feet above the level of the sea).

Description.—In habit and size somewhat similar to *Bombinator igneus*, but with the snout more pointed. The skin is in some specimens warty, in others smooth. The tympanum is rather indistinct, and not quite of the size of the eye. The inner nostrils are small and rather distant from each other, the openings of the eustachian tubes larger. The extremities are of moderate length; the fingers quite free: the third is the longest; the first is very little longer than the second and fourth, which are equal in length. The structure of the hind foot is similar to that in *Oxyglossus*; but the tubercle of the metatarsus is very much like a rudiment of a sixth toe. The fourth toe is one-fourth longer than the fifth. The species varies considerably in coloration, and the most constant characters appear to be brownish specks on all or some of the lower parts, and a brownish streak on the hinder side of the thigh.

	inches.	lines.
Length of the head and body	1	7
——— of the fore leg	0	10
——— of the hind leg	2	4

I have dedicated this species to the memory of the late Adolphe von Schlagintweit.

II. List of Himalayan Reptiles, with Remarks on their Horizontal Distribution.

Those species which, although they extend into the mountainous regions, are not peculiar to the Himalaya fauna, are marked with an asterisk.

CHELONIÆ.

1. EMYDA PUNCTATA, Lacép.

Found by MM. von Schlagintweit in Sikkim.

SAURIA.

*1. EMPAGUSIA FLAVESCENS, Gray, Catal. Liz.

Sent by Mr. Hodgson from Nepal. I strongly suspect this species to belong to the fauna of the lowlands.

2. HINULIA INDICA, Gray, Ann. & Mag.

Found by Dr. Hooker in Sikkim, by Messrs. von Schlagintweit in Sikkim, Garhval, Simla, Kashmir, and in Ladak, Tibet.

3. *MOCOA SIKKIMMENSIS*, Blyth, Journ. As. Soc.
Found by Capt. Sherwill in Sikkim.
4. *PLESTIODON SIKKIMMENSIS*, Gray, Ann. & Mag.
Found by Dr. Hooker in Sikkim.
- *5. *VARANUS HERALDICUS*, Gray, Catal. Liz.
Sent by Mr. Hodgson from Nepal.
6. *DOPASIA GRACILIS*, Gray, Catal. Liz. & Ann. & Mag.
Found by Dr. Hooker in the Khasia Hills.
- *7. *TILIQUA RUFESCENS*, Shaw (Gray, Catal. Liz. & Ann. & Mag.).
Found by Mr. Hodgson in Nepal, by Dr. Hooker and Messrs. v. Schlagintweit in Sikkim.
8. *TILIQUA SCHLEGELII*, Gthr.
Found by Messrs. v. Schlagintweit in Sikkim.
9. *ARGYROPHIS HORSFIELDII*, Gray, Catal. Liz.
Khasia Hills.
10. *BIANCIA NIGRA*, Gray, Ann. & Mag.
Found by Dr. Hooker and Messrs. v. Schlagintweit in Sikkim.
11. *CALOTES MARIÆ*, Gray, Catal. Liz. & Ann. & Mag.
Found by Dr. Hooker in the Khasia Hills, and by Messrs. v. Schlagintweit in Jamu, Himalaya.
12. *CALOTES TRICARINATUS*, Blyth, Journ. As. Soc. Beug. 1854,
p. 650.
Found by Capt. Sherwill at Darjiling.
- *13. *CALOTES VERSICOLOR*, Daud. (Gray, Catal. Liz.).
Found by Mr. Hodgson in Nepal, and by Messrs. v. Schlagintweit in Jamu and Simla (Himalaya).
14. *CALOTES MINOR*, Gray.
Stated by Dr. Gray (Catal. Liz.) to come from the Khasia Hills;
found by Messrs. v. Schlagintweit in Sikkim.
15. *TIARIS ELLIOTTI*, Gthr.
Found by Dr. Hooker and Messrs. v. Schlagintweit in Sikkim.
16. *IPALURA VARIEGATA*, Gray, Ann. & Mag.
Found by Dr. Hooker in Sikkim.

17. PHRYNOCEPHALUS TICKELII, Gray.

Found by Messrs. v. Schlagintweit in Tibet. The black bands round the tail are not always present.

*18. UROMASTIX GRISEUS, Cuv.

Found by Messrs. v. Schlagintweit in Sikkim.

19. BARYCEPHALUS SYKESII, Gthr.

Found by Messrs. v. Schlagintweit at Simla and Garhwal (Himalaya), and in Balti and Ladak (Tibet).

OPHIDIA.

1. BRACHYORRHOS TENUICEPS (*Calamaria tenuiceps*, Blyth, Journ. As. Soc. Beng. 1855, p. 288).

Found by Capt. Sherwill at Darjiling.

*2. SIMOTES RUSSELLII, Daud. (Gthr. Catal. Colubr. Snakes).

Found by Mr. Hodgson in Nepal.

*3. SIMOTES PURPURASCENS, Schleg. (var. D. & E. Gthr. Catal. Colubr. Snakes = *Coronella puncticulata*, Gray, Ann. & Mag.).

Found by Dr. Hooker in Khasia, by Messrs. v. Schlagintweit in Sikkim, and by Mr. Hodgson in Nepal.

*4. ABLABES COLLARIS (*Psammodphis collaris*, Gray, l. c.; Gthr. Catal. Col. Snakes).

Found by Dr. Hooker and Messrs. v. Schlagintweit in Khasia, and by Mr. Hodgson in Nepal.

5. ABLABES RAPPIL, Gthr.

Found by Messrs. v. Schlagintweit in Sikkim.

6. ABLABES OWENII, Gthr.

Found by Messrs. v. Schlagintweit in Sikkim.

7. TRACHISCHIUM FUSCUM (*Calamaria fusca*, Blyth, Journ. As. Soc. Beng. = *Trachischium rugosum*, Gthr. Catal. Col. Sn.).

Found by Dr. Hooker, Capt. Sherwill, and Messrs. v. Schlagintweit in Sikkim; by Mr. Hodgson in Nepal.

8. TRACHISCHIUM OBSCURO-STRIATUM (*Calamaria obscurostriata*, Blyth, Journ. As. Soc. Beng.).

Found by Messrs. v. Schlagintweit in Sikkim; described by Mr. Blyth from specimens from Rangoon.

9. XENODON MACROPHthalmus, Gthr. (Catal. Col. Sn.).

Found by Dr. Hooker in Khasia and Sikkim (4000 feet). *Tro-*
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pidonotus macrops, Blyth (Journ. As. Soc. Beng. xxiii. p. 296), found by Capt. Sherwill at Darjiling, appears to be closely allied to, if not identical with, *X. macrophthalmus*.

*10. *TROPIDONOTUS QUINCUNCIATUS*, Schleg. (Gthr. Catal. Col. Sn.).

Found by Dr. Hooker in Sikkim, by Messrs. v. Schlagintweit in the Himalaya and Cashmere. The variety *T. umbratus* has been procured by Mr. Hodgson in Nepal, and by Messrs. v. Schlagintweit in Sikkim.

*11. *TROPIDONOTUS STOLATUS*, L. (Gray, Ann. & Mag.; Gthr. Catal. Col. Sn.).

Found by Mr. Hodgson in Nepal, by Dr. Hooker in Khasia, and by Messrs. v. Schlagintweit in the Himalaya.

*12. *TROPIDONOTUS SUBMINIATUS*, Reinw. (Gthr. Catal. Col. Sn.).

Found by Dr. Hooker in Sikkim, by Messrs. v. Schlagintweit in Jamu, Himalaya.

*13. *TROPIDONOTUS CHRYSARGUS*, Boie (Gthr. Catal. Col. Sn.).
Sent by Mr. Hodgson from Nepal.

14. *TROPIDONOTUS PLATYCEPS*, Blyth, *l. c.* p. 297.

Found by Dr. Hooker in Khasia, by Capt. Sherwill and Messrs. v. Schlagintweit in Sikkim, by Mr. Hodgson in Nepal. This species has the teeth of the genus *Amphiesma*, D. & B., and varies very much in coloration according to age and sex; but it constantly shows a dark stripe through the eye, and a black vertical streak on the rostral shield. I have found the eggs of a Lizard or of another Snake in the stomach of one of the specimens.

*15. *TROPIDONOTUS CERASOGASTER*, Cant. (Gthr. Catal. Col. Sn.).

Found by Dr. Hooker in Khasia.

16. *TROPIDONOTUS (?) DIPSAS*, Blyth, *l. c.* p. 297.

Found by Capt. Sherwill at Darjiling.

17. *COLUBER CALLICEPHALUS* (*Coronella callicephalo*, Gray, *l. c.*).

Found by Dr. Hooker in Khasia.

*18. *SPILOTES RADIATUS*, Reinw. (Gray, Ann. & Mag.; Blyth, Journ. As. Soc. Beng.).

Found by Dr. Hooker in Khasia, and by Capt. Sherwill in Sikkim.

*19. *SPILOTES MELANURUS*, Schleg. (Gthr. Catal. Col. Sn.).
Sent by Mr. Hodgson from Nepal.

20. *SPILOTES HODGSONII*, Gthr.

Sent by Mr. Hodgson from Nepal, and found by Messrs. v. Schlagintweit at Ladak (Tibet).

21. *SPILOTES RETICULARIS*, Cant. (Gthr. Cat. Col. Sn.).

Found by Dr. Hooker in Khasia, by Messrs. Schlagintweit in Sikkim, by Mr. Hodgson in Nepal.

*22. *CORYPHODON FASCIOLATUS*, Shaw (Blyth, Journ. As. Soc. Beng.).

Found by Capt. Sherwill at Darjiling.

*23. *CORYPHODON BLUMENBACHII*, Merr. (Gthr. Catal. Col. Sn.).

Found by Mr. Hodgson in Nepal, and by Messrs. v. Schlagintweit in Sikkim.

*24. *CORYPHODON KORROS*, Reinw. (Blyth, Journ. As. Soc. Beng.).

Found by Capt. Sherwill at Darjiling.

25. *CORYPHODON CARINATUS*, Gthr. *l. c.* = *Coluber nigro-marginatus*, Blyth, *l. c.* p. 290 = *Coluber dhumnades*, Cant.

Found by Dr. Hooker in Khasia and Sikkim, by Capt. Sherwill and Messrs. v. Schlagintweit in Sikkim, and by Mr. Hodgson in Nepal. When naming this Snake *C. carinatus*, I was well aware of its identity with *C. dhumnades*; but I intended to point out that it stands in the same relation to *Coryphodon fuscus* as *Herpetodryas carinatus* does to *H. fuscus*.

26. *HERPETOREAS SIEBOLDII*, Gthr.

Found by Messrs. v. Schlagintweit in Sikkim.

27. *GONYOSOMA FRENATUM* (*Herpetodryas frenatus*, Gray, Ann. & Mag.).

Found by Dr. Hooker in Khasia.

*28. *PSAMMODYNASTES PULVERULENTUS*, Boie (Gthr. Cat. Col. Sn. = *Dipsas ferruginea*, Cant. Proc. Zool. Soc. 1839, p. 53; Blyth, Journ. As. Soc. Beng.).

Found by Dr. Hooker in Khasia, by Capt. Sherwill and Messrs. v. Schlagintweit in Sikkim.

*29. *DENDROPHIS PICTA*, Gm. (Gthr. Cat. Col. Sn.).

Found by Dr. Hooker in Khasia.

30. *DIPSADOMORPHUS TRIGONATUS*, Schneid.

Found by Messrs. v. Schlagintweit in the Himalaya.

*31. *LYCODON AULICUS*, L. (Gthr. Cat. Col. Sn.).

Sent by Mr. Hodgson from Nepal; found by Messrs. v. Schlagintweit in the Himalaya (2400 feet).

32. *ELAPS UNIVIRGATUS*, Gthr. *l. c.*

Sent by Mr. Hodgson from Nepal.

33. *PARIAS MACULATA*, Gray, *l. c.* (Gthr. Cat. Col. Sn. p. 266, where the specimens are referred, by mistake, to *Trimesurus maculatus*).

Found by Dr. Hooker in Sikkim, and sent by Mr. Hodgson from Nepal.

34. *TRIGONOCEPHALUS AFFINIS*, Gray.

Found by Messrs. v. Schlagintweit in Tibet.

*35. *DABOIA ELEGANS*, Daud.

Found by Messrs. v. Schlagintweit in Kulu, Himalaya.

36. *TRIMESURUS BICOLOR*, Gray, *l. c.*

Found by Dr. Hooker in Khasia.

37. *TRIMESURUS ELEGANS*, Gray, *l. c.*

Found by Dr. Hooker in Khasia.

*38. *NAJA TRIPUDIANS*, Merr.

Found by Messrs. v. Schlagintweit in Sikkim. The specimens are uniform black, or with white cross-bands.

*39. *GONGYLOPHIS CONICUS*, Schneid.

Found by Messrs. v. Schlagintweit in Sikkim.

*40. *CLOTHONIA JOHNNI*, Gray.

Found by Messrs. v. Schlagintweit in Sikkim.

BATRACHIA.

1. *DICROGLOSSUS ADOLFI*, Gthr.

Found by Messrs. v. Schlagintweit in Kulu and Simla, Himalaya.

*2. *RANA TIGRINA*, Daud. (Gthr. Catal. Batr.).

Found by Mr. Hodgson in Nepal, by Messrs. v. Schlagintweit in Sikkim.

*3. *RANA VITTIGERA*, Wiegman.

Found by Messrs. v. Schlagintweit in Jamu, Himalaya.

4. RANA LIEBIGII, Gthr.

Found by Messrs. v. Schlagintweit in Sikkim, and sent by Mr. Hodgson from Nepal.

*5. TOMOPTERNA STRIGATA, Gthr.

Found by Messrs. v. Schlagintweit at Simla, Himalaya. This species has been described and figured in the Catal. Batr. Sal. p. 20. pl. 2. f. A, under the name of *Sphærotheca strigata*, from specimens in the British Museum, transmitted by Mr. Jerdon from Madras. When, however, during the printing of that catalogue, Sir Andrew Smith presented his collection of Reptiles to the British Museum, I found in it specimens of a Frog, identical with *Sphærotheca strigata*, labelled "*Tomopterna delalandii*, Cape," in Sir A. Smith's own hand. I did not venture to doubt such an authority for the reptiles of South Africa, and accordingly placed in the Appendix, p. 133, the new name as a synonym of the older. But the fact of the species now having been found by Messrs. v. Schlagintweit in the Himalaya, leaves us no other alternative than to suppose either that the species occurs in South Africa as well as in the East Indies (which is improbable in the highest degree), or that Sir A. Smith, who has collected reptiles from all parts of the globe, has mistaken the origin of his specimens. *Sphærotheca strigata* has, indeed, a great resemblance to *Tomopterna delalandii*; but it is evident, from a specimen of the latter which I have lately examined, that both differ in the form of the occiput, which is singularly convex and rounded in the former, whilst it is flat in the African species. This character is not sufficient to found a separate genus on it, and *Sphærotheca strigata*, therefore, is to be referred to *Tomopterna*.

6. MEGALOPHRYS GIGAS, Blyth, Journ. As. Soc. Beng. 1855, p. 299.

From Sikkim.

*7. BUFO VULGARIS, Laur.

Found by Messrs. v. Schlagintweit in Sikkim and Balti, Tibet.

*8. BUFO MELANOSTICTUS, Schneid. (Gthr. Catal. Batr.).

Found by Dr. Hooker and Messrs. v. Schlagintweit in Sikkim, by Mr. Hodgson in Nepal.

9. BOMBINATOR (?) SIKKIMMENSIS, Blyth, *l. c.* p. 300.

From Sikkim.

*10. POLYPEDATES MACULATUS, Gray.

Found by Messrs. v. Schlagintweit in Sikkim.

11. RHACOPHORUS MAXIMUS, Gthr. *l. c.*

Found by Mr. Hodgson in Nepal, and by Messrs. v. Schlagintweit in Sikkim.