

3. On the Terrestrial Mollusca collected in Costa Rica by the late Dr. W. M. Gabb, with Descriptions of new Species. By GEORGE FRENCH ANGAS, C.M.Z.S., F.L.S., &c.

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(Plate XL.)

At the request of Mr. Thomas Bland, of New York (who has obligingly forwarded to me for examination the collection of land-shells made in Costa Rica by the late Dr. Gabb), I have undertaken, as far as practicable, to give in the following paper a list of the species obtained in that country by Dr. Gabb, together with descriptions of such as appear to be new to science.

Mr. Bland has also been good enough to furnish me with notes regarding the habitats of the various species, together with drawings of several of the animals, taken from nature by Dr. Gabb; and these he has supplemented with some important remarks of his own. Although in some instances the number of specimens of a species sent is sufficient to form a good series for critical examination, in others there are but one or two examples available; therefore where there is any doubt in determining a species it will be marked with a ?. Through the liberality of Mr. Thomas Bland I have been enabled to place the type specimens (together with examples of most of the species sent), in the national collection in the British Museum.

Previous to Dr. Gabb's decease, several of the Mollusca collected by him in Costa Rica, and preserved in spirits (together with his original drawings of the animals), were submitted by him to Mr. W. G. Binney for examination. In a paper just published in the 'Annals of the New York Academy of Sciences' (vol. i. pl. 11), Mr. Binney gives descriptions and figures of two new genera and species, viz. *Velifera gabbi* and *Cryptostrakon gabbi*. He also figures the lingual dentition and the animals in motion. Furthermore, he figures the animals and the lingual dentition of *Limax semitectus*, Mörch, and of a species of *Tebennophorus*, which he supposes to be *T. costaricensis* of Mörch.

The species placed in my hands by Mr. Thos. Bland are as follow, viz. :—

1. *HELIX* (*OXYCHONA*) *ZHORQUINENSIS*, n. sp. (Plate XL. fig. 1.)

Shell scarcely rimate, conically trochiform, rather thin, under the lens very minutely transversely shagreened upon the lower whorls and on the base, pale yellowish green, with a single narrow chocolate band in the middle of the three or sometimes four lower whorls, and a still narrower band of the same colour next below the sutures; whorls 6, nearly flat, sharply keeled at the periphery; sutures, the last three keeled and white; nucleolar whorls nearly smooth and shining, with a purplish-black line at the sutures, and spreading over

the apex, which is somewhat obtuse; base very slightly convex; aperture very oblique, subquadrate; outer lip expanded and sinuous above, with a produced horizontal beak at the periphery, arcuate and somewhat reflexed below.

Diam. maj.  $13\frac{1}{2}$ , min. 10, alt. 10 lin.

*Hab.* Along the Zhorquin river, Costa Rica.

“Animal very slender, nearly white, pale brownish on head and top of body” (*Gabb*).

Five adult and three young specimens found, all of the same coloration.

This very remarkable and elegant shell is the gem of the collection. It belongs apparently to the same section as *H. bifasciata* from Brazil.

2. *HELIX ÆSOPUS*, Angas, P. Z. S. 1878, p. 72, pl. 5. figs. 11, 12.

Some of the specimens show a dark band round the umbilical region, and are larger than the type specimen figured in the Zoological Society's ‘Proceedings,’ whilst one of them shows traces of concentric lines, especially towards the front of the last whorl.

The nearest ally to this species is *H. triplicata*, Martens, which, however, is smaller, and differs in the shape of the peritreme.

“The animal is grey above, with the foot nearly white” (*Gabb*).

Found in the coast region and to the hills of Uren, at an altitude of 3000 feet. The type specimen was found at Buena Vista at a similar altitude.

Seventeen specimens found, five only unbleached.

3. *HELIX MAC-NEILI*, Crosse, Journal de Conch. vol. xxi. p. 67.

Of this small species only three fresh specimens and a few dead ones were found.

“Animal dark brown; tail and foot slightly lighter; upper tentacles long” (*Gabb*).

Coast region and lower hills, from Parismina to the hills of Zhorquin.

4. *HELIX COSTARICENSIS*, Roth; Pfr. Mon. Hel. iv. p. 302; Pfr. Novitat. i. 21. 15-17.

This is an extremely variable species, both in colour and form as well as in size; still I cannot detect in the series before me any differences that would amount to specific characters. The base is invariably white, with a dark-brown umbilicus, and the umbilical region tinged with bright yellow. The three principal varieties appear to be:—1st, large, depressed, white, with two or three narrow dark-brown bands; 2nd, small, depressed, with the upper surface light or dark brown throughout, or zoned with both colours; 3rd, medium in size, much more conical, with two broad bands of light brown, or all light brown above. This last variety was described by me in this Society's ‘Proceedings’ for 1878, under the name of *Helix boucardi*, from specimens brought home by Mons. Boucard from the region

of Navarro, and found on the leaves of trees. I now consider it (after a careful examination of all the specimens) to be an extreme variety of *H. costaricensis*.

“Animal dark grey above, foot white” (*Gabb*).

High hills only; commonest in Cabecar.

About a dozen living and a number of dead specimens found, varying in size and coloration.

5. *HELIX* (*SOLAROPSIS*) *TILORIENSIS*, n. sp. (Plate XL. fig. 2.)

Shell minutely and profoundly umbilicated, depressedly globose, thin, ornamented with oblique transverse rows of minute granules, from which spring very short, erect, dark brown bristles; pale brown, with one narrow band of dark chestnut towards the basal portion of the last whorl, and another similar band above near the suture—the space between it and the suture, as well as the upper whorls, being crossed with wavy dark chestnut markings, whilst the central portion of the body-whorl is ornamented with light brown transverse angular markings that form a very narrow indistinct band in the middle of the whorl. Whorls  $4\frac{1}{2}$ , the last very large and rounded, the upper whorls flat; spire concavely depressed; aperture broadly crescent-shaped; outer lip arcuate, a little reflexed; columellar margin slightly expanded over the umbilicus.

Diam. maj. 9, min.  $7\frac{1}{2}$ , alt. 5 lin.

*Hab.* Hills between the rivers Tilorio and Zhorquin.

Only three specimens found.

This species comes nearest to *H. andicola*, Pfr., from South America; but the latter has the spire raised above the plane of the last whorl, the granules much more numerous, and not set in regular oblique rows, and has also a different style of coloration.

6. *BULIMUS* *GABBI*, n. sp. (Plate XL. fig. 3.)

Shell imperforate, somewhat elongately ovate, moderately solid, faintly, obscurely, longitudinally striated, shining, straw-colour; the entire peritreme bright rose-colour; whorls 5, convex; spire shorter than the aperture; aperture large, effuse, oblique; outer lip somewhat thickened and expanded.

Var. *a.* Pinkish brown, obscurely banded with darker brown, and freckled and spotted with white.

Var. *b.* Opaque white, marked with a few irregular bands of dark brown arrow-shaped spots.

Var. *c.* White, with two or three brown bands spotted with white.

Diam. 7, alt.  $10\frac{1}{2}$  lin.

*Hab.* On the ground, upon the flanks of Pico Blanco, at an altitude of from 3000 to 6000 feet.

“Foot broad, pointed, and very flat. Animal varies with the colour of the shell from white to ash-colour, greenish white, or light brown” (*Gabb*). (Plate XL. fig. 3 *a.*)

This pretty species was sent as “*B. irazuensis?*, Angas,” but is totally distinct from it, the only character in common being the rose-coloured peritreme.

7. *BULIMUS JOSEPHUS*, Angas, P. Z. S. 1878, p. 73, pl. 5. figs. 13, 14.

Very few specimens found.

“On the lower hills, Talamanca” (*Gabb*).

My type specimens were obtained on the trunks of acacia trees, San José, Costa Rica.

8. *BULIMUS ATTENUATUS*, Pfr. Mon. Hel. iii. p. 336; Chemn. ed. Nov. 30. 9, 10.

“Dota, a high hill region south of San José” (*Gabb*).

This species is closely allied to *B. costaricensis*, Pfr., but is more elongated, and has a twist on the columella, with a somewhat different style of painting.

Three specimens only.

9. *BULIMUS COSTARICENSIS*, Pfr. Mon. Hel. vi. 47; Novitat. iii. 95. 11, 12.

Costa Rica.

The specimens are all poor and in bad condition.

10. *BULIMUS TRIPICTUS*, Albert, Mal. Blätt. iv. 1857, p. 97; Pfr. Mon. Hel. iv. p. 48.

*B. rhodotrema*, Martens, Mal. Bl. 1868, p. 156; Pfr. Novitat. iii. 101. 10, 11.

Costa Rica. A very beautiful little, thin, globose species, pale greenish yellow, ornamented with three dark-brown transverse bands of oblique stripes and spots, with the lip and columella rose-colour.

11. *BULIMUS ZHORQUINENSIS*, n. sp. (Plate XL. fig. 4.)

Shell somewhat broadly perforate, elongately ovate, moderately solid, rather coarsely and irregularly obliquely striated, especially towards the base of the last whorl, crossed here and there with single or double narrow impressed lines, between which are rows of numerous short descending striæ; whitish or pale brown, painted with narrow, distant, longitudinal darker brown flames; whorls 7, rather convex; spire sharply conical; sutures impressed; apex straw-coloured; aperture large, ovate, effuse, pale lilac-brown within; outer lip white, very much expanded, flattened and a little recurved; columella triangularly flattened and expanded over the umbilical region, ending in a blunt rounded callus interiorly.

Diam. 12, alt. 23 lin.

*Hab.* “Middle Zhorquin to Cuabre, low hills and flat ground” (*Gabb*).

This fine shell (of which only three specimens were obtained) resembles *B. expansus*, Pfr., in shape, but wants the sharp longitudinal sculpture and the dark purple mouth. It is also allied to *B. pallidior*, Sow., from “Central America;” but that shell is entirely white, and with a much less expanded lip. It is somewhat like *B. excelsus*, Gould, which, however, is much narrower, and has

a smaller lip and is of a brown colour, with distant white longitudinal zones. Another of the same group is *B. lilacinus*, Rve., also from "Central America," which is white, with violet columella; and still another is *B. liliaceus*, Guild., which is from the West Indies, and is a less solid shell, more contracted, with the aperture less rounded at the base, has a pink tinge, and a much smaller umbilicus, and the outer lip not nearly so much expanded as in *B. zhorquinensis*.

12. *BULIMUS CITRONELLUS*, n. sp. (Plate XL. fig. 5.)

Shell elongately ovate, minutely perforated, rather thin, very finely and closely transversely sculptured with delicate impressed striæ, pale yellow or citron-colour throughout; whorls 7, flatly convex; apex conical; sutures impressed, white; aperture ovate; outer lip thin, slightly expanded towards the base; columella triangularly flattened over the perforation.

Diam. 6, alt. 12 lin.

*Hab.* "Uren to Lipurio, low hills" (*Gabb*).

"Animal white; upper tentacles very long; arboreal" (*Gabb*).

Only two specimens.

13. *BULIMUS MACULATUS*, Lea, Trans. Am. Phil. Soc. 1839, p. 86, pl. 22. fig. 112.

Costa Rica.

The specimen in the British Museum is from Chiriqui Mountain, "Central America."

A small elongate species, pale yellow, banded with light and dark purplish brown.

14. *BULIMUS CORNEUS*, Sow.

Shell rimate, ovate, rather thin, irregularly finely obliquely striated, pale brown throughout; whorls 6, moderately convex; spire equal in length to the aperture; sutures impressed; aperture ovate; outer lip thin, simple; columellar, margin slightly expanded over the perforation; margins united by a thin callus.

Diam. 5, alt. 9 lin.

*Hab.* Tilorio and Zhorquin rivers" (*Gabb*).

"Animal small, yellowish white; tail does not reach to the apex of the shell; tentacles short, dark" (*Gabb*).

A small species of simple aspect, of a uniform pale-brown colour, allied to *B. behrendti*, Pfr.

15. *GLANDINA LIGNARIA*, Reeve.

*Achatina lignaria*, Reeve, Conchol. Icon. *Achatina*, pl. 8. fig. 27 (1849).

*Glandina sowerbyana*, form A, Strebel, Mexik. Land- und Süsww.-Conch. ii. Taf. v. figs. 10 a, 10 b.

*Euglandina lignaria*, Crosse et Fischer, Expéd. Scient. du Mexique, Mollusca, pl. 3. fig. 1.

Two specimens found.

“Only in high country, as high as 6000 feet, Costa Rica” (Gabb).

Dr. Gabb gives the following notes respecting the animal:—“Head and appendages and all the upper surface black; upper margin of foot yellowish brown. Entire surface granulated and corrugated. A groove around the anterior and inner base of each upper tentacle, becoming parallel and running posteriorly to the shell, leaving a median linear ridge. Lateral appendages in part retractile, and, when at rest, curved backwards against the sides of the head. Their front edges acute, posterior edges thicker and rounded. On expanding, first the upper tentacles are protruded, then the lower, and finally the lateral appendages. Sole of the foot perfectly black. On being disturbed the animal withdraws into the shell, all except the foot, which remains outside with its edges corrugated. Doubtless in dry weather the whole could be retracted; but the specimen which I drew could not.”

16. *GLANDINA SOWERBYANA*, Pfr.

*Achatina* (*Glandina*) *sowerbyana*, Pfr. P.Z.S. 1846, p. 32.

*Achatina sowerbyana*, Reeve, Conch. Icon. *Achatina*, pl. 8. figs. 26 a & b.

*Glandina sowerbyana*, form B, Strebel, Mexik. Land- und Süßw.-Conch. ii. Taf. v. A. fig. 10 m.

Only two specimens found.

Although Strebel considers *G. lignaria*, Reeve, to be only a variety of this species, I am inclined, with MM. Crosse and Fischer, to regard it as distinct. *G. sowerbyana* is much more ovate, has a shorter spire and a larger aperture, with a coarser granulated sculpture and a more solid texture than *G. lignaria*, which is more fusiform, thinner, and very finely granulated. The same differences of character are also strongly marked in the young shells.

Locality similar to that of the last species.

17. *GLANDINA AURATA*? Morelet.

*Glandina aurata*, Morelet, Test. Noviss. i. no. 20, p. 12 (1849).

*Glandina aurata*, Crosse et Fischer, Expéd. Scient. du Mexique, Mollusca, pl. 3. figs. 7, 7a.

Costa Rica.

Only one specimen obtained, with the living animal (Plate XL. fig. 6.)

This shell is more like *G. aurata* of Morelet than any other; indeed I cannot detect any specific difference.

18. *GLANDINA ISABELLINA*, Pfr., var.

*Achatina isabellina*, Pfr. P.Z.S. 1846, p. 32; Reeve, Conch. Icon. *Achatina*, pl. 21. fig. 95.

“Several specimens met with, but few in good condition. Rare; from the hills, Costa Rica” (Gabb).

This appears to be a variety of *G. isabellina*, Pfr., with the last

whorl somewhat broader and the aperture more effuse than in the Mexican specimens in the British Museum. This species is allied to *G. conularis*, Pfr., and *G. obtusa*, Pfr., the former of which is from Mexico, and the latter from Nicaragua. The Costa-Rica specimens are larger than the typical ones. The delicate concentric lines (seen through the lens) by which the whorls are crossed are characteristic of this species.

The animal, which is of the same pale isabelline colour as the shell, is entirely retractile.

19. *GLANDINA AURANTIACA*, n. sp. (Plate XL. fig. 8.)

Shell fusiformly oblong, moderately thin, smooth, shining, bright tawny orange, darker towards the base of the columella; whorls  $5\frac{1}{2}$ , slightly convex; spire papillose, obtuse; sutures impressed, and of a dark purple colour; columella slightly oblique, shortly truncated in front; outer lip moderately arcuate, simple, not effuse towards the base; aperture elliptically oblong, half the length of the shell, pale rosy purple within.

Diam. 5 alt. 11 lin.

“From the hilly country,” Costa Rica.

This species, of which only a single example was found, is somewhat allied to *G. isabellina*, Pfr., but is smaller, of a different colour and texture, and quite smooth, with no traces of the fine concentric lines characteristic of that species; and, moreover, it has the sutures banded with purplish brown.

20. *GLANDINA (OLEACINA) ANOMALA*, n. sp. (Plate XL. fig. 9.)

Shell elongately oblong, turreted, thin, shining yellowish olive-green, dark brown towards the apex; whorls 7, very slightly convex, flatly longitudinally striate, the striæ becoming obsolete towards the lower portion of the whorls, especially on the last; spire very large and obtuse; apex rounded, tumid; sutures strongly granulated; columella very slightly arcuate; outer lip simple, nearly straight; aperture small, much shorter than the spire, narrowly subquadrate.

Diam. 6, alt.  $17\frac{1}{2}$  lin.

*Hab.* “Hilly regions,” Costa Rica.

This species, which is allied to *G. turris*, Pfr., and *G. pseudo-turris*, Strebel, is remarkable for its large swollen obtuse spire and small aperture. The longitudinal striæ do not come quite down to the sutures, as in *G. turris*; and the sutures are strongly granulated.

21. *GLANDINA (OLEACINA) MITRIFORMIS*, n. sp. (Plate XL. fig. 10.)

Shell elongately ovate, turreted, moderately thin, shining, irregularly obsoletely striated, striæ finer and closer on the upper whorls, olive-chestnut, with a narrow yellow zone next below the suture; whorls 5, slightly convex, the last more than half the entire length of the shell; spire short, conical, apex rather obtuse; columella slightly arcuate; outer lip simple, nearly straight; margins united

by a callus; aperture elongately ovate, half the length of the shell, lilac within.

Diam.  $6\frac{1}{2}$ , alt. 14 lin.

Only one specimen.

*Hab.* "Middle Zhorquin to Cuabre (low hills and flat ground)" (*Gabb*).

22. *GLANDINA (OLEACINA) STREBELI*, n. sp. (Plate XL. fig. 11.)

Shell elongately ovate, thin, shining, finely longitudinally striated, the striæ nearly obsolete on the last whorl, olive-green; whorls  $5\frac{1}{2}$ , slightly convex; spire elongately conical; apex rounded and blunt; sutures simply impressed; aperture narrowly elliptical; outer lip thin, nearly straight; columella arcuate, margins united by a thin callus.

Diam. 5, alt.  $11\frac{1}{2}$  lin.

*Hab.* "Middle Zhorquin to Cuabre (low hills)" (*Gabb*).

Not unlike *G. turris*, Pfr., but only half the length, narrower, more compressed at the base of the aperture, of a different colour, and with a less number of whorls.

23. *STREPTOSTYLA BOUCARDI*, Pfr., var. ?

*Spiraxis boucardi*, Pfr., P. Z. S. 1861, p. 24.

This species approaches very near to *S. boucardi*, Pfr., of which I am inclined to consider it a variety.

Five specimens were found "on the ridge between Tilorio and Zhorquin" (*Gabb*).

"Animal light brown above, whitish below and posteriorly; tentacles dark brown; carries the tip of the tail slightly turned up in travelling" (*Gabb*).

This species must not be confounded with *S. bocourti*, Crosse & Fischer.

24. *STREPTOSTYLA VIRIDULA*, n. sp. (Plate XL. fig. 12.)

Shell ovate, thin, shining, longitudinally striate at the upper part of the whorls, the striæ becoming almost obsolete on the lower half of the last whorl, pale yellowish green throughout; whorls 6, somewhat convex; spire conoidal; apex but slightly obtuse; sutures subcanaliculate; outer lip very slightly sinuous, nearly straight in the middle; columella strongly twisted and everted at the base; aperture subauriform, nearly two thirds the length of the shell.

Diam. 5, alt. 8 lin.

*Hab.* Hills of Uren, Costa Rica.

25. *STREPTOSTYLA CYLINDRACEA*, Pfr. ?

*Achatina cylindracea*, Pfr., P. Z. S. 1846, p. 31; Reeve, Conch. Icon. *Achatina*, pl. 18. fig. 91.

As there is only a single specimen, I hesitate to identify it positively; but it comes nearer to *S. cylindracea* than to any thing else I can find.

Costa Rica.

## 26. ORTHALICUS ZEBRA, Müll.

*O. zebra*, Müll. Verm. terr. et fluv. Hist. 138; Reeve, Conch. Icon. *Bulimus*, pl. 15. fig. 90.

*Bulimus princeps*, Brod.

*Bulimus undulatus*, Brug.

*Bulimus zigzag*, Lam.

All poor and dead specimens.

"Rare, in the valley about Lipurio; 200 feet above the sea in Talamanca" (*Gabb*).

## 27. CYCLOTUS BOUCARDI, Angas.

*Cyclotus boucardi*, Angas, P. Z. S. 1878, pl. 5. figs. 3, 4.

Only a single specimen found, larger than the type, measuring 2 inches across.

"Mouth of Banana River, 5 miles from Limon" (*Gabb*).

## 28. CYCLOTUS IRREGULARIS, Pfr.

*Cyclotus irregularis*, Pfr. P. Z. S. 1855, p. 117.

A large number of specimens. "The commonest shell in Talamanca; coast region, and to 500 feet high on the hills" (*Gabb*).

"Animal pinkish; tentacles bright red" (*Gabb*).

There are two well-marked varieties of this species:—one large (1 in. 10 lines across), bright chestnut, with a pale band at the periphery; the other smaller (1 in. 5 lines across), pale yellowish olive, with a narrow brown band at the periphery.

It is curious in how many specimens the lower margin of the peritreme appears to have been injured and repair commenced, giving the appearance of a second sinus. Of this remarkable injury, at different ages of the shell, Mr. Bland remarks:—"Examination at the outer edge of the peristome induces me to believe that the animal from time to time produces this injury by grazing, so to say, to satisfy a demand for lime."

## 29. CYCLOTUS DYSONI, Pfr.

*Cyclotus dysoni*, Pfr. P. Z. S. 1851, p. 243.

"Only on hills, not common" (*Gabb*); Cervantes, Costa Rica.

## 30. CYCLOTUS TRANSLUCIDUS, Sow.

*Cyclotus translucidus*, Sow.; Pfr., Monog. Pneumon. vi. vol. i. p. 20.

Eight specimens found, all of a somewhat dwarf form as compared with the type. "Lepanta" (*Gabb*).

## 31. CYCLOPHORUS LUTESCENS, Pfr., var.

*Cyclophorus lutescens*, Pfr. P. Z. S. 1851, p. 250; Chemn. Conch.-Cab. ed. 2, p. 333, pl. 43. figs. 12-14.

Very few specimens. "Lepanta, Nicoyo" (*Gabb*).

Curiously like *Cyclophorus wahlbergi*, Benson, from Zululand.

32. *HELICINA LINDENI*, Pfr.

*H. lindeni*, Pfr. Monog. Pneumon. Viv. vol. i. p. 388 ; Chemn. Conch.-Cab. ed. 2, p. 52, pl. 8. figs. 25, 26.

The specimens, of which three were found, are rather larger than the type, which is from Mexico. Costa Rica.

33. *HELICINA FUNKI*, Pfr., large var. (Plate XL. fig. 7, animal.)

*H. funki*, Pfr. Monog. Pneumon. Viv. vol. i. p. 361.

Many specimens. "Talamanca, all the coast region, and to the lower hills" (*Gabb*).

"Animal brownish white; head and lower tentacles white; animal very timid" (*Gabb*). Much larger than the type, which is from New Granada. Varies in colour from straw-yellow to orange.

34. *HELICINA LYRATA*, Pfr.

*Helicina lyrata* Pfr. Monog. Pneumon. Viv. vol. i. p. 341.

One specimen. Costa Rica.

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35. *HELICINA BEATRIX*, n. sp. (Plate XL. fig. 13.)

Shell conical, solid, shining; as seen through the lens, very finely transversely striated; whorls 6, very slightly convex, the four uppermost chestnut, the fifth dark red, with an opaque whitish band below the suture, the last pale olive-green, with a similar opaque band at the suture; outer lip thickened, a little expanded and reflexed; aperture quadrately semilunate.

*Var.* Smaller and straw-coloured throughout.

Diam.  $4\frac{1}{2}$ , alt. 5 lin.

Very few specimens. "Found only on the hills up to an elevation of 2500 feet. Animal dark grey above, sides and foot white" (*Gabb*). Approaches *H. heloisæ*, Sallé, but larger and much more conical.

36. *SUCCINEA UNDULATA*, Say.

*Succinea undulata*, Say, New Terrestrial Shells, p. 24.

"Coast region to lower hills" (*Gabb*). A dozen specimens. "Animal bright flesh-colour, robust, and marked by a few dark spots; lower tentacles very short" (*Gabb*).

37. *STENOPUS GUILDINGI*, n. sp. (Plate XL. fig. 14.)

Shell perforate, globosely conical, thin, shining, very finely obliquely striated, brownish ash-colour; whorls  $6\frac{1}{2}$ , convex, the last with a thread-like keel at the periphery; apex conical; sutures margined; base convex; aperture crescent-shaped; outer lip arcuate, simple, thin; columellar margin scarcely dilated.

Diam. 2, alt.  $1\frac{1}{2}$  lin.

*Hab.* Costa Rica.

This little species differs from *S. lividus*, Guild., in having the sutures margined with a strongly defined thread-like carina at the periphery, and one more whorl.

38. *STENOPUS MICANS*, n. sp. (Plate XL. fig. 15.)

Shell narrowly perforate, depressedly conical, thin, shining, nearly smooth, under the lens showing extremely faint oblique lines of growth, light fulvous brown; whorls 5, very slightly convex, the last bluntly angled at the periphery; sutures impressed; base flatly convex, with just traces of a very faint rudimentary keel between the umbilicus and the periphery; aperture semilunar; outer lip simple, thin; columellar margin very slightly expanded towards the umbilical region.

Diam. 2, alt.  $1\frac{1}{4}$  lin.

*Hab.* Costa Rica.

This species wants the marginal sutures and the thread-like carina of the preceding one.

39. *STENOGYRA OCTONA?*, Chemn. (Plate XL. fig. 16, animal.)

This species comes remarkably close to *S. octona*, Chemn., which has a wide range, being found in Guayaquil, Brazil, and the West-Indian islands. I cannot detect any difference between this species and *S. trochlea*, Pfr., the habitat of which is given as Peru.

Many specimens.

Gabb gives as the habitat "Old Harbour." He describes the animal as "yellowish white, and wrinkled."

40. *STENOGYRA OCTONOIDES*, C. B. Ad., = *S. contracta*, Poey.

Two specimens only. Costa Rica.

41. *STENOGYRA GABBIANA*, n. sp. (Plate XL. fig. 17.)

Shell perforate, elongately turreted, moderately thin, pale straw-coloured, sculptured with somewhat distant raised thread-like descending striæ, that are strongest on the upper whorls and become evanescent towards the sutures and the base of the last whorl; whorls 8, convex; apex blunt, papillose; aperture vertical, quadrately semilunar; outer lip arcuate, thin, simple; columellar margin a little expanded over the perforation.

Diam.  $1\frac{1}{4}$ , alt.  $3\frac{1}{4}$  lin.

*Hab.* Costa Rica. A single specimen.

A somewhat sparsely and strongly ribbed species, distinct from *S. caraccasensis*, Reeve, which is described by that author as a *Bulimus*.

42. *LEPTINARIA INTERSTRIATA*, Tate.

*Tornatellina interstriata*, American Journ. Conch. 1870, p. 157.

Shell minutely rimate, elongately ovate, turreted, thin, hyaline, ornamented with somewhat distant, raised, slightly curved longitudinal striæ, that disappear towards the middle of the last whorl; whorls 6, convex; apex blunt, papillose; sutures margined; aperture ovately semilunar; outer lip simple, thin, arcuate; columella with a single sinuous fold truncated below.

Diam.  $1\frac{1}{4}$ , alt. 3 lin. A single specimen.

*Hab.* Costa Rica.

## EXPLANATION OF PLATE XL.

- Fig. 1. *Helix (Oxychona) zhorquinensis*, n. sp., p. 475.  
 2. — (*Solaropsis*) *tiloriensis*, n. sp., p. 477.  
 3. *Bulimus gabbi*, n. sp., p. 477.  
 3 a. — —, animal, p. 477.  
 4. — *zhorquinensis*, n. sp., p. 478.  
 5. — *citronellus*, n. sp., p. 479.  
 6. *Glandina aurata*?, animal, p. 480.  
 7. *Helicina funki*, animal, p. 484.  
 8. *Glandina aurantiaca*, n. sp., p. 481.  
 9. — (*Oleacina*) *anomala*, p. 481.  
 10. — (—) *mitriformis*, p. 481.  
 11. — (—) *strebelsi*, n. sp., p. 482.  
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 14. *Stenopus guildingi*, n. sp., p. 484.  
 15. *Stenopus micans*, n. sp., p. 485.  
 16. *Stenogyra octona*?, animal, p. 485.  
 17. — *gabbiana*, n. sp., p. 485.

4. On the Birds collected by the late Mr. T. K. Salmon in the State of Antioquia, United States of Colombia. By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Society, and OSBERT SALVIN, M.A., F.R.S.

[Received May 20, 1879.]

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## I. INTRODUCTION.

The late Mr. Thomas Knight Salmon, of Guildford, was for several years previous to his death, which took place at Guildford on the 5th of May last, resident at Medellin, the capital city of the State of Antioquia, U.S. of Colombia. Mr. Salmon was a most enthusiastic and energetic collector, and, when not occupied in the service of the Government of the State of Antioquia, devoted all his leisure time to excursions into the country surrounding Medellin, in order to collect specimens of the abundant natural products of the varied fauna of Colombia. In this he was very successful, and transmitted large collections of mammals, birds, insects, and other animals to his agent Mr. E. Gerrard, at various periods from 1872 to 1878. On his final return to this country last year, Mr. Salmon brought with him, besides a large quantity of bird-skins, a series of 163 nests and eggs. As each nest was numbered to correspond with a parent bird, the determination of the species to which they belong has been readily effected.



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