

	in.
Length from nose to insertion of tail,	4·75
„ of tail,	4·
„ of hind foot,	0·92
„ of ear from orifice,	0·6

A specimen of a rat obtained by Mr. V. Ball in the Sâtpura Hills and presented by him to the Indian Museum, also belongs to this species.

EXPLANATION OF PLATE X.

Fig. 1. Head of *Golunda Elliotti*, Gray, from Sind (the face is represented much too convex). 2. Right hind-foot. 3. Right fore-foot (the intermediate tubercle should have been drawn further away from the posterior (proximal) pair). 4. Under view of the skull. 5. The skull and mandible, seen from the side. 6. Upper view of the skull. 7. Incisors, seen from the front. 8. Molars of upper jaw, right side. 9. Do. of lower jaw, right side.

XII.—*On the Cyclostomacea of the Dafla Hills, Assam.*—By Major H. H. GODWIN-AUSTEN, F. R. G. S., F. Z. S., Deputy Superintendent Topographical Survey of India.

(Received June 24th;—Read August 2nd, 1876.)

(With Plates VII & VIII, A, Figs. 1—6.)

The expedition into the Dafla Hills in the winter of 1874—75 has added very largely to our knowledge of the land-shells of that part of India. The line of the Himálayas has been very well worked up to the neighbourhood of Darjiling, and the researches of the Messrs. Blanford and the late Dr. Stoliczka have left I suspect very few forms undiscovered in that quarter, but from thence to the Dafla Hills, a distance of 270 miles, we had received nothing, so that when I found myself deputed for survey duty in these more eastern hills, I anticipated a goodly haul of molluscan forms, and am glad to say I have not been disappointed. The present list is confined to the operculated group, numbering some 33 species; of which 11 are new; 5 had been originally described from Darjiling and have their range thus extended far to the eastward; 13 are well-known forms in the Khasi and Naga hill-ranges south of the Brahmaputra River; and 3 or 4 are known to extend thence to the Shan States in the Irrawaddy drainage-system. The list of *Helicidæ* will be given in a second paper, in the prepa-

ration of which I hope to be joined by Mr. G. Nevill of the Indian Museum, Calcutta; and will comprise some 45 species, many of which are new. I had ample opportunities for collecting, especially while forest-clad peaks were being cleared for the triangulation. The weather, which during the whole of January was so very wet as to render the taking of observations for days together an impossibility, was just the kind that was wanted to tempt the smaller forms forth from their hiding places in the decaying leaves and old tree-stumps. In some of the Khasi and Goorkha men of the Survey party I found most energetic and excellent collectors, who soon were as sharp with their eyes in detecting the minute little shells as I myself was. It caused them at first infinite amusement and still greater curiosity as to what possible use they could be put to: "Calcutta jádú ghur ke waste," however, generally satisfied all queries on the subject, and a general impression prevailed that we made medicine of them.

Abstract of Genera.

	Darjeeling.	Khasi.	Daffa.	Total.	Remarks.
1. <i>Cyclophorus</i> ,	1	3	3	7	3 being varieties of Khasi species. 1 being a variety of a Khasi species.
2. <i>Lagocheilus</i>, .....	..	1	..	1
3. <i>Pterocyclos</i>, .....	..	1	..	1
4. <i>Spiraculum</i>, .....	..	1	1	2
5. <i>Alycæus</i>, .....	..	3	6	9
6. <i>Diplommantina</i> ,	1	2	3	6	
7. <i>Pupina</i>, .....	..	1	..	1
8. <i>Streptaulus</i> ,	1	..	..	1
9. <i>Megalomastoma</i> ,	1	..	1	2	
10. <i>Pomatias</i> ,	1	1	1	3	
Total,	5	13	15	33	

No specimens of either of the genera, *Cyathopoma*, *Georissa*, or *Hydrocæna*, which come in on the hill-ranges south of the Brahmaputra, were found: they are apparently absent.

CYCLOPHORUS AURORA, Bs.

Agrees with the specimens from Dalingkote, Western Bhutan Dúars.

CYCLOPHORUS PEARSONI, Bs.

Outer Range.

CYCLOPHORUS FUSCICOLOR, n. sp., Pl. VIII, A, Fig. 1.

Shell umbilicated, globosely turbate, covered with a greyish umber-brown epidermis, with radiating longitudinal lines of ornamentation, the bands of colour rather broader towards the apex, but throughout very close together, in some specimens coalescing on the last whorl into a uniform dark shade of brown. Spire conical, apex sharp. Whorls 6, well rounded, with a single slightly raised ridge upon the keel. Aperture circular, sub-oblique, peristome continuous, double, very slightly reflected. Within the aperture grey.

Alt. 1.24, major diam. 2.30 inches.

HAB.—Dafla Hills.

This is a very distinct form allied to *C. Bensoni* from the southern face of the Khasi Hills, shewing towards the apex in some specimens a tendency to the zigzag painting of that shell, but the uniform, striate, and sober colouring of the rest of the whorls is a very marked character. Two specimens have a moderately broad white band on the periphery, owing to the abrasion of the epidermis upon the raised ridge of the keel.

CYCLOPHORUS EXPANSUS, Pfr.

HAB.—Outer sandstone range.

CYCLOPHORUS ZEBRINUS, Bs.

HAB.—Outer range,—very abundant.

CYCLOPHORUS (MYXOSTOMA) NIVICOLA, n. sp., Pl. VII, Figs. 1 & 1a.

Shell flatly discoidal, openly umbilicated. Whorls 5, with distinct longitudinal striation, the last well rounded on the periphery, large, the rest rapidly decreasing, covered with a thick epidermis, colour dark brown-umber. At half the circumference from the apex fine zigzag pale ochreous markings ornament the upper surface; these widen and are arranged closer towards the apex, which is pale; a black band on the periphery is bounded by a pale narrow one. Spire slightly raised. Suture deep. Aperture oblique, very slightly descending, circular. Peristome thickened, double, reflected, with a small re-entering notch near the suture. Operculum corneous, flat.

Major diam. 1.0, alt. 0.45 in.

HAB.—Dafla Hills.

This form is a representative here of the Ceylonese *C. Bairdii*. A variety of the same size but plain, with pale band on the periphery, on Torúpútú Peak. Small (major diam. 0.65 in.) varieties also occur, both ornamented and plain; the latter are very similar in size and light ochreous colouration to *C. ravidus* of the Nilgiri Hills, but the former have fine zigzag markings and a single black band on the periphery.

LAGOCHEILUS TOMOTREMA, Bs.

HAB.—The Tánir ridge and Torúpútú Peak,—not common.

PTEROCYCLOS PARVUS, Pearson.

HAB.—Shengorh, Tánir ridge, and Torúpútú.

PTEROCYCLOS MAGNUS, n. sp., Pl. VII, Figs. 3, 3a, & 3b.

This shell is similar in form to *P. parvus*, only that the winged portion of the peristome is far more fully developed and folded round into a perfect, largely developed tube with its internal orifice just within the aperture, the inner lip being deeply notched to give room for it. The shell is ornamented with a single black peripheral band and with minute transverse brown zigzag markings. Apex very flat. Whorls 5, rounded.

The largest example measures—alt. 0.26, major diam. 0.95, minor diam. 0.75, apertural tube 0.20 in.

HAB.—Very common in the outer sandstone range, Dafla Hills. It is also found on the northern side of the Nágá Hills, but has hitherto never been separated from *P. parvus* of the Khasi Hills, of which it may be said to be a more developed form, with stronger affinities to the genus *Spiraculum*.

SPIRACULUM HISPIDUM, Pearson, var. MINOR.

HAB.—The outer ranges near Dihiri Parbat. Agrees precisely with specimens from Teria Ghat. It is curious, however, to note that the large variety does not occur here, but that its place is occupied by another new form equally large, which I next describe.

SPIRACULUM NEVILLI, n. sp., Pl. VII, Figs. 2 & 2a.

Shell discoidal, convexly depressed, widely umbilicated, covered with a dark brown epidermis which soon becomes eroded, and with an incipient dark band on the keel in perfect specimens. Spire very slightly raised, suture deep, whorls 5, much rounded, the last descending slightly towards the aperture. The sutural tube is only 0.10" in length, 0.3" behind the aperture, turns back, and is situated close to the suture. Aperture oblique, circular. Peristome double, inner lip continuous, having at the suture a re-enter-

ing angular notch, the outer is similarly notched and then expanded and folded into a spout-shaped form. Operculum not seen, probably as in *S. hispidum*.

Alt. 0·36, major diam. 1·05, minor diam. 0·92, diam. apert. 0·45 in.

HAB.—Two specimens only were obtained near Dihiri Parbat, on the outer sandstone range.

This *Spiraculum* is quite distinct from *S. hispidum*, for which I mistook it when found, and consequently omitted to search for more examples. In the form of the sutural tube it most nearly resembles *S. Avatum*, W. Blf., thus differing very considerably from *S. hispidum*, in which that part is broad and curves quite over and across the suture in well-grown shells (pl. vii, fig. 4). The most notable point of difference, however, is the expansion of the outer lip into a tube-like process, in which respect the species shews its very close affinity to the genus *Pterocyclos*.

ALYCÆUS KHASIACUS, G-A.

HAB.—One specimen of the true typical form was found in the Yétay ravine, Dikrang Dhún.

ALYCÆUS KHASIACUS, var.

The rest of this type from other parts of the hills, however, differ from the Khasi form, in the ridge in front of the constriction being single, and the peristome more thickened and reflected. But in size, sculpture, and the short thickened sutural tube, as well as in the operculum, no change is to be detected.

HAB.—Valley of the Dikrang and Borpani.

ALYCÆUS CRISPATUS, G-A.

HAB.—A conical form of this shell was obtained in the Burroi gorge.

ALYCÆUS THEOBALDI, Bs., var., Pl. VII, Fig. 10.

Is of the same form as *A. Theobaldi* from Cherra Poonjee and the Gáro Hills, only that while the operculum in the latter is exceedingly closely wound, quite smooth in front, and black (and I have examined some dozens of shells), in the former the concentric whorls are wider apart, have a central circular hollow space, and are white. The ribbing of the swollen portion in the Dafla shell is exceedingly minute, and this, I note, is a common character, holding good almost without exception, of all the species in the Dafla Hills. There is, moreover, a slight difference in the contraction of the whorl near the umbilicus, but I hesitate to separate two such close forms, notwithstanding that if dozens of each variety were thrown together, they might all be resorted without a mistake, and I have

a large series. It has yet to be decided what points are to be considered of sufficient weight in separating these forms from one another. We must wait until the whole area has been worked, and the points of difference, however small, all noted, when we shall then be in a position to reduce species or to arrange slightly divergent forms around their nearest and most abundant and widely spread ally. As far as my experience goes, they never remain constant over very large areas.

HAB.—The above shell was obtained on the slopes of Torúpútú.

ALYCÆUS BURTII, G-A.

HAB.—This shell, of which I previously possessed a single specimen only, found by Mr. J. Burt in the gorge of the Barowli river a short distance to the west, proved to be abundant on the outer sandstone range about Dihiri Parbat, the Burroi gorge, &c.

A variety of it, which is much larger and more depressed in form, but which in the crenate peristome and in form of constriction is the same, occurred in the valley of the Dikrang and in the Yetay ravine. This variety measures in alt. 0.18, major diam. 0.25. in.

ALYCÆUS NOTATUS, n. sp., Pl. VII, Figs. 9, 9a, & 9b.

Shell globosely turbinate, narrowly umbilicated, of solid form, white, distant strong costulation on the upper whorls, close and fine ribbing on swollen portion of the last. Spire conoid, suture fairly impressed. Whorls $4\frac{1}{2}$, closely wound, the last swollen, then sharply constricted, and again enlarged and descending, the expanded portion being marked with deep fold-like furrows. Sutural tube moderate, aperture oblique. Peristome very thick, distinctly treble in full-grown shells, outer layer terminating just behind the aperture, the inner continuous, the two outer much reflected near the umbilicus. Operculum smooth in front.

Alt. 0.14, major diam. 0.17. in.

HAB.—On the slopes of Torúpútú Peak at 3000 feet, about 15 specimens collected.

This is one of the most distinct and curious species I have yet discovered, the fold-like indentations upon the expanded portion near the aperture having no counterpart in any other form with which I am acquainted. In other respects it is somewhat similar to *A. diagonius*, in the strong thick peristome and closely wound whorls.

ALYCÆUS DAFLAENSIS, n. sp., Pl. VII, Figs. 12, 12a, & 12b.

Shell turbinate, moderately umbilicated, pale whitish or dull ochreous according to the state of the epidermis, finely ribbed throughout, rather more coarsely near the commencement of the swell of the last whorl, on this por-

tion the ribbing is very fine and close. Spire conoid, apex blunt, suture impressed, the sutural tube moderate. Whorls 4, the last swollen, then constricted, and enlarging again into a well-raised ridge, which terminates below on margin of the peristome, it then descends and expands considerably with four deep longitudinal plications. Peristome single (no sign of the usual outer margin), continuous, with five plications on the outer margin, the lower margin recurved. Aperture oblique. Operculum multispiral, horny, with a large disc-like boss in the centre front side.

HAB.—Torúpútú Peak, 7000 feet.

The nearest form to the above is *A. digitatus*, H. Blf., described and figured in J. A. S. B., Vol. XL, 1871, from Darjeeling, but the duplicate peristome in that shell is conspicuous and forms a well-defined sharp edge where the expansion and plication of the inner lip commences. By the operculum alone it can be at once distinguished, and it is besides a much smaller shell.

A dwarf variety occurs on Shengorh peak only 0·09 in alt., not so expanded near the aperture, and with the plication less developed. On the Tánir ridge at 4000 feet, the same shell, of ordinary size and with the same character of the aperture, occurs, shewing an interesting and gradual change in form; the operculum is also different, being pale coloured, multispiral, and flatly concave in front. This form is in this respect much nearer to *A. digitatus* and might be separated under the title *sub-digitatus*.

ALYCEUS MUTATUS, n. sp., Pl. VII, Figs. 11 & 11a.

Shell sub-turbinately depressed, openly umbilicated, fragile, covered with a scabrous dull ochreous epidermis, which peels off in old shells, very regularly and strongly striated throughout, the ribbing on the last whorl very fine. Spire sub-conoid, apex rather blunt, suture deeply impressed. Whorls 4, rounded, the last swollen, moderately constricted, then again expanded and crossed by two ridges, the last of these not extending all round the whorl. The constriction very regularly ribbed. Sutural tube short, thickened at the base. Aperture oblique, circular. Peristome double but closely united, very slightly reflected. Operculum multispiral, the edges of the outer whorls in high relief so as to form a deep cup-like hollow in the centre.

Alt. 0·10, major diam. 0·20, sutural tube 0·055 in.

HAB.—On Torúpútú, Tánir, and Shengorh Peaks, at 6—7000 feet elevation, in the dead leaves and moss about the roots of the forest trees, I found about a dozen. The ground at the time was covered with snow, so that it was very cold work hunting for them.

This shell is an interesting ally of *A. khasiacus*, from which it differs in its thick well-ribbed epidermis, but more especially in the very different

form of the operculum, which in *Khasiacus* is quite smooth and concave in front. It is also a smaller and more delicately formed shell.

ALYCÆUS (DIORYX) GRAPHICUS, Blf., var.

HAB.—Both in the Dikrang Dhún and on Torúpútú Peak.

ALYCÆUS (DIORYX) URNULA, Bs., var.

Higher in the spire, aperture proportionally larger; whorls more rounded, sutural tube only one-fourth the length, and the ribbing much less fine on the swell of the whorl—differences which by some would be considered quite sufficient to warrant another name being given to this Daffa form. Five specimens were found all possessing the above character, so it would appear to be quite constant.

DIPLOMMATINA POLYPLEURIS, Bs., var.

HAB.—Borpani, Sújúli, and Dihiri Parbat on outermost range.

DIPLOMMATINA POLYPLEURIS, var. MINUTA.

HAB.—Shengorh and Torúpútú Peaks.

DIPLOMMATINA SEMISculpta, W. Blf.

HAB.—Borpani and Dikrank valley,—a good many specimens obtained.

DIPLOMMATINA AUSTENI, W. Blf., large var., Pl. VII, Figs. 8 & 8a.

Shell dextral, ovate fusiform, moderately thick, pale horny. Sculpture very fine, almost disappearing on the two last whorls. Sides of spire moderately flat. Whorls 7, penultimate and antepenultimate the largest, the last ascending slightly. Constriction in middle of aperture, which is circular and vertical; columellar margin rounded, tooth moderate. Peristome simple, double, rather strongly formed, the inner lip continuous.

Alt. 0·15, diam. 0·70 in.

HAB.—Low down on the left bank of the Dikrang river;—about a dozen were found.

This shell is very similar in form to *D. Austeni*, W. Blf. from the Khasi Hills, but it is much larger, that shell only being 0·90" in length, and the two last whorls are not so smooth and shew slight traces of sculpture, but the two are too close to be separated.

DIPLOMMATINA HOMEII, n. sp., Pl. VII, Fig. 6.

Shell dextral, ovate, tumidly fusiform, strong, dull ochreous, very fresh shells often ruddy orange-coloured, sculpture very fine and filiform on the upper whorls, rather coarser on the last approaching the aperture. Spire

with sides rather flat, penultimate and antepenultimate whorls about equal, the last whorl has the constriction in the middle of the aperture, and ascends to it. Aperture vertical, columellar margin angular below, the tooth well developed and placed low down; outer margin rounded. Peristome thick, double, both lips continuous and well reflected on outer margin.

Alt. 0·24, diam. 0·14, diam. apert. 0·08 in.

HAB.—In forest on the peaks of Torúpútú and Shengorh, very abundant.

This species is conspicuous from its large size and tumid flat-sided form. I have named it after Lieut. H. Home, R. E., who, with his company of Sappers, rendered so much assistance in clearing the peak on which I first found this shell; and it is with feelings of extreme regret that I have to record the death by sun-stroke a few months after of this able, zealous, fine young officer.

DIPLOMMATINA LEVIGATUS, n. sp., Pl. VII, Fig. 7.

Shell dextral, tumidly fusiform, colour pale horny, very smooth throughout, slight close colouration on the four apical whorls. Spire rather rapidly diminishing towards the apex, this is rather sharp in some specimens. Suture moderately impressed. Whorls 7, antepenultimate the largest and swollen, the penultimate constricted in front of the aperture, the last ascends but slightly and is puckered on the posterior margin, corresponding with the angular projections of the outer lip. Aperture vertical; peristome solid, double, the inner lip continuous, circular, the columellar process or tooth moderate, the outer lip with an undulating margin, square below, with angular projections, two below and one on the upper outer margin.

Alt. 0·15 in.

HAB.—The Dikrang valley, Dafla Hills.

This is a very distinct form from any I am acquainted with: the waved margin and angular expansions on the outer lip are its most peculiar characters, and mark at once its distinctness.

PUPINA IMBRICIFERA, Bs., var.

HAB.—Dafla Hills. The small variety like that of the Nágá Hills. Only two obtained, the shell appearing to be rare on this side.

STREPTAULUS BLANFORDI, Bs., Pl. VIII, A, Figs. 2, 3, & 4.

HAB.—Harmutti, the Tanir ridge, and Dikrang valley; one only from 7000 feet,—an abundant shell in the low ground.

The true typical form ranges from 1000 to 4000 feet as a rule. There are, however, two other forms, one of which has been alluded to by Mr. W. T. Blanford in his paper on the 'Classification of the Cyclostomacea of

Eastern Asia' (Ann. and Mag. Nat. Hist., June 1864), and considered by him to be perhaps worthy of specific distinction; in this (which I distinguish as var. α) the internal tube opens in the peristome outwards, with no tendency to form an external sutural tube: of it I obtained three fine specimens on Shengorh Peak, where it was associated with the other forms. In the other (var. β , or var. *tubulus*), which was only obtained in one locality at 5000 feet on the flanks of Torúpútú, there is a still wider departure from *S. Blanfordi*, Bs.; the internal tube passes out just behind the peristome, almost in the same way as in *Rhaphaulus chrysallis*, Bs., and is directed upwards for about 0.05" of an inch. These differences are very remarkable, occurring as they do in distinct species from Malayana, and I should be inclined to consider them worthy of specific titles were the habitats of the two forms wider apart, but both occur together, and in no other point of structure can I detect any constant difference. I at first thought that var. β . was more tumid and depressed and that it had a more developed aperture, but similar continuous, thickened, circular peristomes are to be found among the normal forms, when a large series is examined; and the same holds good of the external shape. I am sorry that I had no opportunity of examining the animals of these three forms: some considerable modification of parts must surely be required to produce the very great differences in the length and direction of this tube-like process near the aperture.

Particularly fine examples of *S. Blanfordi* were found, as much as 0.43 in length and 0.28 in. in diameter.

MEGALOMASTOMA PAUPERCULUM, Bs.

HAB.—Shengorh Peak and Torúpútú. This form was found at all the higher elevations, whereas I did not obtain a single example that will assimilate with *M. funiculatum* from Darjeeling, either in form or colouration.

MEGALOMASTOMA TANYCHEILUS, n. sp., Pl. VII, Fig. 5.

Shell cylindrical, turreted, solid, pale ochreous, sometimes with a tinge of green, rather strongly and diagonally striated. Spire straight, sides nearly parallel, apex conoidal, suture shallow. Whorls 9, with very slight convexity of side. Aperture vertical, large, and circular, the peristome continuous, very largely developed, thickened, and expanded; at base of the last whorl is a strong keel which terminates above near the centre of aperture. Operculum composed of several horny layers, which appear to be formed slowly and concentrically on a line radiating from the centre to the circumference.

Length. 1.20, diam. 0.35, diam. apert. (peristome included) 0.32 in.

HAB.—Dikrang valley, low down, ranging up to about 2,500 feet and very abundant.

This shell is a much wider departure from the Darjeeling form first described by Benson, *M. funiculatum*, which is so much more tumid, shorter in spire, of a dark purplish brown colour, and never has the peristome so broad and thickened as in this species. *M. pauperculum* is intermediate between the two.

POMATIAS HIMALAYANÆ, Bs.

HAB.—Torúpútú and Shengorh Peaks.

POMATIAS PLEUROPHORUS, Bs.

HAB.—Very fine specimens were obtained at the village of Pachitah (Camp 7); it was also got at Harmatti. Alt. 0·32, diam. 0·17 in.

POMATIAS GRANDIS, n. sp., Pl. VII, Fig. 13.

Shell dextral, perforate, turreted, rather swollen below, solid, with moderately strong close costulation throughout, smooth on the penultimate whorl above the aperture, very close fine ribbing behind the aperture; covered with a thin epidermis; grey corneous or pale ochreous. Spire rapidly decreasing to apex. Whorls 9, slightly convex, the last rounded below. Aperture vertical, circular. Peristome double, thickened, reflected, continuous, slightly angular at upper outer margin. Operculum thin, horny, indistinctly spiral in some specimens.

Alt. 0·55, diam. 0·20, diam. ap. 0·17 in.

HAB.—Shengorh Peak, rather abundant in moss on rocks.

Its very large size distinguishes it at once from *P. himalayana* and *P. pleurophorus*, but it also differs in its more tumid form, the greater number of its whorls, its rounder aperture without the distinct small notch, and in not being so strongly costulated.

The three following species were found as far back as 1866-67, while the survey of the Khasi and Garo hill-ranges was in progress. I was in hopes that Mr. W. T. Blanford, who has described so many species of the same genus, would have been able to publish these also, but his hands have been so full since then with the large and very important collections from Abyssinia and Persia made by himself, and more recently with those from Yarkand, together with the ordinary work of the Geological Survey, that they have been laid aside. Of two of them years ago I prepared figures, which are now introduced to complete Plate VIII, A. All three are referred to *Cyathopoma*—a genus which has not before been recorded from this part of India. In form these eastern species assimilate with

some from Southern India; but it is interesting and important to note that as regards the operculum there is a distinct departure, the former having this appendage very similar to some *Alycæi* of the same province. I, however, consider them nearer to *Cyathopoma* than to any other genus, and it is not desirable to separate them until something more is known of the animals.

1. *CYATHOPOMA JAWAIENSIS*, n. sp., Plate VIII, A, Fig. 6.

Shell narrowly umbilicated, turbinate, covered with a dark umber epidermis. Whorls $4\frac{1}{2}$, well rounded, with four well raised longitudinal ribs on the last, three shewing on the whorls above. Spire conical, apex papillate. Peristome simple, lip thin; aperture circular, the lirate ribbing extending up to the peristome so as to give it on the exterior margin an angular outline. Operculum pure white, situated close to the margin of the aperture, deeply concave in front, many whorled, with a small dark spot in the centre.

Alt. 0·07, major diam. 0·06 in.

The animal has long pointed pale tentacles, with the eyes on the upper outer basal margin (fig. 6 *c* having been drawn from a dead specimen, the tentacles are represented in a contracted condition). The labial ribbon (fig. 6 *b*) is very similar to that of *Diplommatina*, all the teeth being five-cuspid in the usual arrangement 3—1—3, with the central rather broad.

HAB.—This little shell is very abundant in the woods close to Jawai among dead leaves, and I found the first specimen close under the Dak bungalow at that place. The very white operculum with the dark central spot contrasting with the dark colour of the shell is a very conspicuous character.

In the Nágá Hills I afterwards obtained a slightly larger form to which the above description would apply, only that the operculum is not so deeply concave and is situated well within the aperture, whereas in several dozen specimens of *Jawaiensis* examined the position of the operculum is external.

2. *CYATHOPOMA NEVILLI*, n. sp., Plate VIII, A, Fig. 5.

Shell elongately turbinate, very closely umbilicated, covered with an olivaceous epidermis. Whorls $5\frac{1}{2}$, rounded, with four well marked spiral ribs and one basal near the umbilicus. Apex blunt. Aperture rounded, peristome simple, continuous, very slightly thickened and reflected, operculum well within the aperture, slightly concave, minutely multispiral, with a large central plain area.

A very large specimen measures alt. 1·1, major diam. 0·08, but some are only 0·07 in. in alt. Animal not observed.

HAB.—Khási and Nágá Hills, in damp situations among decaying vegetation at about 4000—5000 feet, not by any means abundant. I at first considered it to be a *Jerdonia*, from its remarkable similarity in external form to *J. trochlea*, Bs., from Southern India, but on comparison of the opercula I found a considerable difference. It is a smaller shell than *J. trochlea*.

3. CYATHOPOMA GAROENSE, n. sp.

Shell openly umbilicated, turbinate, white, multirate. Whorls 5, well rounded; there are six well marked longitudinal ribs on the last whorl, the interval between the 4th, 5th, and 6th being wider than that between the ribs above. Succeeding these below near the umbilicus can be counted eight very close lines of ribbing; the whole surface between this ribbing is sharply and regularly striate, giving it rather a lace-like appearance. Spire conoid, apex high and papillate. Peristome simple, quite circular, single. Operculum exposed in front close to the margin of the aperture, multispiral, flat in front, thick and shelly in appearance. Animal not observed.

Alt. 0·08, major diam. 0·09 in.

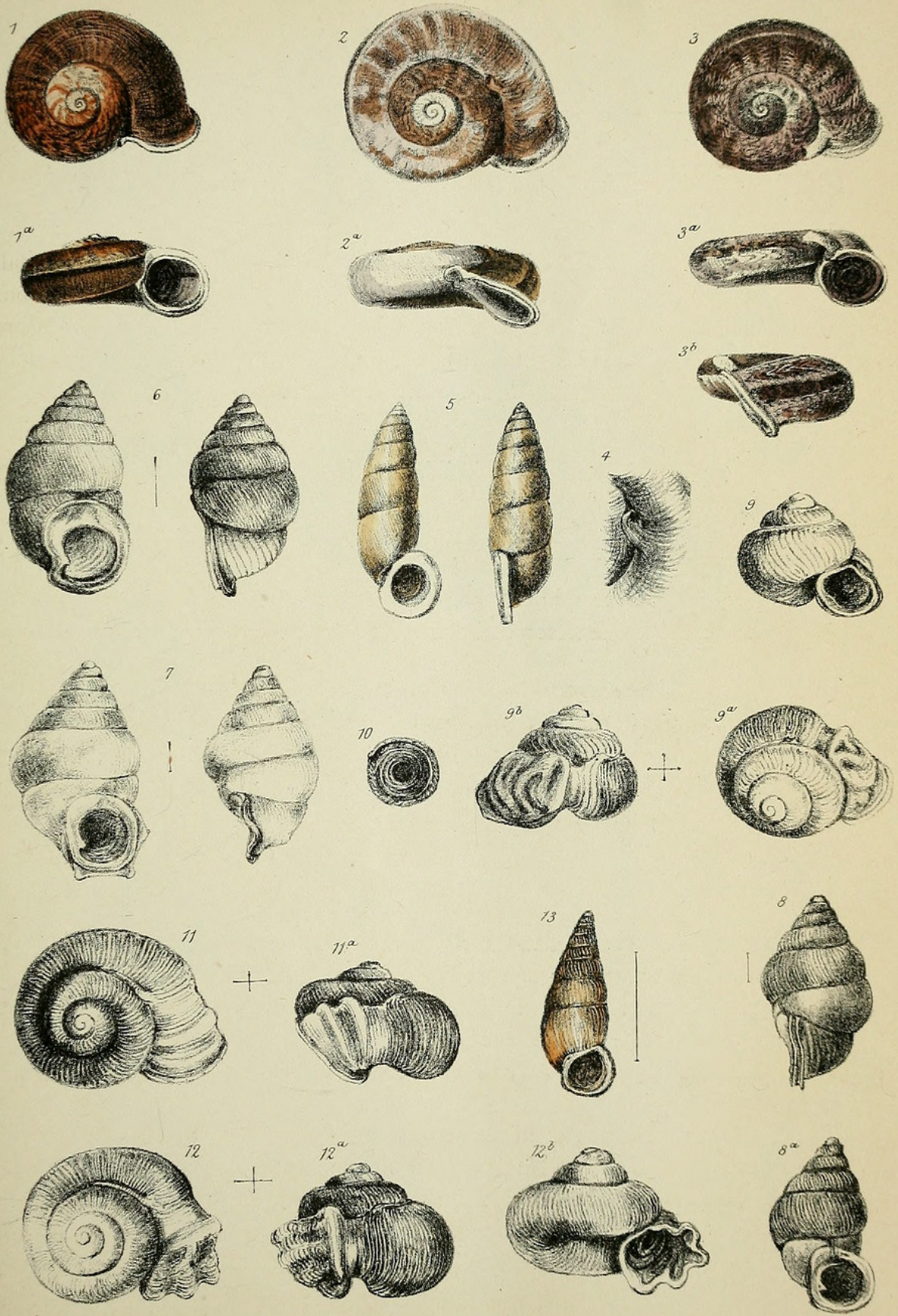
HAB.—It was first taken on limestone rocks in the South Garo Hills, and was particularly abundant at Rywuk on the Sumessary river in the limestone cliff on the left bank of the river; it must extend all along the southern face of the hills with the run of the Nummulitic rocks, for I have two specimens in my collection from the South Jaintia Hills. *C. Garoense* is very like the South Indian *C. Deccanense*, W. Blf., in the sculpture and position of the operculum.

No species of *Cyathopoma* have as yet been obtained anywhere to the north of this line of hills, not one occurred among the large collection of shells made in the Dafla Hills, the most eastern part of the Himalayan range that has as yet been explored.

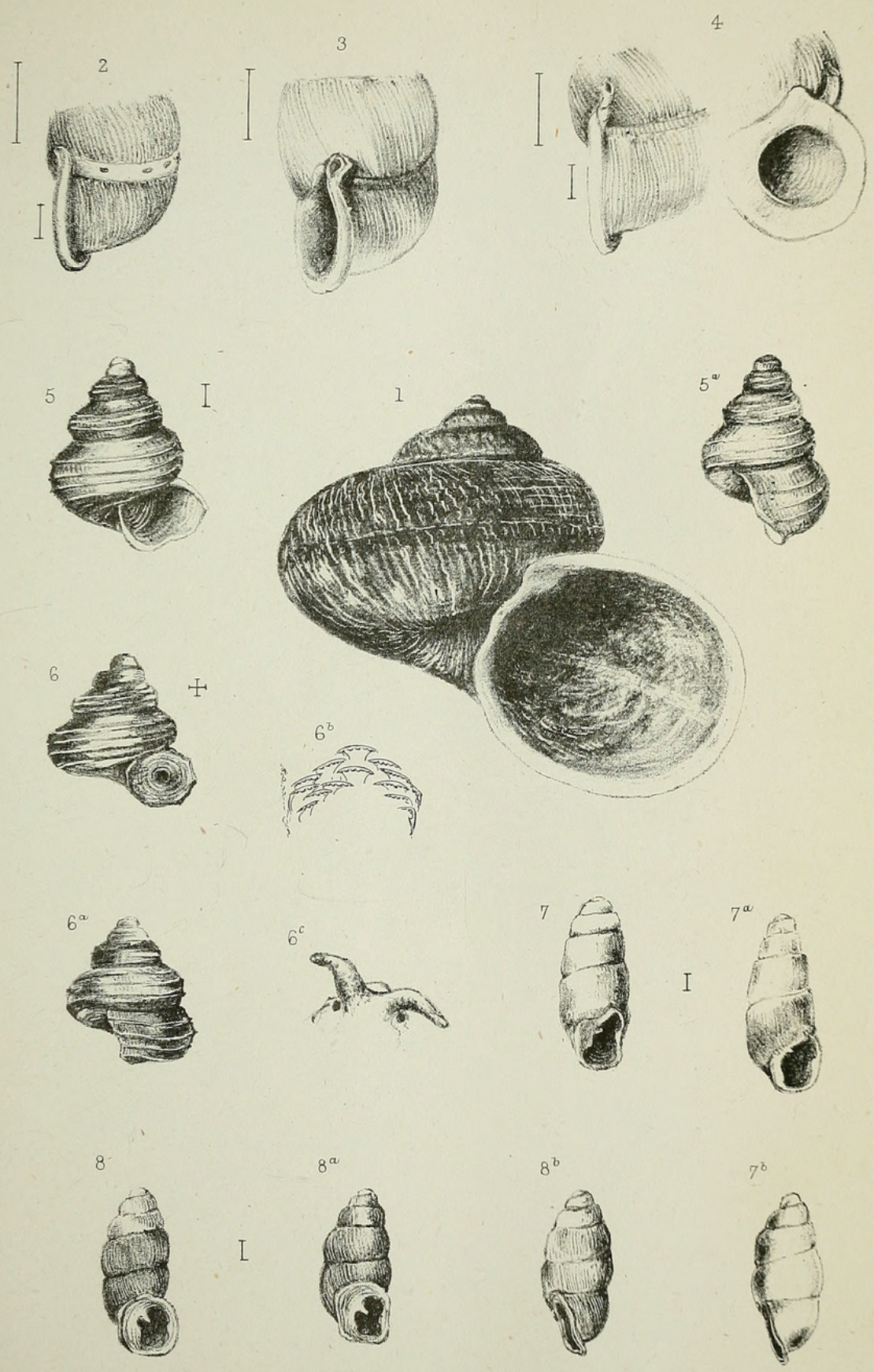
EXPLANATION OF THE PLATES.

Plate VII.

- | | | |
|------|-----|---|
| Fig. | 1. | <i>Cyclophorus nivicola</i> , n. sp., nat. size. |
| „ | 2. | <i>Spiraculum Nevilli</i> , n. sp., nat. size. |
| „ | 3. | <i>Pterocyclos magnus</i> , n. sp., nat. size. |
| „ | 4. | <i>Spiraculum hispidum</i> , Bs., sutural tube, nat. size. |
| „ | 5. | <i>Megalomastoma tanycheilus</i> , n. sp., nat. size. |
| „ | 6. | <i>Diplommatina Homeii</i> , n. sp., enlarged. |
| „ | 7. | ———— <i>levigatus</i> , n. sp., enlarged. |
| „ | 8. | ———— <i>Austeni</i> , Blf., large var., enlarged. |
| „ | 9. | <i>Alycaeus notatus</i> , n. sp., enlarged. |
| „ | 10. | ———— <i>Theobaldi</i> , Bs., var., the operculum, enlarged. |
| „ | 11. | ———— <i>mutatus</i> , n. sp., enlarged. |
| „ | 12. | ———— <i>Daflaensis</i> , n. sp., enlarged. |
| „ | 13. | <i>Pomatias grandis</i> , n. sp., slightly enlarged. |



CYCLOSTOMACEA · DAFILA HILLS · ASSAM.



KHASI AND DAFLA HILL SHELLS.



HELICACEA DAFILA HILLS ASSAM.



Godwin-Austen, Henry Haversham. 1877. "XII.—On the Cyclostomacea of the Dafla Hills, Assam." *The journal of the Asiatic Society of Bengal* 45, 171–183.

View This Item Online: <https://www.biodiversitylibrary.org/item/114186>

Permalink: <https://www.biodiversitylibrary.org/partpdf/148593>

Holding Institution

American Museum of Natural History Library

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: Public domain. The BHL considers that this work is no longer under copyright protection.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.