

Contributions to Indian Malacology, No. III. Descriptions of new operculated land-shells from Pegu, Arakan and the Khasi hills.*—
BY WILLIAM T. BLANFORD, F. G. S.

1. *ALYCÆUS INGRAMI*, n. s.

Testa late umbilicata, conoideo-depressa, acute sinuato-costulata, albida, interdum rubello-albida, versus apicem ferruginea, vix translucens. Spira conoidea, apice obtusula, sutura parum profunda. Anfr. 4 convexi, ultimus ad peripheriam sub compressus, ad latus mediocriter tumidus, ibidem confertissime costulatus, tum constrictus, prope aperturam non descendens. Spatium constrictum† longitudinis mediocris, costulatum, medio tumidum; tubulum suturale mediocre, $\frac{1}{4}$ peripheriæ subæquans. Apertura obliqua, circularis: peristoma duplex; externo breviter incrassato-expanso; interno expansiusculo, continuo. Operculum fusco-corneum, multispirum, externe perconceavum, nucleo centrali intus prominente papillari.

	millimetres	inch
Diam. maj.	6	or 0.24
„ min.	5	0.2
Alt.	$3\frac{1}{4}$	0.13
Aper. diam.	$1\frac{3}{4}$	0.07

Habitat prope Tongoop in Arakan.

The present belongs to the typical group of *Alycæus*, according to Mr. Benson, and is most nearly allied to *A. umbonalis*, B. from Pegu. It is distinguished from that species by its more raised spire, smaller size, shorter sutural tube, and shallower suture, by its less oblique mouth and non-descending last whorl, and by its duplex slightly expanded peristome, which contrasts strongly with the broadly reversed lip of *A. umbonalis*. That species also has the upper whorls much more closely, but less sinuously costulated than are those of *A. Ingrami*. In the subangulation of the last whorl at the periphery there is some resemblance to the little Thayet Myo *A.*

* My brother having left India, I have no longer the advantage of his co-operation in the publication of these "contributions." In consequence of his absence, I fear that I shall be unable in future to add drawings of the shells described.

† By *Spatium constrictum* or *strictura* in these descriptions of *Alycæi*, the whole constricted space from the peristome to the origin of the sutural tube is to be understood.

sculptilis, B. which, however, is easily distinguished by the characters of its crenulated peristome, besides other peculiarities.

The *Alyceus* from the Andaman islands lately described by Mr. Benson (Ann. and Mag. Nat. Hist. for January, 1861) probably resembles *A. Ingrami* in size and general shape. I have not had the opportunity of seeing *A. Andamanice*, B. which is, however, clearly distinct from the present species on account of the characters of the spire, suture, sculpture, &c.

I have much pleasure in naming this form after Captain Ingram, to whom I am indebted for a very large collection of shells, chiefly from Arakan and the Arakan hills, and embracing altogether about 50 species, several of which had escaped my own search.

A. Ingrami was found in only one spot, viz. in earth at the sides of a large mass of limestone about 3 miles S. W. of Tongoop. There it was abundant.

2. ALYCEUS HUMILIS, n. s.

Testa aperte umbilicata, turbinato-depressa, lævis, rubello-succinea, ad apicem sanguinea. Spira conoidea, apice obtusula, sutura profunda. Anfr. $3\frac{1}{2}$ rotundati, ultimus ad latus mediocriter inflatus et confertim costulatus, tum constrictus, versus aperturam breviter descendens. Strictura glabra, longa, antice tumidior. Tubulum suturale breve, $\frac{1}{6}$ peripheriæ subæquans. Apertura obliqua, circularis; peristoma duplex; externo retro-relicto, interno continuo, porrecto, fere soluto. Operculum corneum, multispirum, externe concavum.

	mm.	inch
Diam. maj.	$2\frac{1}{2}$	or 0.1
„ min.	2	0.08
Alt.	$1\frac{1}{2}$	0.06
Apert. diam.	$\frac{2}{3}$	0.025

Hab. ad Akouktoung, ad ripas fluminis Irawaddi, in provincia Burmana Pegu.

A solitary specimen of this species, slightly weathered and shewing more sculpture than usual, was found by me in April, 1861, close to Myanoung, on the banks of the Irrawaddy. With it I found a few other shells; amongst them a small variety of *Bulimus cænopictus*, Hutt. and as this shell is not known to inhabit Pegu, but has since occurred to me in the neighbourhood of Ava, I was inclined to suppose that *A. humilis* was also derived from that neighbourhood.

Lately, however, during a hurried search at Akouktoung, I had the good fortune to find some living specimens of what, I have little doubt, is the same species as that which I first obtained, the only difference being the absence of any sculpture except on the tumid portion of the last whorl. From those specimens the above description has been corrected.

A. humilis resembles somewhat the minute *A. armillatus*, B. but differs in the very much greater distance to which the strongly marked costulation upon the tumid portion of the last whorl is carried back from the constriction, the distance being in both species proportional to the length of the sutural tube. *A. humilis* is further distinguished by its longer constriction, by the descent of the mouth, and the greater tumidity of the last whorl. The colour, as in many *Alycæi*, is probably not quite constant, some specimens being white and translucent.

With *A. humilis* at Myanoung I found a single broken specimen of another *Alycæus* which resembles the singular little Darjiling *A. plectocheilus* in the form of the peristome. The specimen being imperfect and weathered, I delay publishing a description of it in the hopes of succeeding in obtaining better specimens before doing so.*

3. ALYCÆUS GRAPHICUS, n. s.

Testa perforata, ovato-globosa, tenuis, pallide fulva, costulis filaribus subremotis sinuatis ornata. Spira ovato-conoidea, lateribus convexis, apice obtusula, sutura impressa. Anfr. 4, rotundati, 2 primi lente, penultimus et ultimus celerius accrescentes, ultimus ad latus vix tumidus, pone stricturam spatio brevissimo confertius costulatus, tubulum suturale brevissimum gerens. Spatium constrictum læve, costulâ filiformi unâ medio plerumque signatum, prope aperturam tumidius. Apertura vix obliqua, majuscula, circularis; peristoma duplex; interno breviter porrecto, continuo; externo expanso, retro relicto, ad umbilicum reflexo, perforationem partim celante.

	mm.		inch
Diam. maj.	3	or	0.12
„ min.	2½		0.1
Alt.	3		0.12
Apert. diam.	1½		0.06

* It is perhaps the same as a species since found in Upper Burma.

Habitat in montibus Arakanensibus provinciam Burmanam Pegu ab Arakan secernentibus.

A Burmese representative of the little Darjiling group of *Alycæi*, which comprises *A. constrictus*, B. *A. Bembex*, B. and *A. Otiphorus*, B. *A. graphicus*, although much more globose than any of the others, is in some respects intermediate between *constrictus* and *Otiphorus*, resembling the first in size and somewhat in form, and the latter in the reflexed left edge of the outer peristome. This character, however, is by no means so much developed in the Burmese as in the Darjiling species. The present has a more marked sculpture than either of its three allies and differs from them also in the very slight approximation of the costulation behind the constriction. Almost all the species of the genus *Alycæus*, are more closely and strongly marked upon the tumid portion of the last whorl than on any other part of the shell, the length of the closer ribbing and of the tumidity having a general relation to that of the sutural tube.*

Several dead specimens of *A. graphicus* were found at Moditoung, a halting-place about 55 miles from Prome, on the road across the uninhabited Arakan Yoma range from that place to Tongoop.

4. *ALYCÆUS VESTITUS*, n. s.

Testa subanguste umbilicata, turbinata, solida, epidermide deciduâ, crassâ, subtestaceâ, sordide albidâ, conferte, ad spatium inflatum confertissime costulatâ, induta, sub epidermide rubella, lævis, spatio inflato costulato-striata. Spira conoidea, apice obtusa, sutura impressa. Anfr. $4\frac{1}{2}$ rotundati, ultimus teres, ad latus parum inflatus. Strictura brevis, versus aperturam vix tumidior. Tubulum suturale mediocre. Apertura fere verticalis, circularis, majuscula: peristoma duplex; interno continuo, externo expansulo, ab interno sulco separato, ad anfr. penultimum breviter interrupto.

	mm.	inch
Diam. maj.	5	or 0.2
„ min.	$3\frac{1}{2}$	0.14
Alt. vix	3	0.12
Apert. diam.	$1\frac{1}{2}$	0.06

Hab. in montibus Arakanensibus.

Var. minor. Diam. maj. 4, min. 3, Alt. $2\frac{1}{4}$ m.m.

* *A. otiphorus*, B. is not costulated, but simply, closely and regularly striated throughout, rather more closely and costulately on the inflation.

Hab. cum *A. graphico* ad Moditoung.

But a single specimen of each variety was found. The first was obtained on the banks of the Pado Khyoung, a stream running from the Arakan range on the Pegu side in the district of Henzada. A single specimen either of another variety, or of a distinct but closely allied species occurred to me on the banks of another stream, the Alon Khyoung, lying between the two previously mentioned localities. This form differs in having a simple lip, and, apparently, a longer sutural tube. None of the specimens are quite fresh, although all are in fair condition and unbleached. Of the epidermis only traces remain on both shells.

This species is not affined to any known form. It is perhaps nearer to the little group to which *A. graphicus* belongs than to any other, but it has not the short sutural tube nor the ovately conoid form which characterizes that section of the genus. The shortness of the constriction, and the very slight degree in which it expands towards the aperture, connect this form somewhat with the section *Dioryx* of Mr. Benson.

5. *ALYCEUS SUCCINEUS*, n. s.

Testa aperte umbilicata, depresso-turbinata, acute sinuato-costulata, succinea, translucens. Spira conoidea, apice obtusula, sutura impressa. Anfr. 4, ultimus ad latus inflatus, ibidem confertissime costulatus. Strictura longa, medio tumida, et duobus vel tribus costulis obliquis, sulculis internis correspondentibus, signata. Tubulum suturale mediocre, $\frac{1}{2}$ peripheriæ subæquans. Apertura obliqua, irregulariter circularis, superne subangulata: peristoma duplex; interno continuo, incrassato, expansulo, margine dextro bis obtuse angulato, ad basin canaliculo haud intrante perforato; externo breviter expanso, retro relicto.

	mm.	inch
Diam. maj.	5	or 0.2
„ min.	4	0.16
Alt.	$3\frac{1}{4}$	0.13
Ap. diam.	$1\frac{1}{2}$	0.06

Habitat in montibus Arakanensibus.

Some of the peculiarities of this species, such as the canaliculate base of the peristome, and the two or three small plaits on the constrictions are repeated in that next described. The plaits or ridges

just referred to, although they have corresponding internal hollows, are scarcely so prominent as those forming the sculpture of the upper portion of the shell. They are nearer to the mouth than to the rise of the sutural tube, and rest upon a tumidity which is scarcely sufficiently pronounced to enable the species to be assigned to the section *Charax* of Benson, although it exactly represents the well marked ridge in the undermentioned species *A. polygonoma*. The sutural tube is, in one specimen, somewhat short of the typical length.

Of *A. succineus*, I only obtained 4 specimens. They occurred at Moditoung together with *A. graphicus*, &c. All were dead, but in fresh condition.

6. *ALYCEUS POLYGONOMA*, n. s.

Testa aperte et perspective umbilicata, turbinata, radiato-striata, rubello-succinea. Spira conica, apice obtusula, sutura profunda. Anfr. 4 rotundati, ultimus ad latus valde inflatus, ibidem confertissime et acute costulatus; spatium constrictum longitudinis mediocris, costulato-striatum, medio in costam prominentem, intus cavo-sulcatam, 2 vel 3 costulis signatam, tumescens. Tubulum suturale mediocre, $\frac{1}{4}$ peripheriæ subæquans. Apertura obliqua, polygonalircularis, basi valde antice sinuata; peristoma duplex; interno vix porrecto, margine dextro ter subangulato, basi subcanaliculato; externo incrassato-expansulo, processu brevi, acuto, basali munito.

	mm.	inch
Diam. maj.	5	or 0.2
„ min.	$4\frac{1}{4}$	0.17
Alt.	$3\frac{1}{2}$	0.14
Ap. diam.	$1\frac{3}{4}$	0.07

Hab. in montibus Arakanensibus.

This species is allied to the last described but is distinguished by its higher spire, less marked sculpture, by the strong ridge on the constriction, and by the more polygonal aperture. The incision of the base, however, is slighter, and, in this species, accompanied by a slight corresponding projection beneath, which represents, on a small scale, the large ear-like basal process in *A. prosectus* Bens. from the Khasi Hills. The inner peristome of that species also has a slight basal indentation within the aperture.

I am indebted for a few perfect specimens of this species to Captain Ingram, who found them upon the Western side of the Arakan range.

I obtained one imperfect specimen at Shoukbeng on the Prome and Tongoop road, close to the summit of the hills.

7. *ALYCÆUS NITIDUS*, n. s.

Testa anguste umbilicata, depresso turbinata, solidula, fulvo-cornea, nitida, polita, translucens. Spira conoidea, lateribus convexis, apice obtusa, sutura impressa. Anfr. 4 convexi, ultimus ad peripheriam subangulato-compressus, subtus planulato-convexus, ad latus breviter tumidus, ibidem confertissime costulatus. Spatium constrictum longum, nitidum, lirâ retro-recumbente, parum elevatâ, prope regionem inflatam munitum. Tubulum suturale breve. Apertura diagonalis, undata, circularis. Peristoma ad basin antice, superne prope anfractum penultimum retro sinuatum, duplex; interno continuo, breviter porrecto, basi canaliculato; externo expanso, retro relicto, in processum auriformem subtus producto. Operc. tenue, corneum, multispirum.

	mm.	inch
Diam. maj.	3½	or 0.14
„ min.	3	0.12
Alt.	2½	0.09
Ap. diam.	1	0.04

Hab. prope Tongoop in Arakan.

This very pretty and distinct little species occurred rarely at the roots of trees near Thaloo and Bandiyo, on the Prome and Tongoop road, not far from the last-named place. It combines the canaliculate inner peristome of *A. succineus* with an ear-shaped process like that at the base of *A. polygonoma*, while the ridge on the peristome is curved backwards in a similar manner to that in *A. hebes*, Bens. *A. gemmula*, Bens. and *A. Footei*, Blanf. although much less elevated than in either of those species, to which the shell now described has otherwise but little resemblance. The somewhat flattened base is peculiar.

The preceding 7 species shew how numerous must be the forms belonging to this peculiar and well marked little genus. Ten species, including *A. umbonalis*, *armillatus* and *sculptilis* of Mr. Benson, have now been described from the partially explored provinces of Pegu and Arakan.*

* Since the above was written I have obtained 2 more species from Upper Burma.

8. *ALYCÆUS THEOBALDI*, n. s.

Testa aperte umbilicata, conoideo-depressa, corneo-albida, translucens, costulis elevatis, sinuatis, remotis ornata, inter costulas striatula. Spira depresso-conica, apice obtusula, sutura impressa. Anfractus $3\frac{1}{2}$ convexi, ultimus ad latus mediocriter tumidus, ibidem confertissime costulatus. Spatium constrictum longum, striatulum, medio tumidum. Tubulum suturale mediocre, $\frac{1}{4}$ peripheriæ subæquans. Apertura obliqua, expandens, circularis; peristoma ad anfractum penultimum breviter interruptum, marginibus callo junctis, duplex; externo expansulo, interno breviter porrecto. Operc: corneum, multispirum, externe perconcavum, nucleo centrali interno prominente papillari.

	mm.		inch
Diam. maj.	4	or	0.16
Do. min.	$3\frac{1}{4}$		0.13
Alt.	$2\frac{1}{2}$		0.1
Ap. diam.	$1\frac{1}{4}$		0.05

Hab. cum *A. hebeti* in montibus Khasi, teste W. Theobald, Jun.

I received two specimens of this species from Mr. Theobald as *A. hebes*, Bens. of which they were supposed to be young shells. They, however, prove, on closer examination, to be fully grown and distinct, the slight swelling in the centre of the constriction contrasting strongly with the high recurved ridge in *A. hebes*. This alone would shew the present to be a different species, but it is also distinguished by its lower spire, narrower umbilicus, smaller size, and thinner and interrupted peristome, the last character not occurring in any other species of the genus. The well-marked distant costulation of the upper whorls of *A. Theobaldi* is entirely wanting in *A. hebes*. The operculum of the latter does not appear to have been described. A single specimen in my possession is dark horny, indistinctly multispiral, extremely concave in front, and convex, almost conical, behind, and deficient in the central internal boss so prominent in most *Alycæi*.

Although there is a swelling in the centre of the constriction in *A. Theobaldi*, it does not amount to a marked ridge, such as characterizes the typical forms of the section *Charax* of Mr. Benson, e. g. *A. stylifer*, B. It is consequently not clear whether this species should be classed with the members of that section, or with those of

the typical group. Several species indeed tend to connect these two subdivisions, which more recent discoveries have rendered less distinct than they appeared to be when first described.

9. CYCLOPHORUS PATENS, *n. s.*

Testa subanguste umbilicata, globoso-turbinata, nitida, subglabra, oblique striatula, subtilissime decussata, albida, plerumque obsolete fulvo-strigata, fasciâ unicâ, 2-3 m.m. latâ, nigricante castaneâ, infra peripheriam circumdata; rarius superne purpurascenti-castaneo-picta vel strigata, subtus castanea, periomphalo solo albido. Spira conica apice acutiuscula, sutura impressa. Anfr. 5-5½ convexi, ultimus rotundatus, vix descendens; umbilicus pervius. Apertura fere verticalis, circularis, intus flaveola, peristoma simplex, breviter adnatum, sublate angulatim planulato-expansum, margine columellari reflexum, fulvum, læte aurantiacum vel flammeum. Operc. distincte 6-spiratum, corneum, nucleo centrali interno minime prominente.

	m.m.	inches	m.m.	inches
Diam. maj. (exempli majoris,)	38	or 1.5	minoris, 29	or 1.15
„ min. „	29	1.1	„ 21	0.82
Alt.	26	1	„ 19	0.75
Ap. diam. intus,	17	0.6	„ 13	0.5

Hab. circa Thayet Myo, Prome, et Henzada in provinciâ Pegu.

This species is remarkable for its flat, disk-shaped expanded peristome, usually of a bright orange or scarlet colour, and for the absence of marked sculpture, and, in most specimens, of any conspicuous coloration, except a single broad dark chesnut stripe below the periphery.

10. DIPLOMMATINA SPERATA, *n. s.*

Testa dextrorsa, non rimata, ovato-conica, subfusiformis, solidiuscula, pallide cornea, subremote verticaliter costulata. Spira conica, apice acuta, sutura impressa. Anfr. 6½ convexi; antepenultimus major, tumidus; ultimus antice vix ascendens. Apertura verticalis, subtus antice sinuata, late auricularis, plicâ columellari validâ munita; perist: subduplex, expansum, margine columellari sinuato et ad basin angulo acuto desinente, callo parietali mediocri.

	m.m.	inch
Long.	2½	or 0.09
Diam.	1½	0.05
Ap. diam.	½	0.02

Hab. in montibus Arakan a Pegu secernentibus.

But two perfect specimens of this shell occurred to me at Moditong on the Prome and Tongoop road, together with *Alycæus graphicus*, &c. It resembles *D. pachycheilus*, B. in the shape of the mouth, but is distinguished by the slighter rise of the last whorl, and by its subremote costulate sculpture, which, together with its less rounded aperture, serves also to distinguish it from *D. diplocheilus*, B. *D. pullula*, B. and *D. Blanfordiana*, B. the two latter of which are closely costulated, and the first named smooth.

I have met with two other species of *Diplommatina* in Pegu, both apparently undescribed.* The genus had not previously been met with in the Burmese peninsula.

During the past year (1861) I have found *Hydrocena pyxis*, B. as far South as the neighbourhood of Henzada. *Cyclophorus fulguratus*, Pfeiffer, *C. Theobaldianus*, B. and *C. patens*, appear to occur, the former abundantly, the others sparingly, throughout the greater portion of Pegu, west of the Irrawaddy. A small *Pupina* is common at Thondoung near Thayet Myo and in several places further south.

Leptopoma aspirans, B. occurs among Captain Ingram's Arakan collections. Two large species of *Cyclophorus*, one of which may perhaps be a variety of *C. aurantiacus*, Schum. were found near Tongoop. A solitary specimen of a small *Helicina*, allied to *H. Andamanica*, B. was obtained from Ramri Island.†

Thayet Myo, August, 1861.

Since the above paper has been written, undescribed forms have accumulated upon my hands. Of these the most interesting are a second species of the genus *Hypselostoma* from Ava, whence I have also had the good fortune to obtain two more *Alycæi* and two *Diplommatinæ*, as well as a very singular little operculate shell allied to the anomalous *Pterocyclos hispidus*, Pearson. Two new species of *Helix* of the section *plectopylis* of Benson have also occurred to me and a very considerable number of other novelties.

Bassein, March, 1862.

* Two other distinct species have since been obtained in Upper Burma.

† Both *Leptopoma aspirans* and the small *Helicina* referred to above, have since been found abundantly in the South Western extremity of Pegu. They are there associated with the Darjiling and Khasi *Helix plectostoma*, B.



Blanford, W. T. 1863. "Contributions to Indian Malacology, * No. III. Descriptions of New Operculated Land-Shells from Pegu, Arakan and the Khasi Hills." *The journal of the Asiatic Society of Bengal* 31(II), 135-144.

View This Item Online: <https://www.biodiversitylibrary.org/item/256983>

Permalink: <https://www.biodiversitylibrary.org/partpdf/367548>

Holding Institution

Cornell University Library

Sponsored by

BHL-SIL-FEDLINK

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>.