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Publisher: Taylor & Francis

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Annals and Magazine of Natural History: Series 2

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/tnah08>

XV.—Characters of seven new species of Helix, with amended descriptions of some species previously described, and notes on others requiring remark

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Published online: 14 Dec 2009.

To cite this article: W.H. Benson Esq. (1848) XV.—Characters of seven new species of Helix, with amended descriptions of some species previously described, and notes on others requiring remark, *Annals and Magazine of Natural History: Series 2*, 2:9, 158-164, DOI: [10.1080/03745485809494679](https://doi.org/10.1080/03745485809494679)

To link to this article: <http://dx.doi.org/10.1080/03745485809494679>

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further details respecting it, which his eminent attainments and metropolitan opportunities will so well enable him to afford.

EXPLANATION OF PLATE VI.

Fig. 1. Female highly magnified.

— 2. Male ditto.

— 3. Very young foetus in the female.

— 4. Semitransparent ovum with the opaque ovum inside.

— 5. Jaws of the female. The internal parts of the male and female will readily be recognized from the descriptions.

— 6. Ovarium with ova vesicles proceeding from it.

XV.—*Characters of seven new species of Helix, with amended descriptions of some species previously described, and Notes on others requiring remark.* By W. H. BENSON, Esq., late Bengal Civil Service.

THE following seven species of *Helix* are not described in the valuable monograph of the genus lately published by Dr. L. Pfeiffer, a work which deserves to find a place in the library of every conchologist. The first volume, besides monographs of several allied genera of less extent, contains the characters of upwards of 1130 species of *Helix*, inclusive of *Nanina* and *Carocolla*. I have also recast the characters of three of the species described by me in 1836, and included in the monograph, but which Dr. Pfeiffer had not had an opportunity of inspecting when his work was published; and I have noticed a few points in which correction will be required, where a species has either been twice admitted under different names, or has been founded on the young of a shell belonging to a different genus.

Other new species of *Helix* collected in India, at the Cape of Good Hope, and the Mauritius, I hope to describe on a future occasion.

1. *Helix Orobia*, nobis, n. s.

Testa perforata, depresso-globosa, tenuiuscula, radiatim plicato-striata, striis concentricis granulato-decussata, luteo-cornea, fascia infra periphæriam rufo-fusca ornata, versus apicem rufescente, basi pallidiori; spira rotundata, apice planato; anfractibus $5\frac{1}{2}$, superioribus planulatis, ultimo prope suturam tumidiore, periphæria subangulata; apertura subquadrato-lunata, peristomate recto, intus late albido labiato; margine columellari subverticaliter descendente, vix reflexo, perforationem subtegente, angulum cum margine basali expansiusculo efformante.

Diam. maj. 35 millim., min. 31. Axis 16 mill.

Hab. Darjiling regione Sikkim montium Himalayanorum.

Mus. nost. et Soc. Ind. Orient. Angl. Lond.

This shell, like *labiata*, *monticola*, and other Himalayan *Helices*, has frequent varices, the edges of former apertures, distinguished by obliquely radiate bands of a darker colour. It was received by Dr. J. F. Bacon from Darjiling. A specimen from Dr. Pearson is in the East India Company's Museum in Leadenhall-street.

2. *Helix solata*, nobis, n. s.

Testa perforata, depresso-globosa, radiato-striata, nitida, cærulescente-albida, antice rufescente, versus apicem rufo-castanea, punctis plurimis brunneis translucentibus quasi solata, fascia unica castanea supra angulum anfractus ultimi usque ad apicem decurrente, 1-3 obsolete subtus ornata; anfractibus 5 convexiusculis, ultimo subangulato, angulo antice evanescente; spira obtusata; apertura obliqua, transverse ovato-lunata, peritremate intus fusco-castaneo, albo-marginato; labro recto, deflexo, margine columellari subreflexo, umbilicum fere tegente.

Diam. major 23 mill., minor 18. Axis 11 mill.

Hab. montibus Nilgherries Indiæ meridionalis. D. Jerdon.

I owe this species to the kindness of Dr. Jerdon, who sent it to me, with other interesting shells, from the Madras Presidency. He found it on the western face of the Nilgherries. I have a larger specimen from the same source in bad condition.

3. *Helix crassicostata*, nobis, n. s.

Testa late umbilicata, depresso-planata, albida, plicis validis irregularibus obliquis, juxta carinam incrassatis, munita; spiræ apice lævigato, vix elevato; anfractibus 4 planatis, ultimo carinato, subtus valde convexo, antice deflexo; umbilico infundibuliformi; apertura subhorizontali, transverse ovato-rotundata, marginibus conniventibus reflexis, callo brevi junctis.

Diam. major 13 mill., minor 10. Axis 4 mill.

Hab. in dumetis Indiæ meridionalis. Jerdon.

This species belongs to the same group as *H. ruginosa*, *H. fallaciosa* and *H. asperella*, all inhabiting Hindustan. It is most nearly allied to the former, but differs in its flatness above, its keel, colour, and wider umbilicus. Dr. Jerdon sent it to me, with *H. ruginosa*, from the jungles of Salem. Leschenault is quoted as an authority for the occurrence of *H. ruginosa* in Bengal, but it has never been met with by me nor by my correspondents in that Presidency. *H. fallaciosa* is also noted as a Bengal species by Pfeiffer in the 'Zeitschrift für Malakozoologie' for 1846, but in his monograph, Coimbatore and Ceylon are given on the authority respectively of Leschenault and Templeton. Dr. Jerdon sent it to me as occurring in jungles in the Carnatic. For *H. asperella* Dr. Pfeiffer has given only the locality of the specimens

which I sent to Mr. Cuming, viz. Bithoura (not Bithonia) in the Gangetic Doab, where I first met with it in 1824. It occurred to me in greater abundance in Bundelkhund, and it is found in other places near the river Jumna, and to the south-west as far as Mhow in Malwah and Neemuch. I never met with it to the north and east of the Ganges.

4. *H. Capitium*, nobis, n. s.

Testa perforata, globoso-conica, subtrochiformi, lævigata, absque nitore, rufescente-cornea, subdiaphana, opaciter albido-laciniato-strigata et marmorata; spira conica, apice obtuso; anfractibus $5\frac{1}{2}$ convexiusculis, ultimo carina filiformi cincto, basi convexa; sutura impressa, marginata; apertura rotundato-tetragona; peristomate recto, supra expansiusculo, infra subreflexo; margine columellari late reflexo perforationem semitegente.

Diam. major 14 mill., minor 13. Axis 11 mill. Mus. nost. et D. Boys.

Hab. in palude prope Sicrigali provinciae Bahar Indiæ Orientalis. D. Boys.

This remarkable species, the colours of which remind the observer of some of the Philippine shells, was found by Capt. W. J. Boys, 6th Bengal Light Cavalry, in a marsh between the detached hill washed by the Ganges, and the main range at Sicrigully in Bahar.

5. *H. Infula*, nobis, n. s.

Testa subperforata, globoso-conica, subtrochiformi, albido-cornea, pellucida, supra minime nitente, lineis distantibus parum elevatis cincta, subtus subnitente, radiato-striata, striis remotiusculis concentricis ornata; spira subconica, apice obtuso; anfractibus sex convexiusculis, ultimo angulato, infra convexiusculo; apertura subquadrato-lunata, peristomate acuto, margine columellari verticali, prope perforationem subreflexo.

Diam. maj. 7 mill. Axis 5 mill. Mus. nost.

Hab. prope urbem Murshedabad Bengalæ, necnon prope collem Patharghata, provinciae Bahar.

Formerly indicated as *H. turbiniformis*, mihi, in the Journal of the Asiatic Society of Calcutta. This name being used by Pfeiffer for another species, I have altered it for one of nearly similar signification. *H. Infula* occurred to me in 1835 on the leaves of trees and shrubs at the two places above-noted. The animal has a caudal protuberance like *Nanina*, but no expansion of the mantle, and is whitish spotted with brown, which, appearing through the translucent shell, gives the species a beautiful appearance when newly captured. At first sight it appeared as if the colours resided in the shell.

6. *H. radiculicola*, nobis, n. s.

Testa perforata, subglobosa, tenui, virescente-cornea, translucente, subtus nitidiori, radiato-striata, striis concentricis delicatissimis decussantibus; spira elata conoidea, apice obtuso; anfractibus 4 convexis, ultimo obtuse angulato; apertura obliqua, subquadrato-rotundata; peristomate recto (acuto), margine columellari verticaliter descendente, supra late reflexo, perforationem semitegente.

Diam. major 10 mill. Axis 7 mill. Mus. nost.

Hab. prope Landour et Masuri, ad montes Himalayanos Mesopotamiæ Gangeticæ.

Obtained in the hollows at the roots of sycamores by Dr. J. F. Bacon and myself in a dark and precipitous ravine running down the north side of the Queinty range, behind Rockville, Landour. A few were once found by Dr. Bacon on the leaves of a shrub, poisonous to goats, called Aikhâr, on the same range; and a single deserted specimen by Capt. Hutton in the deep valley behind Mussoorie. The animal is obscurely variegated with brown and whitish when seen through the shell.

7. *H. Trotteriana*, nobis, n. s.

Testa imperforata, globosa, tenuissima, translucente, corneo-virente, radiatim obsolete plicatula; spira brevi, conoidea; apice obtusato, lævigato, rubente; anfractibus 4 convexiusculis, ultimo ventricosiore; apertura obliqua, ovato-lunari; peristomate simplici, acuto; margine columellari filiformi, albido, polito, subverticali, leviter arcuato, intrante.

Diam. major $19\frac{1}{2}$ mill., minor 17. Axis 12 mill. Mus. nost., Cumming, &c.

It has much of the habit of *H. ravidia* (mihi) of Chusan (Pfr. no. 69), but is imperforate and differs in other important points. It was taken alive near Uitenhage, South Africa, on the route from Graaf Reynett, by Robert Trotter, Esq., Bengal Civil Service (brother of the Commander of the late Expedition to the Niger), who kindly undertook to collect for me in a trip from Cape Town to the interior, and who got this new form in addition to others already known to science.

In the 'Zeitschrift für Mal.' for 1846, Dr. Pfeiffer states that *Helix Cestus*, Benson, is *H. similis*, Fér., of which *H. Woodiana*, Lea, is another synonym. In his monograph, *Cestus*, Bens., also appears as a synonym of *H. similis*. Dr. Pfeiffer cannot have seen an authentic specimen of *H. Cestus* from the N.E. frontier of Bengal, but possibly one of Dr. Cantor's Chinese specimens, which were referred, without sufficient examination, to that species, as, although allied, the former is sufficiently distinct from my specimens of *H. similis* from the Mauritius and Southern India, as well as from the Chinese examples of the shell which

Lea described as *H. Woodiana*. I annex a more extended and accurate description than that given by me in 1836. The characters "testa perforata, subdepressa, spira subconoidea," already indicated a sufficient difference from *H. similis*, which is "anguste umbilicata, subdepresso-globosa."

AMENDED CHARACTER.

H. Cestus, Bens. J. A. S. vol. v. p. 353, 1836 (Pfr. 884).

Testa perforata, subdepresso-conoidea, fuscescens-cornea, subplicato-striata, supra angulum castaneo-unizonata; spira subconoidea, apice obtusato; anfractibus 5, leviter convexis, supra subplanulatis, ultimi periphæria angulata, basi convexiuscula; apertura obliqua, depressa, minime transversa (altitudine latitudinem æquante), rotundato-lunari, superne labro antrorsum arcuato, expansiusculo, margine columellari basaliq.ue reflexis, illo dilatato, perforationem semitegente.

The greater narrowness of the perforation which is nearly concealed by the reflected columellar lip, the more obtuse apex, more planulate whorls, less convex base, the oblique, sinuous and less transverse depressed aperture, and the more angular periphery, serve, independently of colour, to distinguish *H. Cestus* from any of the varieties of *H. similis*.

H. Cestus is from the same quarter as *H. serrula*, Benson, 1836 (Pfr. no. 540), of which *H. Bensoni*, Von dem Busch (Pfr. 568), is clearly a variety, *H. delibrata**, Bens. 1836 (Pfr. no. 959), of which *H. procumbens*, Gould, Bost. Journ. vol. iv. (Pfr. 1012), redescribed and refigured in Philippi's 'Abbildungen,' is a synonym, *H. plectostoma*, *climacterica*, *tapeina*, and the fine species *H. Oxytes*, Bens. The German conchologists mark these species as from Bengal, but they come from the mountainous region beyond the north-east border of that province, which is geographically a portion of the eastern peninsula beyond the Ganges; and it appears that *H. delibrata* is also found at Tavoy, in a lower latitude of that peninsula. The continental zoologists are apt to give a too extended signification to the term Bengal, confounding the province with the presidency; thus we have "Almorah Bengalæ," "Meywar Bengalæ," situated respectively in the Western Himalaya, and Rajpootana in Western India, the productions of which are quite distinct from those of Bengal and of each other, and the inhabitants of which speak a different language, and would hold themselves aggrieved by being confounded with the enervated occupants of Bengal proper.

* The character "depresso-plana" should have excluded *H. delibrata* from Pfeiffer's division No. 69, and should have placed it in No. 71, in which he has classed *H. procumbens*.

AMENDED CHARACTER.

H. tapeina, Bens. J. A. S. vol. v. p. 352, 1836 (Pfr. 541).

Testa depresso-conoidea, albido-cornea, irregulariter oblique striata, minutissime granulato-corrugata, subtus tumida; spira convexa, apice obtuso; anfractibus 6, subplanulatis, ultimo obtuse angulato; apertura valde obliqua, orbiculato-lunata, peristomatis margine superiori recto, antrorsum arcuato, exteriori expansiusculo, inferiori subreflexo, columellari dilatato reflexiusculo; umbilici infundibuliformis, omnes anfractus exhibentis, margine subangulato.

Diam. maj. 15 mill., min. $13\frac{1}{2}$. Axis $5\frac{1}{2}$ mill.

AMENDED CHARACTER.

H. climacterica, Bens. J. A. S. vol. v. p. 352 (Pfr. 577).

Testa imperforata, depresso-conoidea, carinata, albida, supra argute radiato-plicata, infra læviore, tumida; spira subconoidea, gradata, apice obtuso; anfractibus 8 angustis, arcte convolutis, omnibus carinatis, ultimi carina compressiuscula; apertura angusta, transversa, securiformi; peristomate acuto, infra subsaliente, expansiusculo; umbilici loco excavato, clauso.

Diam. maj. 19 mill., minor 18. Axis 9 mill.

H. Barclayana, Pfr. Monogr. Hel. Viv. p. 118. no. 305.

On an examination of this Mauritian shell in Mr. Cuming's collection, it struck me (from my observation of the adult and young of one of the smaller *Pupa* of the Isle of France while alive in their native haunts, and which, at first sight, appeared to belong to different genera) that this supposed *Helix* was the young of *Pupa Pagoda*, Fér. (*Hel.*), which inhabits the woods around Curepipe in the same island. Mr. Cuming's stores affording specimens of *Pupa Pagoda* in different stages of growth, a comparison was instituted, which left no doubt of the specific identity of the two separated shells. *Helix Barclayana* will therefore require to be erased from the catalogue, a circumstance which I regret the more, as the name commemorated the conchological zeal of an old friend and schoolfellow.

H. petrosa, Hutton, J. A. S. vol. iii. p. 83 (Pfr. no. 114).

This species must be erased from the catalogue. Capt. Hutton's specimens were *H. (Nanina) vitrinoides*, Deshayes, and were imperfectly described by him in 1834.

H. (Nanina) fragilis, Hutton, J. A. S. vol. vii. p. 216, 1838 (Pfr. no. 89).

This is another species which Pfeiffer has not seen. In the note which I took of the shell when I had an opportunity of inspecting it, I find recorded "last whorl ventricose, slightly an-

gular at the periphery," and "an angle at the base of the columella," characters which were not noted in Capt. Hutton's description. Capt. Hutton also describes the shell as "conico-discoidea." My note gives "conoid depressed." Pfeiffer says, "Habitat in Himalaya prope Kirmalliah." Capt. Hutton's habitat is "Kirmalliah, five miles from Neemuch," which is 100 miles south of Ajmere in Rajpootana, and 400 miles from the nearest point of the Himalaya.

H. proxima, Fér. (Pfr. no. 980).

The habitat "Coimbatore" is stated on the authority of Leschenault and Deshayes, as in the "presqu'île au delà du Gange," instead of "en deça du Gange," Coimbatore being south of Seringapatam.

Anostoma Boysii, Bens. (Pfr. no. 3).

The habitat of this singular little species of a rare genus, which I named after its discoverer, Capt. W. J. Boys, is given as Bengal, communicated by Dr. V. d. Busch, who doubtless received it, with other Indian shells (the source of which is not acknowledged in the 'Abbildungen' of Philippi), from Capt. Boys. This gentleman found *A. Boysii* among the stones of the Sâkà in the hill-fort of Chittore in Rajpootana. He got also a single specimen at Ajmere. The species has occurred in no other part of India.

Dublin, June 21st, 1848.

XVI.—On the form of the Capsule and Seeds as affording a specific character in *Primula vulgaris* (Huds.), *P. veris* (Linn.), and *P. elatior* (Jacq.). By the Rev. W. A. LEIGHTON, B.A., F.B.S. E. & L.*

VERY much has been written from time to time on the Cowslip, Primrose and Oxlip, both to prove their specific identity and the contrary; and many experiments have been undertaken with similar views, but as it appears to me without having arrived at any certainty. The question seems still an open one. Most of these writers, whose papers I have had the means of consulting, whilst they duly describe the forms and peculiarities of the leaves, flowers, scape and other parts of the above plants, never take any notice of the capsule and seeds. The same may be said of both English and continental botanists, whose works I have referred to.

It occurred to me that possibly good specific characters might

* Read before the Botanical Society of Edinburgh, July 13th, 1848.