## JAMAICAN LAND SNAILS, 6

## BY H. BURRINGTON BAKER

The first paper of this series appeared in the first number of vol. 48 , in which the symbols used for localities are explained on pages 7 to 9 .

Volvidens (Trifaux) triodon H.B.B., ground [WWF].
Hyalosagda (Lacteoluna) immunda (C.B.A.), ground [EEJadult, $8.7 \times 171$ ( 14.9 mm. ), $4 \frac{1}{2}$ wh.; EJ1, 3 juvenile on rocks]. H. rufula (Pfr.), ground [KHWa, MM3b, MN3ac, NMM ; smaller than immunda]. H. ptychodes (Pfr.), ground, incl. typical [EEJ-fresh, EJ3, EJF, MM3b, MN2-3, NM2, NMM-fresh, NMVfresh, VW2-fresh, WWF] and less angulate Mandeville race (immunda auct.) [MM3be, MN2-3; more rapid whorl-increase than other two].
H. (Aerotrochus) subpyramidalis (C.B.A.), trunk-arboreal [EBL-dead, EEC, EJ2-3, KH, ML2, MM, MN2-3, NM2, WC1, WWC-dead; aestivating shells look like asterisks because of adherent dirt]. H. perdepressa (C.B.A.), ground [ENF, KC1fresh, NM2] ; subsp. brevior (C.B.A.), ground [KCC, MM1, MM2-fresh, VCMa-fresh]. H. omissa (Pils.) [MN3b-fresh].
H. (Microsagda) epistyliulum (C.B.A.), under rocks [MM2-4, VW1, VWS-dead]. H. angustispira (C.B.A.), under rocks [EEJ ; pl. 8, fig. 8; $2.0 \times 147$ ( 3.0 mm .), umb. 5.2 times, $4 \frac{1}{2} \mathrm{wh}$.]. H. spreta (C.B.A.), ground and under rocks [EE, EJ, ENF; fig. $7 ; 4.7 \times 146$ ( 6.9 mm .), umb. 5.6 times, $5 \frac{1}{2}$ wh.]. H. inconspicua (C.B.A.), ground [KHWa].
H. (Strialuna) haplotrema H.B.B., ground [MN3c]. H. sincera (C.B.A.), ground and under rocks, incl. typical [EEC, EJ3, ENF, VCN, VW2-fresh, VWS-fresh; major riblets vague to absent on last whorl] and race diminuta (C.B.A.) [EEC, ENF, KC1-fresh, KF-fresh, KH-fresh, MM3, MN3, NMV-fresh, VC, VW2-fresh, VWS; ribs distinct].
H. (Stauroglypta) anthoniana (C.B.A.), ground to deep-inrocks, incl. typical [NM2, NMV] and paedogenetoid form invasa (Pfr.) + boothiana auct. [KHWa, ML2, MM, MN, NM, VCMd, VW, WSF, WC1, WWF]. H. peraffinis (C.B.A.), mainly ground, also under rocks, incl. typical [ENF, KCC, KF, KH,

ML2, MM3-4, MN3b, VCM, VF, VW1, WSF, WC, WW] and more elevated form (spreta auct.) [KCC, KHS, MM3a, VC, WC2, WWF].
H. (s.s.) similis (C.B.A.) [EBL, EJF, EJG, ENF] ; subsp. ambigua (C.B.A.) [EE]. H. hollandi (C.B.A.) [ML1, MM1-3]. H. arboreoides (C.B.A.), incl. typical [EBL-dead, EJ1-3] and smaller form [KF, KHS-dead]. H. simplex (Pils. \& Br.) [MM3a-dead, MM4, MN2-3; often rimate]. H. osculans (C.B.A.) [NM2; the only lamellate species]. All species on ground and under rocks, most frequently in disturbed places.

Proserpinula infortunata (Bland), ground [KH, ML2, MM2-4, MN3, NM2, VCMb, VF, VW2, VWS, WV] ; subsp. proserpinula (Pfr.), ground [NM2b (one shell), WSF, WC1; without lamina but with deeper suture and more cylindrical whorls than discoidea]. P. discoidea (C.B.A.), ground [EJF, MN1-dead, VW2-dead, VWS]. P. margaritella Pils. \& Br., ground [MN1, 3ac].

Sagda (Parahelix) epistylioides (Fér.), deep-in-rocks [WSF; shape extremes $18.4 \times 111$ ( 20.4 mm .), $9 \frac{1}{4}$ wh., $16.7 \times 141$ ( 23.6 mm .), 9 wh.]. S. connectans (C.B.A.), deep-in-rocks, incl. typical [NMV, NM2a; $18.1 \times 141$ ( 25.5 mm.$)$, $9 \frac{1}{4}$ wh.] and paedogenetoid race [MN2-3; $11.5 \times 154$ ( 17.7 mm .), $7 \frac{3}{4} \mathrm{wh}$.]; subsp. catadupae H.B.B., deep-in-rocks [VW2]. S. occidentalis H.B.B., deep-in-rocks [WC2-dead, WWC-dead, WWF]. S. jayana (C.B.A.), deep-in-rocks [KF most depressed, $18.3 \times 138$ ( 25.3 mm .), $8 \frac{1}{4}$ wh.; KH incl. highest, $18.8 \times 106$ ( 20 mm .), $9 \frac{1}{4}$ wh.]. S. adamsiana Pils. \& Br., deep-in-rocks, incl. typical [MM, MN; shape extremes MM3) $25 \times 100$ ( 25 mm .), 10 wh., $24.5 \times 106$ ( 26 mm. ), 10 wh ., and $18.5 \times 135$ ( 25 mm .), $8 \frac{1}{2} \mathrm{wh}$.; paedogenetoid and most depressed at edges of woods and along fences] and race with double columellar lamella (like in jayana) [MM3 (rare), ML]. S. montegoensis Pils. \& Br., ground and under rocks [ VCMb ; VF usually larger, $20.5 \times 114$ ( 23.8 mm .), 9 wh.]. S. spei Pils. \& Br., under rocks on hillsides [WC1, WC2dead] ; subsp. portlandensis H.B.B., under rocks [EEJ, EJ1, 3b]. S. anodon Pils. \& Br., bases of and under rocks, flood-plain at base of hills [KC2, KCC-dead]. S. grandis Pils. \& Br., deep-inrocks [NMM, NM2, NMV ; shape extremes $27.8 \times 113$ ( 31.5 mm .),
$9 \frac{1}{2}$ wh., $32.4 \times 89$ ( 28.7 mm .), $11 \frac{1}{4}$ wh.]. S. maxima Simps., deep-in-rocks [WV ; $26.6 \times 113$ ( 30.1 mm .), 9 wh .] ; subsp. jacobensis H.B.B., deep-in-rocks, incl. typical [VF] and paedogenetoid race [VW1; $22.4 \times 120$ ( 26.8 mm .), $7 \frac{1}{2} \mathrm{wh}$.]. Most of the species of Sagda vary greatly in relative height and may attain sexual maturity when only half grown.

Sagda (s.s.) kingswoodi H.B.B., ground [WC2-dead]. S. pila (C.B.A.) [VW2-dead]. S. triptycha (Pfr.), rock-bases, edges of woods, incl. typical [NMV-dead; $13.2 \times 115$ ( 15.1 mm .), $5 \frac{1}{4}$ wh.] and dwarf race [NM2, NMT-dead; $10.0 \times 108$ ( 10.8 mm .), $5 \frac{1}{2}$ wh.]. S. foremaniana (C.B.A.), rock-fences [MN3]. S. cookiana (Gm.), bases of and under rocks, open rock-slides [KHW].
Zaphysema (Meiophysema) lamelliferum (C.B.A.), fair climber [EBL-fresh, EEJ, EJ; shell hirsute, lamina inconstant].
Z. (s.s.) macmurrayi (C.B.A.), deep-in-rocks, [MM4, MN3fresh, VW2-dead]. Z. tunicatum (C.B.A.), fair climber, incl. typical [MN3, NM; hairs not developed on last shell whorl; mantle-edge orange red], small dark race [KHW] and small yellowish race [VW2; mantle-edge orange]. $Z$. olivaceum H.B.B., good rapid climber [EEJ, EJ1, EJ2-3-dead]. Z. buddianum (C.B.A.), aestivates on ground [VF, VW1, WV, WWF; shell hirsute; mantle-edge spotted with orange]. Z. mundum (C.B.A.) ( + tenerrima auct.), good climber [M; shell hirsute, usually even on last whorl; mantle-edge reddish].

Thysanophora (Lyroconus) plagioptycha (Sh.), leaf-arboreal [EEC, MM3]. Apparently the only group of Thysanophorinae in Jamaica.

Pleurodonte (Lucerna) lucerna (Müll.), mainly ground, incl. typical race [WWC, small coastal subfossils], fuscolabris (C.B.A.) appr. lucerna [WC2], fuscolabris [WWF, WC1, VC-dead], fuscolabris slightly appr. goniasmos [WSF] and fuscolabris appr. nobilis [VF]. Subsp. patina (C.B.A.), mainly rock-bases, incl. nobilis (C.B.A.) appr. fuscolabris [WV, VW1], nobilis appr. goniasmos [VW2] and race near nobilis [NMV; typical color and tan-and-white shells, mainly with obsolescent carinae]. Subsp. goniasmos (Pils.), ground and rock-bases, incl.

Balaclava race [NM excl. NMV; superficially like Fér. (Hist.: pl. 57, f. 1) but with reduced teeth], more typical stocks [MN, ML1] and goniasmos appr. sublucerna [MM2-4; MM4 with many high turbinate shells]. Subsp. semperfluens Pils. \& Br. (=abnormis Pfr.?), rock-bases, incl. large race [KH] and topotypes [KF]. Subsp. sublucerna (Pils.), ground, incl. large race [KC1, size of semperfluens] and typical [KCC]. Subsp. acuta (Lam.) + lamarckii (Fér.), weak climber, incl. typical acuta [ENF, EJ3], acuta but often smaller, weakly carinate, with large percentage of broadly rimate shells (as in next two from same region) [EEJ] and race heteroclites (Lam.) + lamarckii, var. a, the smaller coastal and hilltop race [EJ2-dead; EEC-dead, rimate]. P. chemnitziana (Pfr.), weak climber on rocks, incl. typical and rimate forms [EJF], small form [EJ1], a very variable series [EEJ] and Blue Mts. race [EBL; epidermis largely eroded and peristome widely adnate below]. P. ingens (C.B.A.), fair rock-climber, incl. mixed ingens and imperforata (C.B.A.) [EJ2-dead, EJ1, 3], and lot also containing indigna (C.B.A.) [EEJ]. P. bainbridgei (Pfr.), deep-in-rocks, incl. typical stock [NMV] and Mandeville race [MM, MN; smallest (diam. 43 mm .) from MM2 and albinos from MN3].
P. (Dentellaria) peracutissima (C.B.A.), fair climber, incl. typical race [ML1-fresh, MM3-4 (light periphery), MN2-3, NMM-fresh, NMT], grading into f. martiniana (Pfr.) [MN1] and broadly rimate race of cara size [NMV-fresh]. P. cara (C.B.A.), incl. 4 -toothed, almost imperforate, more granulate stock [NM2a-fresh] and 4-toothed, rimate shell [NMM] ; subsp. catadupae H.B.B., arboreal [VW2]. P. soror (Fér.) appr. peracuta Vendyes but with 2 outer teeth scarcely joined [WSFfresh; like Chemn. II : pl. 78, f. 3, 4]. P. tridentina (Fér.) with f. browneana (Pfr.), subarboreal [WC] ; same with white radial zigzags [WC2, WWC]; appr. subsp. chittyana (C.B.A.), subarboreal [WWF]; subsp. schroeteriana (Pfr.), under rock [WV]. P. pallescens (C.B.A.) [NMT-fresh, NMV-fresh]. $P$. anomala (Pfr.), weak climber, incl. typical [MM2-3, MN3, NMM, NM2ab] and race "convexa" (C.B.A., preoc.) [NMM, NM1, 2c, NMV-dead]. P. invalida (C.B.A.), under rocks [KF and subfossil from KC2, KCC] ; subsp. simson (Pfr.) [KHWa, KC1-
dead]; subsp. consanguinea (C.B.A.) + sinuosa (Fér. not Gmelin), fair climber [EJ2-3, EJF, KHS-subfossil, KHWbdead]. P. sinuata (Müll.), weak climber, incl. big [MN3, NM excl. NMT; diam. 31.4 mm .] and smaller shells [MM3, MN1, NMT, VW2 and dead from VCM, WSF, WWF]. P. okeniana (Pfr.), rock-bases, incl. f. fortis (C.B.A.) [VW1-fresh; darkcolored, superficially like sloaneana] and typical lighter shells [WV ; more like atavus]. P. atavus (Pfr.), rock-bases [WW]. P. sloaneana (Pfr.) with f. vendryesi (Ckll.), good climber [VCM, VF, VW]. P. valida (C.B.A.), good climber, incl. smallish stock [ENF], typical [EJ, EBL], intergrading with small dark globose shells [EEJ, $19 \times 140(27 \mathrm{~mm}$.)] and small depressed form [EEC, $15.5 \times 190$ ( 29 mm .)]. P. strangulata (C.B.A.), rock-bases near hilltops [EEJ, EJ3-dead].

Polydontes (Thelidomus) asper (Fér.), arboreal, incl. typical [KHW, M, NM, VF-dead, VW2-dead], paedogenetoid race [WC1, $25 \times 39 \mathrm{~mm} ., 3 \frac{3}{4} \mathrm{wh}$.] and appr. cognatus [WV, WWF]; subsp. cognatus (Fér.), subarboreal [WWC].
P. (Eurycratera) jamaicensis (Gm.), deep-in-rocks (KHWfresh, ML1, MM3-4, NM1-2-dead, VW2, WV-dead, WSF-fresh].

Cepolis (Dialeuca) nemoraloides (C.B.A.), arboreal [ML1, MM2-4, MN2]. C. conspersula (Pfr.), arboreal [MN1, 3, NMV] ; subsp. fuscocincta (C.B.A.), subarboreal [NM2] ; subsp. negrilensis H.B.B., arboreal [WC1, WWC]. C. subconica (C.B.A.), arboreal [EE, EJ2-3, ENF, KF, KHS-dead, KHW, ML1 (juvenile?) ; many color forms incl. pulchrior (C.B.A.)].
C. (Hemitrochus) graminicola (C.B.A.), arboreal [KC1-fresh, MM2-3].

Bulimulus guadalupensis (Brug.), weak climber, near cultivation [MM1, 3, NM2a; said to have been introduced into Mandeville a few years before; now becoming a garden pest]. Drymaeus immaculatus (C.B.A.), arboreal [KC1-dead, KCC-dead, MM3, MN-dead]. Oxystyla undata (Brug.) [MM3c-dead] and var. jamaicensis Pils., arboreal, especially on cacti [KC, KF].

Microceramus gossei (Pfr.), rock-faces with slight shade [MM, WWF].

Spirostemma dunkeri (Pfr.), ground at rock-bases [MN3a]. S. ipswichense Pils., very weak rock-climber [VWS]. S. inusi-
tatum (Vend.), rock-bases [ENF]. S. cognatum (Vend.), rockbases [EEJb, EBL (?)]. S. tenellum (C.B.A.), rock-bases [VC] ; subsp. tenerum (C.B.A.), near rock-bases [MM3a, VW2dead]. S. mandevillense Pils. \& Br. [MN3bc-dead].

Anoma gracilis (C.B.A.), arboreal [ML]. A. tesselata cinerea (C.B.A.) [VW2-dead]. A. levis concinna (C.B.A.) [ML1dead]. A. splendens (Pfr.), arboreal [MM3-4, MN3, typical and f. citrina (C.B.A.) ; MN1, f. rosealabris (Ch.) and albida (C.B.A.)] ; var. medinae H.B.B. [NMM, splendens, citrina and albida colors]. A. striata (C.B.A.), fair climber but aestivating on ground [NM2]; subsp. corpulenta (C.B.A.) [NMV-dead]. A. nigrescens (C.B.A.), arboreal [EEJ, typical, f. rufilabris (C.B.A.) and f. leucostoma Pils. (on same tree!) ; EJ1, nigrescens, leucostoma and quadricolor patterns] ; subsp. quadricolor (Ch.), arboreal [EJ2, typical coloration only]; subsp. levior H.B.B., arboreal, [EJ3, quadricolor, leucostoma and nigrescens patterns; EJF, ENF-dead, all leucostoma].

Urocoptis (Spirocoptis) lata (C.B.A.), under rocks, incl. typical [EJ2-3, EJF] and f. antonionis Pils. [EEJ, EJF, ENF]; subsp. manchionealensis Pils. [EEC]. U. sanguinea (Pfr.), under rocks, incl. typical (KF, KHS] and race cerina (C.B.A.) [KHW]. U. megacheila (Ch.) and appr. amethystina (Ch.), under rocks [WWF].
U. (s.s.) brevis (Pfr.), fair climber even on trees, incl. typical and f. obesa (C.B.A.) [KC2], mainly f. columna (C.B.A.) [KC1] and race abbreviata (Desh.) [KCC]. U. gravesii (C.B.A.), rock-bases [VC]. U. procera (C.B.A.), rock-bases [ML1]. U. dubia (Ch.), under rocks [VF, VW1]. U. ambigua (C.B.A.), under rocks and rarely rock-bases, incl. typical [MM, MN1, 3], appr. procera [MN2], appr. fortis [MN1], appr. elizabethensis Pils. \& Jarv. [NM2a, NMV] and appr. medinae [NM2b] ; subsp. magna (C.B.A.), under rocks, incl. typical [NM2, NMV ; and f. fortis (C.B.A.) [NM2b] ; subsp. medinae H.B.B. [NMM]. $U$. cylindrus (Dillw.), under rocks, incl. small [WSF] and large [VW2] races. $U$. zonata (C.B.A.), under rocks [WV]. $U$. nobilior (C.B.A.), cliff-bases [KHW].
U. (Bactrocoptis) rosea (Pfr.), rock-bases and very weak climber [MM3, NM1-2, NMV] ; subsp. striata (Ch.), rock-bases
[WSF]. U. hollandi (C.B.A.) [NM2, VW2, dead]. U. pupaeformis (C.B.A.) [NMV-dead].

Brachypodella (Geoscala) seminuda (C.B.A.), rock-bases and weak climber [KC2, KF, KH, ML2]. B. costulata (C.B.A.), rock-bases, [ML2, MN3, NMM, VW1-2] ; subsp. savlamari H.B.B., rock-bases and under [WC1, WWF-dead]. B. robertsi (C.B.A.), rock-bases [VC].
B. (Simplicervix) inornata (C.B.A.) [MM3, NMM, VCMb; dead].
B. (Mychostoma) pearmanaeana (Ch.), damp shady rockraces [WWF]. B. alba (C.B.A.), damp shady rock-faces, incl. quite typical [VWS], race striata Pils. [VCMb], race minima Pils. [ENF], race eos Pils. [EEJ, EJ3, EJF], race near occidentalis Pils. [NMV] and race striatula (C.B.A.) [EEJ, EJ1].
B. (Apoma) chemnitziana (Fér.), fair climber even on trees [KH]. B. gracilis (Wood), rock-races with slight shade [ML1, MM2-3, MN1, 3, NMM, NM2, VW2].

## YOUNG STAGES OF DISCUS ALTERNATUS

CHARLES H. BLAKE

The young of our land snails are rarely described, and in the case of Discus (Anguispira) alternatus, I was desirous of being able to distinguish it from $D$. cronkhitei var. catskillensis with which it is often associated. A long series of each collected at Randolph, N. H., in late August, 1933 gave the information. The four figures given were drawn with a camera lucida to the same scale. The spirals at the left represent the embryonic whorls from above. While, at a glance, the specimens are similar, they


Fig. A. Discus (Anguispira) alternatus of 3 whorls. Fig. B. D. cronkhitei var. catskillensis of $3 \frac{1}{2}$ whorls.


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