

Some urocoptid land snails from Hispaniola

by

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Abstract: Four new species of Urocoptidae (Gastropoda: Pulmonata) from the Dominican Republic are described. Three are tentatively placed in *Autocoptis* (*A. eburata* sp. n., *A. argiphrix* sp. n. and *A. stibe* sp. n.). The fourth (*Allocoptis nebias*), represents a new genus and species. *A. stibe* is from the Sierra de Neiba and the other three are from the Sierra de Baoruco. Descriptions of the shells, reproductive systems and radulae are given for the four species.

Hispaniolan land snails were among the first species of mollusks to be described by Linnaeus and other early naturalists. Although the island has had close political and cultural ties with Europe through the nineteenth century, it is proximal to North America and is accessible through modern transportation, its invertebrate fauna remains one of the poorest studied in the American tropics. During three field trips to Hispaniola in April and June, 1974 and February-April, 1975 we collected a number of undescribed urocoptids, four of which are made known in this paper.

The non-marine molluscan fauna of Hispaniola was summarized by Crosse (1891). Pilsbry (1902-1904) revised the classification of the Urocoptidae. His comprehensive review included the Hispaniolan members of the family as well as all other known species. Subsequent contributions on Hispaniolan Urocoptidae were made by Bartsch (1932), Clench (1932, 1935, 1966) and Pilsbry (1933).

Until now the soft anatomy of no Hispaniolan species of the family has been described and only brief data on the radulae were available for *Autocoptis sericea* (Pfeiffer) (Pilsbry, 1902: 109), *Brachypodella imitatrix* (Pilsbry, 1904: 45), *B. truncatula* (Lamarck) (Pilsbry, 1904: 50), *B. laterradi* (Grateloup) (Pilsbry, 1904: 55) and *B. dominicensis* (Pfeiffer) (Pilsbry, 1904: 65). These scant data make it difficult to compare the new species described below with previously named taxa.

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Autocoptis Pilsbry, 1902

This genus contains two subgenera, *Autocoptis* s.s. which has a crenulate suture and *Urocoptola* Clench, 1935 which has a non-crenulate suture. Both subgenera are alike in having an accessory lamella within the base of the last whorl. The three new species of *Autocoptis* described herein differ from other known species by lacking an accessory lamella. We consider the three to comprise a natural group not closely related to other members of the genus. We do not give separate subgeneric status to them because such an act requires anatomical information about other species of *Autocoptis*. Subsequent studies by the authors will elaborate on this aspect of urocoptid systematics.

Although the three new species apparently represent a natural species group, they are not closely interrelated. Their conchological and anatomical differentiation from each other reflects a rather extensive degree of evolutionary diversity.

Autocoptis eburata sp.n.

Diagnosis: A small slender snail characterized by having heavy, flattened, wavy ribs that are glossy white, and irregularly mottled with reddish-brown streaks and blotches. The suture is crenulate by the ends of the ribs, but the ribs do not form sub-sutural tufts. It is distinguished from *A. argiphrix* and *A. stibe* by its larger size, more slender shell and its peculiar broad, flattened ribs which do not form tufts. It differs from other *Autocoptis* by its small size and the absence of an accessory lamella.

Shell (Fig. 1, A-B): The shell is medium-sized, imperforate, terete in shape, decollated and moderately slender, 0.21-0.25 times as wide as high. It is glossy white, mottled with irregularly spaced reddish-brown streaks and blotches interspersed on the white. The brown streaks are confined to intercostal spaces and exaggerate the ivory white ribs. Occasional reddish-brown blotches 2-5 ribs wide are present. The blotches tend to be in tandem and lie in a slightly oblique series. Mature shells have 10.4-12.9 whorls remaining (12.9 in holotype). The whorls are nearly flat-sided and are separated by a weakly impressed suture. About 5 whorls are lost above the point of decollation. The apical plug is long and dorso-ventrally tapered. The embryonic shell consists of 2.0 smooth whorls (1 specimen examined). The following post-embryonic whorl is sculptured with weak vertical ribs that have a pleated appearance initially but quickly become well-defined ribs by the fourth whorl. By the seventh whorl the ribs are bold and arch posteriorly. The following whorls are sculptured with broad flat posteriorly-arched ribs that occasionally anastomose. There are about 36-46 ribs on the penultimate whorl. The ribs are separated by narrow furrow-like interspaces. The ends of the ribs project slightly into the suture but the ends do not form tufts as they do in *A. argiphrix*. The base of the last whorl has a strong keel that continues to the peristome. The ribs are slightly stronger below the keel than they are above it. The aperture is free and extends forward slightly beyond the periphery of the previous whorl, and is oblique in lateral profile, lying at an angle of about 24-32° to the shell axis. The aperture is ovate in shape and bluntly angular at the point where the basal keel reaches the peristome. The peristome is moderately reflected and is nearly uniformly expanded. The columella is straight and increases slightly in diameter toward the base of the shell. There is no accessory lamella on the base of the last whorl.

Measurements in mm of selected specimens are as follows (measurements of

holotype in parenthesis): length of shell, 14.8-17.2 (18.0); width of shell, 3.5-3.8 (4.0); aperture width, 2.7-3.1 (3.0); aperture height, 2.7-3.0 (3.1).

Dentition (Fig. 9, A): The radular formula is 23-1-23. The teeth are arranged in broad V-shaped transverse rows. The central, about 25 μ m long, is relatively narrow, and bears a single large mesocone. The lateral-marginals are not differentiated from each other. A uniform transition in size and shaped occurs from the innermost to the outermost. Each tooth bears a large ectocone and a mesocone, which on the outer teeth becomes progressively longer and projects mesad over the front of the adjacent tooth.

Reproductive system (Fig. 2, A-D): The penial retractor muscle is short and stocky and originates on the columellar retractor at the same point as the right ocular retractor. The genital opening lies below and behind the right ocular tentacle. The genital atrium is short and stocky. The vagina is long and moderately slender. The spermathecal duct branches from the vagina just above the level of the penis, is slender and lacks a diverticulum. The spermatheca is small, ovate and lies appressed against the base of the albumen gland. The secondary oviduct is slender and is about as long as the vagina. The primary oviduct is about as long as the combined length of the vagina and the secondary oviduct. The albumen gland is relatively small and strongly compressed. The gonoduct enters the albumen gland near its base. A long slender telon is exposed on the ventral side of the albumen gland. A small elliptical carrefour is imbedded in the albumen gland at the base of the gonoduct.

One specimen collected 16 June, 1974 contained two eggs within the lower primary oviduct. The eggs were about 0.5-0.6 mm in diameter, spherical and had a thick calcareous shell.

The penis is large and robust, and is almost as long as the vagina. An epiphallus is absent. Internally the penis contains a large fleshy verge that originates from the side of the penis wall and extends nearly the length of the penis lumen; a small chamber lies in the lumen above the verge. The vas deferens enters the side of the penis at about a third of the distance below its apex and passes within the penis wall to the middle of the penis at which point it discharges through the verge. The vas deferens is tightly appressed against the apex of the penis and the penial retractor muscle and is nearly uniform in diameter throughout its length.

Type locality: Dominican Republic, Pedernales Province, 8 km NNE of Los Arroyos, 1950 m elevation. **Holotype:** UF 22462; collected 16 June, 1974 by Fred G. Thompson and Beverly E. Johnson. **Paratypes:** UF 22483 (47 specimens); same data as the holotype.

The type locality is in an open pine forest with a dense growth of bracken ferns *Pteridium aquilium*, forming a ground cover. Snails were found along a limestone ledge among broken boulders.

Remarks: This snail is related to *A. argiphrix*. Its phylogenetic position within *Autocoptis* is discussed with the latter species.

Etymology: The species name is from the Latin, *eburatus*, meaning inlaid with ivory, and alludes to the appearance of the white ribs.

Autocoptis argiphrix sp. n.

Diagnosis: A diminutive species of *Autocoptis* distinguished by its short, somewhat stout shell with about 8-9 whorls remaining at maturity. The sculpture consists of glossy, interwoven and anastomosing ribs which form a weakly crenulate suture. The aperture is adnate. An accessory internal lamella is lacking. This species shows similarities to the *monilifera* group by having a glossy surface with a crenulate suture. However, it is closely related to *A. stibe* and *A. eburata*, described herein, by the structure of the reproductive system, and the absence of an accessory lamella.

Shell (Fig. 3, A-B): The shell is terete in shape and decollate with about five whorls missing above the apex. The apical plug is elongate and granular and is about 3/4 whorl long. The shell is moderately slender, about 0.26-0.30 times as wide as high, widest just below the midpoint at about the fourth whorl above the aperture, and decreases slightly in width toward the base. The umbilicus is imperforate. There are about 8.1-9.1 (8.8 in holotype) whorls remaining in mature shells. The whorls are evenly but weakly arched and have a weakly impressed, weakly crenulate suture. The embryonic shell consists of about 1.8 whorls (1 specimen examined), is dull gray and smooth. The post embryonic whorls are sculptured with numerous close, fine, irregular, ripple-like recurved ribs, which tend to interweave and anastomose. The interspaces are very narrow, translucent, and light tan in color. The ribs are complex in form and color. Some are nearly uniformly narrow, light tan and confined between the sutures. Others are irregular in width, and are opaque enamel white on their wider portions. The two types of ribs occur in clusters giving the shell an alternating blotched color pattern. The upper ends of the white ribs frequently project over the suture in clusters of 4-5 giving the suture tufted crenulations corresponding in position with the whitish blotched color pattern. There are about 12-16 tufts along the suture on the penultimate whorl. The last whorl has a strong basal keel that continues to the peristome. The ribs are greatly pronounced on the basal portion of the neck and less pronounced above. The aperture is nearly basal in position, slightly wider than high, usually adnate at maturity and about 0.67-0.80 times the width of the shell. The aperture is ovate, nearly straight in lateral profile and lies at an angle of 23 - 34° to the shell axis. The peristome is continuous around the aperture, thin, fragile, and only weakly expanded. It is widest along the outer lip. The columella is very narrow, smooth, nearly uniform in width, strongly spiraled in the upper whorls, and straight below except in the last whorl where it is slightly flexed. There is no indication of an accessory lamella on the floor of the last whorl.

Measurements in mm of selected specimens from the type series are as follows (measurements of holotype in parenthesis): length, 9.0-10.9 (9.6); width, 2.5-3.0 (2.7); aperture height, 1.7-2.0 (2.1); aperture width, 1.9-2.1 (2.0).

Variation: Specimens from other populations differ from the above description primarily in size. This variation correlates with altitude and precipitation. Specimens increase in size at lower elevations. The type locality lies at 1510 m. Specimens from 1080 m, 12 km north of Las Mercedes vary from 9.2-12.5 mm in length, 3.0-3.1 mm in width, and have 8.3-10.1 whorls. Specimens from 730 meters, 8 km north of Las Mercedes reach a length of 13.4 mm, a width of 3.4 mm and have up to 10.6 whorls. The higher elevation consists of a relatively

dry mountain pine forest which goes through a transition to dense wet montane broadleaf forest at 700-900 m.

Dentition (Fig. 9, B-b): The radula contains 19-1-19 vertical rows of teeth that are arranged in broad V-shaped rows. The central tooth, about 29 μm long, is relatively broad and bears a large mesocone. The laterals and marginals are not differentiated from each other. They decrease in size and become progressively broader laterally. Each bears a well-developed mesocone and a large ectocone. The cusps are non-serrate.

Reproductive system (Fig. 4): The penial retractor muscle originates on the right ocular retractor, inserts on the side of the penis just below the apex, and is joined by a broader vaginal retractor muscle that inserts on the base of the vagina. The genital atrium is very long, being greater than the length of the penis. The vagina is relatively short and slender. The spermathecal duct branches from the vagina at about the same level as the apex of the penis, and lacks a diverticulum. The spermatheca is appressed against the lower half of the albumen gland and is long and saccular. The free oviduct is slightly shorter and stockier than the vagina. The albumen gland is reniform and compressed dorso-ventrally. The gonoduct enters above the middle of the albumen gland. A small oval telon is exposed at the base of the gonoduct. The carrefour is imbedded within the albumen gland. The penis is relatively short and stocky. An epiphallus is absent. The vas deferens passes through the base of the penial retractor muscle and enters the penis through a large papilla on its side just below the insertion of the penial retractor muscle. The papilla protrudes into the lumen of the penis as a low fleshy pillaster. The lumen of the penis is nearly filled by a large bilobed fleshy verge that is narrowly attached throughout its length to the penis wall opposite the papilla.

Type locality: Dominican Republic, Pedernales Prov., 20 km N of Las Mercedes, 1510 m altitude. **Holotype:** UF 22472; collected 22 March, 1974 by Richard Franz, Sylvia Scudder and Fred G. Thompson. **Paratypes:** UF 22473 (166); same data as the holotype.

Other localities: Dominican Republic, Pedernales Prov., 12 km N Las Mercedes, 1080 m (UF 22474); 10 km N Las Mercedes, 885 m (UF 22470); 8 km N Las Mercedes, 730 m (UF 22471).

Habitat: Specimens were found on limestone outcrops under rock chips, cobbles and larger pieces lying on the ground. At the type locality ground vegetation consisted of dense clusters of sedges in an open pine forest. At lower elevations sedges were usually present but the pine forest was replaced by broad-leafed wet montane forests.

Remarks: This snail is readily distinguished from other known entities by its size, shape, sculpture and soft anatomy. It resembles *A. eburata* Thompson and Franz, described herein, by having irregularly thick enamel white ribs that protrude into the suture. It is also like *eburata*, and differs from other known species, by having the vas deferens enter the side of the penis, in lacking an epiphallus and in having an exposed telon. Anatomical features that distinguish *argiphrix* from *eburata* are 1) the presence of a papilla on the side of the penis through which the

vas deferens passes, 2) a very long genital atrium, 3) a vaginal retractor muscle originating on the penial retractor muscle, and 4) a relatively short vagina.

Etymology: The name *argiphrix* is from the Greek *argos*, white, and *phrix*, a ripple, and alludes to the color pattern and sculpture characteristic of this snail.

Autocoptis stibe sp.n.

Diagnosis: This is a small pupiform-terete species about 12-15 mm long. The shell is distinguished by the following combination of characters: 1) the aperture is adnate to the preceding whorl; 2) the peristome is incomplete across the parietal margin; 3) the aperture is ovate-elliptical, and subangulate at the outer base due to the strong basal keel extending forward to the peristome; 4) the sculpture on the lower whorls is a reticulated mesh of anastomosing ribs; 5) the suture is not crenate by the sculpture, although the upper ends of the ribs may form regularly spaced nodes below the suture; 6) the light brown ground color has occasional reddish-brown zigzag bars, and scattered mottlings of frosty-white on the raised sculpture; 7) the axis is simple and straight, and lacks an accessory lamella near its base in the last whorl.

Shell (Fig. 5, A-B): The shell is small and pupiform-terete. It is widest at about the third or fourth whorl above the aperture, near the middle and moderately stocky, 0.24-0.27 times as wide as high. The decollate apex is missing about 6 whorls above the apical plug. The shell is weakly translucent or nearly opaque, glossy and tricolor. The light brown ground color is broken by about 2-6 irregularly spaced reddish-brown vertical zigzag bars. In addition, the crests of the raised sculpture are mottled with irregular patches of frosty-white. The white is most pronounced adjacent to the dark stripes and near the suture. The vertical bars are bold and include up to 3 ribs on the lower whorls but are incomplete or broken into two spots on the earlier whorls. There are about 9.1-10.8 weakly arched, evenly rounded whorls remaining in adult shells (9.5 in holotype). The suture is weakly impressed, and is not interrupted by the adjacent sculpture. The embryonic shell consists of about 2.5 whorls which are moderately arched and smooth. The post embryonic whorls are sculptured with poorly developed oblique axial ribs that become less well-defined and densely anastomose on the lower 5-6 whorls. The axial sculpture again becomes more clearly defined just behind the peristome. The upper ends of some ribs expand into irregular tufts and nodes along the suture. The base of the last whorl bears a strong, sharp basal keel. A second keel is easily indicated near the umbilicus. The sculpture within the area of the basal keel consists of uniform, well-developed, close, radial ribs that cross the basal keel and continue into the sculpture on the outer surface. The aperture is adnate to the previous whorl and is incomplete across the parietal wall, which is covered by an opaque, dull white callus. The aperture is ovate-elliptical and angulate at the outer basal margin where the basal keel intersects the peristome. The plane of the aperture is slightly oblique to the axis of the shell. The peristome is white and moderately expanded, most so along the columellar margin and least so along the outer periphery. The outer lip is weakly sigmoid in lateral profile. The axis is straight, slender and solid. No accessory lamella is present.

Measurements in mm of adult specimens are as follow (holotype in

parenthesis): length, 13.0-14.9 (14.3); width, 3.4-4.0 (4.0); aperture height, 2.5-3.5 (3.0); aperture width, 2.5-2.9 (2.8).

Dentition (Fig. 9, D-d): The radular formula consists of 14-1-14 vertical rows of teeth arranged in deep V-shaped transverse series. The central tooth bears a single cusp, the mesocone, and is about $27\mu\text{m}$ long by about $10\mu\text{m}$ wide at its widest point. The lateral-marginals are undifferentiated from each other, and become progressively shorter and broader toward the margins of the ribbon. Each tooth has a single moderately developed mesocone and a slightly larger ectocone. The cusps are non-serrate.

Reproductive system (Fig. 6, A-B): The right ocular retractor muscle passes along the mesad surface of the lower reproductive system, and is attached secondarily to the apex of the penis and to the mesad side of the vagina (Fig. 6, B). The atrium is moderately short and stocky. The penis is large and stocky and contains a large verge formed by a large fleshy fold along the apical half of the lumen. An epiphallus is absent. The vas deferens is relatively short and thick. It enters the apex of the penis through the penis retractor insertion and discharges into the lumen above the verge. The spermatheca lies against the outer base of the albumen gland. The spermathecal duct enters the vagina just above the atrium. It is moderately large in diameter and lacks a diverticulum. The vagina is about as long as the penis and is about half as wide. The albumen gland is strongly depressed dorsoventrally. The gonoduct enters the albumen gland near its middle. The telon is relatively long, exposed distally and pigmented black. A carrefour is imbedded within the albumen gland.

Type locality: Dominican Republic. La Estrelleta Prov., 16 km S of Elias Piña, 1180 m elevation. **Holotype:** UF 22464, collected 4 March, 1975 by Fred G. Thompson. **Paratypes:** UF 22465 (4), same data as the holotype; UF 22466 (24), 19 km S of Elias Piña, 1480 m elevation; collected 2 March, 1975 by Fred G. Thompson. The single dissected specimens came from the latter locality.

At both localities the area is covered by wet mountain forests growing over rugged limestone karsts, and has a heavy ground cover of ferns, mosses and succulent vines. The single live specimen collected was found in the late afternoon crawling on a fern during a rain.

Remarks: *A. stibe* is distinctive by its radular formula, its genital retractor muscle complex and the structure of its penis. The radula has fewer vertical rows of teeth than is known in other species of *Autocoptis*. *A. stibe* has fourteen lateral-marginals on each side of the central tooth. Other species for which counts are known have nineteen or more lateral-marginals on each side. The genital system is retracted by the passage of the right ocular retractor muscle along the mesad surface of the vagina, where it is tightly attached by muscle fibers, and across the apex of the penis where it is also attached. District muscles inserting on either the penis or the vagina as occurs in *A. argiphrix* are absent. Equally characteristic of *A. stibe* is the thick vas deferens, which enters the penis by passing through the retractor muscle where it attaches to the apex of the penis.

Etymology: The name *stibe* is from the Greek *stibe*, meaning a frost or rime, and refers to the frosty white mottling on raised portions of the reticulated sculpture.

Allocoptis gen.n.

Type species: *Allocoptis nebrias* sp. n.

Diagnosis: Radular formula (27-23)-1-(21-23); first two laterals not noticeably enlarged, and with broad, rounded, non-serrate cusps on the mesocone and the ectocone. Radular sac short and narrow, extending into coelom only half a whorl. Verge terminated with a well developed stout epiphallus. Vas deferens passing within the penial retractor muscle for part of its distance. The moderately short penial retractor muscle for part of its distance. The moderately short penial retractor muscle originates on the columellar retractor and inserts on the apex of the epiphallus. The shell is short and decollate with about 8-9 whorls. Sculpture consisting of fine sigmoid riblets. Neck of last whorl rounded and without a basal keel. Periostracum present, with a spotted color pattern. Axis simple, narrow, solid, weakly twisted in the last whorl.

Allocoptis occupies a primitive position within the *Brachypodella* stock. Within the Urocoptidae, reduction in the radular formula and size modification of the teeth is a common evolutionary trend. The large number of lateral-marginals (21-23) which vary only slightly and uniformly in size, and the short radular sac indicate a primitive position for *Allocoptis*.

Allocoptis nebrias sp. n.

Diagnosis: A small, fragile, shiny, relatively stocky shell with about 7-8 whorls remaining at maturity, and with well-defined, delicate, sigmoid ribs that are separated by deeply incised striations. Fresh shells are whitish and translucent with brown spots and occasional vertical brown bars. The aperture is free from the preceding whorl and has a rounded neck that lacks a basal keel. The axis is simple, straight and solid.

Shell (Fig. 7, A-B): The shell is thin, terete, relatively obese, and about 0.26-0.32 times as wide as high. The shell is widest at the penultimate whorl and tapers slightly at the body whorl. The surface is smooth and shiny. Fresh shells are almost transparent and light gray in ground color, with a superimposed pattern of brown spots and occasional vertical brown bars. On the earlier whorls there are regularly spaced brown bars with swollen ends. On lower whorls the central portion of many of the bars disappears leaving only the swollen ends giving the lower shell a spotted appearance. In some large shells even the spots are absent on the last few whorls. The umbilicus is narrowly perforate and is visible from an oblique view. Mature shells are decollate with about six whorls missing. The embryonic shell consists of about two dull gray whorls. The embryonic whorls are smooth in the one specimen examined, but this may be due to erosion as it is a dead bleached specimen. There are 6.8-8.3 (8.3 in holotype) whorls remaining at maturity. The apical plug is about 1/8 whorl long, smooth and rather bluntly tapered posteriorly. The whorls are sculptured with fine weakly sigmoid ribs separated from each other by strongly incised striation. The suture is weakly crenulated by the upper ends of the ribs. The ribs become slightly stronger on the neck of the last whorl behind the aperture and continue into the umbilicus. There are about 64-75 (75 in holotype) ribs on the penultimate whorl. The neck of the aperture is rounded basally, although in some specimens a basal keel may be very weakly indicated. The

aperture is usually free from and extends slightly beyond the preceding whorl, and is baso-lateral in position. The aperture is ovate, slightly wider than high, and is large, about 0.76-0.86 times the width of the shell. The plane of the aperture lies at about 20° to the shell axis in lateral profile. The peristome is moderately thickened, narrowest along the other lip and widest and most strongly reflected along the columellar lip. The axis is solid, lacks accessory structure and is smooth. It is straight in the upper whorls and becomes weakly spiral in the last two whorls. It is slightly thickened in the center of the whorls, and increases slightly in diameter in the lower whorls.

Measurements of the type lot are as follows (measurements of the holotype are in parenthesis): length, 12.3-14.3 mm (13.0); width, 3.5-4.0 mm (3.7); aperture height, 2.6-3.1 mm (2.9); aperture width, 2.9-3.2 mm (3.1).

Specimens from two other localities tend to be smaller than specimens from the type locality and have more ribs (88-93 on the penultimate whorl) although they are typical in all other respects. These lots are from slightly higher altitudes than the type locality. Measurements are as follows:

Sierra de Baoruco, 10 km SW El Aguacate, 1885 m (UF 22468). Length, 11.2-14.0 mm; width 3.2-3.6 mm; aperture height 2.5-3.0 mm; aperture width, 2.7-3.0 mm; 7.0-8.3 whorls.

Sierra de Baoruco, 11 km SW El Aguacate, 1970 m. (UF 22469). Length, 10.5-12.5 mm; width, 3.2-3.5 mm; aperture height, 2.4-2.7 mm; aperture width, 2.5-3.0 mm; 6.8-8.3 whorls.

Dentition (Fig. 9, C-c): The jaw is plated, consisting of about 33 thin vertical lamellae. The radular sac extends into the coelom for about half a whorl behind the buccal mass and is uniform in width—not extended distally as in *Brachypodella*. The distal end of the sac bears a slender muscle that originates on the pharyngeal retractor. The radular teeth are arranged in broad V-shaped rows with a central and 21-23 lateral-marginals on each side. The central, about 20 μm long and about 8 μm wide, or about as broad as the ectocone of the first lateral, is well-developed and bears a moderate mesocone. The laterals and marginals are not clearly differentiated from each other, but grade continuously in shape and size from the first lateral to the last marginal. The first lateral is just slightly larger than the central. The lateral-marginals each bear a well developed mesocone and slightly smaller ectocone.

Reproductive system (Fig. 8, A-D): The penial retractor muscle is moderately short. It originates on the columellar retractor and inserts on the apex of the epiphallus. The base of the spermathecal duct is attached to the apex of the epiphallus by a thin wide muscle band. The genital atrium is short, about one fourth the length of the penis. The vagina is about as long as the penis and is about as large in diameter. The spermathecal duct is large and voluminous at its base, greater in diameter than is the secondary oviduct at the same point. The spermathecal duct lies along the columellar side of the primary oviduct and bears a small saccular spermatheca that is appressed against the outer side of the albumen gland. The spermathecal duct lacks diverticulum. The secondary oviduct is long and slender, and is about equal in length to the primary oviduct. The albumen gland is relatively small and strongly compressed. The gonoduct enters the distal third of the albumen gland and gives rise to a small telon. An elongate carrefour is present in the middle of the albumen gland. Both the telon and the carrefour are completely imbedded within the albumen gland.

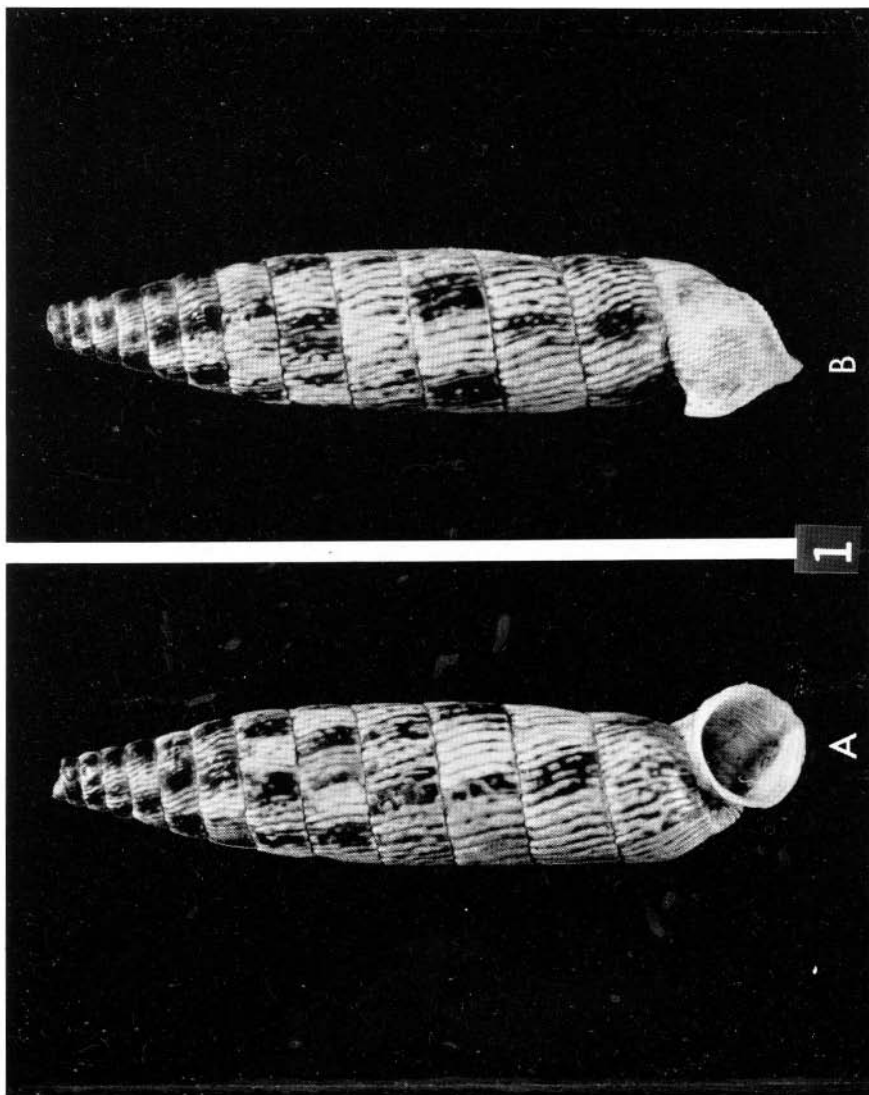
The penis is moderately large and bears a large epiphallus which is not differentiated externally. The vas deferens is uniform in diameter between the epiphallus and prostate. It enters through the apex of the epiphallus and becomes slightly enlarged internally. The epiphallus has a large voluminous lumen, the inner wall of which is lined with numerous close, low, fleshy folds. The penis contains a long stout verge that is attached to the apex and upper inner wall of the penis. The verge is folded and has a deep lateral furrow that is continuous with the opening of the vas deferens.

Type locality: Dominican Republic, Pedernales Prov., Sierra de Baoruco, 6 km NNE of Los Arroyos, 1800 m altitude. **Holotype:** UF 22476; collected 16 June, 1974 by Fred G. Thompson and Beverly E. Johnson. **Paratypes:** UF 22467 (35); same data as the holotype.

Other localities: Dominican Republic, Pedernales Prov., Sierra de Baoruco, 10 km SW El Aguacate, 1885 m (UF 22468); 11 km SW El Aguacate, 1970 m (UF 22469).

Remarks: The systematic position of *A. nebrias* within the subfamily Urocoptinae is enigmatic. We place *Allocoptis* near *Brachypodella* because of the presence of a well developed epiphallus above the penis. An epiphallus is not known to occur in other genera of West Indian Urocoptidae. *Allocoptis* differs remarkably from *Brachypodella* by having a radula with normal sized lateral teeth, with 25 lateral-marginals on each side of the central and short radular sac. Known species of *Brachypodella* have 6-8 lateral-marginals with the first two laterals being conspicuously enlarged, and a very long, slender radular sac that extends far into the coelom. The short, obese, truncate shell with a simple axis, and a rounded neck on the last whorl is also unlike known species of *Brachypodella*. The barred and spotted color pattern of *A. nebrias* is equally distinctive. Species of *Brachypodella* are unicolor. *Urocoptis juliae* Clench (1935: 4-5) appears to be closely related to *A. nebrias*, at least on the basis of shell characteristics, and we tentatively consider the two congeneric. *A. juliae* (Clench), a much larger species reaching a length of about 19 mm, has the upper ends of the ribs fused into pairs and a color pattern consisting of pairs of reddish-brown spots on a horn color background, similar to that occurring on the early whorls of young *A. nebrias*. *A. juliae* is from Mt. Trou D'Eau, Massif de La Selle, Haiti.

Etymology: The generic name *Allocoptis* is from the Greek *allos*, meaning other, foreign or strange, and *coptis* from *Urocoptis*, the type genus of the Family Urocoptidae, to which *Allocoptis* belongs. The name *Allocoptis* is of the feminine gender. The species name *nebrias* is from the Greek *nebrias*, meaning spotted like a fawn.



PC: Snail Land, Ecology, Hispaniola.

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Fig. 2. Reproductive system of *Autocoptis eburata* sp.n. A, complete reproductive system (note the entry of the vas deferens into the side of the penis). B, Ventral view of the albumen gland and associated structures. C, Lower reproductive system showing the attachment of the retractor muscles to the vagina and penis. D, Internal structure of penis showing the verge in place (a, b, and c are cross sections through the penis at the respective arrows).

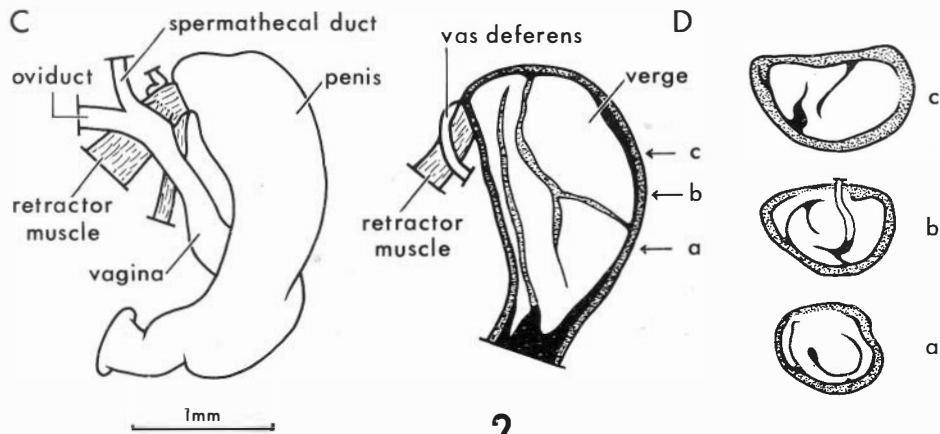
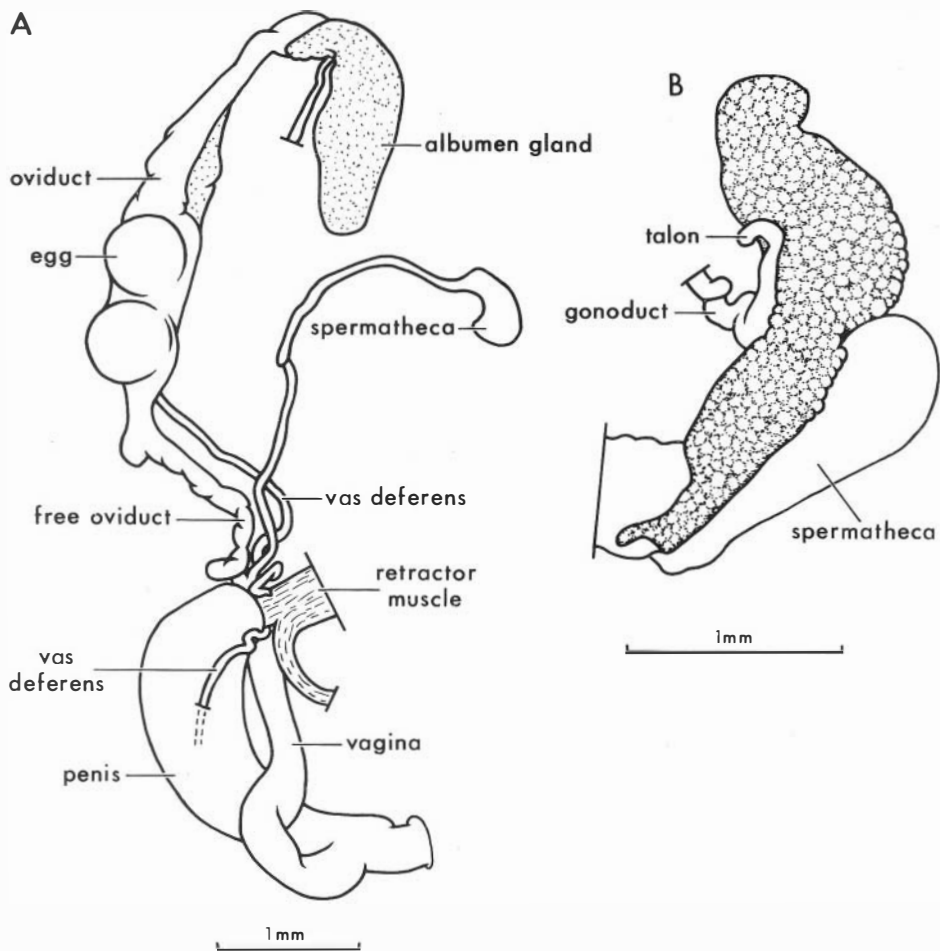


Fig. 3. *Autocoptis argiphrix* sp. n. A, Holotype. B, Paratype.

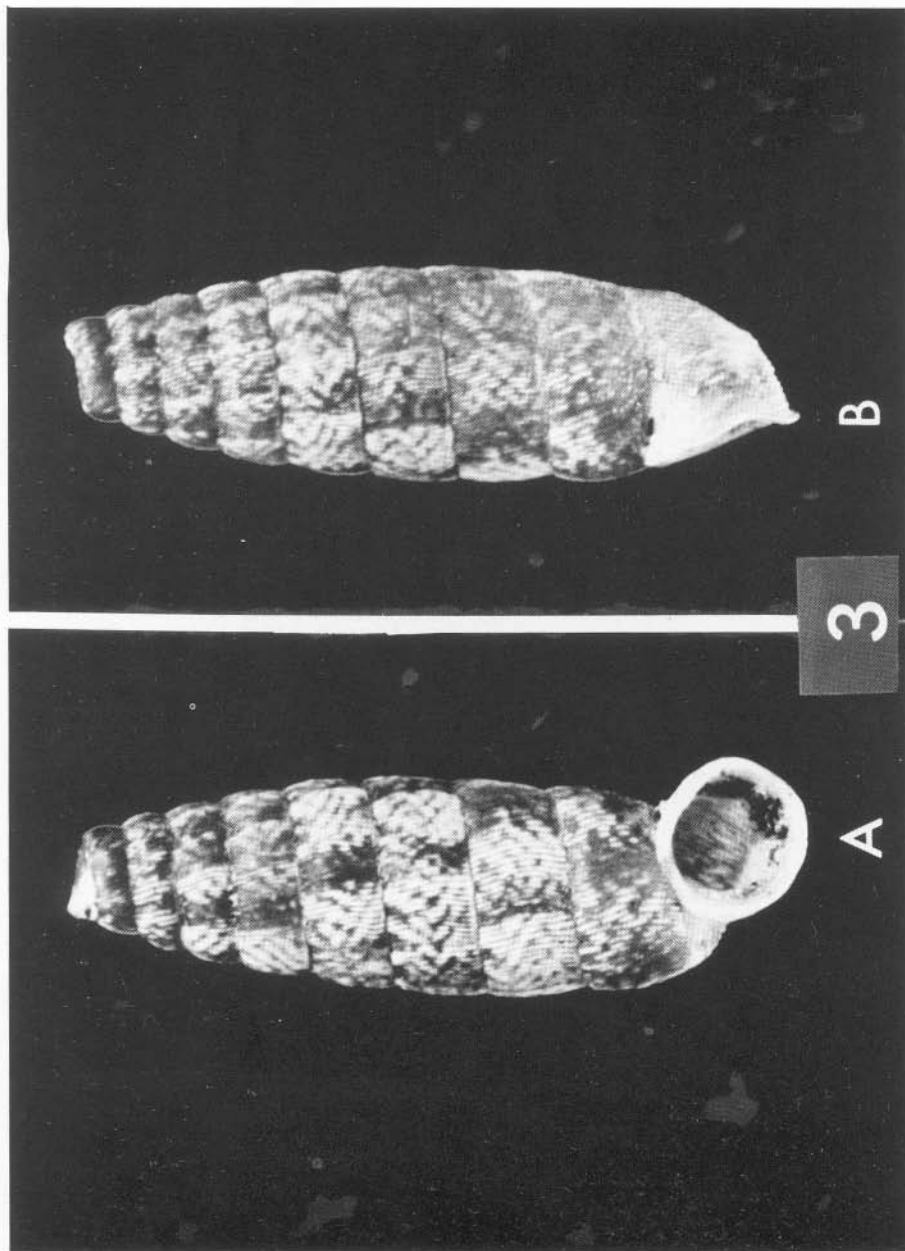




Fig. 4. Reproductive system of *Autocoptis argiphrix* sp.n. Note the entry of the vas deferens through the papilla on the side of the penis.

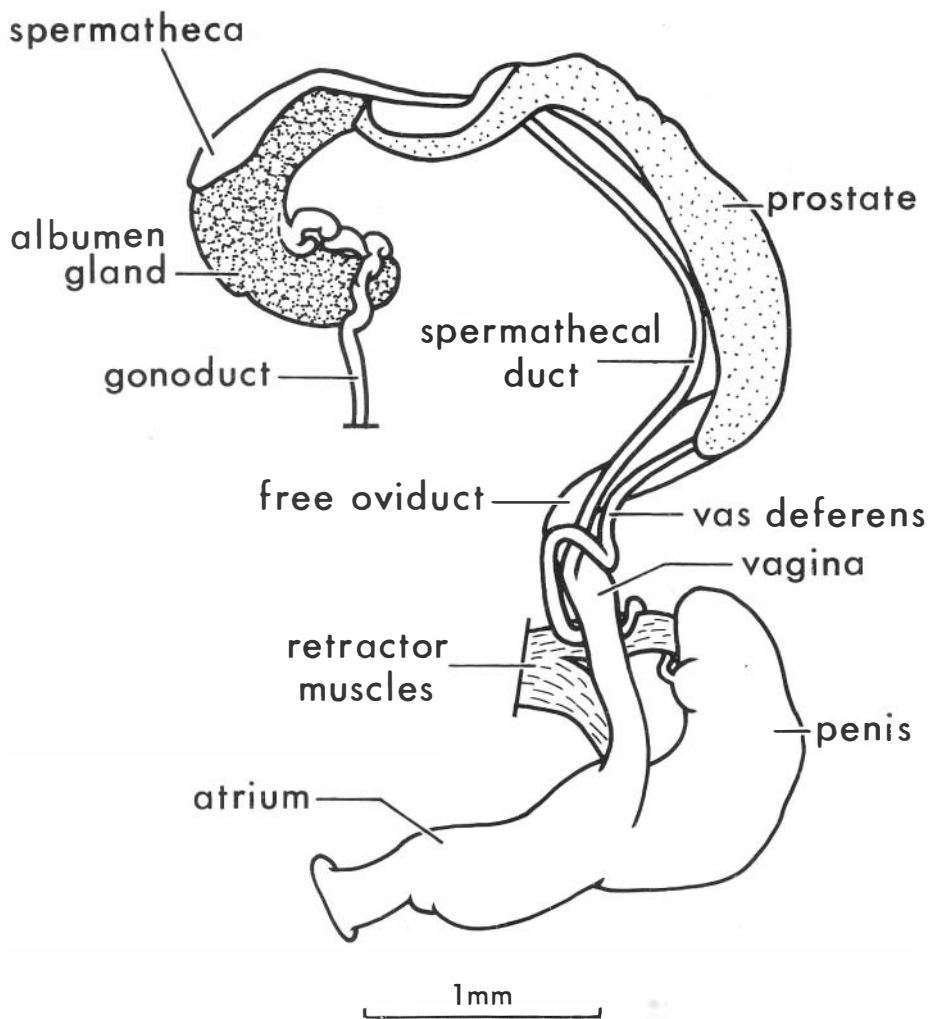


Fig. 5. *Autocoptis stibe* sp. n. A, Holotype. B. Paratype.

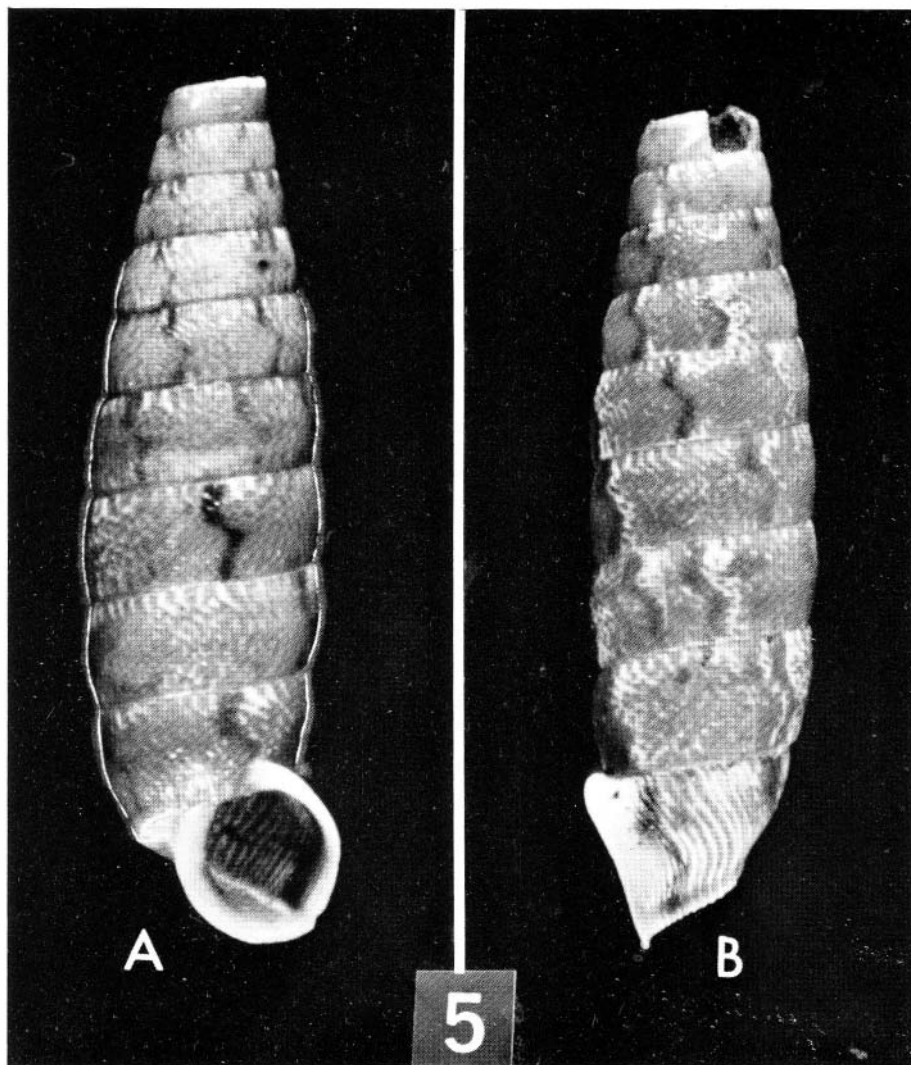


Fig. 6. Reproductive system of *Autocoptis stibe* sp.n. A, Complete reproductive system. Note the passage of the vas deferens through the ocular retractor muscles before entering the penis. B, Lower reproductive system in its natural relationships showing the attachment of the ocular retractor muscles to the apex of the penis and the side of the vagina.

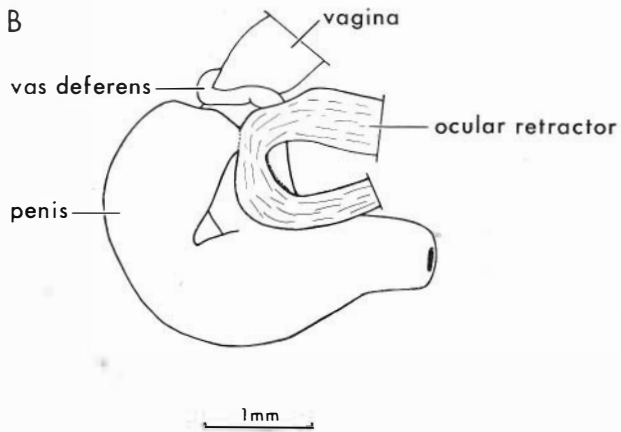
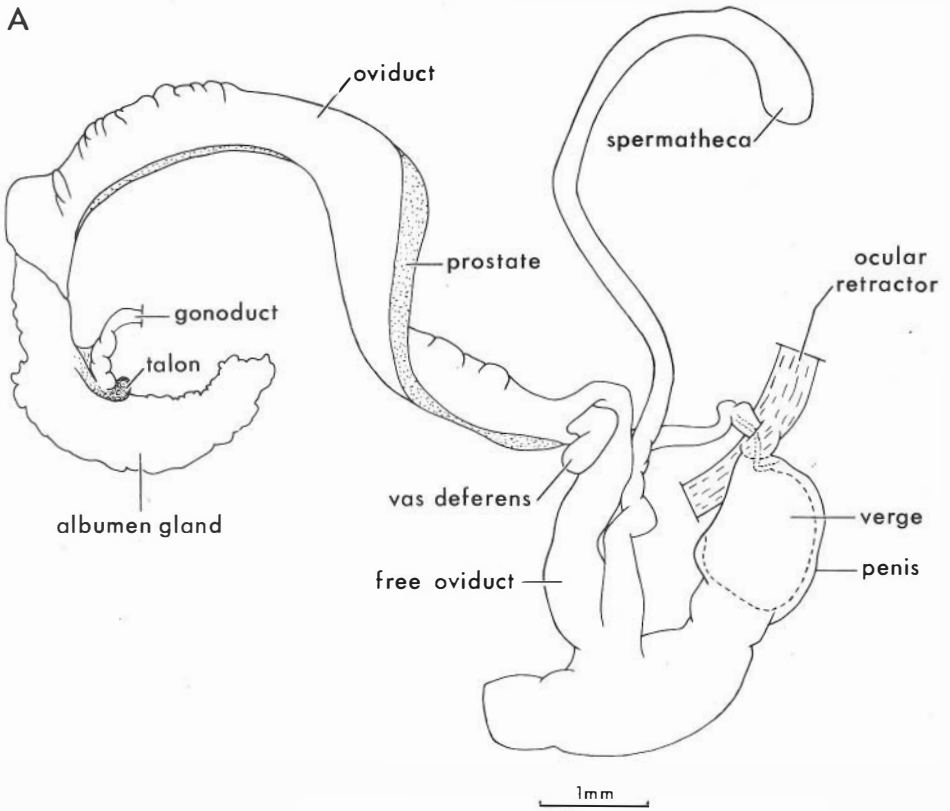


Fig. 7. *Allocoptis nebrias* sp.n. A, Holotype. B, Paratype.

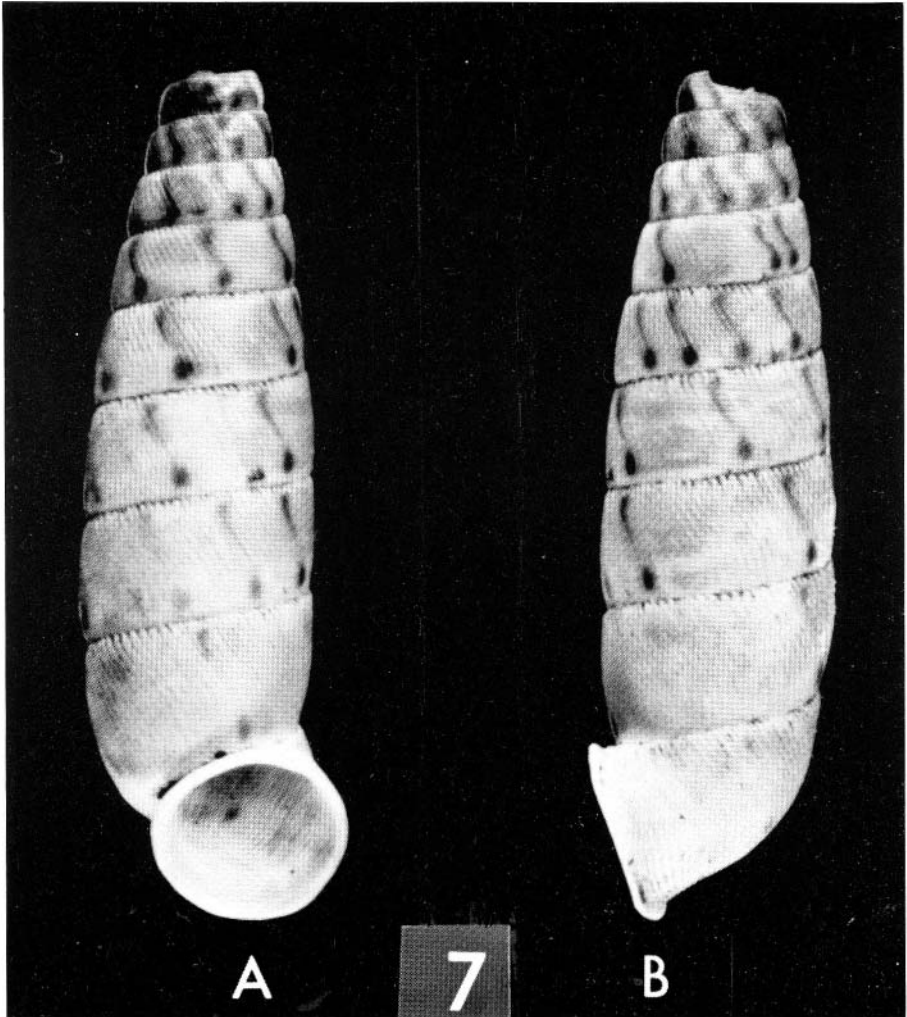


Fig. 8. Reproductive system of *Allocoptis nebris* sp.n. A, complete reproductive system. B, ventral view of albumen gland and associated structures. C, Lower reproductive system. D, Internal view of penis and epiphallus.

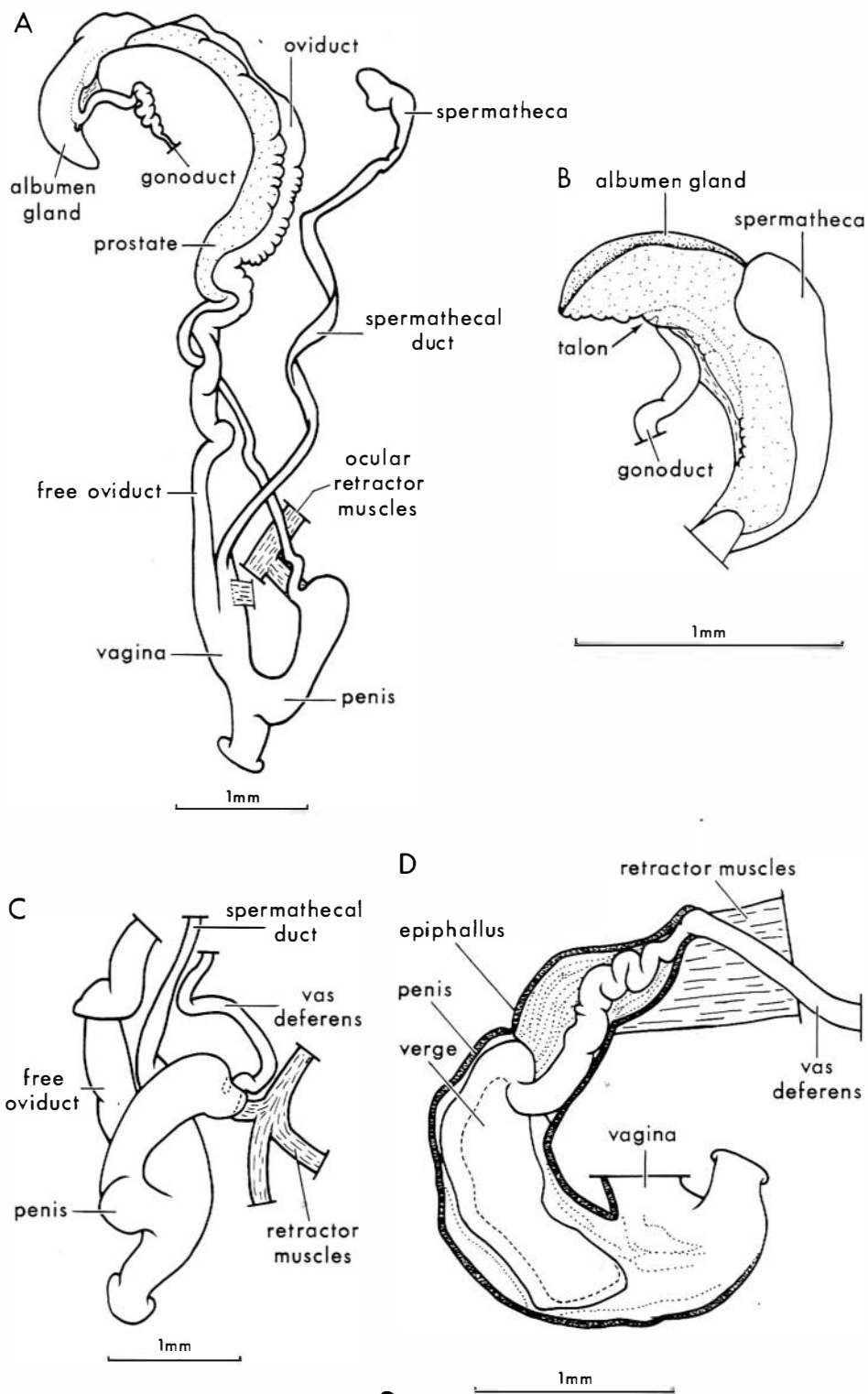
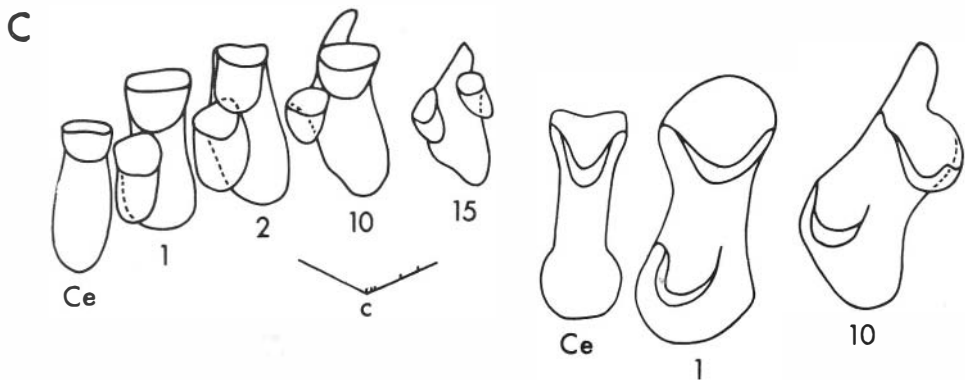
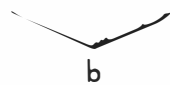
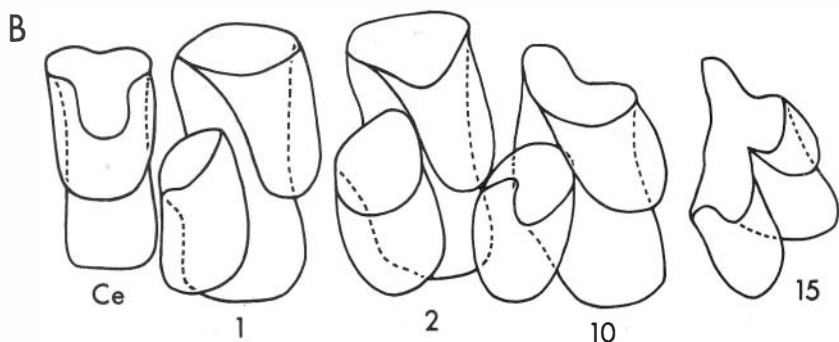
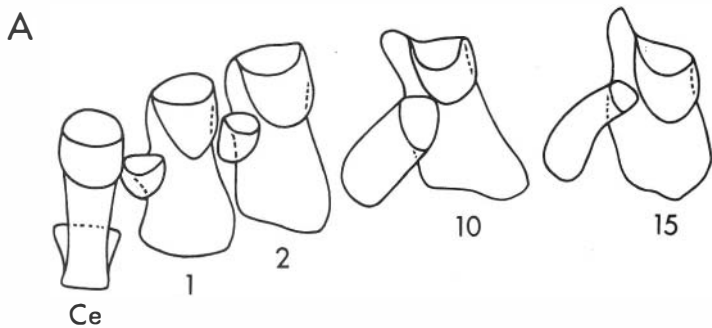


Fig. 9. Radulae of new Urocoptidae. Ce = central tooth; numbers refer to respective lateral-marginal teeth. A, *Autocoptis eburata* sp.n. B, *Autocoptis argiphrix* sp.n. C, *Allocoptis nebias* sp.n. D, *Allocoptis stibe* sp.n. Diagrams b, c and d are diagrams of transverse rows of teeth of B, C and D. The vertical bars represent respective locations of the illustrated teeth. The radula for A was torn so that a complete transverse row could not be diagrammed.



50 μ