

LITERATURE CITED

- BAKER, F. C. 1945. The Molluscan Family Planorbidae. Univ. of Ill. Press, 530 pp.
- BAYER, CH. 1950. Jour. de Conchyl., 90: 245-253.
- BOETTGER, C. R. 1949. Abhandl. Braunschweigischen Wiss. Ges., 1 (1) : 1-7.
- BOETTGER, C. R. 1952. Verhandl. Deutschen Zool. Ges. Freiburg, pp. 468-487.
- PRECHT, H. 1939. Zool. Anzeiger, 128 (5/6) : 124-135.

**CATALOGUE OF THE LAND MOLLUSCA
OF ARGENTINA**

BY J. J. PARODIZ

Carnegie Museum, Pittsburgh

In this catalogue are listed for the first time all the known species and subspecies of terrestrial mollusks of Argentina and the bordering areas of Bolivia, Paraguay, Uruguay, southern Brazil, and some of Chile. It covers almost all the fauna east of the Andes and south of the 22° parallel, from subtropical regions to the subantarctic tip of the continent.

The first known list about these mollusks was published by A. Doering in 1875, and contained only 30 terrestrial species. The present work includes 45 genera, 19 subgenera, with 222 species and subspecies. Synonyms are omitted by limitation of space, but for each species and subspecies the original reference and nomenclature is given, followed by that in which the new combination was made, according to its present status, or the last occasion, (if any), where the species was fully revised. Also the type locality, the names of the Argentine provinces where the species occur, and names of the countries when the distribution is wider, are indicated.

The systematic arrangement of families is according to Pilsbry 1948 (Land Mollusca of North America). Most of the species have been identified and verified in their distribution by the writer, including many types in South and North America museums. In few cases, as in the *Veronicellidae* and *Succineidae*, a further and more intensive revision is necessary, there-

fore the status of the species of these families are given here as provisory.

Cyclophoridae

Adelopoma tucma Doering, 1885, p. 458. Type loc.: San Javier, Tucumán. Distr.: Salta, Jujuy, Tucumán, Catamarca.

A. paraguayana Parodiz, 1944, p. 1, fig. 1. Type loc.: Villarrica, Paraguay.

Helicinidae

Helicina carinata Orbigny, 1835, p. 28; 1837, p. 360, pl. 360, pl. 46, figs. 6-9. Type loc.: Yungas, Bolivia. Distr.: Bolivia; Paraguay; Misiones.

Veronicellidae

Veronicella soleiformis (Orbigny). *Vaginulus* s. Orb., 1835, p. 2; 1837, *V. solea* Orb., p. 220, pl. 21, figs. 1-4. Type loc.: S. of Buenos Aires. Distr.: Buenos Aires to Corrientes, Tucumán; Bolivia; Uruguay.

V. s. bonariensis (Strobel). *Vaginulus* b. Str., 1868, p. 4, figs. 1-2; *Vaginula* s. b. Cockerell, 1893, p. 194. Type loc.: near Buenos Aires.

V. paranensis (Burmeister). *Vaginulus* p. Bur., 1861, p. 494. Type loc.: Paraná, Entre Ríos. Distr.: Entre Ríos, Santa Fe, Tucumán.

V. salamandra (Holmberg). *Vaginula* s. Hol., 1913, p. 171, fig. 2. Type loc.: Delta of Paraná River, N.E. Buenos Aires.

V. deltae (Holmberg). *Vaginula* d. Hol., 1913, p. 173. Type loc.: Jorge Island, Arroyo Barca Grande, Delta of Paraná, N.E. Buenos Aires.

V. tucumana (Holmberg). *Vaginula* t. Hol., 1913, p. 177. Type loc.: Tucumán.

V. missionum (Holmberg). *Vaginula* m. Hol., 1913, p. 178. Type loc.: Posadas, S.W. Misiones.

V. borelliana (Colosi). *Vaginula* b. Col., 1922, p. 487, figs. 1-8. Type loc.: San Pablo, Tucumán.

V. difficilis (Colosi). *Vaginula* d. Col., 1922, p. 504, figs. 33-36. Type loc.: Tucumán.

V. erinacea (Colosi). *Vaginula* e. Col., 1922, p. 504, figs. 37-40. Type loc.: Tucumán.

V. laurentiana (Colosi). *Vaginula* l. Col., 1922, p. 513, figs. 51-53. Type loc.: San Lorenzo, Salta.

Pupillidae

Pupoides (Ichnopupoides) paredesii (Orbigny). *Helix* p. Orb., 1835, p. 21; 1837, p. 322, pl. 44, figs. 3-6. Type loc.: Los Obrajes, near La Paz, Bolivia. Distr.: Peru; Bolivia; Jujuy.

- P. (I.) chordatus* (Pfeiffer). *Bulimus c.* Pfr., 1856, p. 46; *P. c.* Martens, 1901, p. 330. Type loc.: Mazatlan, Mexico. Distr.: La Rioja, probably introduced.
- Gastrocopta nodosaria* (Orbigny). *Helix n.* Orb., 1835, p. 22; *G. n.* Pilsbry, 1916, p. 94, pl. 17, fig. 10. Type loc.: Pampa Ruiz, Laguna, Bolivia. Distr.: Jujuy, Catamarca, La Rioja, Buenos Aires.
- G. servilis oblonga* (Pfeiffer). *Pupa o.* Pfr., 1853, p. 536; *G. o.* Pilsbry, 1916, p. 90. Type loc.: unknown. Distr.: Brazil; Uruguay; Santa Fe, Córdoba, San Luis.
- G. microdonta* (Doering). *Pupa m.* Doer., 1879, p. 82; *G. m.* Pilsbry, 1916, p. 92. Type loc.: La Paz, N.W. Entre Ríos. Distr.: Corrientes, E. Ríos.
- G. clessini* (Doering). *Pupa c.* Doer., 1879, p. 83; *G. c.* Pilsbry, 1916, p. 93. Type loc.: Rio Primero Valley, Córdoba. Distr.: Córdoba, S. Luis.
- G. crucifera* Hylton Scott, 1948, p. 245, fig. 1. Type loc.: Sierra de Velazco, central N. La Rioja.
- G. pulvinata* Hylton Scott, 1948, p. 246. fig. 2. Type loc.: Urundel, N.E. Salta. Distr.: Salta, Jujuy, Tucumán.
- G. (Immersidens) dicroidonta* (Doering). *Pupa d.* Doer., 1879, p. 83; *G. d.* Pilsbry, 1916, p. 100. Type loc.: Villavicencio, Mendoza. Distr.: Catamarca, Córdoba, San Luis, Mendoza.
- Ulpia venusta* Hylton Scott, 1955, p. 67, figs. 1-4. Type loc.: Lumbra, Salta.
- Vertigo frenguelli* Hylton Scott, 1946, p. 360, fig. text. Type loc.: Cerro Colorado, Sierra Norte, Córdoba (subfossil).

Valloniidae

- Vallonia pulchella* (Müller). *Helix p.* Müll., 1874, p. 30; *V. p.* Binney, 1878, p. 344. Type loc.: Denmark. Distr.: cosmopolitan; in Argentina: Jujuy, La Rioja, Buenos Aires.

Clausiliidae

- Nenia argentina* Hylton Scott, 1954, p. 2, figs. 1-7. Type loc.: Las Capillas, Jujuy.

Succineidae

- Succinea meridionalis* Orbigny, 1837, p. 711 (additions et correct.; in text, p. 235, under *S. oblonga* Draparnaud). Type loc.: (here selected) Rio de la Plata. Distr.: from Rio de Janeiro, Brazil to N. Patagonia. Distr.: Corrientes, Entre Ríos, Santa Fe, Buenos Aires, Rio Negro; Uruguay; also Chile and Peru after Orbigny.

- S. m. cornea* Doering, 1881, p. 62. Type loc.: Sierra de la Ventana, S.W. Buenos Aires. Distr.: Buenos Aires, Rio Negro.
- S. burmeisteri*¹ Doering, 1873, p. 59. Type loc.: Springs on Rio Chico, above Rio Chalía, Santa Cruz (selected by Pilsbry, 1911).
- S. labiosa* Philippi, 1860, p. 164, pl. 7, fig. 7. Type loc.: Atacama, Chile. Distr.: San Luis, after Doering 1875.
- S. porrecta* Doering, 1875, p. 76. Type loc.: Valley Juntas, Tucumán.
- S. magellanica* Gould, 1852, p. 24, fig. 22. Type loc.: Orange Bay, Magellan Strait.
- S. ordinaria* E. A. Smith, 1905, p. 338, fig. 4. Type loc.: T. del Fuego.
- S. aurita* Hylton Scott, 1952, p. 29 (n.n. pro *S. aurea* Scott, 1945; not *S. aurea* Lea 1841). Type loc.: Los Manantiales, Tilcara, Jujuy.

Omalonyx unguis Orbigny. *Helix (Cochlohydra) u.* "Ferus-sac" Orb., 1835, p. 2; S. (*O.*) *u.* Orb., 1837, p. 229. Type loc.: flooded margins of Paraná Riv. near Corrientes. Distr.: Corrientes, Entre Ríos, Santa Fe; Bolivia; Uruguay, Brazil; (Paraguay?). The species *O. patera* Doering, 1873, p. 67 from Corrientes, and *Succinea convexa* Martens, 1868, p. 183 from Porto Alegre, Brazil, are forms of *O. unguis*.

Zonitidae

Zonitoides arboreus (Say). *Helix a.* Say, 1816, p. 4, fig. 4; *Z. a.* Henderson 1924, p. 13, Type loc.: not indicated. Distr.: All Americas; introduced in Europe, S. Africa, Australia, Japan and Hawaii; in Argentina: Buenos Aires, Misiones, Córdoba, Jujuy; Uruguay.

Habroconus (Pseudoguppya) semenlini (Moricand). *Helix s.* Moric., 1845, p. 55, fig. 17. Type loc.: Brazil. Distr.: N.E. Entre Ríos.

H. (P.) lilloana (Hylton Scott). *Guppya l.* H. Scott, 1948, p. 267, fig. 12. Type loc.: Palmar San Pedro, Jujuy. Distr.: Jujuy, Tucumán.

H. (P.) aenea (Hylton Scott). *Guppya a.* H. Scott, 1948, p. 270, fig. 13. Type loc.: Urundel, N.E. Salta. Distr.: Salta, Jujuy. The inclusion of the last two species in *H. (Pseudoguppya)* is based on the resemblance in shell, jaw and radula to the type of *Pseudoguppya*, *H. (P.) cassiquensis* Pfeiffer (see H. B. Baker, 1925, p. 10).

¹ Systematics and distribution of these *Succinea* are poorly known; according to Doering, 1875, *S. burmeisteri* could be synonym of *meridionalis*. Also *S. rosarinensis* Doering 1873, p. 75, from Rosario, Santa Fe, may be *meridionalis*. *S. felipponei* Marshall, 1926, is very doubtful.

Limacidae

Deroceras reticulatum (Müller). *Limax r.* Müll., 1774, p. 10. Type loc.: Germany. Distr.: palearctic; introduced in temperate countries; Buenos Aires.

D. laeve (Müller). *Limax l.* Müll., 1774, p. 2; *D. l.* H. B. Baker, 1930, p. 41, pl. 11, figs. 1-7. Type loc.: Denmark. Distr.: All Americas. In Argentina: Buenos Aires, Mendoza, Córdoba, Jujuy. *Limax argentinus* Strobel and *L. andecolus* Orbigny, belong to this species.

Endodontidae

Amphidoxa (Stephanoda) ² patagonica (Suter). *Pyramidula p.* Sut., 1900, p. 329; *S. p.* Pilsbry, 1900, p. 387, pl. 12, figs. 9-11. Type loc.: Santa Cruz. Distr.: S. Patagonia, Tierra del Fuego.

A. (S.) jujuyensis (Hylton Scott). *Stephanoda j.* H. Scott, 1948, p. 251, fig. 4. Type loc.: Ravines of Rio Chico, Jujuy.

Discus costellata (Orbigny). *Helix c.* Orb., 1837, p. 252, pl. 26, figs. 6-9. Type loc.: Montevideo. Distr.: Uruguay; Buenos Aires. Unidentified specimens, different from *costellata* were found at Totoral and Chumbicha, Catamarca.

Austrodiscus ³ twomeyi (Parodiz). *Araucania t.* Par., 1954, p. 17, fig. 1. Type loc.: Rio la Pascua, S. Chile. Distr.: probably Santa Cruz.

Radiodiscus magellanicus (E. A. Smith). *Helix m.* Smith, 1881, p. 36; *R. m.* Pilsbry, 1905, p. 517, pl. 42, fig. 1. Type loc.: Tom Bay, near Madre de Dios Island, S. Chile. Distr.: very probably in Lake Argentino region and Tierra del Fuego.

R. riochiquensis Crawford, 1939, p. 115. Type loc.: Rio Chico region, S. Santa Cruz.

R. katiae Hylton Scott, 1948, p. 253, fig. 5. Type loc.: Ravines of Rio Chico, city of Jujuy.

Achatinidae

Ceciliooides consobrina (Orbigny). *Achatina c.* Orb., 1837, p. 89, pl. 11 (bis), figs. 10-12; *C. (Caecilianopsis) c.* Pilsbry, 1908, p. 38, pl. 5, figs. 81-82. Type loc.: near Matanzas, Cuba. Distr.: Entre Ríos, Salta, Jujuy, Tucumán, Córdoba, San Luis.

Lamellaxis (Allopeas) gracilis (Hutton). *Bulimus g.* Hutton, 1834, J. As. Soc. Bengal, 3, p. 93; *L. (A.) g.* H. B. Baker, 1935, p. 84. Type loc.: Mirzapur, India. Distr.: "tropics of both hemispheres" (Pilsbry 1948); in Argentina: Buenos

² This status of *Stephanoda* is according to Thiele. Other authors maintain it as a separate genus.

³ *Austrodiscus*, new name pro *Araucania* Parodiz, 1954, not *Araucania* Pate 1946, Hymenoptera, Sapygidae.

Aires, Martín Garcia Island in Rio de la Plata; the loc. for the syn. *O. martensi* Doering is Buenos Aires.

Leptinaria bacterinoides (Orbigny). *Helix b.* Orb., 1835, p. 9, L. p. H. Scott, 1948, p. 255, fig. 7. Type loc.: Pampa Ruiz, Bolivia. Distr.: Salta, Jujuy; Bolivia; Paraguay.

Stenogyra goodalli Miller (= *Opeas pumilum* Pfr.) referred by Doering, 1875, from Uruguay, was probably accidental, since this widely introduced species has not been found again in the region.

Obeliscus (Rectobelus) birabeni Hylton Scott, 1946, p. 363, figs. 1-3, pl. fig. 1-4. Type loc.: Vicinities of Jujuy city.

Strophocheilidae

Strophocheilus (Megalobulimus) oblongus haemastomus (Scopoli) *Bulimus h.* Scop., 1786, Delic. Faun. Fl. Insubricae, 1, p. 67, pl. 25, figs. 1^{b-2}; *S. (M.) o. h.* Bequaert, 1948, p. 74, pl. 6, fig. 2, pl. 21, fig. 4, pl. 24, fig. 5. Type loc.: ? Distr.: Corrientes, Entre Ríos; Uruguay; Paraguay; S. Brazil.

S. (M.) o. elongatus Bequaert, 1948, p. 78, pl. 1, fig. 4, pl. 2, fig. 4. Type loc.: Nueva Palmira, Uruguay. Distr.: Uruguay; Paraguay; E. Ríos?

S. (M.) o. lorentzianus (Doering). *Bulimus (Borus) l.* Doer., 1875, p. 336; *S. (M.) o. l.* Bequaert, 1948, p. 80, pl. 27, fig. 5. Type loc.: Sierras de Tucumán. Distr.: N.W. Argentina from Salta to Córdoba.

S. (M.) o. musculus Bequaert, 1948, p. 82, pl. 12, fig. 6, pl. 20, fig. 1, pl. 31, fig. 4. Type loc.: Villarrica, Paraguay; Distr.: Salta, Jujuy, Corrientes, E. Ríos; S.E. Brazil; Paraguay; probably Uruguay.

S. (M.) intertextus Pilsbry, 1895, p. 32, pl. 17, figs. 30-31, as *S. (Borus) capillaceus* i.; *S. (M.) i.* Bequaert, 1948, p. 84, pl. 18, fig. 3. Type loc.: Corumba, Brazil; Distr.: Brazil; Uruguay; Santa Fe?

S. (M.) sanctipauli Pilsbry & Ihering, 1900, p. 390, as *S. oblongus* s.; *S. (M.) s.* Bequaert, 1948, p. 137. Type loc.: Botucata, São Paulo, Brazil. Distr.: S. Brazil; Paraguay; Misiones, Corrientes.

S. (M.) s. eyerdami Bequaert, 1948, p. 139, pl. 24, fig. 2. Type loc.: Tartagal, Salta.

S. (M.) globosus (Martens). *Bulimus g.* Mart. in Pfeiffer, 1876, p. 17; *S. (M.) g.* Bequaert, 1948, p. 142, pl. 4, fig. 7, pl. 15, fig. 2, pl. 20, fig. 2. Type loc.: near Montevideo? Distr.: Uruguay (living); subfossil in pleistocene of Entre Ríos and Buenos Aires.

S. (Austroborus) lutescens (King & Broderip). *Bulimus l.* King & Brod., 1832, p. 340; *S. (A.) l.* Parodiz, 1949, p. 189. Type loc.: Maldonado, Uruguay. Distr.: S. Uruguay.

S. (A.) l. d'orbignyi Doer., 1876, p. 366; *S. (A.) l. d.* Parodiz, 1949, p. 190. Type loc.: Sauce Chico Valley, S.W. Buenos Aires. Distr.: Sierra de la Ventana and around Bahia Blanca.

S. (A.) cordillerae (Doering). *Bulimus (Borus) lutescens c.* Doer., 1876, p. 385; *S. (A.) c.* Parodiz, 1949, p. 190 and 219. Type loc.: Sierra Achala, Córdoba. Distr.: W. Córdoba, in alluvial beds; subfossil in pleistocene of Uruguay. Living specimens are rare.

Gonyostomus (Anthinus) turnix albolabiatus Jaeckel, 1927, p. 136. Type loc.: Santa Rosa, Rio Grande do Sul. Distr.: S. Brazil; Misiones, N. Corrientes.

Macrocyclidae

Macrocyklis laxata (Ferussac). *Helicella l.* Fer., 1820, p. 39; *M. l.* Pilsbry, 1894, p. 165. Type loc.: "Chile." Distr.: in Argentina: Nahuel Huapí National Park, Neuquen-Rio Negro.

Bulimulidae

Bulimulus rushii Pilsbry, 1896, p. 78. Type loc.: Maldonado, Uruguay. Distr.: Entre Ríos, Corrientes; subfossil at La Plata.

Bulimulus bonariensis (Rafinesque). *Siphalomphis b.* Raf., 1833, no. 5, p. 165. Type loc.: Buenos Aires. This is the species known as *B. sporadicus* Orb., which typical form is the named *B. s. bonariensis* Str.

B. b. sporadicus (Orbigny). *Helix s.* Orb., 1835, p. 12; *B. sporadicus* of authors. Type loc.: not indicated; Orbigny mentioned several loc. now belonging to other species or subspecies, but those figured in 1837, pl. 32, figs. 12-14 are the typical from Chiquitos, Bolivia. Distr.: Bolivia; Paraguay; Salta, Tucumán, Chaco, Formosa, Stgo. del Estero, Santa Fe, Corrientes, Entre Ríos.

B. b. montevidensis (Pfeiffer). *Bulimus m.* Pfr., 1846, p. 33; *B. s. m.* Pilsbry, 1897, p. 68, pl. 11, fig. 19. Type loc.: Montevideo, Uruguay.

B. b. morenoi Preston. *B. (Drymaeus) m.* Pr., 1907, p. 494. Type loc.: "Argentina" (probably Buenos Aires).

B. b. schadei Schlesch, 1935, p. 86, as *sporadicus s.* Type loc.: Villarrica, Paraguay.

B. b. gracilis Hylton Scott, 1948, p. 238, pl. 2, fig. 3, as *sporadicus g.* Type loc.: Cerro Colorado, S.E. Salta.

B. vesicalis uruguayanus Pilsbry, 1897, p. 69, pl. 12, figs. 38-39. Type loc.: Montevideo, Uruguay; pleistocene of Buenos Aires.

B. apodemetes (Orbigny). *Helix a.* Orb., 1835, p. 10; *B. (Bostryx-Lissoacme) a.* Pilsbry, 1897, p. 187, pl. 51, figs. 1-4. Type loc.: Santa Fe. Distr.: Bolivia, Paraguay; Uruguay;

- Salta, Formosa, Chaco, Tucumán, Stgo. del Estero, Santa Fe, Catamarca, Corrientes, Entre Ríos.
- B. a. dispar* Hylton Scott, 1952, p. 23. Type loc.: Pocitos, Salta.
- B. gorritiensis* Pilsbry, 1897, p. 18. Type loc.: Gorriti Id., coast of Uruguay. Distr.: Gorriti and Lobos islands.
- B. jujuyensis* Holmberg. *B. (Thaumastus) jujuyensis* Hol., 1909, p. 11; *B. (B.) j.* H. Scott, 1945, p. 207, pl. 1, figs. 8-9. Type loc.: Quebrada de Humahuaca, Jujuy. Distr.: Jujuy, (Salta ?), Formosa.
- B. flossdorfi* Holmberg, 1909, p. 11. Type loc.: Nueva Pompeya, Formosa.
- B. prosopidis* Holmberg, 1912, p. 148, as *B. (Mesembrinus) p.* Type loc.: Margins of Pilcomayo Riv. Distr.: Argentina-Paraguay border.
- B. eliator* Hylton Scott, 1952, p. 21, pl. 2, fig. 4. Type loc.: Laguna Yema, Formosa.
- B. (Scansicochlea) pastorei* Holmberg, 1912, p. 22, as *B. (Mesembrinus) p.* Type loc.: Cerro Varela, San Luis.
- B. (S.) jorgensi* Holmberg, 1912, p. 150, as *B. (Leptomerus) j.* Type loc.: Bompland, Misiones. Distr.: common in tobacco plantations.
- B. (S.) montagnei* (Orbigny). *Bulimus m.* Orb., 1837, p. 286, pl. 32, figs. 5-7. Type loc.: Santa Cruz, Bolivia. Distr.: Argentina-Bolivia.
- B. (S.) hyltonscottae* Parodiz, 1956, p. 59, figs. 1-4. Type loc.: El Zapallar, Quines, San Luis.
- B. (S.) strobeli* Parodiz, 1956, p. 62, fig. 5. Type loc.: Cerro del Morro, San Luis.
- Thaumastus (Scholvienia) argentinus* Bequaert, 1949, p. 114, pl. 7, fig. 6. Type loc.: N. of "Pique" (for Pigüé), S.W. Buenos Aires; this southernmost loc. for a living *Thaumastus* needs confirmation. Very close to *T. (S.) weyrauchi* Pilsbry, 1944, p. 121, pl. 11, fig. 2 from Peru.
- Scutalus tupacii* (Orbigny). *Helix t.* Orb., 1835, p. 16; *Bulimulus (S.) t.* Pilsbry, 1897, p. 19, pl. 3, figs. 27-31. Type loc.: Yunacacha, Yungas, Bolivia. Distr.: Salta, Jujuy, Tucumán, Stgo. del Estero.
- Neopetraeus stelzneri* (Dorhn). *Bulimulus (Scutalus) s.* Dorhn, 1875, p. 202; *N. s.* Parodiz, 1946, p. 349. Type loc.: Yocotula, Catamarca. Distr.: Catamarca, La Rioja, Salta. The typical subspecies includes the forms described by Parodiz, 1948: *hybrida*, p. 12, Sierra Velazco, La Rioja; *nonogastanus*, p. 13, Nonogasta, La Rioja; *tinogastanus*, Tinogasta, Catamarca; *scaber*, p. 14, Cachi, Salta.
- N. s. conispinus* (Doehring). *Bulimulus (Scutalus) c.* Doer., 1879, p. 67. Type loc.: Sierra de Tucumán. Distr.: Catamarca, Tucumán, La Rioja (San Luis?). Form *minuta* Parodiz, 1948, p. 18, Fiambala, Cat.

N. s. peristomatus (Doering). *Scutalus p.* Doer., 1879, p. 4; *N. s. p.* Parodiz, 1948, p. 14. Type loc.: Sierra Pocho, Córdoba. Form *paraconispirus* Parodiz, 1948, p. 16, from Sierra Gigante, San Luis.

N. s. hector (Holmberg). *Bulimulus h.* Holm., 1909, p. 11. Type loc.: Tilcara, Jujuy. Distr.: Jujuy, Salta. *B. h. multicincta* Holm., 1909, p. 12, from same loc., is banded form of this subspecies.

N. s. apertus Hylton Scott, 1948, p. 238, pl. 2, figs. 4-5. Type loc.: Cerro Colorado, N.E. Salta.

(To be continued)

LAND AND FRESH WATER MOLLUSKS OF UNION COUNTY, NEW JERSEY

BY SAM FREED

Union County, located in the north-eastern part of the State has an area of 102.1 square miles. It is bounded on the north by Essex County, east by Middlesex County and west by Somerset and Morris Counties. The ground is generally level with marsh land toward the coast while the western section is broken by a range of hills known locally as the Watchung Mountains. The highest point is located at the Second Mountain north of Feltville and has an elevation of 553 feet above sea level. The principal rivers draining the county are the Rahway and Elizabeth, both flowing into the Arthur Kill.

The Watchung Mountains are abrupt ridges which rise above the general level of the Piedmont Belt. The crests and upper slopes of the Watchungs are composed of diabase and basalt. In the northwestern part of the county the Terminal Moraine is characterized by especially uneven topography. The westernmost part of the county is located in the Passaic River Basin. This is the bed of old glacial Lake Passaic, distinguished particularly by extensive silt and clay sediments.

Total annual precipitation is 56.08 inches. May is the wettest month with an average of 6.52 inches. Temperature ranges from an average of 79.2 degrees in the summer to 36.0 degrees in the winter.

Most of the county is highly industrialized and the building of factories and homes is at a peak. Well-developed farm patterns

The following text is generated from uncorrected OCR.

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Literature Cited

Baker, F. C. 1945. The MoUuscan Family Planorbidae.

Univ. of 111. Press, 530 pp.

Bayer, Ch. 1950. Jour, de Conchyl., 90 : 245-253.

Boettger, C. R. 1949. Abhandl. Braunschweigischen Wiss.

Ges., 1(1): 1-7.

Boettger, C. R. 1952. Verhandl. Deutschen Zool. Ges. Freiburg, pp. 468-487.

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Cyclophoridae

Adelopoma tucma Doering, 1885, p. 458. Type loc. : San Javier,
Tucuman. Distr. : Salta, Jujuy, Tucuman, Catamarca.

A. paraguayana Parodiz, 1944, p. 1, fig. 1. Type loc. : Villarrica,
Paraguay.

Helicinidae

Helicina carinata Orbigny, 1835, p. 28 ; 1837, p. 360, pi. 360, pi.
46, figs. 6-9. Type loc. : Yungas, Bolivia. Distr. : Bolivia ;
Paraguay ; Misiones.

Veronicellidae

Veronicella soleiformis (Orbigny). *Vaginulus* s. Orb., 1835, p.

2 ; 1837, V. *solea* Orb., p. 220, pi. 21, figs. 1-4. Type loc. : S.

of Buenos Aires. Distr. : Buenos Aires to Corrientes, Tucuman; Bolivia; Uruguay.

V. s. *honariensis* (Strobel). *Vaginulus* h. Str., 1868, p. 4, figs.

1-2; *Vaginula* s. h. Cockerell, 1893, p. 194. Type loc: near

Buenos Aires.

V. paranensis (Burmeister). *Vaginulus* p. Bur., 1861, p. 494.

Type loc. : Parana, Entre Rios. Distr. : Entre Rios, Santa Fe,

Tucuman.

y. salamandra (Holmberg). *Vaginula* s. Hoi., 1913, p. 171, fig.

2. Type loc. : Delta of Parana River, N.E. Buenos Aires.

V. deltae (Holmberg). *Vaginula* d. Hoi., 1913, p. 173. Type

loc. : Jorge Island, Arroyo Barca Grande, Delta of Parana,

N.E. Buenos Aires.

V. Uicumana (Holmberg). *Vaginula* t. Hoi., 1913, p. 177.

Type loc. : Tucuman.

V. missionium (Holmberg). *Vaginula* m. Hoi., 1913, p. 178.

Type loc. : Posades, S.W. Misiones.

V. horelliana (Colosi). *Vaginula* l. Col., 1922, p. 487, figs. 1-8.

Type loc. : San Pablo, Tucuman.

V. difficilis (Colosi). *Vaginula* d. Col., 1922, p. 504, figs. 33-36.

Type loc. : Tucuman.

V. erinacea (Colosi). *Vaginula* e. Col., 1922, p. 504, figs. 37-40.

Type loc. : Tucuman.

V. laurentiana (Colosi). Vagimda I. Col., 1922, p. 513, figs. 51-

53. Type loc. : San Lorenzo, Salta.

Pupillidae

Pupoides (*Ichnopupoides*) *paredesii* (Orbigny). *Helix* p. Orb., 1835, p. 21; 1837, p. 322, pi. 44, figs. 3-6. Type loc: Los Obrajes, near La Paz, Bolivia. Distr.: Peru; Bolivia; Jujuy.

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P. (7.) chordaUis (Pfeiffer). *Bulimus* c. Pfr., 1856, p. 46; *P. c.*

Martens, 1901, p. 330. Type loc. : Mazatlan, Mexico. Distr. :

La Rioja, probably introduced.

Gastrocopta nodosaria (Orbigny). *Helix* n. Orb., 1835, p. 22;

G. n. Pilsbry, 1916, p. 94, pi. 17, fig. 10. Type loc. : Pampa

Ruiz, Laguna, Bolivia. Distr. : Jujuy, Catamarca, La Rioja,

•nPTio^ AiT'P^

G. servUis ohlonga (Pfeiffer). *Pujm* o. Pfr., 1853, p. 536; *G. o.*

Pilsbry, 1916, p. 90. Type loc: unknown. Distr.: Brazil;

Uruguay ; Santa Fe, Cordoba, San Luis.

G. microdonta (Doering). Pupa m. Doer., 1879, p. 82; G. m.

Pilsbry, 1916, p. 92. Type loc. : La Paz, N.W. Entre Rios.

Distr. : Corrientes, E. Rios.

G. clessini (Doering). Pupa c. Doer., 1879, p. 83; G. c. Pilsbry,

1916, p. 93. Type loc. : Rio Primero Valley, Cordoba. Distr. :

Cordoba, S. Luis.

G. crucifera Hylton Scott, 1948, p. 245, fig. 1. Type loc. : Sierra

de Velazco, central N. La Rioja.

G. pulvinata Hylton Scott, 1948, p. 246. fig. 2. Type loc:

Urundel, N.E. Salta. Distr. : Salta, Jujuy, Tucuman.

G. {Immersidens} dicrodonta (Doering). Pujja d. Doer., 1879,

p. 83; G. d. Pilsbry, 1916, p. 100. Type loc: Villavicencio,

Mendoza. Distr. : Catamarca, Cordoba, San Luis, Mendoza.

Ulpia venusta Hylton Scott, 1955, p. 67, figs. 1-4. Type loc:

Lumbrenera, Salta.

Vertigo frenguelli Hylton Scott, 1946, p. 360, fig. text. Type

loc: Cerro Colorado, Sierra Norte, Cordoba (subfossil).

Valloniidae

Yallonia pidcliella (Müller). *Helix* p. Müll, 1874, p. 30; V. p.

Binney, 1878, p. 344. Type loc : Denmark. Distr. : cosmopolitan ; in Argentina : Jujuy, La Rioja, Buenos Aires.

Clausiliidae

Nenia argentina Hylton Scott, 1954, p. 2, figs. 1-7. Type loc. :

Las Capillas, Jujuy.

Succineidae

Succinea meridionalis Orbigny, 1837, p. 711 (additions et correct. ; in text, p. 235, under *S. ohlonga* Draparnaud). Type loc. : (here selected) Rio de la Plata. Distr. : from Rio de Janeiro, Brazil to N. Patagonia. Distr. : Corrientes, Entre Ríos, Santa Fe, Buenos Aires, Rio Negro ; Uruguay ; also Chile and Peru after Orbigny.

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S. m. cornea Doering, 1881, p. 62. Type loc. : Sierra de la Ven-tana, S.W. Buenos Aires. Distr. : Buenos Aires, Eio Negro.

S. hurmeisteri ^ Doering, 1873, p. 59. Type loc. : Springs on Rio Chico, above Rio Chalia, Santa Cruz (selected by Pilsbry, 1911).

S. labiosa Philippi, 1860, p. 164, pi. 7, fig. 7. Type loc. : Ata-cama, Chile. Distr. : San Luis, after Doering 1875.

S. porrecta Doering, 1875, p. 76. Type loc. : Valley Juntas, Tucuman.

S. magellanica Gould, 1852, p. 24, fig. 22. Type loc. : Orange Bay, Magellan Strait.

S. ordinaria E. A. Smith, 1905, p. 338, fig. 4. Type loc. : T. del Fuego.

S. aurita Hylton Scott, 1952, p. 29 (n.n. pro ^*S. aurea* Scott, 1945 ; not *S. aurea* Lea 1841). Type loc. : Los Manantiales, Tilcara, Jujuy.

Omalonyx unguis Orbigny. *Helix (Cochlohydra) u. "Ferus-sac"* Orb., 1835, p. 2; *S. (0.) u.* Orb., 1837, p. 229. Type loc: flooded margins of Parana Riv. near Corrientes. Distr. : Cor-rientes, Entre Rios, Santa Fe; Bolivia; Uruguay, Brazil; (Paraguay?). The species *O. patera* Doering, 1873, p. 67 from Corrientes, and *Succinea convexa* Martens, 1868, p. 183

from Porto Alegre, Brazil, are forms of *O. unguis*.

Zonitidae

Zonitoides arboreus (Say). *Helix* a. Say, 1816, p. 4, fig. 4;

Z. a. Henderson 1924, p. 13, Type loc. : not indicated. Distr. :

All Americas; introduced in Europe, S. Africa, Australia,

Japan and Hawaii; in Argentina: Buenos Aires, Misiones,

Cordoba, Jujuy ; Uruguay.

Hahroconus (Pseudoguppya) semenlini (Moricand). *Helix* s.

Moric, 1845, p. 55, fig. 17. Type loc: Brazil. Distr.: N.E.

Entre Rios.

H. (P.) illoana (Hylton Scott). *Guppya* I. H. Scott, 1948, p.

267, fig. 12. Type loc : Palmar San Pedro, Jujuy. Distr. :

Jujuy, Tucuman.

H. (P.) aenea (Hylton Scott). *Guppya* a. H. Scott, 1948, p.

270, fig. 13. Type loc. : Urundel, N.E. Salta. Distr. : Salta,

Jujuy. The inclusion of the last two species in *H. (P.) guppya* is based on the resemblance in shell, jaw and radula to the type of *Pseudoguppya*, *H. (P.) cassiquensis* Pfeiffer (see H. B. Baker, 1925, p. 10).

1 Systematics and distribution of these Succinea are poorly known ; according to Doering, 1875, *S. burmeisteri* could be synonym of *meridionalis*.

Also *S. rosarinensis* Doering 1873, p. 75, from Eosario, Santa Fe, may be

meridionalis. *S. felipponei* Marshall, 1926, is very doubtful.

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Limacidae

Deroceras reticulatum (Mueller). *Limax r.* Muell, 1774, p. 10.

Type loc. : Germany. Distr. : palearctic ; introduced in temperate countries ; Buenos Aires.

D. laeve (Mueller). *Limax l.* Muell, 1774, p. 2; P. I. H. B.

Baker, 1930, p. 41, pl 11, figs. 1-7. Type loc: Denmark.

Distr. : All Americas. In Argentina : Buenos Aires, Mendoza,

Cordoba, Jujuy. *Limax argentinus* Strobel and L. andecolus

Orbigny, belong to this species.

Endodontidae

Ainphidoxa (*Stephanoda*) ^ *patagonica* (Suter). *Pyramidula* p.

Sut., 1900, p. 329 ; S. p. Pilsbry, 1900, p. 387, pi. 12, figs. 9-11.

Type loc. : Santa Cruz. Distr. : S. Patagonia, Tierra del

Fuego.

A. (S.) jujuyensis (Hylton Scott). *Stephanoda* j. H. Scott,

1948, p. 251, fig. 4. Type loc. : Ravines of Rio Chico, Jujuy.

Discus costellata (Orbigny). *Helix* c. Orb., 1837, p. 252, pi. 26,
figs. 6-9. Type loc. : Montevideo. Distr. : Uruguay ; Buenos
Aires. Unidentified specimens, different from *costellata* were
found at Totoral and Chumbicha, Catamarca.

Austrodiscus ^ twomeyi (Parodiz). *Araucania* t. Par., 1954,
p. 17, fig. 1. Type loc. : Rio la Pascua, S. Chile. Distr. : prob-
ably Santa Cruz.

Badiodiscus magellanicus (E. A. Smith). *Helix* m. Smith, 1881,
p. 36 ; R. m. Pilsbry, 1905, p. 517, pl. 42, fig. 1. Type loc. :
Tom Bay, near Madre de Dios Island, S. Chile. Distr. : very
probably in Lake Argentino region and Tierra del Fuego.

R. riochiquensis Crawford, 1939, p. 115. Type loc. : Rio Chico
region, S. Santa Cruz.

R. katiae Hylton Scott, 1948, p. 253, fig. 5. Type loc. : Ravines
of Rio Chico, city of Jujuy.

Achatinidae

Ceciliooides consohrina (Orbigny). *Achatina* c. Orb., 1837, p. 89,
pi. 11 (bis), figs. 10-12; C. (*Caecilianopsis*) c. Pilsbry, 1908,
p. 38, pi. 5, figs. 81-82. Type loc. : near Matanzas, Cuba.
Distr. : Entre Rios, Salta, Jujuy, Tucuman, Cordoba, San Luis.

Lamellaxis (*Allopeas*) *gracilis* (Hutton). *Bulimics* g. Hutton,
1834, J. As. Soc. Bengal, 3, p. 93; L. (A.) g. H. B. Baker,

1935, p. 84. Type loc. : Mirzapur, India. Distr.: "tropics of both hemispheres" (Pilsbry 1948); in Argentina: Buenos

2 This status of Stephanoda is according to Thiele. Other authors maintain it as a separate genus.

3 Austrodiscus, new name pro Araucania Parodiz, 1954, not Araucania Pate 1946, Hymenoptera, Sapygidae.

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Aires, Martin Garcia Island in Rio de la Plata ; the loc. for the

syn. *O. martensi* Doering is Buenos Aires.

Leptinaria hacterinoides (Orbigny). *Helix h. Orb.*, 1835, p. 9,

L. p. H. Scott, 1948, p. 255, fig. 7. Type loc. : Pampa Ruiz,

Bolivia. Distr. : Salta, Jujuy; Bolivia; Paraguay.

Stenogyra goodalli Miller (= *Opeas pumilum* Pfr.) referred by

Doering, 1875, from Uruguay, was probably accidental, since

this widely introduced species has not been found again in the

region.

Oheliscus (Rectohelus) hiraheni Hylton Scott, 1946, p. 363, figs.

1-3, pi. fig. 1-4. Type loc. : Vicinities of Jujuy city.

Strophocheilidae

Strophocheilus (Megalohulimus) ohlongus haemastomus (Socpoli) *Bulimus* h. Scop., 1786, Delic. Faun. Fl. Insubricae, 1, p. 67, pi. 25, figs. P-2; S. (M.) o. h. Bequaert, 1948, p. 74, pi. 6, fig. 2, pi. 21, fig. 4, pi. 24, fig. 5. Type loc. : ? Distr. : Corrientes, Entre Rios ; Uruguay ; Paraguay ; S. Brazil.

S. (M.) o. elongatus Bequaert, 1948, p. 78, pi. 1, fig. 4, pi. 2, fig. 4. Type loc. : Nueva Palmira, Uruguay. Distr. : Uruguay ; Paraguay; E. Rios ?

8. {M.) o. lorentzianis {Doering). *Bulimus* {Bonis) I. Doer., 1875, p. 336; ASf. {M.) o. I. Bequaert, 1948, p. 80, pi. 27, fig. 5. Type loc. : Sierras de Tucuman. Distr. : N.W. Argentina from Salta to Cordoba.

S. (M.) o. muscidus Bequaert, 1948, p. 82, pi. 12, fig. 6, pi. 20, fig. 1, pi. 31, fig. 4. Type loc. : Villarrica, Paraguay ; Distr. : Salta, Jujuy, Corrientes, E. Rios; S.E. Brazil; Paraguay; probably Uruguay.

S. (M.) intertextus Pilsbry, 1895, p. 32, pi. 17, figs. 30-31, as ;S^.

{Borus) capillaceus i.; S. {M.) i. Bequaert, 1948, p. 84, pi. 18, fig. 3. Type loc. : Corumba, Brazil ; Distr. : Brazil ; Uruguay; Santa Fe ?

S. {M.) sanctipaidi Pilsbry & Ihering, 1900, p. 390, as >S^A. oh-longus s.; 8. {M.) s. Bequaert, 1948, p. 137. Type loc: Botucata, Sao Paulo, Brazil. Distr.: S. Brazil; Paraguay; Misiones, Corrientes.

8. {M.) s. eyerdami Bequaert, 1948, p. 139, pi. 24, fig. 2. Type loc. : Tartagal, Salta.

8. {M.) glohosus (Martens). Buliyniis g. Mart, in Pfeiffer,

1876, p. 17; ;Sf. {M.) g. Bequaert, 1948, p. 142, pi. 4, fig. 7, pi. 15, fig. 2, pi. 20, fig. 2. Type loc: near Montevideo ? Distr.: Uruguay (living); subfossil in pleistocene of Entre Rios and Buenos Aires.

8. {Austrohorus) lutescens (King & Broderip). Bidimus I. King & Brod., 1832, p. 340; ;S^A. {A.) I. Parodiz, 1949, p. 189. Type loc. : Maldonado, Uruguay. Distr. : S. Uruguay.

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S. (A.) I. d'orUgnyi Doer., 1876, p. 366; ^S'. {A.) I. d. Parodiz,

1949, p. 190. Type loc. : Sauce Chico Valley, S.W. Buenos Aires. Distr. : Sierra de la Ventana and around Bahia Blanca.

S. (A.) cordillerae (Doering). *Bulimus* {Bonis} *lutescens* c. Doer., 1876, p. 385; *S. (A.) c.* Parodiz, 1949, p. 190 and 219.

Type loc. : Sierra Achala, Cordoba. Distr. : W. Cordoba, in alluvial beds; subfossil in pleistocene of Uruguay. Living specimens are rare.

Gonyostomus (*Anthinus*) *turnix alholahiatus* Jaeckel, 1927, p. 136. Type loc. : Santa Rosa, Rio Grande do Sul. Distr. : S. Brazil ; Misiones, N. Corrientes.

Macrocyclidae

Macrocyclus laxata (Ferussac). *Helicella* I. Fer., 1820, p. 39; M. I. Pilsbry, 1894, p. 165. Type loc: "Chile." Distr.: in Argentina : Nabuel Huapi National Park, Neuquen-Rio Negro.

Bulimulidae

Bulimulus rushii Pilsbry, 1896, p. 78. Type loc. : Maldonado, Uruguay. Distr. : Entre Rios, Corrientes ; subfossil at La Plata.

Billimidus honariensis (Rafinesque). *Siphaloniphis* h. Raf., 1833, no. 5, p. 165. Type loc. : Buenos Aires. This is the species known as *B. spor adieus* Orb., which typical form is the

named *B. s. honariensis* Str.

B. h. sporadicus (Orbigny). *Helix* s. Orb., 1835, p. 12; *B. sporadicus* of authors. Type loc. : not indicated ; Orbigny mentioned several loc. now belonging to other species or subspecies, but those figured in 1837, pi. 32, figs. 12-14 are the typical from Chiquitos, Bolivia. Distr. : Bolivia ; Paraguay ; Salta, Tucuman, Chaco, Formosa, Stgo. del Estero, Santa Fe, Corrientes, Entre Rios.

B. h. montevidensis (Pfeiffer). *Bulimus* m. Pfr., 1846, p. 33; *B. s. m.* Pilsbry, 1897, p. 68, pi. 11, fig. 19. Type loc. : Montevideo, Uruguay.

B. h. morenoi Preston. *B. (Drymaeiis)* m. Pr., 1907, p. 494.
Type loc: "Argentina" (probably Buenos Aires).

B. h. schadei Schlesch, 1935, p. 86, as *sporadicus* s. Type loc:
Villarrica, Paraguay.

B. h. gracilis Hylton Scott, 1948, p. 238, pi. 2, fig. 3, as *sporadicus* g. Type loc : Cerro Colorado, S.E. Salta.

B. vesicalis Uruguay anus Pilsbry, 1897, p. 69, pi. 12, figs. 38-39.
Type loc. : Montevideo, Uruguay ; pleistocene of Buenos Aires.

B. apodemetes (Orbigny). *Helix* a. Orb., 1835, p. 10; *B. (Bostryx x-Lissoacme) a.* Pilsbry, 1897, p. 187, pi. 51, figs. 1-4.

Type loc: Santa Fe. Distr.: Bolivia, Paraguay; Uruguay;

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Salta, Formosa, Chaco, Tucuman, Stgo. del Estero, Santa Fe,
Catamarca, Corrientes, Entre Rios.

B. a. dispar Hylton Scott, 1952, p. 23. Type loc. : Pocitos, Salta.

B. gorritiensis Pilsbry, 1897, p. 18. Type loc. : Gorriti Id., coast
of Uruguay. Distr. : Gorriti and Lobos islands.

B. jujuyensis Holmberg. B. {Thaumastus} jujuyensis Hoi.,
1909, p. 11; B. (B.) j. H. Scott, 1945, p. 207, pi. 1, figs. 8-9.
Type loc. : Quebrada de Humahuaca, Jujuy. Distr. : Jujuy,
(Salta ?), Formosa.

B. flossdorfi Holmberg, 1909, p. 11. Type loc. : Nueva Pompeya,
Formosa.

B. prosopidis Holmberg, 1912, p. 148, as B. (Mesemhrinus) p.
Type loc. : Margins of Pilcomayo Riv. Distr. : Argentina-
Paraguay border.

B. eliator Hylton Scott, 1952, p. 21, pi. 2, fig. 4. Type loc:
Laguna Yema, Formosa.

B. (Scansicochlea) pastorei Holmberg, 1912, p. 22, as B. (Mesemhrinus) p. Type loc: Cerro Varela, San Luis.

B. (S.) jorgenseni Holmberg, 1912, p. 150, as B. (Leptomerus) j. Type loc. : Bompland, Misiones. Distr. : common in tobacco plantations.

B. (S.) montagnei (Orbigny). Biilimus m. Orb., 1837, p. 286, pi. 32, figs. 5-7. Type loc : Santa Cruz, Bolivia. Distr. : Argentina-Bolivia.

B. (8.) hyltonscottae Parodiz, 1956, p. 59, figs. 1-4. Type loc: El Zapallar, Quines, San Luis.

B. (S.) stroheli Parodiz, 1956, p. 62, fig. 5. Type loc. : Cerro del Morro, San Luis.

Thaumastus (Sciolvienia) argeniinus Bequaert, 1949, p. 114, pi. 7, fig. 6. Type loc: N. of "Pique" (for Pigiie), S.W. Buenos Aires; this southernmost loc. for a living Thaumastus needs confirmation. Very close to T. (S.) weyrauchi Pilsbry, 1944, p. 121, pi. 11, fig. 2 from Peru.

Scutalus tupacii (Orbigny). Helix t. Orb., 1835, p. 16; Bulimulus (8.) t. Pilsbry, 1897, p. 19, pi. 3, figs. 27-31. Type loc. : Yunacacha, Yungas, Bolivia. Distr. : Salta, Jujuy, Tucuman, Stago. del Estero.

Neopetraeus stelzneri (Dorhn). *Bulhnulus* {*Scutalus*} s. Dorhn,
1875, p. 202 ; N. s. Parodiz, 1946, p. 349. Type loc. : Yoco-
tula, Catamarca. Distr.: Catamarca, La Rioja, Salta. The
typical subspecies includes the forms described by Parodiz,
1948 : *hyrida*, p. 12, Sierra Velazco, La Rioja ; *nonogastaniis*,
p. 13, Nonogasta, La Rioja; *tinogastanus*, Tinogasta, Cata-
marca; *scaber*, p. 14, Cachi, Salta.

N. s. *conispirus* (Doehring). *Bidimulus* {*Scutalus*} c. Doer.,
1879, p. 67. Type loc. : Sierra de Tucaman. Distr. : Cata-
marca, Tucuman, La Rioja (San Luis?). Form *minuta* Paro-
diz, 1948, p. 18, Fiambala, Cat.

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N. s. *peristomatus* (Doering). *Scutalus* p. Doer., 1879, p. 4;
N. s. p. Parodiz, 1948, p. 14. Type loc. : Sierra Pocho, Cor-
doba. Form *paraconispirus* Parodiz, 1948, p. 16, from Sierra
Gigante, San Luis.

N. s. *hector* (Holmberg). *Bulinmlus* h. Holm., 1909, p. 11.
Type loc. : Tilcara, Jujuy. Distr. : Jujuy, Salta. B. h. *rmUti-*
cincta Holm., 1909, p. 12, from same loc, is banded form of
this subspecies.

N. s. *apertus* Hylton Scott, 1948, p. 238, pi. 2, figs. 4-5. Type

loc: Cerro Colorado, N.E. Salta.

(To 1)6 continued)

LAND AND FRESH WATER MOLLUSKS OF UNION
COUNTY, NEW JERSEY

By SAM FREED

Union County, located in the north-eastern part of the State has an area of 102.1 square miles. It is bounded on the north by Essex County, east by Middlesex County and west by Somerset and Morris Counties. The ground is generally level with marsh land toward the coast while the western section is broken by a range of hills known locally as the Watchung Mountains. The highest point is located at the Second Mountain north of Feltville and has an elevation of 553 feet above sea level. The principal rivers draining the county are the Rahway and Elizabeth, both flowing into the Arthur Kill.

The Watchung Mountains are abrupt ridges which rise above the general level of the Piedmont Belt. The crests and upper slopes of the Watchungs are composed of diabase and basalt. In the northwestern part of the county the Terminal Moraine is characterized by especially uneven topography. The western-most part of the county is located in the Passaic River Basin. This is the bed of old glacial Lake Passaic, distinguished particularly by extensive silt and clay sediments.

Total annual precipitation is 56.08 inches. May is the wettest month with an average of 6.52 inches. Temperature ranges from an average of 79.2 degrees in the summer to 36.0 degrees in the winter.

Most of the county is highly industrialized and the building of factories and homes is at a peak. Well-developed farm patterns