

Article III.—INSECTS OF FLORIDA

V. THE WATER BEETLES¹

BY CHARLES W. LENG AND ANDREW J. MUTCHLER

INTRODUCTION

In the preparation of this list the same authorities have been consulted as in the preparation of the List of Carabidæ of Florida.² These include the Hubbard and Schwarz records of 1878, the subsequent manuscript additions of Mr. Schwarz, the published and manuscript additions of Mrs. Annie Trumbull Slosson, and the results of expeditions to Florida by members of the Museum Staff and other entomologists whose names are mentioned in the text. In addition, the records of the late Mr. C. H. Roberts' Collection (now in this Museum) and those in the collection of Mr. John D. Sherman, Jr., have been incorporated. These two entomologists have, for many years, specialized in aquatic Coleoptera and employed Mr. W. S. Genung to collect Florida Water Beetles. In Haliplidæ, the papers by Dr. R. J. Matheson and Mr. Roberts have been followed; in Dytiscidæ, Mr. Sherman's knowledge of the scattered literature has been helpful; in Hydrophilidæ, the studies of Mr. Fred Wintersteiner, thus far unpublished, have been useful; and in Parnidæ, the unpublished studies of Mr. Harry H. Knight have been of assistance; but, withal, it must be admitted that among the small species there is still some confusion, which we have aimed to clarify as far as possible. The specimens collected by Grossbeck, Leng, Lutz, Mutchler, and Watson are in the collection of The American Museum of Natural History.

In comparison with the water beetle lists of some other section, after making some allowances for the various degrees of completeness with which the material has been worked up, the number of species occurring in Florida may seem small. It is due, in part, to the almost total failure of the great northern genus *Hydroporus*, whose numbers swell the list for any northern locality. Other, smaller but important, northern genera that are missing

¹ The following new names and synonymy are proposed in this paper:

Celina slossoni, new species.

Bidessus shermani, new species.

Haliplus confluentus Roberts = *H. havaniensis* Wehncke.

They are to be credited to Mr. Mutchler alone.

² Bulletin American Museum Natural History, XXXIX, 1915, pp. 555-601.

are *Ilybius* and *Agabus*. This difference is most marked in the carnivorous Dytiscidæ,¹ but it is also plainly seen in the Haliplidæ, Gyrinidæ, and Parnidæ. The numbers of the Hydrophilidæ, which though water beetles are not Adephaga, are, however, nearly equal to those of northern regions.

The Number of Species Reported from Various Regions

	N. J.	Ind.	D.C.	S.W. Pa.	Fla.	W.I.
Dytiscidæ	95	69	49	39	42	43
Haliplidæ	10	11	6	2	6	3
Gyrinidæ	25	15	10	6	10	8
Hydrophilidæ	42	39	29	32	39	33
Sphæridiidæ	16	15	17	15	11	13
Parnidæ	18	7	16	10	6	10
	<hr/> 206	<hr/> 156	<hr/> 127	<hr/> 104	<hr/> 114	<hr/> 110

An effective comparison with the West Indian fauna is not yet possible, since our West Indian list is far from complete; but a total about the same as that recorded for Florida is indicated as probable, with about 20% of identical species. These identical species are partly northern ones which extend through Florida to Cuba or beyond, and partly Antillean species that have been found in Florida. The strong flight of water beetles, coupled with the similarity of some aquatic environments wherever they occur, are doubtless factors that tend to produce this result. It may eventually appear, after a detailed study family by family has been completed, that a greater similarity between the beetles of Florida and Cuba is to be found in the families of water beetles treated in this article than in any other family.

It may be worth noting from our personal experiences that in Florida the water beetles were seldom in its beautiful clear lakes but rather in roadside ditches, shallow rain-pools, etc., in which there was some vegetable growth. One such pool near Punta Gorda was so shallow that it was not everywhere easy to sink the net entirely under the surface but 20 species (nearly a quarter of the whole fauna) rewarded an hour's work. A similar and almost equally productive pool was found about a mile west of Lakeland; and a shallow ditch near Titusville also abounded in specimens, including the rare genus *Ochthebius*. Many of the records from Lake Monroe at Enterprise result from Mr. Brownell's winter sifting of the lake shore debris, and part of the Fort Myers records commemorate the

¹Sharp (Camb. Nat. Hist. Insects, II, p. 213) has noted the apparently boreal tendency of this family, remarking upon their abundance in Lapland; but in his great Monograph, he points out that this is particularly true for the Dytisci complicati only.

night work of Messrs. Grossbeck and Davis at electric lights. The Lake Okeechobee records that we have from Mr. Blatchley also refer to the fauna of the shores rather than of the depths. Taken together, these data furnish a picture of large numbers of aquatic beetles flying by night in search of new breeding places, where food, inaccessible to terrestrial insects, is to be found for their young.

DYTISCIDÆ

The Water Tigers, as the Dytiscidæ have been called, exhibit the greatest aquatic development of the Adephaga. Their swimming powers are developed in the highest degree and they possess special adaptations in their breathing structures to an aquatic life. They are *the* water beetles par excellence. The larvæ are carnivorous.

Associated with them in this paper, will be found the aquatic Hydrophilidæ, Gyrinidæ, Haliplidæ, and Parnidæ because the adults are usually found in water; also the Sphæridiidæ (which are not aquatic) because their usual position in catalogues adjoins that of the Hydrophilidæ. A discussion of the family relationship and the light that has been thrown thereon from a recent study of genitalia will be found on a subsequent page; here it may suffice to say that we regard the Dytiscidæ as aquatic Adephaga, constituting with Carabidæ, Amphizoidæ, and Cicindelidæ one of the great series of Coleoptera. The highest authority on Dytiscidæ has long been Dr. David Sharp of Cambridge, England, and his ideas, in part made known to us by Mr. Sherman, have been largely followed in our arrangement of the species. As far as we have been able to determine them, they are briefly described in the following pages.

DYTISCI FRAGMENTATI

NOTERINI

Notomicrus nanulus (Leconte)

Elongate oval. Head, thorax, and antennæ reddish yellow. Elytra dark reddish brown, apex slightly attenuate. Under side of the same color as head and thorax. Length, 1.25 mm.

Crescent City and Bartow (Schwarz); Dunedin, January to March (Blatchley); Bartow, July (Roberts Coll.). Described from Louisiana; rare.

SUPHISINI

Colpius inflatus Leconte

Globose, obtusely acuminate behind. Opaque black. Antennæ and legs rufous. Upper surface obscurely variegated with red. Head (beneath) and sides of thorax reddish. Elytra strongly punctate. Body opaque beneath. Coxæ with a few large scattered punctures; abdomen impunctate; apical margin setose. Length, 3.5 mm.; width, 2.5 mm.

Tampa, rare, and St. Augustine (Schwarz); Jacksonville and Taylor Co., July (Genung in Leng Coll.); Enterprise, November (Brownell in Leng Coll.); Dunedin, Kissimmee, and Lake Okeechobee, January to March (Blatchley); Jacksonville, June and July (Roberts Coll.). Described from Louisiana. Crotch gave the distribution as Louisiana, Florida, and New York, but the last is certainly erroneous.

HYDROCANTHINI

Hydrocanthus iricolor Say

Ovate, convex, attenuate behind. Head, thorax, and under surface reddish yellow. Elytra dark reddish brown polished, iridescent with three visible rows of fine dorsal punctures. Prosternal process very broad behind the coxæ. Hind tibiae broad. Length, 4-5 mm.

Lake Harney, Tampa, St. Augustine, Crescent City, and Bartow (Schwarz); Lakeland, November (Davis); Gainesville, September and October (Mutchler and Watson); Dunedin, Kissimmee, Lake Okeechobee, and Sarasota, January to March, common (Blatchley). Recorded also from Guadeloupe. None in Roberts Coll. Crotch gave the distributions as Pennsylvania, Georgia, and Louisiana. The type locality is not given in the original description.

Hydrocanthus oblongus Sharp

Reddish brown. Elytra somewhat shining, almost impunctate. Prosternal process deeply hollowed out and nearly impunctate in the male; in the female it is flat and variably punctured. Hind coxal plate somewhat coarsely and closely punctured. Ventral segments smooth, shining. Length, 4 mm.; width, 2 mm.

Common in Florida (Sherman); Marion Co., Hastings, Sanford, and Jacksonville (Amer. Mus. Coll.); Enterprise, October to December (Brown-

ell); Fort Myers, November, and Titusville, November (Lutz); Taylor Co., July and August, Sanford, February, Jacksonville, August (Roberts Coll.). The original description merely mentions North America as the locality. Blatchley records *atricolor* from Sanford, January, and Lake Okeechobee, March, but we believe his record also refers to *oblongus* or *texanus*.

Hydrocanthus texanus Sharp

Oval, convex, shining. Dark ferruginous. Elytra iridescent black. Under side with posterior part darker. Length, 4.25 mm.; width, 2.25 mm. This species is darker and comparatively more convex than either of the two former species, and in respect to the elytral punctures is intermediate between the two.

Jacksonville, July (Roberts Coll.). Described from Texas.

A species of *Hydrocanthus*, doubtfully identified by Mr. Schwarz as *atricolor* Say (which, according to Crotch, was described from Mexico), or *texanus* Sharp, was found at Lake Harney.

Canthydrus floridanus Blatchley

Short ovate, strongly convex. Head and thorax reddish yellow with a black or fuscous cloud on the occiput and middle or apical half of the thorax. Elytra dark brown. Antennæ, under surface, and legs pale reddish yellow. Head and thorax without punctures, except for a few coarse ones on the basal half of the latter. Elytra with numerous irregularly placed, very shallow punctures. Length, 2-2.2 mm.

Described from Kissimmee, beneath rubbish, and Lake Okeechobee, February and March (Blatchley).

Canthydrus puncticollis (Crotch)

Head, thorax, antennæ and under side testaceous. Thorax with more or less distinct infusate mark on the middle at the apex; punctation visible only on the basal portion. Elytra piceous with an irregular testaceous mark in front of the middle, starting at the side but not reaching the suture; coarsely and somewhat closely punctate. Length, 3 mm.

Enterprise (Schwarz); Jacksonville, August (Roberts Coll.). These records antedate the description of *floridanus* and may refer to that species. The type locality is not given in the original description.

Canthydrus bicolor (Say)

Ovate, convex. Head, thorax and under side reddish yellow. Elytra dark reddish-brown, closely and somewhat coarsely punctate. Length, 2.5 mm.

Lake Harney, Tampa, St. Augustine, and Bartow (Schwarz). Described from Louisiana. Crotch gave distribution as Pennsylvania and Florida. No specimens from Florida in the Roberts Collection.

Canthydrus gibbulus (Aubé)

Ovate convex. Head and thorax yellow, the latter clouded with dusky on the apical margin. Elytra piceous or dark brown, with an oblique, irregular, yellowish cross-bar near the middle, less closely punctate than in the preceding and with the dorsal rows of punctures more distinct. Length, 2.5 mm.

Lake Worth and Biscayne Bay, January to March (Slosson Coll.); Sarasota, Dunedin, Kissimmee, Fort Myers, and Lake Okeechobee, January to March, very common (Blatchley); Punta Gorda, November (Davis); Sanford and Jacksonville (Amer. Mus. Coll.); Enterprise, December, in lake shore debris (Brownell in Leng Coll.); Punta Gorda and Fort Myers, November, in shallow grassy pools (Lutz, Davis, and Leng). Sanford, February; Taylor Co., July; and Jacksonville, August (Roberts Coll.). The original description merely gives the United States as the locality.

LACCOPHILINI

Laccophilus pumilio Leconte

Ovate, pointed behind, not convex. Unpunctured. Rufo-testaceous, meso- and metasternum darker. Elytra piceous, slightly iridescent, regularly narrowed behind, not obliquely truncate at tip. Abdomen without the distant fine oblique lines seen in the other species. Sharp says: "Very careful examination shows in certain lights traces of two or three lines on the second ventral segment towards the sides, but these are the only evidences of the characteristic ventral sculpture of the other species." Length, 1.9 mm.

Enterprise; the type and only known specimen taken by Mr. Schwarz (Sherman).

Laccophilus gentilis Leconte

Oval, angustate, subdepressed. Shining, rufo-testaceous, thorax at middle of apex and base darker. Elytra finely and closely punctate, fuscous with vague reddish markings. Ventral segments with conspicuous scratches. Front and middle tarsi of male thicker than in female. Length, 3.5 mm.; width, 1.85 mm.

Lake Worth (Slosson Coll.); Crescent City (Schwarz); Sarasota, March (Blatchley); Enterprise, December, in lake shore debris (Brownell in Leng Coll.); Gainesville, September and October (Mutchler and Watson); Crescent City and Taylor Co., July, and Jacksonville, June (Roberts Coll.). Described from Louisiana.

***Laccophilus proximus* Say**

Ovate, narrowed behind; nearly uniform reddish brown. Elytra with traces of greenish yellow spots. Body beneath reddish brown. Length, 4.5 mm.

Jacksonville, Crescent City, Tampa, and Enterprise, common (Schwarz); Dunedin, Sarasota, and Arch Creek, January to March, common (Blatchley); Lakeland, Punta Gorda, Enterprise, and Fort Myers, November (Lutz, Davis, and Leng); Gainesville, September and October (Mutchler and Watson); Jacksonville, July and August, Sanford, April, Taylor Co., August, and Hastings (Roberts Coll.). Described from South Carolina. Crotch gave distribution as Canada, Illinois, Iowa, Nebraska, Texas, and Florida. *L. americanus* Aubé, known from Cuba, Porto Rico, Guadeloupe, and Antigua, does not differ.

There are four other species of *Laccophilus* known from the West Indies which have not yet been sufficiently compared with the Floridian *pumilio* and *gentilis*.

DYTISCI COMPLICATI

HYDROVATINI

***Hydrovatus compressus* Sharp**

Broadly ovate, convex. Piceous. Head and thorax reddish; thorax with base slightly darker, sparsely punctate, coarser and more dense towards the base. Elytra moderately, coarsely and evenly punctate, slightly finer towards the apex. Antennæ and legs rufous. Posterior coxal plate closely and coarsely punctate. Length, 2.3 mm.; width, 1.5 mm. Allied to *Hydrovatus caraibus* Sharp from the West Indies.

Biscayne Bay, January to March (Slosson Coll.); Florida (Blatchley); Enterprise, November and December, in lake shore debris (Brownell in Leng Coll.); Punta Gorda, November (Lutz, Davis, and Leng); Sarasota and Lake Okeechobee, February and March (Blatchley); Jacksonville, July and August, Sanford, February, Taylor Co., July (Roberts Coll.). Described from Louisiana.

BIDESSINI

Desmopachria granum (Leconte)

Short, ovate. Rufo-piceous, shining, sides slightly margined. Thorax finely and sparsely punctate. Elytra finely punctate. Under side finely and sparsely punctate. Length, 1.30–1.65 mm.; width, .80–1.15 mm.

Tampa, Lake Harney, Bartow, and Centreville (Schwarz); Taylor Co. (Leng Coll.); Jacksonville, November (Lutz, Davis, and Leng); Dunedin, February and March (Blatchley); Taylor Co., July (Roberts Coll.); Monticello, October (Mutchler and Watson). Described from Louisiana. Crotch gave Southern States as habitat.

Bidessus fuscatus (Crotch)

Crescent City and elsewhere, common (Schwarz); Lakeland, November (Davis); Titusville, November (Lutz). Taylor Co., July, Lake Worth, and Jacksonville, August (Roberts Coll.). Crotch, in the original description, says it occurs from Lake Superior to Florida.

Bidessus granarius (Aubé)

Cited from northern Florida, but unseen, in Hubbard and Schwarz list. Jacksonville, August (Roberts Coll.). Confirmed by specimens found by C. W. Johnson at St. Augustine, identified by Dr. John Hamilton. Crotch gave Southern States. Aubé mentions merely the United States as the type locality of this and the other species of *Bidessus* which were described by him.

Bidessus exiguus (Aubé)

Lake Harney, Enterprise, Tampa, and Bartow (Schwarz); Belleair, January to March (Slosson Coll.); Jacksonville and Marion Co. (Sherman); Jacksonville (Leng Coll.); Enterprise, November, in lake shore debris (Brownell in Leng Coll.); Dunedin, January to March, common (Blatchley); Jacksonville, August and Lake Harney, March (Roberts Coll.). Occurs also at Valdosta, Ga. (Sherman).

Bidessus seminulum (Leconte)

Enterprise and Crescent City (Schwarz); Crescent City (Roberts Coll.). Described from Florida.

***Bidessus pulicarius* (Aubé)**

(Including *inconspicuus* Leconte as a synonym). Crescent City, Kissimmee, Enterprise, Centreville, Tampa, and St. Augustine (Schwarz); Biscayne Bay, January to March (Slosson Coll.); Tampa, Lake Worth, and Jacksonville (Roberts Coll.); Lakeland, November (Davis); Enterprise, November, in lake shore debris (Brownell in Leng Coll.); Punta Gorda, November, in shallow grassy pools (Lutz, Davis, and Leng); Sarasota, Dunedin, and Arch Creek, January to March (Blatchley); Monticello, October (Mutchler and Watson). Crotch gave Southern States; South Carolina for *inconspicuus*.

***Bidessus affinis* (Say)**

Haulover, Enterprise, St. Augustine, Jacksonville, Biscayne Bay, Lake Worth, and Lake Ashby¹ (Schwarz, including Castle and Laurent and Slosson records); Punta Gorda, November (Lutz, Davis, and Leng); Arch Creek, Bassenger, February to March (Blatchley). None in Roberts Coll. The type locality is not mentioned in the original description, but Crotch gave Atlantic region as habitat.

***Bidessus lacustris* (Say)**

Dunedin and Kissimmee, February and March (Blatchley). Jacksonville, August, and Taylor Co., July (Roberts Coll.). Described from Pennsylvania. Mr. Sherman has not recognized this species in his Floridian material, but has the species from Vowell's Mill, La., and Brownsville, Alpine and Del Rio, Texas. According to Crotch, it is abundant in the Atlantic region.

***Bidessus floridanus* Fall**

Jacksonville and Dunedin, are the type localities. (See Journ. N. Y. Ent. Soc., XXV, 1917, p. 168.)

¹The records for this locality were copied from Mr. Schwarz's paper on the Coleoptera of Florida (Proc. Amer. Philos. Soc., XVII, 1878, pp. 353-472). They probably refer to the Lake Ashby located in the southern part of Volusia County.

***Bidessus shermani*, new species**

Oblong oval; shining, reddish brown. Head and thorax slightly paler than the elytra. Head obsoletely, very finely, and sparsely punctate; with a pair of impressions on the front between the eyes. Antennæ of the same color as the head. Thorax coarsely and densely punctured, and with an impressed line parallel to the apical margin; basal plica extending about half way to the apex. Elytra with the thoracic plica continued on the base but distinctly shorter than the thoracic part; moderately, finely punctate; pubescence very fine, scarcely visible on the basal portion, slightly more dense on apical part; an indistinct groove on the disk beginning at the base and becoming almost entirely obliterated at the apical third. Under side punctate and slightly pubescent; hind coxal plates shining, very sparsely punctate; first ventral segment with a row of slightly coarser punctures at base and apex. Punctures on segments 2 to 5 more or less arranged in rows running parallel with the sutures. Last segment about as broad as the three preceding taken together; with a slight, punctured impression on each side near the base, and with the punctures slightly more prominent on the apical part of the segment. Legs of the same color as the under side. Length, 1.75 mm.; width, about .75 mm.

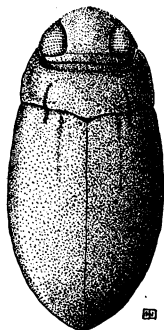


Fig. 1. *Bidessus shermani* Mutchler

Habitat:—Jacksonville (type locality), August 1902, Taylor County, July 1903, and Lake Worth, Florida. Type, No. 24282; paratypes, Nos. 24283, 24284, and 24285.—The American Museum of Natural History.

In the numerous specimens examined there seems to be very little variation, except that the color of the under side of some specimens is slightly darker than in others and the groove of some of the speci-

mens is more noticeable.

This new species differs from *exiguus*, *granarius*, and *lacustris* by the extremely short and indefinite prolongation of the thoracic plica on the basal portion of the elytra, approaching *seminulum* in that respect; while finely pubescent towards apex, it lacks the evident pubescence of *pulicarius*; the elytra show little trace of the elongate markings of *affinis* and are less coarsely punctate than in *fuscatus*; the elytral portion of the plica is also shorter than in any of the above. It differs, finally, from *seminulum* in color, in pubescence, and in size.

Dedicated to Mr. John D. Sherman, Jr., in recognition of much help from him in the preparation of this paper.

The Floridian species of *Bidessus* may be separated by the following key:

1. Basal thoracic plica continued on the elytra.....2.
- Basal thoracic plica not continued on the elytra.....8.

2. Elytral portion of basal plica distinctly longer than the thoracic portion. 3.
Elytral portion of basal plica not distinctly longer than the thoracic portion. 5.
3. Basal plica not continued to middle of the elytron. 4.
Basal plica elevated and continued beyond the middle of the elytra, forming an elongate carina; elytra coarsely punctate, not pubescent. (1.65 mm.).
exiguus.
4. Body ovate; elytra coarsely and distinctly punctate; indistinctly pubescent. (1.75 mm.). *granarius*.
Body elongate oval; elytra finely and indistinctly punctate; finely pubescent. (1.4–1.8 mm.). *lacustris*.
5. Elytra not or very finely pubescent. 6.
Elytra distinctly pubescent with longer yellowish hairs behind the middle and near the apex. (1.5–1.7 mm.). *pulicarius*.
6. Elytra finely punctate. 7.
Elytra coarsely punctate, punctures moderately closely placed; coxal plates with coarse punctures; first and second ventral segments coarsely but sparsely punctate. (1.7–2 mm.). *fuscatus*.
Punctures of elytra more closely placed and slightly finer; coxal plates with a few fine punctures; abdomen with some coarser punctures toward the base. (1.75–2 mm.). *floridanus*.
7. Elytra fuscous brown, often with paler, elongate markings; pubescence very slight, nearly nude. (1.5–1.8 mm.). *affinis*.
Elytra reddish brown with indistinct fuscous markings; finely pubescent, slightly more distinct on apical portion. (1.75 mm.). *shermani* n. sp.
8. Elytra rufo-testaceous; not pubescent, shining, finely punctate. (1.3 mm.).
seminulum.

The two species of *Bidessus* recorded from the West Indies (Cuba and Haiti) have not yet been compared with the Floridian species.

HYDROPORINI

Cœlambus princeps Blatchley

Broadly oval, subdepressed above, strongly convex beneath. Head, elytra, and narrow front and hind margins of thorax dark reddish or piceous brown. Under surface and legs pale reddish brown. Antennæ and legs paler. Eyes very finely granulate. Head and thorax finely, sparsely and irregularly punctate; elytra a little more coarsely, more regularly, and aciculate punctate; punctures of the under side shallow sparse and irregular. Length, 5.4 mm.; width, 2.8 mm.

Described from Florida. One specimen, March 6, beneath decaying water hyacinth on southeast shore of Lake Okeechobee.

Cœlambus marginipennis Blatchley

Short, rounded oval, subdepressed above, moderately convex beneath. Head, thorax, femora, and tibiæ reddish brown. Elytra piceous black, shining, with narrow

side margins generally broadening into a rounded lobe at the middle. Tarsi and apical fourth of antennæ dusky. Clypeus broadly rounded, distinctly margined. Head and thorax finely, evenly, but not densely punctate; elytra more coarsely and densely punctate. Meso- and metasterna coarsely, rather sparsely and deeply punctate; abdominal punctures finer and more shallow. Length, 3.5-3.8 mm.

Sarasota, frequent in shallow, brackish pools, March (Blatchley); Punta Gorda, November (Lutz, Davis, and Leng). Belleair, January to March, and Biscayne Bay (Slosson Coll.); Sarasota, March, and Jacksonville, August (Roberts Coll.). Described from Florida.

Hydroporus cimicoides Sharp

Elongate oval, slightly attenuate behind. Densely pubescent, somewhat opaque, densely and distinctly punctate. Head and thorax fuscous, with testaceous markings; antennæ fuscous, base testaceous. Thorax broadly margined. Elytra fuscous with somewhat indistinct testaceous markings; epipleuræ carinate. Body, beneath, and legs fuscous. Length, 5.5 mm.; width, 2.65 mm.

Lake Harney, one specimen in U. S. N. M., and Port Orange, one specimen in Leconte Collection (Sherman); Enterprise, April, in lake shore debris (Brownell in Leng Coll.).

This is one of the few species of *Hydroporus* which seems to be at home in the Southeastern States, occurring in Florida, South Carolina (Beaufort), near Richmond, Virginia, and at Lakehurst, N. J. The original description merely gives North America as the locality.

Hydroporus undulatus Say

Oval, slightly attenuate behind. Head reddish yellow, somewhat finely and moderately punctate. Thorax reddish yellow more or less intermixed with fuscous, pubescent, more coarsely and closely punctate than the head. Elytra blackish, with more or less distinct irregular reddish brown markings; punctuation and pubescence similar to that on the thorax. Under side reddish brown, somewhat densely and coarsely punctate; central portion of the metasternum, the internal plate of hind coxæ and ventral segments somewhat sparsely but very noticeably pubescent. Legs of same color as the under side. Length, 4-4.5 mm.

Common (Schwarz); Sanford, March (Blatchley); Fort Myers, April, at light (Davis); Monticello, October, and Gainesville, September and October (Mutchler and Watson).

It is well known that we have several undescribed species of *Hydroporus* related to Say's *undulatus*, and it is not altogether certain what species is entitled to this name. The species described above is a characteristic

Floridian form. Say, in the original description, says that the specimens from which his description was made were found in a pond near Bowyer Creek, Upper Missouri, and it is not uncommon in Pennsylvania.

***Hydroporus republicanus* Sharp**

Oval, rather convex, slightly elongate. Ferrugineous above, more or less infusate. Prothorax slightly margined. Posterior coxæ strongly, closely but not densely punctate. Length, 4 mm.; width 2.12 mm.

St. Augustine (Schwarz, citing C. W. Johnson's collecting and Dr. Hamilton's identification). The original description merely cites North America as the locality.

The paucity of species of *Hydroporus*, a genus enormously developed in the more northern States, is a striking feature of the Floridian aquatic fauna, paralleled by the scarcity of many northern genera of Carabidæ. No West Indian *Hydroporus* are known to us.

It is most likely, judging from the results of Prof. Bradley's collecting in the Okefinokee region of Georgia, that some of the species of *Hydroporus*, found in running water, will eventually turn up in northern Florida.

***Celina angustata* Aubé**

Elongate. Brownish red, shining. Thorax finely and sparsely punctate. Elytra darker than thorax; somewhat finely and not densely punctate; disk with a line of coarser punctures and a few others scattered over the surface; apices acuminate. Under side finely and sparsely punctate, reddish brown; legs of same color. Length, 4.0-4.5 mm.

Fort Capron, Enterprise, Jacksonville, St. Augustine, and Biscayne Bay (Schwarz); Florida (Brownell in Leng Coll.). Occurs in Southern States, not common. Aubé, in his description, says the species is found in North America and Cayenne.

***Celina slossoni*, new species**

Elongate, parallel. Head reddish brown, with piceous markings; finely and sparsely punctate; and with a pair of impressions on the front between the eyes. Thorax reddish brown, marked with piceous along the base and apex, sparsely and finely punctate but with a row of coarse punctures at the apex and another at the base separated at the disk. Elytra piceous, outer margins slightly reddish brown; more coarsely punctate than the thorax; an indistinct groove on the disk extending from near the base and becoming obliterated at the apex; apices acuminate and

with a few long scattered fulvous hairs. Under side reddish brown, somewhat shining; hind coxal plate coarsely punctured on the outer two-thirds, nearly impunctate towards the inner margin; first ventral segment somewhat alutaceous; third, fourth, and fifth segments with a slightly punctured, more or less pubescent, impression about the middle; last segment with a few long hairs; otherwise, the ventral part is very finely and sparsely punctate and slightly alutaceous. Legs of same color as under side; femur somewhat alutaceous; middle tibia of male slightly curved and narrowed at middle, basal portion somewhat slender, apical much broader; front and middle tarsi with the last joints nearly as long as the three preceding together; hind tarsi with the first joint subequal in length to the next two combined; last joint, including claws, as long as the first. Length, 4.5–5.5 mm.; width, 1.75–2. mm.

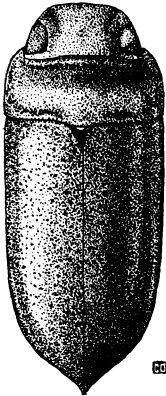


Fig. 2. *Celina slossoni*
Mutchler.

Holotype (male), No. 24286; allotype, No. 24287; and paratypes, Nos. 24288 and 24289 — The American Museum of Natural History — all from Sanford, Florida, February, except one paratype from Lake Worth, Florida. There are also two specimens from Enterprise, December, in the Leng Collection and nineteen specimens from Sanford in the Sherman Collection.

Slossoni approaches *grossula* in size and resembles it also in being generally rather dark. It differs not only in the transverse blackish bands at front and hind margins of thorax but also in the punctuation of the upper surface, which is sparser in *slossoni* than in *grossula*, particularly on the disk of the thorax.

Dedicated to Mrs. Annie Trumbull Slosson, in grateful recognition of her many additions to the list of Floridian beetles and of her constant kindness to us.

***Celina grossula* Leconte**

Chocolate brown, shining. Head and thorax paler, finely and not densely punctate; thorax with a row of larger punctures at base of apex; elytral punctures slightly coarser and more dense, with three indistinct lines seemingly formed by slightly larger punctures, the first at the suture, the second on the disk, and the third at the margin. Apices of elytra slightly acuminate. Under side finely and sparsely punctate. Length, 5 mm.

Enterprise and Jacksonville (Schwarz); Everglade, May (Davis); Sanford, July, and Marion Co. (Sherman). Described from Louisiana. Occurs also in Cuba.

COLYMBETINI

Copelatus chevrolati Aubé

Elongate, oval, subdepressed. Head and thorax reddish brown, lighter at the margins. Thorax with a row of punctures at the sides. Elytra reddish brown, sides slightly paler, each with eight striae; also a short stria at the apex between the margin and first stria and a line of punctures near the margin. Under side fusco-piceous, but legs somewhat paler. Length, 6 mm.; width, 3.25 mm.

Fort Capron and Tampa, rare (Schwarz); Taylor Co. and Hastings (Genung in Sherman Coll.); Enterprise, December (Leng Coll.); Dunedin, January to March (Blatchley); Jacksonville, June, and Taylor Co., July (Roberts Coll.). Crotch gave a wide distribution for this species, including Lake Superior, Kansas, Texas, Arizona, and California. No specific locality is mentioned in the original description.

Copelatus glyphicus (Say)

Oblong-ovate, rather narrow, subdepressed. Dark reddish brown or piceous, but antennae and legs paler. Thorax nearly smooth. Each elytron with ten deeply impressed striae, reaching scarcely to the apex. Body, beneath, sparsely strigose. Length, 5-6 mm.

St. Augustine and Lake Worth, common (Schwarz); Arch Creek, March (Blatchley); Lakeland, November (Lutz, Davis, and Leng); Enterprise, November (Leng Coll.). Say, in the original description, mentions that he found it in numbers in fresh water ponds on Sullivan's Island, South Carolina, also that it is listed in Melsheimer's Catalogue. Vermont to Pennsylvania (Roberts Coll.). Crotch gave Lake Superior, Kansas, Texas, Louisiana, and Florida. Occurs also in Cuba and Guadeloupe.

Copelatus cælatipennis Aubé

Oval, subdepressed. Head, thorax, elytra at base and sides, antennae, and legs rufous. Thorax minutely strigate, the strigae continued almost to apex, marginal one longest. Each elytron with ten striae. Body, beneath, reddish; abdomen darker. Length, 4.5 mm.; width, 2.25 mm.

Sanford, Jacksonville, and Taylor Co. (Sherman Coll.); Lakeland, November (Lutz, Davis, and Leng); Taylor Co., July, Sanford, and Jacksonville, August (Roberts Coll.). Described from the Antilles.

In studying *Copelatus*, reference should be made to Schæffer, Journ. N. Y. Ent. Soc., XVI, 1908, pp. 16-18.

Matus bicarinatus (Say)

Elongate oval, slightly convex. Uniform brownish red, shining, but antennæ paler. Thorax rounded at the sides, front angles acute. Elytra each with two or three rows of faint dorsal punctures. Length, 8-9 mm.

Included in Hubbard and Schwarz list but unseen by them. Arch Creek, March (Blatchley); Lake Okeechobee, one specimen, April 30 (Grossbeck); Taylor Co.? (Roberts Coll.). Mr. Sherman was at first disposed to question the occurrence of this northern species in Florida, but accumulated evidence shows it to be present, although rare. Mr. Loding finds it in Alabama. The original description makes no mention of the type locality.

Coptotomus interrogatus var. **obscurus** Sharp

Elongate oval, convex; shining. Head, thorax, and antennæ reddish yellow, the outer antennal joints being slightly darker and the thorax with middle of apex and base pitchy brown; finely and closely punctate. Elytra pitchy brown; with reddish yellow markings consisting of a short stripe on each side near the scutellum, and a marginal one recurved at the humerus and becoming somewhat broken on the apical third. Under side reddish brown. Length, 7 mm.; width, 3.75 mm.

St. Augustine, common (Schwarz); Enterprise, November (Leng Coll.); Monticello, October (Mutchler and Watson); Sanford, August, Enterprise, and Jacksonville, July (Roberts Coll.); Lake Worth and Atlantic Beach, January to March (Slosson Coll.); Arch Creek and Dunedin, January and March (Blatchley); Econ. River,¹ March (Brownell in Leng Coll.); Jacksonville, April 21 (Laurent). This last record displaces that of *Agabus* n. sp. (Ent. News, 1879, p. 7), the specimens having since been identified by Mr. Sherman at Mr. Laurent's request. So far, no species of *Agabus* is known to occur in Florida. *C. interrogatus* was described from Massachusetts, and *obscurus* from Texas and Florida. The southern forms seem to show a varietal difference from the northern ones. Sharp says that *obscurus* is excessively similar to *interrogatus* Fabricius and *longulus* Leconte but is smaller and darker in color, especially beneath, and has the hind coxæ more free from sculpture and their front border nearer to the middle coxal cavities. The sexual distinctions are also less conspicuous. Crotch gave the distribution of *interrogatus* as Pennsylvania, Georgia, Texas, Missouri, and California.

¹ It is impossible to say whether this abbreviation refers to the Econfinia River in Washington County or the Econfino River in Taylor County, but we believe that the latter is the locality referred to.

Rhantus calidus (Fabricius)

Ovate, subconvex. Black, slightly shining. Head (at vertex) and thorax (at apex and sides) reddish yellow. Elytra with a subbasal transverse line, three narrow vittæ, and lateral margin pale reddish yellow; also numerous small spots, more dense between the second and third vittæ and at apex, of the same color. Antennæ, under side, and four anterior legs rufous; posterior legs slightly darker. Male with tarsal claws of middle leg equal. Length, 12.5-13.5 mm.

Buck Key (Schwarz); Lake Worth and Belleair, January to March (Slosson Coll.); Sarasota, March (Blatchley); Lakeland, November, in a grassy pool (Davis); Enterprise, November (Brownell in Leng Coll.); Taylor Co., July, and Jacksonville, August (Roberts Coll.). Crotch recorded it from Georgia. Described from South America. It is known from Cuba, Haiti and Guadeloupe.

Hydaticus bimarginatus (Say)

Oval, moderately convex. Head and thorax reddish; basal margin of head darker. Thorax at base with a dark line dilated at the middle. Elytra uniform piceous with a submarginal yellow stripe recurved at the humerus, the apical portion often broken and not reaching the apex. Antennæ, palpi, and four front legs yellowish; hind legs darker. Ventral segments dark, with obsolete lighter submarginal spots. Length, 11.5-12 mm.

Fort Capron, Tampa, and Jacksonville (Schwarz); Lake Worth, January to March (Slosson Coll.); Enterprise, September and October (Brownell in Leng Coll.); Tampa, August (Bradley); Titusville, November (Lutz); Clearwater, April, and Sanford, May (Van Duzee); Taylor Co., July, and Jacksonville, July and August (Roberts Coll.). Crotch gave Pennsylvania, Georgia, Florida, and Louisiana. Described from Louisiana. The genus is represented in the West Indies by two allied species, *cinctipennis* and *rimosus* of Aubé.

Thermonectes basilaris (Harris)

Ovate, subconvex. Above black. Head in front and a transverse line on the vertex dull yellow. Thorax with a discal line and sides broadly dull yellow. Elytra at margins and a subbasal transverse line and some ill-defined markings at the sides and apical part yellowish. Antennæ and front legs testaceous; hind legs and under surface reddish brown or piceous. Length, 11.5-13 mm.

Fort Capron, Lake Ashby, Tampa, Jacksonville, St. Augustine, Lake Worth, and Buck Key (Schwarz); Arch Creek, March (Blatchley); Day-

tona, November (Engelhardt); Lake City, June (J. R. Watson); Lakeland, November, in a grassy pool (Davis); Sanford, May (Van Duzee); Lake Okeechobee, April, Punta Gorda, Jacksonville, and Titusville, November (Amer. Mus. Coll.); Jacksonville, June, and Sanford (Roberts Coll.). Crotch gave Canada, Pennsylvania, Georgia, and Texas. This species is known from Cuba and Guadeloupe.

Variety *ornaticollis* (Aubé) is dull yellow above. Head with vertex and an M-shaped mark black. Thorax with two transverse black lines. Elytra punctate as in the above. Length, 11.5–13 mm. Under the name *basilaris* var. from Lake Worth (Slosson Coll.); Key West (?) (Angell Coll.); Jacksonville, August (Roberts Coll.). Described from Mexico and the United States. Crotch gave the distribution as Pennsylvania, Illinois, and Kansas.

Thermonectes latecinctus (Leconte). There are specimens bearing this name in the Slosson Coll. from Lake Worth, January to March; also others collected at Enterprise by Brownell in the Leng Coll. However, the name rightly applies to southwestern forms. The original description citing the locality as "ad flumen Colorado et Vallecitas."

CYBISTRINI

Cybister fimbriolatus (Say)

Ovate, more or less wedge shaped. Above brown with a greenish tinge. Thorax and elytra with a broad yellow margin. Front of head, four front legs, and spots at sides of ventral segments 3–6, yellow. Thorax and elytra of female finely strigose; suture more or less smooth. Stridulating plate of male with four distinct ridges. Length, 30–33 mm.

Jacksonville, January to March, and Biscayne Bay (Slosson Coll.); Jacksonville (Ashmead); Jacksonville (Castle and Laurent); Daytona, November (Engelhardt); Lake City, March and June (J. R. Watson); Fort Myers, April, at light (Davis). Crotch gave the distribution as Pennsylvania, Georgia, Kansas, and Louisiana. No specimens from Florida in the Roberts Collection. Described from Pennsylvania.

Cybister olivieri Crotch

Similar to *fimbriolatus* but with the thoracic and elytral margins narrower; the yellow marginal stripe leaves the margin behind the middle and ends in an attenuate point. The male stridulating plate has only three distinct ridges. Length, 28–32 mm.

New Smyrna, Tampa, Cedar Keys, Jacksonville, St. Augustine, and Lake Worth (Schwarz); Jacksonville (Leng Coll.); Hillsboro Co., Marion Co., and Jacksonville (Roberts Coll.). Described from Florida. The genus *Cybister* is represented in Cuba by the species *occidentalis* Aubé.

Megadytes fraternus Sharp

Broadly oval, subconvex, narrowed anteriorly. Head, front, and sides of thorax, testaceous. Elytra near the apex spotted with ferrugineous. Under side black; four anterior legs rufous; middle tarsi piceous; posterior legs piceous black. Antennæ very slender, testaceous. Elytra of female thickly sculptured with very short, but regular, linear impressions, which cover the surface except for a small space on the extreme apical portion. Length, 22.5 mm.

West Palm Beach, June (Dury). A West Indian species known from Antigua, Guadeloupe, Haiti, Porto Rico, for which this is the first Floridian record. The species was described by Sharp from specimens found in Panama, Guatemala, Guadeloupe, St. Domingo, and Demerara.

The following West Indian Dytiscidæ are not even generically represented in Florida:

Eumectes sticticus (Linné).—Guadeloupe, St. Bartholomew, Central America, Arizona, Lower California, etc.

Derovatellus lentus (Wehncke).—Central America and Porto Rico.

Suphis cimicoides Aubé.—Guadeloupe.

Pachydrus.—Five species; Antigua, Guadeloupe, Porto Rico, and Cuba.

Pronoterus obscuripennis Fleutiaux.—Guadeloupe.

These are nearly all confined to the Lesser Antilles, and, excluding them, it may be said that the family is represented in Florida and the Greater Antilles by the same genera and to a considerable extent by the same species; seven Floridian species out of forty-two are absolutely identical, and several others are at least closely allied. Taxonomically, *Pachydrus* is closely related to *Bidessus* and *Desmopachria*; *Suphis* is closely related to *Colpius*; but *Pronoterus* is tribally separated and *Derovatellus* is of subfamily separation according to Dr. Sharp's arrangement. That is, the greater the taxonomic separation the lesser the representation in the Greater Antilles, indicating, as we have already seen in the Carabidæ, a strong bond between the Floridian and Cuban fauna. There is a similar bond (though a much weaker one) between the South American fauna and that of Lesser Antilles.

As intimated above, the remaining families of water beetles are not surely adepagous, though the Haliplidæ have usually been associated, in

systems of classification, with Carabidæ and Dytiscidæ. Sharp and Muir, after a year's study of the genitalia, keep the Haliplidæ in Adephaga but find "their differentiation from the Byrrhoid type [which includes Gyrinidæ, Hydrophilidæ and Parnidæ] is not great." Of Gyrinidæ, they speak more strongly: "The structure of Gyrinidæ is on a different plan from that of the Caraboidea. When it is remembered in addition to this that all the members of this family are highly specialized for a mode of life that is shared by no other Coleoptera, we are justified in concluding that this has always been an isolated family." "They should not be placed with the Dytiscidæ but near the Hydrophilidæ." These remarks are quoted from the paper by Sharp and Muir (Trans. Ent. Soc. Lond., 1912) on the 'Comparative Anatomy of the Male Genital Tube in Coleoptera.' The families Gyrinidæ, Hydrophilidæ, and Parnidæ are placed in the first, or Byrrhoidea, division — under which name they include twenty or thirty other families, the Byrrhidæ being treated on the whole as the most central of the families. Their conclusion concerning the phylogenetic rank is summarized as follows: "The complex is of considerable importance, as it is possible to consider that we are here in the presence of the more primitive of the conditions of the coleopterous genital tube, so far as existing forms are concerned. We use this qualification because the structures are very far from being truly primitive."

HALIPLIDÆ

These insects are found in still water in which there is a growth of filamentous algæ, for clinging to which the claws of these insects are specially adapted. In this family the descriptions of Matheson (Jour. N. Y. Ent. Soc., XX, 1912) and Roberts (*op. cit.*, XXI, 1913) were made without mutual comparison of material, and it becomes necessary to combine their contributions and add that of Blatchley ('Beetles of Indiana,' 1910) in order to review the Floridian fauna. To facilitate the identification of the reader's specimens, we have prepared the following key to the species involved, adding two species, *Haliphus lewisii* and *Peltodytes pedunculatus*, which have been reported but which we believe are now covered by more recent names.

Key to Haliplid Genera of Florida

- A.— Terminal joint of palpi small, subulate, shorter than the preceding; posterior coxæ concealing only the first three segments of abdomen.....*Haliphus*.
- AA.— Terminal joint of palpi large, conical, longer than the preceding; posterior coxæ concealing all but the last segment of abdomen.....*Peltodytes*.

Haliplus

The Floridian species all have the pronotum without paired basal impressions (present in *ruficollis* which is common over the region north of Florida); prosternum distinctly margined; black markings always present. They are distinguished as follows:

1. Small species (2.0–3.0 mm.); pronotum immaculate or with a piceous patch wider at hind margin.....2.
Larger species (3.75–4.50 mm.); pronotum with a round black spot at middle of front margin; elytra with six black spots more or less confluent; punctures large and deep.....*punctatus*.
2. Pronotum immaculate; smaller (2.0–2.5 mm.).....3.
Pronotum with piceous patch; elytra with confluent piceous patches leaving only small spots of the ferrugineous ground color; 3.0 mm.....*havaniensis*.
3. Elytra with black bands on base, across middle, and at apex, extending nearly across elytron, the middle one more irregular in outline; apices not denticulate; 2.0–2.5 mm.....*annulatus*.
Elytral maculation indistinct; apices slightly denticulate; 2.5 mm. (Not Floridian; included for comparison only).....*lewisi*.

Haliplus punctatus Aubé

Lake Harney and Cedar Keys, not rare (Hubbard and Schwarz); Sebastian River (Schwarz Mss. notes); Jacksonville, August, and Sanford, February and July (Roberts Coll.); Middle and Southern States (Crotch); Florida, Texas, and Louisiana (Roberts Coll.). The specimens on which the Crotch record of "Middle States" is based (quoted also by Matheson) are excluded by Roberts and the species, as restricted, is confined to the Gulf Strip. The original description merely gives the United States as the locality.

Haliplus havaniensis Wehncke (*confluentus* Roberts)

Originally described by Wehncke (Entom. Zeit. Stettin, XLI, 1880, p. 74) from Cuba; redescribed by Roberts (Journ. N. Y. Ent. Society, XXI, 1913, p. 106) as *confluentus*; and apparently unknown to Matheson, who gives no definite Floridian citations for any species of *Haliplus*. Taylor Co., Sanford, and Jacksonville (Genung), and Tampa (U. S. Nat. Mus.) are the localities cited by Roberts, whose types are now in this Museum and show his species to be identical with the Cuban one. The Taylor County and Jacksonville specimens are labelled July.

***Haliplus annulatus* Roberts**

Described from Florida in 1913; the types from Taylor Co., July (Genung) are now in this Museum. Also Jacksonville, August (Roberts Coll.); Titusville, Nov. 8, in a roadside pool (Lutz). With this we combine the records for *H. lewisii*, a species reported from Texas (Roberts), Indiana and Wisconsin (Matheson), believing that all Floridian specimens are covered by the *annulatus* description. These are Lake Worth (Slosson Coll.) and Florida (Blatchley). Roberts gave the range as Florida and South Carolina.

Peltodytes

1. Posterior femora entirely black or brown.....2.
Posterior femora more or less pale..... (Allied northern species).
2. Elytra with a subhumeral spot or dash of black.....3.
Elytra without subhumeral spot or dash of black; median spots coalescent on suture, forming a black blotch; 3.5-4 mm.....*muticus*.
3. Last abdominal segment shining, polished.....4.
Last abdominal segment dull, rugose; spots large, distinct, the median coalescent with the sutural margin; coarse punctures of elytra extending beyond the middle of elytra; 3.5-4 mm.....*oppositus*.
4. Spots smaller, distinct, the median barely touching sutural margin; 3.5 mm. (Not yet found in Florida).....*pedunculatus*.
Spots larger, confluent, the median distinctly coalescent with the sutural margin; coarse punctures of elytra extending to middle; 3.5 mm.....*floridensis*.

***Peltodytes oppositus* Roberts**

Described from Florida; types in this Museum. Jacksonville (Genung), November, (Lutz, Davis, and Leng); Fort Myers, November, found in almost still water.

***Peltodytes floridensis* Matheson**

Described from Sanford, Florida.

***Peltodytes muticus* (Leconte)**

Crescent City and St. Augustine (Schwarz); Sanford (Roberts and Matheson). The *Cnemidotus 12-punctatus* of the Hubbard and Schwarz list, which occurs in more northern regions and differs from all Floridian

species by its partly yellow femora, is probably covered by this name. Described from the Middle and Western States.

There have been three species of *Haliplidæ* described from the West Indies and the family is known from Cuba, Haiti, Guadeloupe, and Antigua.

GYRINIDÆ.

These are the whirligig beetles. They are common during the day on the surface of the water, where they congregate in restless groups.

Dineutes

Key to the Floridian species

1. Sutural angles of elytra rounded in both sexes.....2.
- Sutural angles of elytra distinct, frequently produced, in both sexes.....3.
2. Femora of male with a strong acute tooth; sutural angles of elytra broadly rounded, apices not serrate. Length, 10-11 mm.; width, 6-7 mm.
emarginatus.
- Femora of male with a weak tooth, scarcely more than a termination of the ridge on the under side; sutural angles of elytra scarcely rounded, apices very finely serrulate. Length, 9-10 mm.; width, 5.5-6 mm.....*carolinus*.
3. Under surface brown or testaceous; femora of male toothed.....4.
- Under surface black, more or less tinged with brown, shining; anterior tibiæ regularly broadened from base to apex, exterior angle rectangular; middle and hind legs testaceous; femora of male not toothed. Length, 10-11 mm.; width, 5.5-6 mm.....*assimilis*.
4. Apices of elytra serrulate.....5.
- Apices of elytra not serrulate. Size small; narrow, very convex. Upper surface polished black; under surface and legs rufous. Tooth on femora of male minute. Length, 9-10.5 mm.; width, 4.5-5.5 mm.....*angustus*.
5. Size medium to small. Upper surface very highly polished, not bronzed; under surface chestnut brown, shining; serration of elytra distinct. Length, 9-12 mm.; width, 6-6.5 mm.....*serrulatus*.
- Size medium. Upper surface not highly polished, bronzed; under surface pitchy brown; serration of elytra fine. Length, 11-11.5 mm.; width, 6-6.5 mm..... *analis*.

Dineutes analis Regimbart

Biscayne Bay and Atlantic Beach, January to March (Slosson Coll.). Described from Louisiana and Texas. Roberts gave Texas as the habitat.

Dineutes emarginatus (Say)

Florida (Blatchley). No type locality is given in the original description, but Roberts gave Northern and Middle Atlantic States, south to Virginia, as the distribution.

Dineutes carolinus Leconte

Fort Capron and Sand Point, not rare (Schwarz); Buck Key (Schwarz); Lake City, April (J. R. Watson); Lake Parker, near Lakeland, November (Davis); Deep Lake and Lake Okeechobee, April (Grossbeck); Everglade, May and July, and Fort Myers, April, at light (Davis); Monticello and Pensacola, October (Mutchler and Watson); Dunedin, March, and Ormond, April (Blatchley); Sanford, February (Roberts Coll.). Described from South Carolina. Roberts gave South Atlantic States, Louisiana, and Texas as the habitat.

Dineutes serrulatus Leconte

Sand Point, Enterprise, Lake Ashby, and St. Augustine (Schwarz); Florida (Blatchley); Crescent City and Deep Lake, April (Grossbeck); Gainesville, September and October (Mutchler and Watson); Enterprise, June, and Kissimmee and Orange Co., April (Roberts Coll.); Levy Co. (Laurent). Described from the Middle and Southern States, but Roberts gave Florida only for all the specimens which he saw of this species.

Dineutes angustus Leconte

Described from Florida; recorded also from Virginia by Roberts. No Floridian specimens in Roberts' Coll.

Dineutes assimilis Aubé

St. Augustine (Schwarz). The original description merely gives the United States, but Roberts gave a wide distribution: Northern, Middle and Southern Atlantic States, also New Mexico, Colorado, Minnesota, Michigan, and Dakota; there are no specimens from Florida in his collection.

Gyrinus

Key to the Floridian species

1. Scutellum finely but distinctly carinate; upper surface not polished.....2.
Scutellum flat; upper surface polished.....3.
2. Under surface always ferruginous yellow; inflexed margins and legs ferruginous;
3.5-4.5 mm.....*minutus*.
3. Epipleuræ metallic black, rarely with a feeble rufous tinge.....4.
Epipleuræ and under side of margin of thorax testaceous; above black, highly
polished, broadly bronzed on the sides; tips of elytra truncate, slightly rounded,
outer angle not very distinct; under side rufo-ferruginous; mesosternum and
posterior coxæ (especially in the female) frequently piceous; 5-5.25 mm.
elevatus.
4. Upper surface highly polished.....5.
Upper surface not highly polished; black bronzed above and beneath; elytra
with tips broadly rounded; outer rows of punctures but little stronger than
inner ones; legs and last ventral segment ferruginous; 5-6 mm. (Not re-
corded from Florida).....*analitis*.
5. Upper surface black shining; margins and sides bronzed; elytra with rows of
deeply impressed bronzed, coarse punctures, so approximated that the outer
striæ seem impressed; 5.25-5.75 mm.....*parcus*.
Upper surface black, highly polished, with bluish reflections; margins and sides
bronzed; elytra with rows of punctures which are not closely approximate,
outer rows a little stronger, not impressed; 6 mm.....*pernitidus*.

Gyrinus elevatus Leconte

Common (Schwarz); St. Augustine (C. W. Johnson); Gulf Hammock (Castle and Laurent); Florida (Engelhardt); Lake City, April (J. R. Watson); Lake Okeechobee, April and May (Davis and Grossbeck); Lake City, April (Leng Coll.); Dunedin, February (Blatchley); Orange Co. (Roberts Coll.). Described from New York.

Gyrinus pernitidus Leconte

Monticello, October (Mutchler and Watson). No type locality is given.

Gyrinus minutus Fabricius

Gulf Hammock (Castle and Laurent); Gainesville, October (Mutchler and Watson). An abundant species at Lake Superior. Under the name *rockinghamensis* Leconte (treated as a synonym in the 'Catalogus'), Jack-

sonville (Ashmead); Econ. River, March (Brownell in Leng Coll.); noted as unseen in Hubbard and Schwarz List. Sanford, February, and Enterprize, March (Roberts Coll.). Described from North Carolina.

Gyrinus parvus Say

Florida (Roberts Coll.). Described from Mexico.

An unnamed species is noted from Biscayne Bay in Schwarz Mss. notes. It may be one of the following, for which southern distribution is indicated by Leconte: *analis*, Lake Superior to North Carolina, and *parvus*, Tex.

In the West Indies, a few species of *Dineutes*, *Gyrinus*, and *Gyretes* are known, but as yet there is no known instance of actual specific identity.

HYDROPHILIDÆ

The Hydrophilidæ are regarded as being phytophagus. Some are powerful swimmers, but the first three genera belong to a group possessing but feeble natatorial powers.

HELOPHORINI

Hydrochus

Very little work has been done on the species of this genus for a number of years, probably not only from a lack of material but also from the extreme difficulty in separating the species and in recognizing the described species without comparison with the types. There are four species which have surely been credited with occurring in Florida; they are as follows:

H. rugosus, 6 mm. in length, is the largest species. Color, gray with a coppery reflection. Thorax trapezoidal, not longer than wide; dorsal foveæ slightly impressed, the three anterior larger. Elytra striate punctate; interstices on posterior part elevated forming small callosities. Beneath, black. Tibiæ and tarsi, red.

The next in size, *H. foveatus*, is 3.5 mm. in length. Color, shining gray. Thorax slightly longer than wide, slightly angustate posteriorly, sides nearly straight; dorsal foveæ large and deep, two basal ones smaller. Elytra punctate-striate; posterior part with callosities; suture and alternate interstices elevated; third and fifth interstices interrupted at posterior part, fourth with its posterior part elevated.

H. inæqualis, 3 mm. in length, is dark reddish brown, slightly bronzed. Thorax slightly longer than wide; sides subsinuate, finely crenulate; dorsal foveæ distinct. Elytra punctate striate; the fifth, seventh, and ninth interstices elevated and in-

interrupted behind the middle, giving the appearance of a transverse impression; fourth elevation opposite the break in the third. Legs red.

The smallest species recorded, *H. simplex*, 2.5 mm. in length, is black with a bronze reflection. Thorax slightly angustate posteriorly; sides slightly crenulate; dorsum with the two basal foveæ more marked. Elytral striæ of the same width as interstices. Legs rufo-testaceous.

There are also four species which either may be found in Florida or whose names have been attached to Floridian specimens:

The largest of these, *H. scabratus*, 5.5 mm. in length, is slightly darker than *rugosus* but without coppery reflection. The elytral striæ are less impressed and the interstices have large tubercular elevations, giving the insect a scabrous appearance. Described from Middle and Southern States.

H. excavatus, 3.5–3.9 mm., is related to *inæqualis* but of darker color and the interruptions of the elytral striæ are less apparent; the fifth interstice is elevated about the middle and interrupted; adjacent to this interruption the fourth and seventh are slightly elevated. Described from Louisiana and cited by Hubbard and Schwarz.

H. rufipes, 3.25 mm., is related to the preceding, but the thorax is less narrowed behind and the interstices of the elytra are distinctly wider than the striæ. Described from Middle and Southern States.

H. variolatus, 3.25 mm., described from San Diego, is very questionably found in Florida. It is dark gray with metallic reflection. Thorax slightly longer than wide; sides crenulate; dorsal foveæ moderately deep. Surface of the elytra not perceptibly uneven, except for the slight posterior elevation of the fifth interstice. Legs testaceous; basal joints of femora darker. This name has been applied to specimens from Biscayne Bay and Lake Worth in the Slosson collection.

Hydrochus simplex Leconte

Belleair and Biscayne Bay, January to March (Slosson Coll.); Punta Gorda and Titusville, November (Lutz, Davis, and Leng). Described from Louisiana.

Hydrochus rugosus Mulsant

Enterprise and Tampa, rare (Hubbard and Schwarz); Belleair (Leng Coll. received from Mrs. Slosson); Monticello, October (Mutchler and Watson). The original description merely gives North America but Leconte gave Middle States for this species and described *callosus*, which is regarded as synonymous, from Louisiana. Cuban specimens have been identified as this species by Mr. Wintersteiner.

Hydrochus inæqualis Leconte

Common (Hubbard and Schwarz); St. Augustine (Schwarz Mss. notes). Described from Louisiana.

Hydrochus foveatus Haldeman

Monticello, October (Mutchler and Watson), identified by Mr. F. Wintersteiner. Described from Texas.

Three species are known from Cuba, one of which appears to be identical with *rugosus*, cited above. Two species are known from Porto Rico.

Ochthebius attritus Leconte

Piceo-testaceous; surface aeneous; legs pale. Thorax gradually, sinuately narrowed from apex to base; transparent border narrow, continuing the curve of the anterior third; discal fovea shallow or nearly absent; lateral impression deeper and more coarsely punctured; median line distinct, extending about two-thirds the length of thorax. Elytral striæ scarcely impressed; punctures closely placed and subquadrate; lateral margin spread out and flattened from humerus to beyond middle, but not reaching the apex. Length, 1.5 mm.

Including *simplex* Leconte as a synonym, Haulover, on the lagoon beach (Hubbard and Schwarz). Described from Florida.

Ochthebius foveicollis Leconte

Piceous; surface aeneous; legs pale. Thorax abruptly arcuately narrowed from one-fourth behind the apex; a second sinuation behind the middle; transparent border broad, gradually arcuate; discal fovea moderately deep and well separated; lateral impressions large and deep; median line long and deep. Elytra with striæ of closely placed punctures; margin of transparent border continuous. Length, 1.2-2.5 mm.

Lake Harney and Enterprise, not rare (Hubbard and Schwarz); Enterprise, June (Roberts Coll.); Titusville, November 8, in a grassy ditch beside railroad track (Lutz). Described from Lake Harney. Dr. Horn's revision of the genus gives a wide distribution: Pennsylvania, New Mexico, and Florida. We have, so far, no West Indian records for any definite species, but the U. S. Nat. Museum has examples of the genus from Cuba and Porto Rico.

Hydræna marginicollis Kiesenwetter

Surface shining. Head black, somewhat coarsely and closely punctate. Thorax black; with anterior and posterior margins testaceous; somewhat coarsely and closely punctate; with a broad fovea on each side before the middle. Elytra piceo-testaceous, ornamented with rows of moderately coarse, closely placed punctures. Under side black. Legs and palpi, testaceous. Length, 1.25 mm.

Rare (Hubbard and Schwarz); Punta Gorda, November (Lutz, Davis, and Leng); Enterprise, November and December, in lake shore debris (Brownell). Leconte recorded it from New Orleans. According to the original description this species was found in New Orleans, Louisiana, and in the West Indies; this last record was overlooked by the authors in their list of Coleoptera of the West Indies and the species should be added to that list (See Linnæa, Entomologica, IV, 1849, pp. 177-178).

HYDROPHILINI

Tropisternus

According to records at hand, there are five species of this genus to be found in Florida, but further investigation may prove that the records for *lateralis* and *nimbatus* refer to the same species. There is also a series of three specimens in the Museum collection which was identified by Mr. F. Wintersteiner as *quadristriatus* Horn. This species was described by Dr. Horn (Trans. Amer. Ent. Soc., III, 1871, p. 331) from near the seacoast of New Jersey, but later (Trans. Amer. Ent. Soc., V, 1876, p. 252) he found it to be synonymous with *sublævis*. The only difference which we can see in the Floridian specimens is the predominating testaceous color of the legs. The following notes may be of some assistance to the student.

The separation of the species of this genus into groups is based upon the shape of the prosternal groove, whether open or closed in front. The species *striolatus* (9-10.5 mm. in length) has the groove open; thorax and elytra coppery black margined with yellow, the latter with yellow stripes on the disk; under surface black with prosternum and legs brownish yellow. The other four species from Florida have the prosternal groove closed in front. Two of these, *nimbatus* and *lateralis*, are of equal length, 8.2-9 mm. The thorax and elytra are olivaceous black, margined with pale yellow. Under surface black or piceous; legs yellow; base of femora black. Those with a narrow marginal stripe are referred to as *nimbatus* and the ones with a broader stripe as *lateralis*. The other two have the thorax and elytra uniformly black above. Of these, *sublævis* is 9-10 mm. in length, elongate oval with minute indistinct punctures on the elytra. Antennæ, palpi, and legs dull yellow; base of femora piceous. Front half of sternal crest flat, finely but distinctly punctured. The other, *glaber*, is 9.5-11 mm. in length, is more broadly oval. Elytral punctures slightly larger and more distinct. Palpi flavous, apex of last joint brown. Legs black, more or less variegated with testaceous. Front part of sternal crest concave and very coarsely punctured.

The following list of localities is probably far from complete.

Tropisternus lateralis (Fabricius)

Common (Hubbard and Schwarz); St. Augustine (Schwarz Mss. notes). Leconte gives the distribution as New York, Georgia, Nebraska, and Texas. Neither in the Roberts Collection nor in Mr. Wintersteiner's identifications does this name appear, being replaced, probably, by *nimbatus*. Known in the West Indies from Cuba to Barbados.

Tropisternus nimbatus (Say)

Lake Worth, Punta Gorda, and Biscayne Bay, January to March (Slosson Coll.); Jacksonville (Castle and Laurent); Lake City, June (Florida Agric. Exp. Sta.); Lakeland, Punta Gorda, and Titusville, November (Lutz, Davis, and Leng); Fort Myers, at light, March (Davis); Lake Okeechobee, at light, April (Davis and Grossbeck); Florida (Blatchley). The records for *nimbatus* and *lateralis* are possibly confused; both of these species were described without definite localities being given.

Tropisternus sublævis (Leconte)

Everglade, April (Davis); identified by F. Wintersteiner; confused previously with *glaber*. Described from Nebraska and Georgia.

Tropisternus striolatus (Leconte)

Enterprise, not rare (Hubbard and Schwarz); Jacksonville (Castle and Laurent); Fort Myers, March and April, at light (Davis); Punta Gorda, November (Lutz, Davis, and Leng); Clearwater, April (Van Duzee); Lake Okeechobee, April (Grossbeck); Monticello, October, and Gainesville, September and October (Mutchler and Watson). Described from, and abundant in, the Southern States.

Tropisternus glaber (Herbst)

Common (Hubbard and Schwarz); St. Augustine (Johnson); Lake Worth (Hamilton); Jacksonville, January to March (Slosson Coll.); St. Augustine, November (Engelhardt); Lake City, June (J. R. Watson); Fort Myers, at light, March and April (Davis); Monticello and Gainesville, September and October (Mutchler and Watson). Dr. Leconte gave the distribution as Lake Superior to Georgia. It has also been recorded

from Haiti, and, even though its records are confused with those of *sublævis*, it is clearly a common and widely distributed species.

Hydrophilus ovalis Ziegler

Oblong-oval; above, black with a greenish tinge. Head with irregular impressed punctures. Antennæ and palpi piceous. Thorax with punctures near the anterior angles, a series on each side and a few near the anterior margin. Elytra with four series of punctures, the third abbreviated anteriorly, the fourth double; side margin finely and closely punctured. Beneath, black with traces of a rufous spot on each segment. Length, 31-33 mm.

Jacksonville (Castle and Laurent); Lake City, June (Florida Agric. Exp. Sta.); Fort Myers, at light, March and April (Davis); Florida (Blatchley); Tampa, August (Bradley). Described from Pennsylvania. The Tampa specimens are, in part, brilliantly purplish metallic and may represent *violaceonitens* Duval, described from Cuba.

Hydrocharis castus (Say)

Oblong-oval; black; finely punctate. Head with an oblique line of coarse punctures in front and a line of punctures near the eye. Antennæ and palpi, rufous. Labrum broadly emarginate; anterior edge piceous; center with two larger punctures. Thorax with a short arcuated row of punctures near the apex and a few scattered punctures on the sides. Elytra with five rows of impressed punctures, the lateral ones being approximate to the margin. Legs, except base of femora, piceous. Length, 13-15.5 mm.

Fort Capron, very rare (Hubbard and Schwarz); Jacksonville, (Castle and Laurent); Lake Worth (Hamilton); St. Augustine (Schwarz Mss. notes); Dunedin, November (Blatchley); Daytona, June (Engelhardt); Everglade, May, Fort Myers, at light, March, and Lake Okeechobee, April (Davis); Punta Gorda, Fort Myers, and Jacksonville, November (Lutz, Davis, and Leng). Abundant in Middle and Southern States. Described from Louisiana.

HYDROBIINI

Berosus

There are six species of this genus recorded from Florida, but the separation of the species is so difficult that a revision of the whole genus will be necessary before one may be sure of his identifications. Therefore, we are

unable to give any definite key for their separation, especially as to color pattern, as there are a number of specimens in our collection from Florida which agree with the description of one or another species but the color markings are quite variable. One species (*pugnax*), 5-6 mm. in length, may be told on account of its having two spines at the apex of each elytron; another (*aculeatus*), 4 mm. in length, has the elytra prolonged at the apex, this prolongation being more noticeable in the female. The remainder do not have the elytra prolonged and are more difficult to separate. Two of these are said to have one tooth at the middle of the notch in the fifth segment (a somewhat difficult character to make out in some specimens); one of these species (*peregrinus*) measures about 4 mm. in length, while the other (*exiguus*) is very much smaller, measuring only 2.5 mm. The remaining two species have two teeth at the middle of the notch on the fifth segment. They are separated as follows: *striatus*, 4-5 mm. in length, has the stria on the elytra distinctly impressed and intervals with rather coarse punctures; while *infuscatus*, 5-6 mm. in length, has the striae on the disk of the elytra replaced by rows of fine punctures and the intervals finely punctate. The following are the locality records for the species which we have been able to recognize.

***Berosus pugnax* Leconte**

Enterprise, one specimen (Hubbard and Schwarz); Jacksonville, April (Laurent); La Belle, April (Grossbeck); Lake Okeechobee, April (Davis). Described from Louisiana.

***Berosus infuscatus* Leconte**

Lake Harney and Enterprise, not rare (Hubbard and Schwarz); Lakeland, Jacksonville, and Titusville, November (Lutz, Davis, and Leng); Everglade, April (Davis and Grossbeck); Gainesville, September and October, and Monticello, October (Mutchler and Watson). Described from Middle and Southern States.

***Berosus exiguus* (Say)**

Enterprise, Lake Ashby, and Kissimmee, not rare (Hubbard and Schwarz); Biscayne Bay (Schwarz Mss. notes); Lake Okeechobee, May (Davis and Grossbeck); Everglade, May (Davis); Jacksonville, July and August (Roberts Coll.). Described from specimens collected on the shore of Chincoteague Island, Va.

***Berosus striatus* (Say)**

Fort Capron and Tampa, rare (Hubbard and Schwarz); St. Augustine (Schwarz Mss. notes); Florida (Blatchley); Jacksonville, November (Lutz, Davis, and Leng). Described from Pennsylvania.

***Berosus aculeatus* Leconte**

Lake Harney, not rare (Hubbard and Schwarz). Described from North Carolina.

***Berosus peregrinus* (Herbst)**

Included in the Hubbard and Schwarz list, though unseen by them; not since included in Schwarz Mss. notes. Specimens which are doubtfully identified with Herbst's species are known from Fort Myers, March (Davis); Everglade, April (Davis); Monticello, October (Mutchler and Watson); Lakeland and Titusville, November (Lutz, Davis, and Leng). Leconte gave Middle and Southern States as the distribution.

Five species of *Berosus* are described from Cuba and Guadeloupe; none of them are known to be identical with those of Florida.

***Chætarthria pallida* (Leconte)**

Very convex; shining. Head, black. Thorax and elytra, dull brownish yellow; disk of thorax sometimes with a fuscous blotch. Elytra very sparsely and finely punctate; sutural striae distinct, more pronounced on the apical half. Beneath, black. Length, 1.5-2 mm.

Fort Capron, Sand Point, and Enterprise, not rare (Hubbard and Schwarz); Enterprise, December, in lake shore debris (Brownell). Originally described from specimens collected under stones and in wet places at the junction of the Colorado and Gila rivers, California.

***Helopeltis larvalis* Horn**

Oblong, depressed; piceo-testaceous. Head, obsoletely rugulose. Thorax, at base, nearly three times as wide as long. Elytra with ten punctate striae; the outer two striae indistinct; intervals flat. Length, 5.5 mm.

Florida (Roberts Coll. and Leng Coll.); Sarasota, March 4, beneath chunks of debris half buried in the mud of tide water marsh (Blatchley);

see also Beutenmüller, Journ. N. Y. Ent. Soc., VII, p. 176. Described from Louisiana and Sonora. Occurs also in Cuba.

Helochares maculicollis Mulsant

Oblong-oval, distinctly narrowed in front, subdepressed; above brownish yellow. Head with irregular piceous markings. Thorax with large piceous spot on disk. Elytra with ten rows of moderately deeply impressed serrate punctures; intervals flat, finely punctate, the fifth and ninth with a row of coarser punctures. Under surface black or piceous. Length, 4–5.5 mm.

Florida (Horn); Econ. River, March (Brownell). Leconte recorded it from Illinois, Louisiana; Horn gave the distribution as Illinois, Ohio, Kentucky, Missouri, Texas, North Carolina, Florida.

Philhydrus

There are nine species of this genus recorded from Florida. Two of these (*fimbriatus* and *bifidus*) have been placed in different genera by some authors on account of the tarsi on the middle and hind legs being only four jointed; *fimbriatus* is generally smaller, measuring from 4.5–5.5 mm., and the elytra are somewhat coarsely punctate but not striate; *bifidus* measures from 5.5–7 mm. and has the elytra striate, some of the striae not being entire, while the intervals are flat and punctate. Three of the remaining species are of the various shades usually called testaceous. Of this series, *nebulosus* may be separated by the prosternum being distinctly carinate; the thorax and elytra are indistinctly punctate, the usual rows of coarser punctures being scarcely visible. This species varies in length from 3.5 to 4.5 mm. The other two species in this series do not have the prosternum carinate. They may be partially separated by their sizes: *ochraceous* measures from 3.5–4 mm. and has the mesosternal lamina very feeble, the front edge being arcuate, without distinct angle; *diffusus* measures from 4.5–6 mm. and has the mesosternal lamina prominent with a distinct angular projection. The remaining four species are black or piceous black, sometimes with paler margins. The largest species of this series is *consors* measuring from 7–8 mm.; it is transversely convex with the sides of the elytra nearly vertical; the basal marginal line of the thorax is always distinct; the color of the upper surface is uniformly black. The following three have the margins of the thorax and elytra paler. *P. perplexus* is the smallest, measuring from 4.5–5 mm.; it is subdepressed with sides of the elytra obliquely descending and with the basal marginal line of thorax always distinct. *P.*

cinctus is similar in form to *consors* but smaller, measuring from 6.5–7 mm. and with the basal marginal line of the thorax very indistinct. Finally, *estriatus*, 6.5 mm. in length, was described by Blatchley (Can. Ent. XLIX, 1917, p. 139) who says: "Intermediate in size between *consors* and *perplexus* of Leconte, being smaller and much less convex than *consors* and larger and more broadly ovate than *perplexus*. In both those species the punctation is much coarser, the sutural striæ very distinct and the coarser punctures of elytra in four rows. From *P. cinctus* Say, which it resembles in color, *estriatus* is separated by its less convex form, absence of sutural striæ and oblique front edge of mesosternal crest."

***Philhydrus cinctus* (Say)**

Lake Worth (Slosson in Schwarz Mss. notes); Florida (Blatchley); Lake Okeechobee, April (Davis and Grossbeck). Say, in the original description, says that this species was found in the "Red River of Lake Winnepeck¹; it is also found in Pennsylvania." Leconte gave Middle and Southern States as the range; Horn gave Canada to Georgia and Kansas. The greater part of the Floridian records have been applied to the closely related species, *consors* Leconte.

***Philhydrus consors* Leconte**

Fort Capron, Tampa, and Palatka (Hubbard and Schwarz); St. Augustine, Lake Worth, Crescent City, and Jacksonville (Schwarz Mss. notes); Biscayne Bay, January to March (Slosson Coll.); Lake City, June (Florida Agric. Exp. Sta.). Noted as rare by Mr. Schwarz and not taken by our expeditions. Described from Louisiana. Horn gave the distribution as Louisiana, Florida. This species extends northward, on the Atlantic Coast, to New Jersey.

***Philhydrus nebulosus* (Say)**

Common (Hubbard and Schwarz list); Lake Worth and Biscayne Bay, January to March (Slosson in Schwarz Mss. notes); Florida (Blatchley); Key West, November (Engelhardt); Everglade, April (Davis). Say, in the original description, said he obtained a specimen in the "Lake of the Woods" and it is also listed in the Melsheimer Catalogue. Widely dis-

¹ Lake Winnipeg.

tributed, Canada to California (Horn). Occurs also in Porto Rico, according to Mr. Wintersteiner's determination.

Philhydrus ochraceus Melsheimer

Common (Hubbard and Schwarz list); St. Augustine, Biscayne Bay, Jupiter, and Miami (Schwarz Mss. notes); Florida (Blatchley); Lake Okeechobee, Marco, La Belle, Fort Myers, and Everglade, April, May, and July (Davis); Monticello, October (Mutchler and Watson). Widely distributed, Canada to Mexico (Horn). Described from Pennsylvania. We have Porto Rican specimens that seem to be identical.

Philhydrus diffusus Leconte

Common (Hubbard and Schwarz list); Lake Okeechobee, April (Davis); Punta Gorda, November (Lutz, Davis, and Leng). Described from Nebraska and California. Horn gave only the western distribution, Illinois to California, and described *hamiltoni* from the Atlantic Coast.

Philhydrus perplexus Leconte

Common (Hubbard and Schwarz list); St. Augustine, Haw Creek, and Biscayne Bay (Schwarz Mss. notes); Punta Gorda, November, and Everglade, April, May, and July (Davis). Described from New York, Illinois, Lake Superior, and Nebraska. Widely distributed, Canada to Texas (Horn).

Philhydrus (*Cymbiodita*) **fimbriatus** Melsheimer

Crescent City (Schwarz Mss. notes); Lake Okeechobee, April (Davis). Described from Pennsylvania. Occurs from Canada to Texas (Horn) but may be confused with *rotunda* Say, which occurs from Massachusetts to North Carolina.

Philhydrus (*Helocombus*) **bifidus** Leconte

Enterprise and Orange Co., rare (Hubbard and Schwarz list). Described from Middle and Southern States. Occurs from Canada to Georgia (Horn).

***Philhydrus estriatus* Blatchley**

Type: Dunedin, January and March (Blatchley).

The West Indian fauna includes about a dozen species of *Philhydrus*, occurring in Montserrat, Guadeloupe, Jamaica, Porto Rico, Cuba, and probably other islands. As far as we know at present, only two of these species are identical with the Floridian forms.

Creniphilus

The separation of the species of this genus into groups depends, in part, upon the number of joints in the antennæ which, in view of the small size, is difficult to determine. For this reason we may have included under some species records which may belong to some other species, but notes referring to such identifications will be found in the list of locality records. All of the species are black or piceous and of nearly the same size, measuring 2 mm. or a little less in length and not more than 1 mm. in width. The three species which are said to have the antennæ seven-jointed may be separated in the following manner.

C. reductus (length, 1.6–1.8 mm.) and *degener* (about the same length) have alutaceous sculpturing on the elytra. The former species has the thorax minutely, sparsely punctate, and the elytra relatively coarsely punctured; while the latter has the thorax distinctly, moderately punctate, and elytra without punctures. *C. nanus*, also of same length, has the upper surface polished and finely punctate; form less convex. This (*nanus*) was described as a variety of *ellipsus* (recorded from Arizona) but is said to differ from the typical specimens in being constantly smaller in size and having the elytral punctures relatively coarser. Two others are said to have the antennæ nine-jointed: *suturalis*, 1.5–2 mm. in length, is oblong, fully twice as long as wide, tarsi slender, the posterior pair fully as long as the tibiæ, the pro- and mesosternum without a trace of carina; *depectus*, 1.5 mm. in length, is not much longer than wide, tarsi stouter, the posterior pair shorter than the tibiæ, the prosternum carinate and mesosternum with a small but acute protuberance, elytra distinctly punctate. *C. subcupreus*, 1.5–2 mm. in length, the records for which we have included under *nanus*, is said to have the antennæ eight-jointed.

***Creniphilus nanus* Fall**

Described from Capron and Lake Harney. Specimens from Lake Okeechobee, April and May, and Punta Gorda, Lakeland, and Titusville,

November, have been identified as *nanus* by Mr. F. Wintersteiner. The name *nanus* was proposed subsequent to the publication of the older records; we, therefore, include those for *subcupreus* (Say), which is said by Horn to extend south to Virginia only, under *nanus* as they probably belong to the Floridian insect. They are Biscayne Bay, Crescent City, Enterprise, Lakeland, Everglade, etc., common at various dates.

***Creniphilus reductus* Fall**

Described from Capron; has not been recognized in our material.

***Creniphilus degener* Horn**

Described from Tampa; has been found also at Everglade, April, according to Mr. Wintersteiner's identification.

***Creniphilus suturalis* (Leconte)**

Enterprise, Kissimmee, and Tampa (Hubbard and Schwarz list); St. Augustine and Crescent City (Schwarz Mss. notes); Punta Gorda, Titusville, and Lakeland, November (Lutz, Davis, and Leng). Described from Pennsylvania, New York, and Lake Superior. Horn gave the distribution as Canada to Georgia.

***Creniphilus despectus* (Leconte)**

Haulover, rare (Hubbard and Schwarz). Somewhat doubtfully, we place under this name specimens from Everglade, April, and Salt Marsh (Davis); Lake Okeechobee, April and May (Davis and Grossbeck); Lakeland and Punta Gorda, November (Lutz, Davis, and Leng). As we read Dr. Leconte's treatment of these forms, *despectus* seems to have been intended by him to cover the more southerly forms. The original description gives Middle and Southern States as the distribution. Dr. Horn later associated with this species specimens from Massachusetts, Pennsylvania, Michigan, and Illinois.

The genus *Creniphilus* is known to occur in Cuba and Jamaica, but no descriptions have been published.

***Hydrobius tessellatus* (Ziegler)**

Broadly oval, very convex; pale reddish brown, elytra indistinctly marked with darker brown. Thorax coarsely, not closely, and somewhat irregularly punctate.

Elytra with ten rows of moderately close, but not serrate, punctures; alternate intervals (3, 5, 7, and 9) without trace of the coarse series of punctures. Body, beneath, brownish. Legs brown, basal half of all the femora opaque, punctate, and pubescent. Length, 7-7.5 mm.

Centreville (Roberts Coll. and Schwarz Mss. notes). Described from Pennsylvania. Horn gave the distribution as Canada to Florida. This species is found clinging to the under side of submerged logs.

Hydrobius tumidus Leconte

Oval, very little longer than wide, very convex; piceous black, shining, surface slightly bronzed. Head, closely punctate. Thorax moderately, closely, and equally punctate and with coarser punctures. Elytra with ten rows of punctures; the first and second rows incomplete; alternate intervals (3, 5, 7, and 9) with a row of coarser punctures. Beneath, black. Legs, piceous; tarsi, paler; posterior femora, entirely glabrous, coarsely and sparsely punctate; middle femora, densely punctate and pubescent near the base only; anterior femora opaque, except near the tip. Length, 8-8.5 mm.

Crescent City, Haw Creek, Bartow, and Jacksonville (Schwarz Mss. notes); Lake Okeechobee, in moist humus at edge of lake, April (Grossbeck). Described from New York and Pennsylvania. Horn gave the distribution as New York to Florida.

SPHÆRIDIIDÆ

This family, though not water beetles, is included because they are a part of the Hydrophilidæ in the Henshaw Check List and belong, with that family, to the Palpicornia. They inhabit decaying vegetable matter and are often found on the seashore.

Dactylosternum abdominale (Fabricius)

Oblong-oval, moderately convex; piceous black, shining. Antennæ testaceous, club darker. Head punctate, more finely and densely on the clypeus. Thorax closely punctate, a little more coarsely than the head. Elytra with ten striæ, more deeply impressed on sides and apex; punctures coarse; intervals flat on the disk, slightly convex at apex and sides, closely punctate. Body, beneath, piceous or brownish opaque. Legs, piceo-rufous. Length, 4.5-5 mm.

A native of Brazil, known also from Madeira, Madagascar, Mexico, the Antilles, Florida, and North Carolina (Horn).

Dactylosternum advectum Horn

Oval, slightly oblong; piceous black, shining. Head moderately, closely, and not coarsely punctate, more densely on the clypeus; thorax regularly punctate, a little more closely than the head. Elytra striate-punctate; discal rows fine, and distant outer ones coarser and more deeply impressed; sutural striæ moderately impressed from apex nearly half-way to the base. Body, beneath, piceous or brownish; metasternal area shining, finely punctate. Legs piceo-rufus. Length, 4.5 mm.

Described from Florida. There are two specimens, which have been questionably identified as this species, in the Museum collection from Porto Rico.

Phænotypus palmarum (Schwarz)

The original description of this species is as follows: "Rather broadly oval, convex, piceous black, shining. Antennæ and palpi pale rufo-testaceous. Head minutely, transversely strigose, sparsely punctulate. Thorax minutely alutaceous, sparsely punctate. Elytra sparsely, obsoletely punctate, the punctures confused without tendency to form rows, sutural striæ moderately well impressed from apex one-third toward base. Body beneath opaque. Legs bright rufo-testaceous. Length, .07 inch; 1.75 mm."

The type specimens were collected at Enterprise, on sap of Palmetto, rare (Schwarz). Crescent City (Schwarz Mss. notes); La Belle, Lakeland, Jacksonville, Newberry, and Fort Myers, November (Lutz, Davis, and Leng). Taken by sweeping vegetation, in sifting the ground debris, and at light. Mr. Wintersteiner has recognized this species in material obtained by sweeping in Dominica, W. I. (Lutz).

Phænonotum estriatum (Say)

Rather broadly oval, strongly convex; piceous black, shining. Antennæ testaceous, club fuscous. Head indistinctly punctate. Thorax very finely punctate; punctures of elytra coarser. Body, beneath, piceous, opaque. Metasternal carina shining, sparsely punctate. Legs, piceous. Length, 3-4 mm.

Common (Hubbard and Schwarz); St. Augustine, Lake Worth, Biscayne Bay, and Crescent City (Schwarz Mss. notes); Dunedin, January (Blatchley); Everglade, at light, and La Belle, April (Davis); Lakeland, sifting, and Fort Myers, at light, November (Lutz, Davis, and Leng); Sand Point, February (Roberts Coll.); Monticello, October (Mutchler and Watson); Sanford, May (Van Duzee); Everglade, May and July (Davis). Described from Louisiana. Occurs from Maryland south to Florida and Texas (Horn); also in Guadeloupe, Montserrat, Dominica, Jamaica, and Cuba.

Phænonotum semiglobosum (Zimmermann)

This species is 2.5 mm. in length and is closely related to the preceding, differing only in being smaller and more convex. The entire surface is less distinctly punctate and the elytral punctures are more widely separated.

Common (Hubbard and Schwarz); Crescent City, Haw Creek, Enterprise, Capron, and Tampa (Schwarz Mss. notes); Florida (Blatchley); Lakeland, sifting, Jacksonville, sweeping, and Fort Myers, at light (Lutz, Davis, and Leng). Described from Carolina. Horn gave no records outside of Florida.

Oosternum costatum Sharp

Oval; dull red; scantily covered with a lighter elongate pubescence. Thorax distinctly margined at sides; surface irregularly punctate. Elytra costate; alternate costæ very much raised toward the apex; striæ punctate; intervals pubescent. Metasternum shining, coarsely punctate. Ventral segments with sides dull and impunctate. Length, 1.5-2 mm.

Florida (Slosson Coll.). Described from Mexico, Guatemala and Nicaragua. Occurs also in Porto Rico and Cuba.

Cercyon

C. littoralis occurs in both the Old and New World but has not been found in Florida. It has the outer edge of the front tibiæ emarginate near the apex and with a conspicuous spur near the emargination. The other species recorded from North America do not have this emargination. Of these, five have been recorded from Florida but a number of others are liable to occur, especially among the seacoast species. Although we will not attempt to give detailed descriptions, the following notes may aid the student in separating his species. All of the species recorded from Florida have the sides of the thorax regularly arcuate and narrowed from base to apex. Of these, *nigriceps*, 1.25-2 mm. in length, may be known by having the metasternal area extended by an oblique line which is directed obliquely toward the anterior angle; color piceous, thorax paler at sides, with a distinct basal marginal line; elytra pale, with a piceous transverse band behind the middle. In all of the other species, the metasternal area is limited to the metasternum, the lateral marginal line reaching only to the hind angles. *C. variegatus*, 2-2.25 mm. in length, has the interval between the seventh and eighth striæ of the elytra narrow and with but a single row of punctures; the color is testaceous, except for the head, the median space of thorax and

the humeral space, which are piceous. *C. analis* is of the same size and form as *variegatus* but differs in being piceous black with an indefinite pale space at apex of the elytra. The other two species have the interval between the seventh and eighth striæ normally wide and at least biserially punctate. *C. prætextatum*, 2.5–3 mm. in length, is oval, never very convex, head oblique; elytra piceous black with a large, sharply limited, yellowish white space extending along the sides to the humeral angles; striæ rather deeply impressed at apex. *C. floridanum*, 2 mm. in length, is very convex; head vertical; elytra piceous, with a sharply defined apical pale spot which extends narrowly along the sides to base; striæ deeply impressed; the intervals convex at sides and apex, scarcely distinctly punctate but the punctures are more noticeable than those of the thorax.

***Cercyon prætextatum* (Say)**

Common (Hubbard and Schwarz list); St. Augustine, Lake Worth, Biscayne Bay, and St. Lucie (Schwarz Mss. notes); Everglade, at light, April and May (Davis); Fort Myers, March and November, and Monticello, October (Amer. Mus. Nat. Hist. Coll.). Occurs from Canada to Florida and west to Kansas (Horn). There is no locality given in the original description.

***Cercyon anale* Paykull (*ocellatum* Say)**

Capron and Enterprise, not rare (Hubbard and Schwarz). New England to Louisiana (Horn).

***Cercyon floridanum* Horn**

Described from Florida. Capron, Enterprise and Crescent City (Schwarz Mss. notes); Everglade, April and May (Davis); Fort Myers, November, at light (Lutz).

***Cercyon variegatum* Sharp**

Belleair and Jacksonville (Slosson Coll.). Described from North America, Mexico, Guatemala, and Nicaragua. Horn adds New Orleans as a locality record and Mr. Wintersteiner has identified specimens in the Museum collection from Dominica, W. I., as this species.

Cercyon nigriceps Marsham

Punta Gorda (Slosson Coll.). Canada to Louisiana, almost cosmopolitan (Horn). No locality given in the original description. Also occurs in Guadeloupe and Jamaica.

In Hydrophilidæ and Sphæridiidæ we have, thus, 50 species in Florida, of which 13 are also found in the West Indies — possibly more after further study has reduced the doubtful cases. There are 18 genera of which 13 are represented in the West Indies and there are but two West Indian genera (as far as published) not known in Florida. The remarks by the senior author in reference to the Carabidæ of Florida and the West Indies (Bull. Amer. Mus. Nat. Hist., XXXIV, p. 558) might here be repeated in stronger form, for the water beetles of the two regions are surely so very similar that the description of a new species from either region should be preceded by the study of the species of both.

PARNIDÆ.

For the purpose of keeping beetles found in the water together, we include here this small family, the species of which have aquatic habits.

Pelonomus rufescens Casey

Described from Florida and closely related to *P. obscurus* Leconte from the Southern States. In the Roberts Coll. from Bartow, July, and Lake Worth. Under the name *obscurus*, noted as common at Enterprise in the original Hubbard and Schwarz list; from Biscayne Bay in the Joutel Coll., and Daytona, November, in the Engelhardt Coll. Abundant in the debris on the shores of Lake Monroe, November and December (Brownell).

Helichus fastigiatus (Say)

Centreville (Schwarz Mss. notes); Lake City (J. R. Watson). Described from Pennsylvania.

Elmis pusillus (Leconte)

Centreville (Schwarz Mss. notes); Crescent City (Roberts Coll.). Described from specimens found in the Rapids of Niagara.

Elmis foveatus Leconte

Crescent City (H. H. Knight). Described from Santa Fé, New Mexico. The specimens, according to Mr. Knight, are not *foveatus* but indicate a new species near it, the description of which he will publish later.

Stenelmis bicarinatus Leconte

Tampa, one specimen (Hubbard and Schwarz); Crescent City (Roberts Coll.). Found also in Okefinoke Swamp, Georgia, by Prof. J. Chester Bradley. Described from Ohio. The specimens included here indicate a new species near *bicarinatus*, according to Mr. Knight.

Ancyronyx variegatus (Germar)

Crescent City, on sunken logs in cypress swamp (Schwarz Mss. notes). The original description merely gives North America as locality.