

Her. Kley
1904

NAUTILUS.
...sfully with these "remedies," I can
...of course trapping under pieces of
...rning the same occasionally and col-
...ed with more or less success.
...sons, slugs are particularly destruc-
...there they work at night. Lime is
...pping under cabbage and other large
...ot is sometimes used in the wheat

(*Amalia*) *hewstoni* (= *A. gagates*?)
...grass plots of San Francisco twenty
...extended its territory over a larger
...native slugs, *Limax* (*Ariolimax*),
...relative *californicus* Cp., inhabitants
...amed found also as far north as
...ree of the sins which have made the
...two species are sometimes met
...Their dirty yellowish green color,
...repulsive. It is not unlikely that
...to the farmers in some parts of Cal-
...welcome incident pertaining to the

...highly developed in *L. maximus*,
...and again, the sense or instinct of
...species that I have had an oppor-
...on. The slugs are "not popular
...people call them "nasty things."
...

...FROM THE CARBONIFEROUS. By
...Mus. xxvii, 1904). *Limipecten*
...upon a Texan species, *L. texanus*
...ecten and *Acanthopecten* are fully
...group near *Allerisma*, type *P.*
...vilites is a new genus of *Denta-*
...but having a dorsal ridge over
...anterior bend. Type *C. howar-*
...n. gen. is a Brachiopod group
...*Orthotetes* of F. de Waldheim.

THE NAUTILUS.

Vol. XVIII. AUGUST, 1904. No 4.

LIST OF ALABAMA SHELLS COLLECTED IN OCTOBER AND NOVEMBER, 1903.

A. A. HINKLEY.

For several years I have been interested in the variations and geographical distribution of the family *Pleurocerida* of our fresh water shells. Under the same environments a species will often show considerable variation, while specimens from widely different stations will show very marked differences which are often confusing in the determination of species. This has been one cause of the large synonymy of this group.

Last fall I had the pleasure of a short visit to several of the streams from Decatur to Montgomery, Alabama. At Decatur, a stop between trains did not allow much time for collecting.

At Blount Springs, Randolph creek was followed over most of its rock-bed between the mountains, from the railroad to the bottom lands of the Mulberry river. The river was followed up stream for several miles. Most of the distance the water was shallow, flowing over a seamed rock-bed.

The Black Warrior was followed from the wagon bridge near Warrior to the L. and N. R. R. bridge. The only shoal places were at the two bridges.

The Bucksehatchee creek near Calera was a water course with pools here and there.

A walk of three miles from Calera to Wilson's creek gave an opportunity to follow that shaded stream into Montevallo. Individ-

uals were not numerous until the town was reached, where in some places the bed of the stream was literally covered with *Goniobasis*. A large spring at the edge of the town furnished several species.

The Coosa river at Farmer, Shelby Co., offered no good collecting places, but farther up the stream at Ft. William's Shoals the stream was explored for considerable distance with very satisfactory results. In the clear, shallow water everything was plainly visible, the colors of the shells often showing with remarkable distinctness. Shoal creek, below Farmer, contained but few individuals.

At Wilsonville only one small shoal was searched.

At Wetumpka there are more accessible places for collecting than at any of the other Coosa river localities visited.

The Tallapoosa river above Tallassee, is a much broken stream caused by a rough rock-bed, with a considerable fall.

The *Pleuroceridæ* were looked for closely, and especially the Coosa river forms; but many described species and others listed from that stream were not found. Some of them were undoubtedly overlooked or are to be found in other situations than those explored, but I think the earlier collectors in some way mixed their collections; and species are credited to the Coosa river which were not found there, while some of the Coosa river forms were credited to other streams. This subject is open for further investigation.

For aid in determination of the species, thanks are due Prof. Pilsbry for kindly comparing a large part of the *Pleuroceridæ* and part of the *Unionidæ* with specimens in the Academy of Natural Sciences, and for describing some new forms of *Limnæidæ*. To Mr. Bryant Walker for his excellent work with new forms of *Somatogyrus*, etc. and identifying part of the *Helicidæ* and *Unionidæ*. And to Dr. Sterki for identifying the *Corbiculidæ*.

Very little attention was given the land shells and the fresh-water species which inhabit muddy situations. The *Unionidæ* were taken as they were noticed while looking for the *Pleuroceridæ*, so that this list is not as full as it might otherwise have been.

In the genus *Schizostoma* or *Gyrotoma*, the fissure appears to be the most constant character, while the striæ, carinæ, nodules, bands, ground-color and outline, all vary more or less.

FAMILY PLEUROCERIDÆ.

Pleurocera annuliferum Con. Warrior, common.

P. anthonyi Lea. Wetumpka.

P. canaliculatum Lea. Wilsonville.

P. dignum Lea. Spring Creek, Farmer

P. excruciatum Con. Decatur. Except difference between this and *moniliferum*.

P. formanii Lea. Wetumpka, common muddy bays.

P. incrassatum Anth. Wilsonville and

P. incrassatum Anth., var. *showalterii* Le

P. moniliferum Lea. Decatur, often fou

P. nobile Lea. Decatur, found on mudd

P. ponderosum Anth. Decatur, commor

P. striatum Lea. Blount Springs.

P. thornstonii Lea. Spring Creek at Fa

P. vestitum Con. Montevallo and Blour

Lithasia brevis Lea. Wetumpka and Fc

Goniobasis ampla Anth. Wilsonville; Wetumpka, common, often found devouring shells.

G. capillaris Lea. Wilsonville; Fort tumpka.

G. carinifera Lam. Randolph Creek. This form was received from Prof. Call y cella Anth.

G. clausa Lea. Fort William Shoals a

G. crebristriatus Lea. Wetumpka, species are readily separated from *impressa* have not the carina of the former, and the eroded like the latter, the outline and color.

G. crenatella Lea. Wetumpka; Fort W ville.

G. cylindracea Con. Wetumpka and I mon.

G. expansa Lea. Tallapoosa River, T Blount Springs, common.

G. fallax Lea. Wetumpka; Fort W ville, common.

G. hydeii Con. Black Warrior, Warri

G. impressa Lea. Wilsonville; Fort tumpka.

n was reached, where in some
rally covered with *Goniobasis*.
furnished several species.
y Co., offered no good collect-
t at Ft. William's Shoals the
distance with very satisfactory
everything was plainly visible,
g with remarkable distinct-
tained but few individuals.
was searched.
ble places for collecting than
s visited.

ee, is a much broken stream
siderable fall.
sely, and especially the Coosa
s and others listed from that
were undoubtedly overlooked
than those explored, but I
mixed their collections; and
which were not found there,
re credited to other streams.
tion.

s, thanks are due Prof. Pils-
the *Pleuroceridæ* and part
ademy of Natural Sciences,
imnæidæ. To Mr. Bryant
forms of *Somatogyrus*, etc.
nd *Unionidæ*. And to Dr.

l shells and the fresh-water
The *Unionidæ* were taken
e *Pleuroceridæ*, so that this
ve been.

r, the fissure appears to be
iæ, carinæ, nodules, bands,
less.

IDÆ.

common.

- P. anthonyi* Lea. Wetumpka.
P. canalitium Lea. Wilsonville.
P. dignum Lea. Spring Creek, Farmer.
P. excuratum Con. Decatur. Except for the striæ there is no
difference between this and *moniliferum*.
P. formanii Lea. Wetumpka, common. Along the shore in
muddy bays.
P. incrassatum Anth. Wilsonville and Wetumpka.
P. incrassatum Anth., var. *showalterii* Lea. Wetumpka.
P. moniliferum Lea. Decatur, often found in submerged logs.
P. nobile Lea. Decatur, found on muddy and sandy bottom.
P. ponderosum Anth. Decatur, common.
P. striatum Lea. Blount Springs.
P. thorntonii Lea. Spring Creek at Farmer.
P. vestitum Con. Montevallo and Blount Springs, common.
Lithasia brevis Lea. Wetumpka and Fort William Shoals.
Goniobasis ampla Anth. Wilsonville; Fort William Shoals and
Wetumpka, common, often found devouring the animal from smaller
shells.
G. capillaris Lea. Wilsonville; Fort William Shoals and We-
tumpka.
G. carinifera Lam. Randolph Creek. Also Spring, Montevallo.
This form was received from Prof. Call years ago, labelled *G. ma-
cella* Anth.
G. clausa Lea. Fort William Shoals and Wilsonville, common.
G. crebristriatus Lea. Wetumpka, specimens referred to this spe-
cies are readily separated from *impressa* and *capillaris*, the young
have not the carina of the former, and the mature specimens are not
eroded like the latter, the outline and color differ from both.
G. crenatella Lea. Wetumpka; Fort William Shoals and Wilson-
ville.
G. cylindracea Con. Wetumpka and Fort William Shoals, com-
mon.
G. expansa Lea. Tallapoosa River, Tallassee; Mulberry River,
Blount Springs, common.
G. fallax Lea. Wetumpka; Fort William Shoals and Wilson-
ville, common.
G. hydeii Con. Black Warrior, Warrior, common.
G. impressa Lea. Wilsonville; Fort William Shoals and We-
tumpka.

G. laeta Jay. Wilsonville; Fort William Shoals and Wetumpka, common. *G. lewisii* Lea and *culta* Lea are probably synonyms.

G. negata Lea. Wetumpka.

G. nigrocincta Anth. Spring at Montevallo.

G. nigrocincta Anth., var. *quadricincta* Lea. Tallassee.

G. nigrocincta Anth., var. *grata* Anth. Montevallo.

G. pybasii Lea. Calera.

G. rubicunda Lea. Wetumpka, common and variable.

G. semicostata Con. Randolph Creek and Blount Springs.

G. showalterii Lea. Fort William Shoals. The elongated operculum of this species, unlike that of *Anculosa rubiginosa*, shows a regular growth with the growth of the shell.

G. symmetrica Hald. Buckschatchee Creek, Calera; Randolph Creek, Blount Springs.

G. vanuxemiana Lea. Spring Creek; Fort William Shoals, Wetumpka and Wilsonville.

G. vanuxemii Lea. Fort William Shoals.

G. variata Lea. Montevallo, common.

G. wheatleyii Lea. Spring Creek, Farmer and Fort William Shoals.

Schizostoma alabamaensis Lea. Wilsonville and Wetumpka.

S. castaneum Lea. Coosa River, Wetumpka and vicinity. Mature specimens were rare. Fissure deep and narrow; three- or four-banded, when four-banded the two middle ones are approximate. The carina is obscure except at the tip of the young; the spire of mature specimens is eroded giving them a cylindrical shape.

S. constrictum Lea. The most plentiful species of this genus at Fort William Shoals, generally three-banded, smooth or inclined to be nodulous below the hem; differs from *incisum* by the fissure being more direct and deeper, ground color lighter, the bands are more distinct. *Incisum* is never nodulous. *S. amplum* and *salebrosum* are synonyms.

S. ellipticum Anth. (syn. *bulbosum* Anth.). Wetumpka and Wilsonville. Several hundred specimens show considerable variation, many are smooth, others more or less striate, some quite distinctly nodulous, three-banded, the bands generally broad, giving the shell a dark appearance. *S. cylindraceum* may be a form of this species.

S. glans Lea. Fort William Shoals, close to *ellipticum* if not a synonym.

S. excisum Lea (syn. *pumilum* Lea) Varies from cylindrical to globosely oval those without bands are mature and near position to have bands on the first whorl behind the fissure is well developed on little or nothing of it. The striae are generally direct, medium in length and width.

S. glandula Lea. Described from noticeable difference from *incisum*, of is the light color and the bands more color and bands resemble *constrictum*, but *incisum*.

S. incisum Lea. The most plentiful at Wetumpka. The fissure is very short, cases only a sinuous outer lip. The thickness giving the shell a dark color.

S. lewisii Lea. Coosa River, no specimens referred to this species may be *impressa* with a very sinuous outer lip.

S. ovoideum Shutt. Wetumpka.

S. pyramidatum Shutt. (syn. *pagoda* *babylonicum* Lea).

Shell smooth, striate, or carinate, for The carina, always prominent on the erosion of the spire. The fissure is short. *Pagoda* was described from three specimens *wetumpkaensis* Mr. Lea says it is umbilicated with all the specimens and especially supposed umbilicus confined to *wetumpkaensis* but caused by erosion. *S. babylonicum* one specimen and I think it only a mature *wetumpkaensis*. *Showalterii* and *demi* this species.

Anculosa ampla Anth. There are several refer to this species. The epidermis outlines of body-whorl, and shape of aperture all its varieties. The columella of the Fort William Shoals is always purple; it is white in Wetumpka and vicinity.

Fort William Shoals and Wetumpka, *multa* Lea are probably synonyms.

g at Montevallo.

radricinata Lea. Tallassee.

ata Anth. Montevallo.

ka, common and variable.

ch Creek and Blount Springs.

William Shoals. The elongated oper-
of *Anculosa rubiginosa*, shows a reg-
the shell.

chatchee Creek, Calera; Randolph

; Creek; Fort William Shoals, We-

William Shoals.

common.

Creek, Farmer and Fort William

Wilsonville and Wetumpka.

r, Wetumpka and vicinity. Mature

leap and narrow; three- or four-

two middle ones are approximate.

the tip of the young; the spire of

; them a cylindrical shape.

plentiful species of this genus at

ree-banded, smooth or inclined to

; from *incisum* by the fissure being

or lighter, the bands are more dis-

s. *S. amplum* and *salebrosum* are

m Anth.). Wetumpka and Wil-

ens show considerable variation,

less striate, some quite distinctly

generally broad, giving the shell

m may be a form of this species.

oals, close to *ellipticum* if not a

S. excisum Lea (syn. *pumilum* Lea). Wetumpka and vicinity. Varies from cylindrical to globosely ovate, banded or without bands, those without bands are mature and nearly all of them show a disposition to have bands on the first whorl. The cord-like elevation behind the fissure is well developed on some while others show very little or nothing of it. The striæ are generally distinct. The fissure is direct, medium in length and width.

S. glandula Lea. Described from one specimen. The only noticeable difference from *incisum*, of which it is a color variety, is the light color and the bands more narrow and distinct. The color and bands resemble *constrictum*, but the fissure places it with *incisum*.

S. incisum Lea. The most plentiful species of this genus at Wetumpka. The fissure is very short, wide and oblique, in some cases only a sinuous outer lip. The three broad bands are clouded, giving the shell a dark color.

S. lewisii Lea. Coosa River, near Wilsonville, Ala. Two specimens referred to this species may be only elongated forms of *G. impressa* with a very sinuous outer lip.

S. ovoideum Shutt. Wetumpka.

S. pyramidatum Shutt. (syn. *pagoda* Lea, *wetumpkaensis* Lea, *babylonicum* Lea).

Shell smooth, striate, or carinate, four-banded or without bands. The carina, always prominent on the young, disappears with the erosion of the spire. The fissure is short and constant in character. *Pagoda* was described from three specimens. In his description of *wetumpkaensis* Mr. Lea says it is umblicate. I find this is not the case with all the specimens and especially the young, nor is the supposed umbilicus confined to *wetumpkaensis*. It is not a true umbilicus but caused by erosion. *S. babylonicum* was described from one specimen and I think it only a mature form of that described as *wetumpkaensis*. *Showalterii* and *demissum* may also be forms of this species.

Anculosa ampla Anth. There are not many specimens which I refer to this species. The epidermis and character of the bands, outline of body-whorl, and shape of aperture, differ from *picta* and all its varieties. The columella of the specimens from Fort William Shoals is always purple; it is white in a few specimens from Wetumpka and vicinity.

A small variety found on the exposed surface of stones in the swift current, is remarkably depressed with a very large aperture. The columella is broad and thickened its entire length; it is sometimes white instead of tinted and purple; the spire is very much depressed, hardly extending beyond the body-whorl; when placed aperture down, the apex is low down on the right side. One of the largest specimens measured over the columella, is .30 of an inch, the largest measurement is .40 of an inch. When placed aperture down, the height is .21; extreme length of aperture .30 of an inch, width from center of columella to outer lip .19 of an inch.

It seems to me that the forms described as *A. elegans* and *A. formosa* Lea, more properly belong in the synonym of *A. picta* instead of *ampla*. Young specimens referable to these varieties appear to be only color varieties of young *picta*.

A. melanoides Conrad. This unpretentious species was found on pebbles in strong current in Black Warrior River at a bridge near Warrior. The spire is more elevated than usual with the species of this genus, the perfect ones have four whorls, the spire of most specimens is eroded, only two whorls left. A few are banded, but most have no indication of bands. Mature specimens with eroded spire measure .40 to .45 length and .28 to .30 inch diameter. Columella a little thickened at the base and the aperture angulated at the juncture of the columella and outer lip.

A. picta Conrad. Common at Fort William Shoals, Wetumpka and vicinity. A very variable species, smooth, sometimes corded or plicate, or both. The bands extremely variable. The most common form is eight to twelve narrow bands made up of dots and dashes. These may be placed so as to form diagonal stripes as in *A. zebra* and *flammata*, and in some instances these diagonal bands are so strong as to blur the revolving lines of dashes. The bands are often continuous and number from two to twelve, or the two characters of bands may be alternate on the same specimen. Many are imperfectly banded and a few without bands, occasionally one in purple. The columella is often purple or tinged with that color; the prevailing color is white, the plicæ are often waves or folds. The shell may be globose. In old specimens the body-whorl is often compressed above the periphery, sometimes giving the shell a distorted appearance.

A. plicata Con. Black Warrior River at Warrior, Ala., common.

At this locality the species is rare there are few with small or indistinct smooth with the exception of a few which is more or less crenulate. The upper one just below the aperture is two. None were found in the C

A. ligata Anth. Wetumpka.

found on the under side of rocks
A. rubiginosa Lea. Coosa River
sonville. More or less striate, developed, producing costate specimens form they vary considerably. Slight little resemblance to *A. plicata*,

Specimens with an elongated situation, on the west side of an island the length of the operculum seen of the shell. Occasionally one is seen. They are generally attached to rocks; the colors show up bright and distinct in stream.

A. taeniata Con. The specimens are a smooth form of *rubiginosa*.

FAMILY

Viviparus contectoides Binney. In a swamp deeply shaded by a hemlock quite numerous. Mature specimens very young to half grown.

Tulotoma magnifica Con. Coosa River and Wilsonville. This species is found under side of rocks where there are generally in colonies; it was not found on a single stone a foot square or more.

T. magnifica Con., variety *lutea* sonville. This form was found in places they were numerous in cultivated high-water mark. The size varies and the lower row of nodules is

T. angulata Lea. Coosa River

sed surface of stones in the swift
with a very large aperture. The
entire length; it is sometimes
the spire is very much depressed,
whorl; when placed aperture
right side. One of the largest
la, is .30 of an inch, the largest
when placed aperture down, the
ture .30 of an inch, width from
an inch.

described as *A. elegans* and *A. for-*
e synonym of *A. picta* instead
to these varieties appear to be

tentious species was found on
Warrior River at a bridge near
usual with the species of this
s, the spire of most specimens
are banded, but most have no
is with eroded spire measure
diameter. Columella a little
angulated at the juncture of

William Shoals, Wetumpka
smooth, sometimes corded or
variable. The most common
made up of dots and dashes.
gonal stripes as in *A. zebra*
these diagonal bands are so
ashes. The bands are often
ive, or the two characters of
specimen. Many are imper-
occasionally one in purple
with that color; the prevail-
es or folds. The shell may
-whorl is often compressed
the shell a distorted appear-

at Warrior, Ala., common.

At this locality the species is not typical; among several hundred
there are few with small or indistinct plication. Most specimens are
smooth with the exception of a raised line a little below the suture,
which is more or less crenulate. Many specimens are three-banded,
the upper one just below the raised line and narrower than the other
two. None were found in the Coosa River.

A. ligata Anth. Wetumpka. The young of this species was often
found on the under side of rocks in swift water.

A. rubiginosa Lea. Coosa River at Wetumpka also found at Wil-
sonville. More or less striate, in some striae are remarkably well de-
veloped, producing costate specimens with a crenulated outer lip. In
form they vary considerably. Some of the plicate specimens have a
little resemblance to *A. plicata*, but evidently are not that species.

Specimens with an elongated operculum were found in only one
situation, on the west side of an island above the Wetumpka bridge;
the length of the operculum seemed to have no reference to the size
of the shell. Occasionally one will have a clear, white columella.
They are generally attached to rocks and pebbles in the current, and
the colors show up bright and distinct through the clear water of the
stream.

A. taeniata Con. The specimens I refer to of this species may be
a smooth form of *rubiginosa*.

FAMILY VIVIPARIDÆ.

Viviparus contectoides Binney. n. var. Decatur. In a small
swamp deeply shaded by a heavy growth of trees, this species was
quite numerous. Mature specimens were rare, the larger part being
very young to half grown.

Tulotoma magnifica Con. Coosa River at Fort William Shoals
and Wilsonville. This species was nearly always found on the
under side of rocks where there was little or no current. They were
generally in colonies; it was not uncommon to find 20 or 30 under a
single stone a foot square or more.

T. magnifica Con., variety *bimonilifera* Lea. Farmer and Wil-
sonville. This form was found only in a fossil state. In some places
they were numerous in cultivated fields and some distance above
high-water mark. The size averaged larger than the living *magnifica*
and the lower row of nodules is more strongly developed.

T. angulata Lea. Coosa River, Wetumpka; this form differs

from *magnifica* by being smooth or nearly so, some being nearly as smooth as *viviparus*. They are found under rocks in the swift current of the stream. Both forms, *magnifica* and *angulata*, vary greatly in color from a light horn to a dark purple.

Campeloma ponderosum Say. Tennessee River, Decatur; Coosa River, Wilsonville; Fort William Shoals and Wetumpka.

C. coarctatum Lea. Black Warrior River, Warrior; Tallapoosa River, Tallassee.

C. decisum Say. Tennessee River, Decatur.

C. nolani Tryon. Coosa River, Wetumpka.

Lioplax cyclostomatiformis Lea. Black Warrior River, Warrior; Coosa River, Fort William Shoals and Wetumpka.

FAMILY VALVATIDÆ.

Valvata bicarinata Lea. Coosa River near the railroad bridge, Farmer, Ala., but three specimens found.

FAMILY AMNICOLIDÆ.

Somatogyrus aureus Tryon. Coosa River, Fort William Shoals, rare.

S. constrictus Walker. Coosa River, Wetumpka and Wilsonville, very few; nearly always found on the underside of the rocks associated with *S. coosaensis* and *S. hinkleyi*, very seldom more than one on the same rock. The light color, eroded spire and deep suture made them easily noticed among other species.

S. coosaensis Walker. Wetumpka, Fort William Shoals; common. On rocks in swift water; sometimes 25 to 30 were seen together.

S. crassus Walker. Wetumpka and Fort William Shoals; not plentiful.

S. hinkleyi Walker. At all localities in the Coosa River. One specimen supposed to be from the Tallapoosa River above Tallassee, was probably mixed with *S. pilsbryanus* by accident.

S. nanus Walker. Very plentiful at Fort William Shoals. They literally covered the rock-bed of the stream in favorable situations, showing up very plainly through the clear water, but owing to the swift current it was difficult and tedious collecting them.

S. obtusus Walker. Coosa River, Farmer, above the railroad bridge, found among the drift in a stagnant pool, made by the low stage of water.

S. pilsbryanus Walker. Tallapoosa River, plentiful on rocks in swift water, often seen in water as it fell over a natural dam.

S. pumilus Con. Tennessee River, Decatur, the shore in muddy places, protected by

S. subglobosus Say. Tennessee River, common.

S. umbilicatus Walker. Wetumpka, rare.

Ammicola n. sp. Coosa River near Farmer, Ala.

FAMILY LIMNÆIDÆ.

Limnæa desidiosa Say. In a small stream near Montgomery, Ala. This species was quite common.

L. columella Say. Wilsonville, Fort William and Blount Springs.

Physa pomilia Con. A small stream near Blount Springs, Tallapoosa River, Tallassee, rare.

(To be continued)

THE LAND-SHELLS OF IRONBOUND ISLAND.

BY DWIGHT BLANCHARD.

The following land-shells have been found on Ironbound Island, Frenchman's Bay. This is one of the coast of Maine—with high cliffs to the water on the bay side.

Heavily covered with spruce mixed with comparatively little cleared land, it does not afford much opportunity for collecting land-shells. Under the guidance of Edward S. Morse, we have ransacked all the rocks and feel well rewarded with the following nine species.

The numerals refer to Pilsbry and Walker's Catalogue of the Land-shells of America.

No. 141. *Polygyra monodon* (Rack.), common.

No. 200. *Pupa muscorum* (L.), common.

both or nearly so, some being nearly as
are found under rocks in the swift
th forms, *magnifica* and *angulata*, vary
horn to a dark purple.

ty. Tennessee River, Decatur; Coosa
William Shoals and Wetumpka.

c Warrior River, Warrior; Tallapoosa

ee River, Decatur.

River, Wetumpka.

Lea. Black Warrior River, Warrior;
Shoals and Wetumpka.

FAMILY VALVATIDÆ.

Coosa River near the railroad bridge,
mens found.

FAMILY AMNICOLIDÆ.

n. Coosa River, Fort William Shoals,

osa River, Wetumpka and Wilsonville.

l on the underside of the rocks associ-

. *hinkleyi*, very seldom more than one on

or, eroded spire and deep suture made
her species.

umpka, Fort William Shoals; common.

times 25 to 30 were seen together.

umpka and Fort William Shoals; not

l localities in the Coosa River. One

the Tallapoosa River above Tallassee,

pilsbryanus by accident.

entiful at Fort William Shoals. They

l of the stream in favorable situations,

gh the clear water, but owing to the

id tedious collecting them.

River, Farmer, above the railroad

in a stagnant pool, made by the low

S. pilsbryanus Walker. Tallapoosa River above Tallassee, very
plentiful on rocks in swift water, often seen on the rocks back of the
water as it fell over a natural dam.

S. pumilus Con. Tennessee River, Decatur, Ala. Found along
the shore in muddy places, protected by saw-logs.

S. subglobosus Say. Tennessee River, Decatur, Ala. One speci-
men.

S. umbilicatus Walker. Wetumpka and Fort William Shoals,
rare.

Amnicola n. sp. Coosa River near the railroad bridge, Farmer,
Ala.

FAMILY LIMNÆIDÆ.

Limnæa desidiosa Say. In a small stream near the Union Depot,
Montgomery, Ala. This species was quite numerous.

L. columella Say. Wilsonville, Fort William Shoals, Tallassee,
Farmer and Blount Springs.

Physa pomilia Con. A small stream near the Union Depot, Mont-
gomery, Tallapoosa River, Tallassee, Randolph Creek, and a small
rill at Blount Springs.

(To be continued.)

THE LAND-SHELLS OF IRONBOUND ISLAND, MAINE.

BY DWIGHT BLANEY.

The following land-shells have been collected on Ironbound
Island, Frenchman's Bay. This is one of the many rocky islands
on the coast of Maine—with high cliffs toward the sea, and sloping
to the water on the bay side.

Heavily covered with spruce mixed with a few birches, and with
comparatively little cleared land, it does not seem a very likely place
for collecting land-shells. Under the guidance of our friend Prof.
Edward S. Morse, we have ransacked all favorable situations, and
feel well rewarded with the following nineteen species.

The numerals refer to Pilsbry and Johnson's Land-shells of
America.

No. 141. *Polygyra monodon* (Rack.), common.

No. 200. *Pupa muscorum* (L.), common.

No. 224. *Vertigo ventricosa* (Morse), common.

No. 224a. *Vertigo ventricosa* var. *elatior*, (Sterki), rare.

This species is noted in the catalogue as from Ohio, Michigan and Minnesota.

226. *Vertigo bollesiana* (Morse), rare.

260. *Vitrea hammonis* (Ström), rare.

264. *V. binneyana* (Morse), common.

268. *V. ferrea* (Morse), common.

278. *Euconulus fulvus* (Müll.), common.

283. *Zonitoides arboreus* (Say), abundant.

293. *Z. exiguus* (Stimp.), common.

494. *Z. milium* (Morse), rare.

338. *Pyramidula alternata* (Say), abundant.

344. *P. striatella* (Anth.), abundant.

346. *Helicodiscus lineatus* (Say), common.

248. *Punctum pygmaeum* (Drap.), common.

353. *Sphyradium edentulum* (Drap.), rare.

362a. *Succinea obliqua totteniana* (Lea), common.

367. *S. avara* (Say), not common.

The *Pupa muscorum* L. was found in a most interesting situation. On the seaward side of the island, on a rough, stony beach, rises a pinnacle of rock many tons in weight. This is nearly fifty feet high and is separated from the main cliff by about forty feet. I climbed one day to a flat place near the top, three feet square, covered with Juniper bushes, to gather some wild bluebells, *Campanula rotundifolia* L., and while clinging in this narrow space, picked over the valves of clams and mussel shells brought by Crows. Needless to say, I was inspired to find hidden in the lower shells, deep in the bushes, quite a colony of *Muscorum*. This is the only place on the island where this species is found; and a careful search on the adjacent cliffs revealed no more of them. How they could have got there is of course an interesting problem. Two fresh-water species are found on the island. *Pisidium abditum* (Hald.) and *Lymnaea caperata* Say, and the following land-shells have been found on neighboring islands.

13. *Helix hortensis* Müll, Little Duck Island, common.

106. *Polygyra sayii* (Binn.), Hancock Point.

180. *Strobilops labyrinthica* (Say), Soward's Island, common.

254. *Vitrina limpida* Gld., Calf Island, common.

NOTES ON SOME CAPE

BY C. W. JOE

During a recent trip on Cape Cod, in studying the insect fauna, but inc shells. One afternoon, at low tide I Provincetown harbor; on my way out (Portugese, by the way, constitute ab with a bucket full of periwinkles (*Lito he was going to do with them. "E inquiry whether they were good, he rocks (the remains of an old pier) we over almost everything was a coati *balanoides*), and it was interesting to the periwinkles, often greater in size*

On every hand were trails of the s find that *Polinices (Neverita) duplicat heros*; the former were much smaller the New Jersey coast, and their nidi as "sand collars," were also correspo *P. duplicata* is readily distinguished lower or expanded margin being und of *Columbella avara* was found. Of *ana* was abundant, and two specime Say (which we must now call *Calloco* collected. In places the coarse sand inspection showed it to be made up of

At Eastham are located a numb with no apparent inlet or outlet, in and quite cool. In the one nearest I found three species of the *Unionide* and very much eroded, features of though apparently more pure than m *Unio complanatus* were about two inc most common species, although dw two and a quarter inches in length, v epidermis, was also abundant. The example of *Anodonta cataracta* Say

orse), common.
 elatior, (Sterki), rare.
 ogue as from Ohio, Michigan and

rare.

rare.

mon.

ommon.

ubundant.

n.

, abundant.

nt.

common.

, common.

ip.), rare.

(Lea), common.

d in a most interesting situation.

on a rough, stony beach, rises a

t. This is nearly fifty feet high

by about forty feet. I climbed

three feet square, covered with

l bluebells, *Campanula rotundi-*

narrow space, picked over the

rought by Crows. Needless to

the lower shells, deep in the

This is the only place on the

d a careful search on the adja-

m. How they could have got

them. Two fresh-water species

abditum (Hald.) and *Lymnæa*

nd-shells have been found on

uck Island, common.

ock Point.

, Soward's Island, common.

and, common.

NOTES ON SOME CAPE COD MOLLUSCA.

BY C. W. JOHNSON.

During a recent trip on Cape Cod, Mass., I was mostly interested in studying the insect fauna, but incidentally collected a number of shells. One afternoon, at low tide I wandered over the sand-flats of Provincetown harbor; on my way out I met a little Portuguese boy (Portugese, by the way, constitute about one-third of the population) with a bucket full of periwinkles (*Litorina litorea*). I asked him what he was going to do with them. "Eat 'em," was his reply. To my inquiry whether they were good, he said, "Yep." The piling and rocks (the remains of an old pier) were literally covered with them; over almost everything was a coating of small barnacles (*Balanus balanoides*), and it was interesting to see the load carried by some of the periwinkles, often greater in size than the shell itself.

On every hand were trails of the sea-snails, but I was suprised to find that *Polinices* (*Neverita*) *duplicata* far outnumbered *P. (Lunatia) heros*; the former were much smaller than those I have collected on the New Jersey coast, and their ntidimental bands, popularly known as "sand collars," were also correspondingly smaller. The nidus of *P. duplicata* is readily distinguished from those of *P. heros* by the lower or expanded margin being undulated or wavy. One specimen of *Columbella avara* was found. Of the Pelecypods, *Pandora gould-ana* was abundant, and two specimens of the old *Cytherea convexa* Say (which we must now call *Callocardia morrhuana* Linsley), were collected. In places the coarse sand had a dark purple line. Close inspection showed it to be made up of the little *Gemma gemma*.

At Eastham are located a number of large fresh-water ponds, with no apparent inlet or outlet, in which the water is very clear, and quite cool. In the one nearest the station, called Depot Pond, I found three species of the *Unionidæ*. All of them were undersized, and very much eroded, features characteristic of still water, even though apparently more pure than many streams. The specimens of *Unio complanatus* were about two inches in length. It was by far the most common species, although dwarfed *Lampsilis radiatus*, about two and a quarter inches in length, with a thick, dark, sparsely rayed epidermis, was also abundant. The other species was a very fragile example of *Anodonta cotaracta* Say (*A. fluviatilis* Dillw.), about two

inches in length. Attached to shells and stones were a few *Amnicola limosa*. Under an old board I found a colony of *Pyramidula striatella* associated with *Zonitoides arboreus*. In the salt marshes east of the station *Melampus lineatus* was in great numbers, together with a few *Litorina rudis* var. *tenebrosa*.

My first stroll along the beach at Chatham was at high tide. Coming upon some lobster pots I found quantities of animal life strewn about. Among them were beautiful specimens of *Polinices heros*, but the animals were dead, and were left behind because they took up entirely too much room for their size; they were like some specimens a friend once described as "dead, but not gone, and unwilling to be forgotten." The next day, at low water, in the little bights between the several bars which extend out from the beach south of the inlet, were to be seen hundreds of specimens of *P. heros* of all ages, from the size of a pea to one nearly four inches in length, while the nidi-mental bands were unusually large, and owing to the coarse sand exceedingly handsome.

Among the other interesting shells were the Arcas of the New England coast. *Arca transversa* and *A. pexata* Say, or as we must now call it *A. campechensis* Gmel. Is not this northern form worthy of a varietal name? As Say's description covers both, can we not restrict his name to this form as described and figured by Gould? Scattered along the outer beach we found upwards of twenty single valves of *Arca ponderosa* Say, several with portions of the ligament and epidermis in place. To find so many of this species at the extreme northern limit of its distribution was a surprise; it seems even to be more plentiful here than on the New Jersey coast. *Mesodesma arcuatum* was very common; a few valves of *Cochlodesma leanum*, *Astarte castanea* and two valves of *Divaricella quadrisulcata* were also found. In a heap of scallop shells *Pecten gibbus* var. *borealis* Say (*Pecten irradians* of authors), I obtained some very interesting examples of *Crepidula fornicata*, many of the specimens in adapting their shells to the surface of the scallop becoming strongly ribbed.

A rainy day had its advantages; it not only gave me a chance to attend to all the material I had collected, but it brought out the *Helix hortensis* in great numbers along the steep bank near the light-houses; they were all of the light-colored, bandless variety. I am not aware that this species has been recorded from this place which adds another locality to the mainland records.

THE NAU

Vol. XVIII.

SEPTEMBER, 18

SOUTHWESTERN S

BY JAS. H. FERI

Joliet has a botanical park where nature is being improved. Fast as the money and collection is being improved. I am superin salary of 25 cents per year, which is to b missioners have their salaries increased complete a collection of the U. S. ferns a Southwest after rare examples.

I was surprised on the first day out to roots upon the hot side of the Frankli surprised as when the ferns were foun mountain of clay and rock, thoroughly ba collector as a well-used brick kiln. The *Holospira roemeri* Pfr. and *Bulimulus dec* will be a species some day. Of less than this first trip, six were new species or var

Not until the last half of the fern trip r the snails given serious consideration. specimens in a land where to him the cor gives his whole soul to the work.

Frank Woodruff, ornithologist and phc Academy was with me a couple of weeks. formed an alliance with the city marsh Florida Mts., ten miles away. At Bowie

THE NAUTILUS.

ed to shells and stones were a few *Amni-*
ld board I found a colony of *Pyramidula*
Zonitoides arboreus. In the salt marshes
is lineatus was in great numbers, together
ar. *tenebrosa*.

beach at Chatham was at high tide. Com-
I found quantities of animal life strewn
beautiful specimens of *Polinices heros*, but
were left behind because they took up en-
ir size; they were like some specimens
dead, but not gone, and unwilling to be
t low water, in the little bights between
l out from the beach south of the inlet.
specimens of *P. heros* of all ages, from
four inches in length, while the nidi-
arge, and owing to the coarse sand ex-

g shells were the *Arcas* of the New
sa and *A. pexata* Say, or as we must
el. Is not this northern form worthy
description covers both, can we not
as described and figured by Gould?
we found upwards of twenty single
eral with portions of the ligament and
y of this species at the extreme north-
surprise; it seems even to be more
Jersey coast. *Mesodesma arcuatum*
s of *Cochlodesma leanum*, *Astarte*
cella quadrisulcata were also found.
n gibbus var. *borealis* Say (*Pecten*
some very interesting examples of
specimens in adapting their shells
ng strongly ribbed.

it not only gave me a chance to
ected, but it brought out the *Helix*
steep bank near the light-houses;
ndless variety. I am not aware
d from this place which adds
ords.

THE NAUTILUS.

Vol. XVIII.

SEPTEMBER, 1904.

No. 5.

SOUTHWESTERN SHELLS.

BY JAS. H. FERRISS.

Joliet has a botanical park where nature herself made a good start in a collection. Fast as the money and friends can be had the collection is being improved. I am superintendent of the ferns upon a salary of 25 cents per year, which is to be paid whenever the commissioners have their salaries increased to that point. An effort to complete a collection of the U. S. ferns and cacti has led me into the Southwest after rare examples.

I was surprised on the first day out to find shells among the fern roots upon the hot side of the Franklin Mountain at El Paso, as surprised as when the ferns were found in the first place. This mountain of clay and rock, thoroughly baked, is as uninviting to the collector as a well-used brick kiln. There were two shells there, *Holospira roemeri* Pfr. and *Bulimulus dealbatus pasonis* Pils. This will be a species some day. Of less than twenty species found upon this first trip, six were new species or varieties.

Not until the last half of the fern trip made the present year were the snails given serious consideration. A collector will find few specimens in a land where to him the conditions are new, unless he gives his whole soul to the work.

Frank Woodruff, ornithologist and photographer of the Chicago Academy was with me a couple of weeks. At Deming, N. M., we formed an alliance with the city marshal who escorted us to the Florida Mts., ten miles away. At Bowie, Ariz., an expedition was

outfitted for the Chiricahua Mts. We went as far as old Fort Bowie. It was rather cold. Some mornings we crawled out from under snow-banks. Water was scarce, and our guides inexperienced. We were after birds, ferns, snap shots and Indian relics, and at the end of two weeks had found only four snails—*Sonorella hachitana* Dall, *Ashmunella walkeri* Ferriss, *A. levettei* Bld., and a *Physa*.

Former information told me the Chiricahuas were unexplored, and were occasionally exploited by the Apaches. By cautious approaches we made our way to the fort, now occupied by a single miner only. Here we learned there had been no raids for five years, and that the mountains were safe as the streets of Philadelphia.

At the fort Mr. Woodruff turned back to El Paso and Albuquerque. With a miner, ponies and a burro I pushed into the higher peaks. These run up about 8,000 feet. We pitched our tent in Cave Creek Canyon, and altogether it was a delightful situation,—caves, strange birds and plants, mountain streams, heavy forests, every day perfect, good folks, and new shells around every point. The miner herded the ponies, prepared warm suppers, and my regular daily grist was two shells I had never seen, and a new fern to the territory. The last day we packed up and visited a cave a quarter mile from our camp. Upon our return we found four snails we had never seen. Two were new species.

The next day we rode up a wagon road to a saw mill in a heavy pine forest at the top of the mountain. I walked a little and found one new species, two varieties and two I had not seen in the territory. This was a government forest reserve, and here we found Chas. T. McGlone, of Ashland, Ky., in charge, with a lion hunter for a partner, and the partner had a fiddle. The canyons are deep, heavily wooded and well watered; and truly at parting my heart was heavy. I know many species of snails were left behind.

The mountains seem rather difficult to reach from the railroads. They are far away, cattle ranches are about ten miles apart, and there are no stages or hotels, but the approach is easy enough, like snail hunting itself, when you catch on. From the Huachuca station on the Sonora branch of the Southern Pacific I walked fifteen miles across the plain to a canyon formerly visited, and in the next month wore out another pair of hob nails. I left home with rheumatism, dyspepsia and several more or less important defects, but was so busy no inventory had been taken since crawling out of the snow

in the Chiricahuas. The first Sunday rested up a little, and found there was a few fingers. I am not afraid of an a

Truly, snails were as thick together as mussels are found on the seashore. the highest mountains, composed of soft enough stone to cover the *Oreohelix*, and glued together in masses. Upon the banded variety was found, upon the away, a white variety. This shell canyon though three miles in length all peopled by one variety. Over another variety, though every colony have some distinctive mark in size, true of the *Ashmunellas*. No two and they did not visit back and forth part of their own rock pile.

On the south side of the Huachuca *Ashmunella chiricahuana* about on a colony of typical *Ashmunella levettei* mile lower down the *levettei* were ch between these three colonies were 1 from typical *levettei* with four large with no teeth at all, and all forms three teeth, rudimentary forms of thickening of the lip. Did these or was this the exact spot upon Adam and Eve located? It is up to two species there can be no mistake whole responsibility is now dumped heard from Messrs. Clapp and Wall

Some of the *Oreohelix* are black, speckled, mottled and variegated, of colonies of similar colors were of two were carinated, some as round-bellied *Circinaria*, some depressed, and some *levettei* colonies, outside of the albinut to dull white, and from ten mm

The broken rocks tumbled down fr

in the Chiricahuas. The first Sunday morning in the Huachucas I rested up a little, and found there was nothing out of repair except a few fingers. I am not afraid of an automobile now.

Truly, snails were as thick together on the under surface of rocks as mussels are found on the seashore. At the very peak of one of the highest mountains, composed of slabs of limestone, there was not enough stone to cover the *Oreohelix*. They were hibernating on top and glued together in masses. Upon one side of the peak a dark banded variety was found, upon the other, not two hundred feet away, a white variety. This shell seems to be a home-body. A canyon though three miles in length from top to bottom, was usually peopled by one variety. Over a divide but a few steps was another variety, though every colony in the canyon was liable to have some distinctive mark in size, color or form. And this was true of the *Ashmunellas*. No two colonies seemed exactly alike, and they did not visit back and forth, nor travel far from the best part of their own rock pile.

On the south side of the Huachucas I found a colony of typical *Ashmunella chiricahuana* about one-half albinos, a mile west a colony of typical *Ashmunella levettei*, nearly all albinos. Half a mile lower down the *levettei* were chestnut-colored and polished. In between these three colonies were light horn-colored shells running from typical *levettei* with four large teeth to typical *chiricahuana* with no teeth at all, and all forms between, one tooth, two teeth, three teeth, rudimentary forms of these, and mere suspicions of teeth or thickening of the lip. Did these two species come together here, or was this the exact spot upon which the original *Ashmunella* Adam and Eve located? It is up to Dr. Pilsbry. I have described two species there can be no mistake in. With no courage left, the whole responsibility is now dumped upon his shoulders. The last heard from Messrs. Clapp and Walker, they were running too.

Some of the *Oreohelix* are black, white, brown, red, banded, lined, speckled, mottled and variegated, of only ten mm. diameter. Other colonies of similar colors were of twenty-five mm. diameter. Some were carinated, some as round-barreled and as umbilicated as a *Circinaria*, some depressed, and some were old-time bee-hives. The *levettei* colonies, outside of the albino camp, varied from dark chestnut to dull white, and from ten mm. diameter to twenty millimeters.

The broken rocks tumbled down from the cliffs, the "slide," or talus,

THE NAUTILUS.

THE NAUTILUS.

THE NAUTILUS.

THE NAUTILUS.

good snail hoe is necessary, and one or two trials, or climate, crack the collector's and the colonies will be found where the soil is wet and with a normal condition as to moisture but a natural soil condition. The collector must not be discouraged until after the dead or living shells until after the excavation. *Ashmunella chiricahuana* was found digging away at a rocky slide for an hour in a pocket large as my hat with 85 specimens from a like pocket, and left the rest of the specimens nearest the surface. Though they are often found under the top stone, and often buried in the soil, and often buried in the soil, where deep delvers, and lived down to the soil together or buried in the soil. I found three specimens found in one place, but such as they were I have found in the southern mountains. I found a few on the plains which I did not find on the plains which I did not find under dead vegetation upon the lamp ravines in the decaying vegetation, was found in the drift of the San Juan, and in the Huachucas, or the drift of the San Juan, and therefore I suspect it came from there. There are a number of species of *Ashmunella* in the mountains of Chiricahuas I did not find. The headquarters of the army, and is visited by the cavalry. Many collectors visit the mountains and entomologists predominate, but no better than many others in the army. The collectors in the army lead the life of a soldier. C. R. Biedermann in a cabin of the army there two or three years studying at the Philadelphia Academy. From what he has seen in the best places, and from what I have seen, I am satisfied there is fully two specimens of *Ashmunella* in the mountains of Chiricahuas will be cheerfully welcomed.

It is an open field, and the climate is glorious. Take a guide, for water is scarce. The verification of these wonders is now left to Dr. Pilsbry. He has the evidence.

Ashmunella walkeri Ferriss, n. sp.

The shell is much depressed, lens-shaped, acutely carinate peripherally, rather thin and pale corneous-brown. The umbilicus, narrow within, enlarges rapidly at the last whorl. Surface nearly smooth, very lightly marked with growth-lines. Whorls $4\frac{1}{2}$, slightly convex, the last very shortly descending in front. Base more convex than the upper surface. The aperture is small and very oblique, the lip well reflexed, white, with an obtuse, squarish tooth in the outer margin and two compressed teeth in the basal margin, the inner one smaller; these three being nearly equally spaced. There is a rather short, straight, obliquely set parietal tooth. Alt. $4\frac{1}{2}$, diam. $13\frac{1}{2}$ mm.

Florida Mountains, Luna Co., New Mexico. Found in a tumble of rock near the top of the mountain, probably an elevation of 6,500 feet. Only a few were found, and none found at any other place. Cotypes in collections of J. H. F. and A. N. S. P. This very distinct species differs from all other known forms of the *levettei* group in the small number of whorls. It is also flatter and more acutely keeled than any other *Ashmunella*.

Oreohelix clappi Ferriss, n. sp.

The shell is moderately depressed, the alt. about two-thirds the diam., and about equally convex above and below the obtuse peripheral angle. The umbilicus is about one-sixth the diam. and contracts rapidly within. It is brownish-white under a thin greenish-yellow cuticle with some darker oblique streaks and two indistinct brownish bands. In old individuals the cuticle remains only in small shreds. Sculpture of irregular growth-wrinkles and very fine, faint spiral striæ, nearly obsolete on the upper surface. Whorls $4\frac{3}{4}$, convex, the last double the width of the preceding, the first $1\frac{1}{2}$ radially obliquely costulate. Base very convex. The aperture is short-oval, nearly circular, and very oblique. The ends of the lips converge, and in old shells are continuous, being connected by a short raised parietal ledge.

Alt. 9.6, diam. 15 to 16 mm.

Alt. 9, diam. 14 mm.

Cave Creek Cañon, Chiricahua Mts. Cotypes in collections of J. H. F. and A. N. S. P. Found alive, buried deeply in rotten shale about the base of cliffs near the stream.

This species differs from all the forms of *O. strigosa* by its radially costulate apical whorls and greenish cuticle.

LIST OF ALABAMA SHELLS COLLECTED IN OCTOBER AND
NOVEMBER, 1903.

A. A. HINKLEY.

FAMILY LIMNÆIDÆ (continued from August number).

Planorbis trivolvis Say. A very few specimens found in same location as *Viviparus*, near Decatur, Ala.

P. bicarinatus Say. A single specimen taken from the Coosa River, near the railroad bridge, Farmer, Ala.

P. dilatatus Gould. Coosa River, Farmer, and Wetumpka. Very few found.

P. tantillus Pilsbry. Coosa River, Wetumpka. Found on rocks in swift water, generally on the under side; they are so small that collecting them was tedious, though they were abundant in places.

N. g., n. sp. Same location as above.

FAMILY ANCYLIIDÆ.

Ancylus rhodacme Walker. A common species in the Coosa River at Fort William Shoals, Wetumpka and vicinity.

FAMILY HELICIDÆ.

Polygyra pustuloides Bland. Blount Springs, one specimen at Tallassee, Ala.

P. tridentata tennesseensis, W. and P. Warrior, Tallassee. Larger than the northern form of *tridentata*.

P. inflecta Say. Blount Springs, Tallassee, Warrior and Milstead.

P. obstricta carolinensis Lea. Wetumpka and Tallassee.

P. appressa perigrapta Pils. Tallassee, Warrior, Milstead, Farmer and Montevallo.

P. thyroides Say. Tallassee, Farmer and
P. spinosa Lea. Blount Springs and W.
P. stenotrema Bland. Blount Springs, T
P. hirsuta Say. Blount Springs and W
P. downiciana Bland. Blount Springs.
P. monodon fraterna Say. Tallassee.

FAMILY CIRCINARIÆ

Circinaria concava Say. Blount Spring

FAMILY ZONITIDÆ

Omphalina polita Pils. Blount Spring
found.

O. lævigata Pfr. Tallassee and Warri

Vitrea carolinensis Ckll. Blount Sprin

Euconulus sp. Tallassee. Young spec

Zonitoides arboreus Say. Blount Sprin
common.

Gastrodonta demissa Binney. Blount
and Montevallo.

G. interna Say. Blount Springs, Talla

FAMILY ENDODONTÆ

Pyramidula alternata Say. Blount Sp
rior.

P. perspectiva. Blount Springs, Talla

Helicodiscus lineatus Say. Tallassee.

FAMILY HELICINÆ

Helicina orbiculata Say. Only dead
Blount Springs. At Tallassee living spe
under leaves where the ground was damp

FAMILY UNIONIÆ

Not being familiar with Charles T. S
Unionidæ, I follow Dr. Lea, and use th
bensive sense.

Unio acutissimus Lea. Mulberry and

U. ulatus Say. Decatur.

ahua Mts. Cotypes in collections of
and alive, buried deeply in rotten shale
a stream.
the forms of *O. strigosa* by its radially
enish cuticle.

US COLLECTED IN OCTOBER AND
MBER, 1903.

HINKLEY.

ntinued from August number).

very few specimens found in same
Decatur, Ala.

gle specimen taken from the Coosa
River, Farmer, Ala.

River, Farmer, and Wetumpka

River, Wetumpka. Found on rocks
under side; they are so small that col-
lect they were abundant in places.
as above.

ANCYLIDÆ.

A common species in the Coosa River
Wetumpka and vicinity.

HELICIDÆ.

Blount Springs, one specimen at

and P. Warrior, Tallassee. Larger
specimens at

Blount Springs, Tallassee, Warrior and Mil-

Wetumpka and Tallassee.

Blount Springs, Tallassee, Warrior, Milstead,

- P. thyroides* Say. Tallassee, Farmer and Warrior.
P. spinosa Lea. Blount Springs and Warrior.
P. stenotrema Bland. Blount Springs, Tallassee and Warrior.
P. hirsuta Say. Blount Springs and Warrior.
P. downieana Bland. Blount Springs. Only one specimen found.
P. monodon fraterna Say. Tallassee.

FAMILY CIRCINARIIDÆ.

Circinaria concava Say. Blount Springs and Tallassee.

FAMILY ZONITIDÆ.

Omphalina polita Pils. Blount Springs. Only two young ones
found.

O. lævigata Pfr. Tallassee and Warrior.

Vitrea carolinensis Ckll. Blount Springs, Tallassee and Warrior.

Euconulus sp. Tallassee. Young specimens.

Zonitoides arboreus Say. Blount Springs, Tallassee and Warrior,
common.

Gastrodonta demissa Binney. Blount Springs, Tallassee, Farmer
and Montevallo.

G. interna Say. Blount Springs, Tallassee and Warrior.

FAMILY ENDODONTIDÆ.

Pyramidula alternata Say. Blount Springs, Tallassee and War-
rior.

P. perspectiva. Blount Springs, Tallassee, Warrior and Milstead.

Helicodiscus lineatus Say. Tallassee.

FAMILY HELICINIDÆ.

Helicina orbiculata Say. Only dead specimens were found at
Blount Springs. At Tallassee living specimens were found on a hill
under leaves where the ground was damp.

FAMILY UNIONIDÆ.

Not being familiar with Charles T. Simpson's classification of the
Unionidæ, I follow Dr. Lea, and use the genus *Unio* in its compre-
hensive sense.

Unio acutissimus Lea. Mulberry and Black Rivers.

U. alatus Say. Decatur.

- U. anodontoides* Lea. Wetumpka.
U. arctatus Con. Mulberry River and Black Warrior River, common.
U. arcus Con. Wilsonville, Wetumpka and Farmer.
U. asperatus Lea. Fort William Shoals and Wilsonville, common.
U. atrocostatus Lea. Black Warrior River, common. Fort William Shoals.
U. blandianus Lea. Fort William Shoals, one specimen.
U. brumbyanus Lea. Mulberry River, common.
U. cahawbaensis Lea. Mulberry River, common.
U. cerinus Con. Black Warrior River.
U. chattanoogaensis Lea. Coosa River, Wetumpka.
U. chunii Lea. Coosa River, Wetumpka, one specimen.
U. compactus Lea. Coosa River, Wilsonville and Farmer.
U. cornutus Bar. Fort William Shoals, Decatur and Wilsonville.
U. corvunculus Lea. Black Warrior River.
U. crassidens Lam. Decatur and Coosa River.
U. ebenus Lea. Decatur.
U. decisus Lea. Fort William Shoals and Wetumpka.
U. dolosus Lea. Wetumpka, common.
U. dromas Lea. Decatur.
U. excavatus Lea. Black Warrior River, common; Wilsonville, one specimen; Mulberry River and Wetumpka.
U. fibuloides Lea. Coosa River, Wetumpka, one specimen.
U. flavescens Lea. Black Warrior River, common; Mulberry River.
U. foremanianus Lea. Fort William Shoals, common.
U. gibbosus Barnes. Decatur.
U. gracilis Barnes. Coosa River, Black Warrior River at Warrior, Mulberry River at Blount Springs.
U. greenii Con. Mulberry River.
U. instructus Lea. Black Warrior River, common.
U. lewisii Lea. Coosa River, Fort William Shoals and Wetumpka.
U. lienosus Con. Black Warrior River, common.
U. metanever Raf. Fort William Shoals, one specimen.
U. metastratus Lea. Black Warrior River.
U. multiradiatus Lea. Coosa River, Wetumpka, one specimen; Wilsonville, one specimen.

- U. obliquus* Lam. Decatur.
U. orbiculatus Hild. Decatur.
U. parvulus Lea. Mulberry River and Bl
U. penitus Con. Coosa River, Wetump
 River.
U. perovalis Con. Mulberry River.
U. perplexus Lea. Decatur.
U. planus Lea. Coosa River and Fort
 specimens.
U. plenus Lea. Decatur.
U. pyramidatus Lea. Decatur.
U. rectus Lam. Black Warrior River.
U. retusus Lam. Decatur, Ala.
U. rubidus Lea. Black Warrior and Mul
U. rubellus Lea. Black Warrior River, W
U. rumphianus Lea. Black Warrior and
U. securis Lea. Fort William Shoals, W
U. sparus Lea. Mulberry River.
U. subblatus Lea. Mulberry and Black W
U. stabilis Lea. Black Warrior River.
U. tuberculatus Barnes. Found at all riv
U. vibex Conrad. Mulberry River, Blour
U. vanuxemensis Lea. Wetumpka, Bla
 poosa.
Anodonta subvexa Con. Black Warrior R
A. sp. Black Warrior River and Warri
A. sp. Coosa River.

FAMILY CORBICULID.

- Sphaerium solidulum* Prime. Bucksehatch
 common.
S. striatinum Lam. Black Warrior Rive
 scarce, muddy places.
Musculium contractum Prime. A single
 Bucksehatchee Creek, Calera, Ala.
Pisidium virginicum Gmel. Tennessee F
 River, Blount Springs, Black Warrior Rive

npka.
 River and Black Warrior River.
 Wetumpka and Farmer.
 in Shoals and Wilsonville, common.
 Warrior River, common. Fort
 lam Shoals, one specimen.
 y River, common.
 ry River, common.
 or River.
 a River, Wetumpka.
 Wetumpka, one specimen.
 r, Wilsonville and Farmer.
 i Shoals, Decatur and Wilsonville.
 rrior River.
 d Coosa River.
 hoals and Wetumpka.
 mon.
 or River, common; Wilsonville.
 Wetumpka.
 Wetumpka, one specimen.
 or River, common; Mulberry
 am Shoals, common.
 Black Warrior River at War-
 gs.
 River, common.
 ort William Shoals and We-
 liver, common.
 hoals, one specimen.
 or River.
 r, Wetumpka, one specimen

U. obliquus Lam. Decatur.
U. orbiculatus Hild. Decatur.
U. parvulus Lea. Mulberry River and Black Warrior River.
U. penitus Con. Coosa River, Wetumpka and Black Warrior
 River.
U. perovalis Con. Mulberry River.
U. perplexus Lea. Decatur.
U. planus Lea. Coosa River and Fort William Shoals, two
 specimens.
U. plenus Lea. Decatur.
U. pyramidatus Lea. Decatur.
U. rectus Lam. Black Warrior River.
U. retusus Lam. Decatur, Ala.
U. rubidus Lea. Black Warrior and Mulberry Rivers.
U. rubellus Lea. Black Warrior River, Warrior, common.
U. rumphianus Lea. Black Warrior and Mulberry Rivers.
U. securis Lea. Fort William Shoals, Wetumpka and Decatur.
U. sparus Lea. Mulberry River.
U. sublatius Lea. Mulberry and Black Warrior Rivers.
U. stabilis Lea. Black Warrior River.
U. tuberculatus Barnes. Found at all river localities.
U. vibex Conrad. Mulberry River, Blount Springs, Ala.
U. vanuxemensis Lea. Wetumpka, Black Warrior and Talla-
 poosa.
Anodonta subveza Con. Black Warrior River.
A. sp. Black Warrior River and Warrior, Ala.
A. sp. Coosa River.

FAMILY CORBICULIDÆ.

Sphærium solidulum Prime. Bucksehatchee Creek, Calera, Ala.,
 common.
S. striatinum Lam. Black Warrior River, and Warrior. Rather
 scarce, muddy places.
Musculium contractum Prime. A single specimen taken from the
 Bucksehatchee Creek, Calera, Ala.
Pisidium virginicum Gmel. Tennessee River, Decatur, Mulberry
 River, Blount Springs, Black Warrior River, Warrior, Ala.