l ribs, and may prove on further study to b
tinct. (U. S. Nat. Mus. Cat. No. 210004).
siformis Hinds, 1844, is not the species so name
), or Orbigny, 1844. It is a *Strombina* and may
of *fusinoidea*. It is a Panama species.
bulata Sowerby, 1847, is not *C. subulata* Duclos
trombina and may be hereafter called *S. colpoic*
he Gulf of California to Panama.
cina Dall, is a short stumpy white species with
he latter with a lilac flush in perfect specimens;
are inconspicuous, but the spiral sculpture is
channeled grooves with wider flat interspaces.
ie last whorl; the distal end of the pillar pro-
outer lip, with a very deep recurved short
there is no dorsal hump, and the shell is about
(U. S. Nat. Mus. Cat. No. 219764). It has
n the Gulf of California and Manzanillo.
which seems to be undescribed, I propose to
eana, as a tribute to the author of the excel-
of the *Columbellidæ* in the fifth volume of the
Malacological Society, London. It is 37 mm.
spire takes 20, and the maximum diameter
re are more than ten whorls (nucleus lost);
vith a narrow turriculation at the suture: the
attish and smooth, the last whorl and a half
of the suture by about nine small pustules.
y dark brown with a silky periostracum.
ow and edentulous, 15 mm. long. It has
Scammon Lagoon, L. Cal., and the Gulf of
Nat. Mus. Cat. No. 130616).
na was used by Bronn in 1849 in a large
rrhaidæ, *Strombidæ*, &c. According to the
s not affect its use as a generic name. I
opted the clumsy *Strombocolumbus* proposed
1 to replace *Strombina*. This author was
he brief entry in Scudder's nomenclator
nbina. It may be added that the type of
Sowerby, selected by Chenu in 1859, not

C. carinata Hinds, as given by M. Cossmann; the type of *Amphissa* is *corrugata* Reeve, not *A. versicolor*; the type of *Meta* is *dupontii* Kiener, not *philippinarum* Reeve; Fischer's name for *Strombina bicanalifera* is *Bifurcium*, not *Bifurcina*, as per Cossmann; *Conidea* Swainson, 1840, is a synonym of *Pyrene* Bolten, 1798, but its type is *Buccinum punctatum* Bruguière, 1789, not *Columbella punctata* of Lamarck, Sowerby and others; the type of *Anachis* H. & A. Adams, 1853, is *scalarina* Sowerby, which is quite distinct from *rugosa* Sowerby, cited by Cossman; the type of *Atilia* is *suffusa* Sowerby, not *minor* Scacchi; these corrections have already been indicated by Mr. Pace, for the most part, and point clearly to the advisability of consulting original sources rather than relying on quotations by other authors.

FRESHWATER SHELLS FROM CENTRAL AND WESTERN NEW YORK.

BY CARLOTTA JOAQUINA MAURY, PH.D.

Some years ago the writer made extensive collections of molluscs from the lakes of Central and Western New York. The preliminary determinations of the species were verified by comparisons with specimens in the Say and Lea collections at Philadelphia and Washington; and doubtful cases were referred to Dr. Pilsbry, Dr. Dall, or Mr. Charles T. Simpson, who kindly passed judgment upon them. Thus every effort was made to make the identifications correct. Large numbers of individuals were obtained to observe the ranges of variation among the different species.

The writer presented the collection to the Museum of Cornell University where it is on exhibition.

From many of these lakes the mollusca have never been before recorded, nor have dredgings for deep-water forms been made except ours in Cayuga Lake.

It is also interesting historically that Say obtained several types from this region.

The mollusca were found to be most abundant in sheltered coves where the water is shallow and sun-warmed; and in the inlets and outlets of the lakes.

The following is a list of the species and the lakes in which they were found :—

Lampsilis cariosa Say. Cayuga Lake.
Lampsilis iris Lea. Cayuga Lake.
Lampsilis luteola Lam. Cayuga, Little York, Canandaigua, Chautauqua Lakes, Genesee River.
Lampsilis luteola var. *rosacea* DeKay. Cayuga Lake.
Lampsilis radiata Gmelin. Cayuga, Cayuta, Little York Lakes.
Obovaria ellipsis Lea. Niagara River (From Dr. Sager).
Ptychobranchus phaseolus Hild. Chautauqua Lake.
Strophitus edentulus Say. Cayuga, Canandaigua, Green, Chautauqua Lakes.
Anodonta cataracta Say. Cayuga, Cayuta, Little York Lakes.
Anodonta fluviatilis Lea. Cayuga, Cayuta, Little York Lakes.
Anodonta grandis Say. Cayuga, Cayuta, Chautauqua Lakes.
Anodonta grandis Say var. *footiana* Lea. Canandaigua, Hemlock, Chautauqua Lakes.
Anodonta grandis Say var. *decora* Lea. Chautauqua Lake.
Anodonta fragilis Lam. Cayuga Lake.
Anodonta implicata Say. Cayuga Lake.
Anodontoides ferussacianus var. *buchanensis* Lea. (*Anodonta subcylindracea* Lea). Cayuga, Little York Lakes.
Symphynota costata Raf. (*Alasmodonta rugosa* Barnes). Cayuga Lake.
Alasmidonta marginata Say. (*Alasmidonta truncata* Wright). Tioughnioga River.
Unio complanatus Sol. Cayuga, Canandaigua, Little York Lakes.
Unio gibbosus Barnes. Chautauqua Lake.
Sphaerium partumeium Say. Fall Creek, Ithaca.
Sphaerium simile Say. Cayuga, Cayuta, Hemlock, Conesus, Chautauqua, Silver Lakes.
Sphaerium striatinum Lam. var. Chautauqua Lake.
Sphaerium transversum Say. Fair Grounds, Ithaca.
Pisidium compressum Prime. Cayuga Lake.
Pisidium virginicum Bourg. Hemlock Lake.

Pisidium scutellatum Sterki. Chautauqua La
Limnaea catascopium, Say. Cayuga, Canan qua Lakes.
Limnaea catascopium white variety. Chauta
Limnaea columella Say. Cayuga, Conesus Lakes.
Limnaea elodes Say. Fall Creek and Cayuga locality).
Limnaea elodes var. *umbrosa*, Say. Conesus
Limnaea emarginata Say. Cayuga, Chautau
Limnaea humilis Say. Dwyer's Pond, Itha
Limnaea stagnalis Linn. var. *appressa*, Say Ithaca and Canandaigua Lake.
Planorbis bicarinatus Say. Cayuga, Cayu Chatauqua Lakes.
Planorbis bicarinatus var. *major*. Fall Creek
Planorbis campanulatus Say. Silver, Cay Conesus Lakes.
Planorbis deflectus Say. Fall Creek, Ithaca Hemlock, Chautauqua Lakes.
Planorbis exacutus Say. Cayuga, Chautauq
Planorbis hirsutus Gould. Chautauqua Lak
Planorbis lentus Say. Fair Grounds, Ithaca
Planorbis parvus Say. Cayuga, Chautauqu
Planorbis trivolvis Say. Chautauqua, Can Lakes and Glacial Kettle near Ithaca.
Planorbis trivolvis var. *corpulentus* Say.
Segmentina armigera Say. Cayuga Lake.
Ancylus diaphanus Hald. Cayuta Lake.
Ancylus parallelus Hald. Fall Creek, It Lakes.
Ancylus rivularis Say. Cayuga, Chautauqu
Physa ancillaria Say. Owasco, Chautauqu
Physa gyrina Say. Fall Creek, Ithaca.
Physa heterostropha Say. Chautauqua La Ithaca, Courtland Pond.
Pleurocera subulare Lea. Cayuga Lake.
Elimia virginica Say. Cayuga, Conesus La

wing is a list of the species and the lakes in wh
ound :—

cariosa Say. Cayuga Lake.
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radiata Gmelin. Cayuga, Cayuta, Little York

lipsis Lea. Niagara River (From Dr. Sager).
hus phaseolus Hild. Chautauqua Lake.
dentulus Say. Cayuga, Canandaigua, Green, Chau-

taracta Say. Cayuga, Cayuta, Little York Lakes.
viatilis Lea. Cayuga, Cayuta, Little York Lakes.
andis Say. Cayuga, Cayuta, Chautauqua Lakes.
andis Say var. *footiana* Lea. Canandaigua, Hem-
lua Lakes.
andis Say var. *decora* Lea. Chautauqua Lake.
gilis Lam. Cayuga Lake.
plicata Say. Cayuga Lake.
ferussacianus var. *buchanensis* Lea. (*Anodonta*
ea). Cayuga, Little York Lakes.
ostata Raf. (*Alasmodonta rugosa* Barnes). Ca-

arginata Say. (*Alasmidonta truncata* Wright).
ver.
utus Sol. Cayuga, Canandaigua, Little York

Barnes. Chautauqua Lake.
umeium Say. Fall Creek, Ithaca.
le Say. Cayuga, Cayuta, Hemlock, Conesus,
er Lakes.
tinum Lam. var. Chautauqua Lake.
versum Say. Fair Grounds, Ithaca.
ssum Prime. Cayuga Lake.
cum Bourg. Hemlock Lake.

Pisidium scutellatum Sterki. Chautauqua Lake.
Limnaea catascopium, Say. Cayuga, Canandaigua, Chautauqua Lakes.
Limnaea catascopium white variety. Chautauqua Lake.
Limnaea columella Say. Cayuga, Conesus, Cayuta, Silver Lakes.
Limnaea elodes Say. Fall Creek and Cayuga Lake (Say's type locality).
Limnaea elodes var. *umbrosa*, Say. Conesus Lake.
Limnaea emarginata Say. Cayuga, Chautauqua Lakes.
Limnaea humilis Say. Dwyer's Pond, Ithaca.
Limnaea stagnalis Linn. var. *appressa*, Say. Fall Creek at Ithaca and Canandaigua Lake.
Planorbis bicarinatus Say. Cayuga, Cayuta, Canandaigua, Chatauqua Lakes.
Planorbis bicarinatus var. *major*. Fall Creek, Ithaca.
Planorbis campanulatus Say. Silver, Cayuta, Chautauqua, Conesus Lakes.
Planorbis deflectus Say. Fall Creek, Ithaca, Cayuga, Cayuta, Hemlock, Chautauqua Lakes.
Planorbis exacutus Say. Cayuga, Chautauqua Lakes.
Planorbis hirsutus Gould. Chautauqua Lake.
Planorbis lentus Say. Fair Grounds, Ithaca and Cayuga Lake.
Planorbis parvus Say. Cayuga, Chautauqua Lakes.
Planorbis trivolvis Say. Chautauqua, Canandaigua, Conesus Lakes and Glacial Kettle near Ithaca.
Planorbis trivolvis var. *corpulentus* Say.
Segmentina armigera Say. Cayuga Lake.
Ancylus diaphanus Hald. Cayuta Lake.
Ancylus parallelus Hald. Fall Creek, Ithaca and Cayuga Lakes.
Ancylus rivularis Say. Cayuga, Chautauqua Lakes.
Physa ancillaria Say. Owasco, Chautauqua Lakes.
Physa gyrina Say. Fall Creek, Ithaca.
Physa heterostropha Say. Chautauqua Lake, Fall Creek at Ithaca, Courtland Pond.
Pleurocera subulare Lea. Cayuga Lake.
Elimia virginica Say. Cayuga, Conesus Lakes.

Elimia virginica var. *multilineata* Say. Cayuga Lake.
Bythinia tentaculata Linn. Cayuga Lake, Seneca River at Waterloo.
Bythinella attenuata Hald. Chautauqua Lake.
Bythinella nickliniana, Lea. Chautauqua Lake.
Amnicola granum Say. Chautauqua Lake.
Amnicola limosa Say. Cayuga, Chautauqua, Cayuta Lakes.
Amnicola lustrica Pilsbry. Cayuta Lake.
Amnicola pallida Hald. Chautauqua Lake.
Valvata sincera Say. Cayuga Lake.
Valvata tricarinata Say. Cayuta, Chautauqua, Owasco Lakes.
Vivipara contectoides Binney. Cayuga Lake.
Campeloma decisa Say. Cayuga, Canandaigua, Conesus, Chautauqua Lakes.

After making this collection from the shallow waters of the lakes, the question naturally arose whether a deep-water molluscan fauna exists in Cayuga Lake.

To determine this, Professor G. D. Harris and the writer aided by Dr. Pilsbury, now of Ann Arbor University, made three dredgings from east to west across the lake between the Ithaca Lighthouse and Estey's Glen. A United States Fish Commission dredge, weighting about fifty pounds, with a net attached was employed. As the dredge was worked by hand power with a windlass, it was not feasible to go below about 200 feet. The maximum depth of Cayuga Lake is about 450 feet. This deep is in the middle of the lake at a point northeast of Toughannock Point (formerly known as Goodwin's Point), some miles north of our furthest section.

These dredgings proved very conclusively that molluscs are abundant from the shore line to about ten feet, after twenty-five feet they become very scarce, the dredge yielding only a few Amnicolas and broken fragments of shells, the occupants having apparently been preyed upon by fishes.

In the greater depths no signs of mollusca or of plants were found. There was only a very fine grey mud entirely barren of life.

We believe this to be due partly to the great depth of the Finger Lakes; but much more to the extremely low tempera-

ture of the water of Cayuga Lake, which eve
is very cold except in sun-warmed shallows.

It is interesting to compare the present m
Cayuga Valley with its Pleistocene ancestry o
mains[1] occur in a delta terrace between Tough
Frontenac Beach, about twenty feet above the
These Pleistocene forms include:

Lampsilis luteola Say.
Lampsilis ventricosa Barnes.
Anodonta fragilis Lam., (*marginata* Say).
Anodonta grandis Say.
Anodonta grandis var. *footiana* Lea.
Sphærium simile Say.
Pisidium compressum Prime.
Pisidium virginicum Bourg.
Limnæa palustris Mull.
Limnæa elodes Say.
Physa heterostropha Say.
Planorbis bicarinatus Say.
Planorbis deflectus Say.
Planorbis lentus Say.
Planorbis parvus Say.
Amnicola limosa Say.
Valvata tricarinata Say.
Campeloma decisa Say.

These mollusca were approximately sync
Pleistocene forms of the Don Valley beds of t
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They apparently lived during the Peorian,
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St. Lawrence molluscs coming in from the
annihilation of the colony by the advance of
of the interglacial species re-established it
finally retreated, and all are now living in th

[1] See C. J. Maury, Interglacial Fauna in Cayuga V
ology, 1908, vol. xvi, no. 6, pp. 565–567.

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m Say. Chautauqua Lake.
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ı Hald. Chautauqua Lake.
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It is interesting to compare the present molluscan fauna of Cayuga Valley with its Pleistocene ancestry of which fossil remains[1] occur in a delta terrace between Toughannock Falls and Frontenac Beach, about twenty feet above the present lake level. These Pleistocene forms include:

Lampsilis luteola Say.
Lampsilis ventricosa Barnes.
Anodonta fragilis Lam., (*marginata* Say).
Anodonta grandis Say.
Anodonta grandis var. *footiana* Lea.
Sphærium simile Say.
Pisidium compressum Prime.
Pisidium virginicum Bourg.
Limnæa palustris Mull.
Limnæa elodes Say.
Physa heterostropha Say.
Planorbis bicarinatus Say.
Planorbis deflectus Say.
Planorbis lentus Say.
Planorbis parvus Say.
Amnicola limosa Say.
Valvata tricarinata Say.
Campeloma decisa Say.

These mollusca were approximately synchronous with the Pleistocene forms of the Don Valley beds of the Toronto formation, one-hundred and seventy miles northwest of Ithaca. They apparently lived during the Peorian, or Fourth Interglacial Period. The colony was established by Mississippian and St. Lawrence molluscs coming in from the West. After the annihilation of the colony by the advance of the ice, everyone of the interglacial species re-established itself when the ice finally retreated, and all are now living in the waters of Cayuga.

[1] See C. J. Maury, Interglacial Fauna in Cayuga Valley. Journ. of Geology, 1908, vol. xvi, no. 6, pp. 565–567.