QL
415
N7B4

1886

C-NRLF

3 360 991

EX LIBRIS

BIOLOGY
LIBRARY

10^u

Land and Fresh Water Shells

—OF—

ONONDAGA COUNTY,

—WITH A—

Supplemental List of New York Species,

PREPARED BY

W. M. BEAUCHAMP,

BALDWINSVILLE, N. Y.

BALDWINSVILLE, N. Y.:
GAZETTE AND FARMERS' JOURNAL STEAM PRINT.
1886.

QL415

N7B4

BIOLOGY
LIBRARY

Land and Fresh Water Shells

—OF—

ONONDAGA COUNTY AND NEW YORK STATE.

BY REV. W. M. BEAUCHAMP.

Mollusca of Onondaga.

In these notes on Onondaga shells collected by me, sub-generic names are omitted, and Dr. Lewis' general system followed.

Helicodiscus lineatus.—*Morse*.—Small, flat, yellowish green, with revolving lines. Wet places, under wood.

Macrocyclus concava.—*Say*.—Medium, greenish white, common, carnivorous.

Slugs have short shields instead of shells, and the following are found in gardens and fields. Prolific and active.

Limax agrestis.—*L*.—Grey slug, breathing hole large.

flavus.—*L*.—Larger and brownish.

campestris.—*Binney*.—Smaller, blackish and slender.

The following shells have simple lips and wide umbilicus.

Helix alternata.—*Say*.—Alternate spots of red, common.

perspectiva.—*Say*.—Small, saucer-shaped, reddish. Dead wood.

striatella.—*Anth*.—Smaller, brown, with sharp ribs. Stones.

The following have thick lips when mature, mostly with teeth.

Helix labyrinthica.—*Say*.—Small, conical, rare. Onondaga Hill.

monodon.—*Rackett*.—Small, brown, downy, tooth-linear. I have one with two parallel teeth. Also variety *fraterna*.

palliata.—*Say*.—Larger, brown, hairy, several teeth, rarer.

tridentata.—*Say*.—Smaller, reddish, 3-toothed, smooth, common.

Helix albolabris.—*Say*.—Large, imperforate, lip broad, common. Dentate variety rarer, with a small tooth on pillar lip.

thyroides.—*Say*.—Large, perforate, tooth on pillar lip.

Sayii.—*Binney*.—Reddish, flattened, perforate, teeth small. Ravines.

pulchella.—*Muller*.—Wide mouth, minute, white. Low lands.

The following three genera are of small cylindric shells, and except the first, difficult to find. Mostly with teeth.

Cionella subcylindrica.—*L*.—Brown, shining. Gardens and lowlands. Have found many hid in plum-stones in the fall. Larger than the following.

Pupa pentodon.—*Say*.—Mouth with five teeth, whitish, rare.

contracta.—*Say*.—Mouth contracted, toothed, white, frequent.

corticaria.—*Say*.—Slender, glassy. Onondaga and Skaneateles.

Vertigo ovata.—*Say*.—Ovate, dark chestnut, common. Wet grounds.

ventricosa.—*Morse*.—Similar, smaller, rare. Split Rock.

Bollesiana.—*Morse*.—Ovate, almost translucent. Split Rock.

Gouldii.—*Binney*.—Ovate, light chestnut. Split Rock.

simplex.—*Say*.—Toothless, chestnut. Split Rock.

The Succineas, or Amber Shells, are almost amphibious, in wet places and have pellucid shells with large apertures.

Succinea ovalis.—*Gould*.—Oval, colorless to orange, common.

avara.—*Say*.—Shorter, stouter, with bristles. Seneca river.

obliqua.—*Say*.—Large, yellow, very oblique, common.

Totteniana.—*Lea*.—Smaller and greener, less common.

The following snails have thin lips and shells.

Zonites fuliginosus.—*Grif*.—Large, brown, polished, common.

inornatus.—*Say*.—Similar, smaller and lighter. Rocky woods.

Zonites intertextus.—*Say*.—Conical, angulated, reddish, medium, common.

ligerus.—*Say*.—Similar, yellowish, polished. Very rare.

nitidus.—*Muller*.—Amber hue, small, shining. Low places.

arboreus.—*Say*.—Less polished and expanded, common.

viridulus.—*Menke*.—Small, thin, flat, brown, rare.

minusculus.—*Binney*.—Minute, white, rare.

limatulus.—*Ward*.—Small, thin, flat, whitish, rare.

indentatus.—*Say*.—Small, flat, whitish, shining, rare.

multidentatus.—*Binney*.—A beautiful minute reddish shell, with white teeth showing through. Rare.

fulvus.—*Drap*.—Smaller, conical, tawny, not abundant.

Tebennophorus Carolinensis.—*Bosc*.—Our largest slug. Woods.

dorsalis.—*Binney*.—Small, dark, slender. Woods.

Carychium exiguum.—*Say*.—A minute, white, thread-like shell. Low places.

The water snails following are of several genera, the pulmonates, without an operculum, coming first.

Limnaea stagnalis.—*L*.—Two inches long, spire slender, mouth large, light tawny to reddish. Once common in Onondaga and Cross Lakes; now found mostly in Oneida lake.

columella.—*Say*.—Yellow, delicate, resembling *Succinea*. On water lily leaves in Seneca river, rare.

elodes.—*Say*.—Fragile, brown, often faceted, common.

umbrosa.—*Say*.—Large, slender, aperture brown. Wet woods.

desidiosa.—*Say*.—Small, slender, whorls angulated, common.

emarginata.—*Say*.—Inflated, solid, mouth large and angular, common in lakes. A white variety in Cross lake.

catasopium.—*Say*.—Similar, longer.

caperata.—*Say*.—Yellowish, with revolving striae, common.

umbilicata.—*Adams*.—Differs little from the last.

Limnaea pallida.—*Adams*.—A beautiful white shell in Onondaga and Cross lakes, where most shells are light colored.

humilis.—*Say*.—Brown, common, our smallest local species.

The translucent shining shells of the following two genera, revolve in the opposite way to most others.

Physa ancillaria.—*Say*.—Large, inflated, spire depressed. Skaneateles.

heterostropha.—*Say*.—Less inflated and depressed, common, thinner.

Niagarensis.—*Lea*.—Similar, smaller, colorless, rare. Onondaga lake.

gyrina.—*Say*.—Cylindric, yellowish, aperture long. Forest ponds. There are several varieties, one like *P. Hildrethiana*.

Bulinus hypnorum.—*L*.—Thin, slender, brown, shining. Wet woods.

The following two genera are flat orbicular shells of the *Planorbis* family, feeding on decaying vegetation in still waters.

Planorbis campanulatus.—*Say*.—Bell-shaped aperture, common.

trivolis.—*Say*.—Our largest species, common.

lentus.—*Say*.—Similar, more depressed, rarer.

bicarinatus.—*Say*.—Whorls sharp above and below, common.

exacutus.—*Say*.—Small, thin, margin acute, common. Swamps.

dilatatus.—*Gould*.—Small, perforation deep. Doubtful identification.

deflectus.—*Say*.—Small, mouth depressed. Wet woods.

albus.—*Mull*.—Thin, yellow, hairy, common.

parvus.—*Say*.—Corneous, common. Our smallest species.

Segmentina armigera.—*Say*.—Olive, aperture with teeth. Wet woods.

The next genus is of the small pyramidal fresh water limpets, clinging to stones and plants. Not abundant.

Ancylus rivularis.—*Say*.—Seneca river, rare.

tardus.—*Say*.—Olive, on stones in rivers.

Ancylus parallelus.—*Hald.*—Dark, narrow, more common. On plants.

The remaining fresh water snails close the aperture with a horny door, or operculum, attached to the snail.

Valvata tricarinata.—*Say.*—Small, whitish, whorls with sharp keels, common. Ecarinate varieties in Onondaga lake.

sincera.—*Say.*—Brown, with ribs, no keels, habits different from the last. Marshy spots on Seneca river, rare.

The *Melanthos* are green or greenish, large, solid, variable, viviparous, found in all waters but Onondaga and Cross lakes. Muddy bottoms Approaching other species.

Melantho decius.—*Say.*—Green, worn at apex, common. integer.—*Say.*—Similar, longer and more perfect, rarer.

rufus.—*Hald.*—Shorter, grayer, polished, rosy within. Found only in canals and at Baldwinsville. Abounds in canal.

Lioplax subcarinatus.—*Say.*—Smaller, more expanded, and the six whorls more rounded than the last. But one found, not typical. Canal; found also in the Hudson.

Bythinia tentaculata.—*L.*—An introduced European shell found by me at Oswego in 1879, now abundant at Syracuse. Resembles *Melantho*, but is small, yellowish, grey or red.

Bythinella obtusa.—*M. Tand.*—Resembles Pupa, Erie canal, rare.

Gilia altilis.—*Lea.*—Small, green, orbicular. Abundant in canals.

Somatogyrus isogonus.—*Say.*—Similar, rare.

The genus *Amnicola* contains minute shells like the *Melantho*, but perforate. Abundant in all waters on plants.

Amnicola Sayana.—*Anth.*—Elevated, six whorls, rare. Erie canal.

Cincinnatiensis.—*Anth.*—Rather slender, five whorls. Canal.

orbiculata.—*Lea.*—Depressed, orbicular.

porata.—*Say.*—Perforated, round, common.

pallida.—*Hald.*—Paler and slender, rarer. Ponds.

limosa.—*Say.*—Small, bulbous, common.

lustrica.—*Say.*—Small, very slender, rarer.

grana.—*Say.*—Very small. Seneca river.

The next two genera are of slender species here, not found south of the canal in this county, the first being here confined to the Erie canal. The snails feed mainly on the fresh water algae growing on stones and logs. They are active quite late, as I collected *Goniobasis* Dec. 1, 1884, at Baldwinsville.

Pleurocera subulare.—*Lea*.—A beautiful elevated shell, apex grooved, aperture auger-like, somewhat rare.
intensum.—*Lea*.—Similar, intense dark and yellow.
pallidum.—*Lea*.—Similar, color pale.

Goniobasis livescens.—*Menke*.—Bulbous, purple within. A yellow variety.
depygis.—*Say*.—Yellowish, often with dull red lines.
Haldemani.—*Tryon*.—Slender, rare. Erie canal.
Virginica.—*Gmel*.—Large, beautiful, variable, smooth or striate, banded or plain, thin or thick. Canal and Seneca river.

gemma.—*DeKay*.—Variety of the last.

The next two genera are of small bivalve shells, the largest not an inch long. Some living in wet leaves, others burrowing in still or rapid waters. They have cardinal teeth in the center and linear teeth at the ends of the hinge margin.

Sphaerium simile.—*Say*.—The largest. Brown, inflated.
fabale.—*Prime*.—Similar, brown, compressed, hinge margin curved, rare.
striatinum.—*Lam*.—Compressed, smoother, rare.
occidentale.—*Prime*.—Oval, yellow, shining, common. In wet woods.
partumeium.—*Say*.—White, angular, inflated, thin.
truncatum.—*Linsley*.—Similar, smaller, compressed.
transversum.—*Say*.—Long, thin, large. Erie canal.
secure.—*Prime*.—Small, rhombic, rare. Rivers.
solidulum.—*Prime*.—Yellow and brown.
stamineum.—*Conrad*.—Inflated, yellow.

The *Pisidi*ums are smaller and more inequilateral.

Pisidium compressum.—*Prime*.—Compressed, beaks raised.
variabile.—*Prime*.—Ovate, thick, yellow, polished.
abditum.—*Hald*.—Oval, yellow, smooth, rare.
Noveboracense.—*Prime*.—Oval, inflated, thin, rare.
Virginicum.—*Bourg*.—Large, thick, brown, rare.
ferrugineum.—*Prime*.—Globose, beaks raised, rusty.

The following three genera are fresh water clams or mussels. *Unio* has cardinal and lateral teeth; *Margaritana*, cardinal teeth; *Anodonta* is toothless. All crawl and burrow with the long foot, and when thrown ashore by waves at Onondaga lake, I have seen them raise themselves and get back to the water.

Unio alatus.—*Say*.—Brown, winged, variable.

cariosus.—*Say*.—Yellowish, inflated, rare. Oswego river.

complanatus.—*Sol*.—The common flat species.

gracilis.—*Barnes*.—Resemble *alatus*, lighter, thinner.

iris.—*Lea*.—Resembles *U. Novi-Eboraci*. Canal.

Liebigii.—*Lea*.—A curious dead shell from Onondaga lake, thus identified by Dr. Newcomb. Rare.

ligamentinus.—*Lam*.—Coarse, oval, brown, rare. Cross lake.

luteolus.—*Lam*.—Oval, teeth compressed, variable. It is often difficult to distinguish this shell from *U. radiatus*.

Novi-Eboraci.—*Lea*.—Small, yellow, interrupted rays.

occidens.—*Lea*.—Large, ovate, polished. Seneca river.

parvus.—*Barnes*.—Small, cylindric. Erie canal.

pressus.—*Lea*.—Green, compressed, winged. Seneca river.

radiatus.—*Lam*.—Oval, variable, teeth erect, common.

rectus.—*Lam*.—Long, black. Rifts of rivers.

rosaceus.—*DeKay*.—Like *radiatus* and *luteolus*. Rosy within. Rare.

rubiginosus.—*Lea*.—Reddish, heavy, angular. Erie canal.

siliquoides.—*Barnes*.—Polished, inflated.

Tappanianus.—*Lea*.—Small, compressed. Canal and Seneca river.

undulatus.—*Barnes*.—Large, brown, plicate, quadrate. Canal, rare.

ventricosus.—*Barnes*.—Large, oval, inflated. Seneca river.

Margaritana marginata.—*Say*.—Inflated, truncated, common.

rugosa.—*Barnes*.—Compressed, one end wrinkled. Rivers and canals. Occurs in Onondaga lake.

- undulata.—*Say*.—Inflated, stout, rare. Canal.
 margaritifera.—*L*.—Reported from Oneida lake.
 Anodonta Benedictii.—*Lea*.—Large, inflated, green, thin.
 decora.—*Lea*.—Oval, green. Canal.
 edentula.—*Say*.—Thick, brown, beaks undulated.
 Ferussaciana.—*Lea*.—Cylindric, inflated. Canal.
 Footiana.—*Lea*.—Angular, inflated, rare.
 fluviatilis.—*Dill*.—Thin, green, variable, common.
 fragilis.—*Lam*.—Thin, inflated, fine. Lakes.
 imbecillis.—*Say*.—Cylindric, hinge margin straight.
 lacustris.—*Lea*.—Thin, brown. Lakes.
 Lewisii.—*Lea*.—Angular, variable, often large.
 pavonia.—*Lea*.—Thick, compressed. Canal.
 Pepiniana.—*Lea*.—Thin, compressed, greenish.
 Lakes.
 salmonia.—*Lea*.—Compressed, orange within beaks.
 subcylindracea.—*Lea*.—Small, cylindric, common.
 Simpsoniana.—*Lea*.—Thick, compressed, rare.
 Beaver Lake.
 undulata.—*Say*.—Like edentula, compressed, green.
 Williamsii.—*Lea*.—Angular, nacre brilliant, rare.
 Seneca river.

Of the foregoing but ten species have been found exclusively south of the canal, while no land species are peculiar to the northern towns. In water species the case is different, for nearly seventy belong exclusively to the canal and northern waters, many reaching us by the canals.

Other shells are likely to occur in Onondaga county, among which are the following :

- Helix dentifera.—*Binney*.—Medium, depressed, toothed.
 Punctum minutissimum.—*Lea*.—Minute, subglobose.
 Zonites cellarius.—*Muller*.—Glassy, greenish.
 Sphaerium rhomboideum.—*Say*.—The name describes this.
 Unio gibbosus.—*Barnes*.—Thick, compressed, gibbous.
 Unio nasutus.—*Say*.—Smooth, long.

Land and Fresh Water Mollusks of Eastern and Southern New York.

- Vitrina limpida*.—*Gould*.—Small, wide aperture.
- Helix hirsuta*.—*Say*.—Like *H. monodon*, lip cleft.
- hortensis*.—*Muller*.—Yellow and red. Long Island.
- nemoralis*.—*L*.—Aperture black. Long Island.
- harpa*.—*Say*.—Small, conical, ribbed, fragile. Found by me at the Thousand Islands, in 1883.
- Limax maximus*.—*L*.—Introduced. Mushroom beds.
- Pupa fallax*.—*Say*.—Long, tapering, smooth, brownish.
- armifera*.—*Say*.—Cylindric, smooth, aperture white.
- rupicola*.—*Say*.—Small, elongated, brownish.
- muscorum*.—*L*.—Obtuse, dark chestnut.
- Vertigo milium*.—*Gould*.—Very minute, dark amber.
- Succinea aurea*.—*Lea*.—Amber, oval. Staten Island.
- Arion fuscus*.—*Muller*.—Ashy, a dorsal line.
- Zonites exiguus*.—*Stimpson*.—Minute, green.
- ferreus*.—*Morse*.—Minute, light steel gray.
- suppressus*.—*Say*.—Depressed, thin, teeth internal.
- Alexia myosotis*.—*Drap*.—Small, elongate, dark, shining.
- Melampus bidentatus*.—*Say*.—Ovate, toothed, banded.
- Limnæa ampla*.—*Mighels*.—Large inflated, aperture wide.
- megasoma*.—*Say*.—Large, aperture chestnut.
- gracilis*.—*Jay*.—Very slender. L. Champlain.
- galbana*.—*Say*.—Semi-fossil in calcareous tufa.
- Ancylus calcarius*.—*De Kay*.—Large, conic, calcareous.
- fuscus*.—*Adams*.—Epidermis brown, shell translucent.
- Vivipara contectoides*.—*Binney*.—Green, four brown bands.
- Anculosa carinata*.—*Brug*.—Conic, carinate. Varieties.
- Sphærium rosaceum*.—*Prime*.—Rosy, polished, small.
- croceum*.—*Lewis*.—Small, yellow.
- Vermontanum*.—*Prime*.—Full, oblique, green.
- Pisidium ventricosum*.—*Prime*.—Small, globose, yellow.
- Unio ochraceus*.—*Say*.—Oval, reddish.
- Anodonta implicata*.—*Say*.—Large, inflated.
- excurvata*.—*De Kay*.—Large, thick, inflated.

Mollusks of Western New York.

- Helix solitaria*.—*Say*.—Large, two or three bands.
fallax.—*Say*.—Elevated, resembles *H. tridentata*.
exoleta.—*Binney*.—Large tooth, resembles *albolaris*.
elevata.—*Say*.—Dentate, elevated, resembles *albolaris*.
profunda.—*Say*.—Large, yellowish, banded.
multilíneata.—*Say*.—Yellowish, many red bands.
- Limnæa reflexa*.—*Say*.—More slender than *L. umbrosa*.
Bulinus integer.—*Hald*.—Pointed, oval, yellowish.
- Unio anodontoides*.—*Lea*.—Yellow, polished, thick.
Boydianus.—*Lea*.—Resembles ochraceus.
coccineus.—*Lea*.—Brown, roundish, nacre pink.
distans.—*Lea*.—Oval, smooth.
ellipsis.—*Lea*.—Brown, elliptical.
elegans.—*Lea*.—Angular, heavy, green.
fabalis.—*Lea*.—Ovate, small, black.
heterodon.—*Lea*.—Small, compressed, teeth reversed.
hippopæus.—Oval, plicate.
multiradiatus.—*Lea*.—Inflated, many green rays.
phaseolus.—*Hild*.—Dark, compressed, heavy.
pustulatus.—*Lea*.—Quadrated, nodulous.
spatulatus.—Yellowish, oblong ovate.
triangularis.—*Barnes*.—Triangular, green.
trigonus.—*Lea*.—Triangular, brown.
- Margaritana complanata*.—*Barnes*.—Winged, compressed.
Hildrethiana.—*Lea*.—Smooth, small.
- Anodonta ferruginea*.—*Lea*.—Oval.
Tryonia.—*Lea*.—Oval, small.

Some will have access to De Kay's Shells of New York, and may be glad to know of necessary changes in nomenclature. For *Arion hortensis* read *A. fuscus*, for *Vitрина pellucida*, *V. limpida*; in several places substitute *Zonites* for *Helix*. *H. electrina* is *Z. viridulus*. *H. subglobosa* embraces *H. hortensis* and *nemoralis*; *H. diodonta* is *H. Sayii*; *H. minuta* is *H. pulchella*; *H. chersina* is *Z. fulvus*. For *H.*

lineata read *Helicodiscus*. Several are not given by De Kay, and he mentions some not found in New York. *Pupabadia* is *muscorum*, and *P. exigua* is *Carychium exiguum*. Change *P. milium*, *ovata*, and *simplex* to *Vertigo*. *Succinea campestris* and *ovalis* to *S. obliqua*; *Bulimus lubricus* equals *Cionella subcylindrica*. *Auricula bidentata* is *Melampus bidentatus*, and *A. denticulata* is *Alexia myosotis*. *Planorbis megastoma* and *corpulentus* are *P. trivolvus*; *P. obliquus* is *deflectus*; *hirsutus* is *albus*; *elevatus*, *parvus*; and *P. armigerus* is *Segmentina*. *Limnaea fragilis* equals *elodes*; *Linsleyi* is *humilis*; *jugularis* and *appressa* are *stagnalis*. *Physa cylindrica*, *plicata* and *aurea* are *heterostrophia*; *elliptica* is *gyrina*; *obesa* is *ancillaria*; and *glabra* and *elongata* are *Bulinus hypnorum*. *Paludina* includes *Melantho* and *Somatogyrus*. *Melania Niagarensis* is *Goniobasis livescens*; *M. bizonalis* is *G. Virginica*; *M. subulare* is *Pleurocera subulare*. For *Anculotus* read *Anculosa*. *A. trivittata* is a variety of *A. carinata*. *Unio compressus* is *pressus*. *Alasmodon* is now *Margaritana*, and *A. arcuata* is considered *M. margaritifera*; *M. corrugata* is *M. marginata*, and *A. Unadilla* is *Anodonta edentula*.

De Kay also reckons *Anodonta plana* among New York shells. *Sphaerium* and *Pisidium* now replace *Cyclas*. *C. dubia* and *edentula* are *S. striatinum*, and *C. elegans* is *S. rhomboideum*.

Those who wish fuller notes on the land and fresh water shells, except the Unionidae, will find the cheap publications of the Smithsonian Institute useful, but there is no moderate priced manual of the Unionidae yet available. The best of our cheap publications on shells of all kinds is the valuable work on Structural and Systematic Conchology, recently published by George W. Tryon, Jr., of Philadelphia.

In collecting land shells a small wooden rake with an adjustable handle is useful, and I have used a block with a few nails in it. A deep skimmer, or a perforated basin with a long handle, is best for water species. Cleanse the outside of the shell in a pail of water with sharp sand, or with a tooth brush, and extract the animal. Hot water may be used for this. Some small species are better prepared in alcohol. Oxalic acid is often used, but carefully, for removing iron stains.

Large shells may be placed in paper boxes; smaller species may be mounted on card-board, one end being turned up sufficiently for the name and locality. All should be arranged in drawers.

The spring and fall are the best seasons for collecting most shells, as fewer immature specimens then occur, and

many then congregate on land under pieces of wood. Some, however, may be taken at almost any time. The land snails having teeth and thickened lips at their apertures, do not gain these generally until almost mature, and before this may prove perplexing. When canals, creeks or mill-races are drawn off, some species may be obtained which are otherwise inaccessible. Fresh water mussels are best obtained by wading, or from a boat, but some of the rarer species will even then escape notice, so that dead shells may prove of value when better ones cannot be obtained. A judicious rubbing with vinegar will fairly restore the lustrous nacre.

Occasionally sea-shells and others are found far inland. Mr. E. P. Howe recently found a number of specimens of *Littorina litorea* in the canal east of Syracuse, and I have an uncommon New England sea-shell which was gathered with others at Cross Lake, having been dropped there.

Limestone regions generally produce the thickest shells, and the water and bottom make a great difference in water species. At Kirkville the shells in the Erie canal are much handsomer than elsewhere in the county; and in Cross and Onondaga lakes most Unios have a brown epidermis, while other shells are light in color.

One interesting question is that of the occurrence of fragile shells deep down in gravel, sand and clay. Such instances are often seen when banks are cut away. Mr. E. B. Knapp has a number of shells taken from the Skaneateles cemetery in digging graves; among them one species not, I think, now found in that town. A full explanation would take time, but in some instances the change in the beds of streams, the filling in of hollows, and the snails' practice of following and feeding upon decaying roots, give a sufficient answer. It is a subject worthy of further study. All snails feed by use of jaws and sharp teeth. Our local bivalves have two siphons which draw in and throw out currents of water, retaining the solid nutriment, and also acting like the gills of a fish.

The preceding list covers over ten years' work, so that there will probably be very few additions, though some may be expected. I have searched the county from the highest hill-tops, over 2,000 feet above the sea, to the bottoms of many waters, and give the present results of my knowledge.

M90520

QL415

N7B4

Bisb.

Libr.

THE UNIVERSITY OF CALIFORNIA LIBRARY