INSTITUTE FOR FISHERIES RESEARCH UNIVERSITY MUSEUMS UNIVERSITY OF MICHIGAN ANN ARBOR, MICHIGAN

November 3, 1930

Report No. 38

by Henry Vander Schalie, on

THE CLAMMING INDUSTRY OF THE ST. JOSEPH RIVER

From September 15 to September 19, Röwin Greaser and I conducted a general survey of the Molluscan fauna of the St. Joseph River in the south-western part of Michigan.

Incidental to the general collecting, we made inquiries and invostigations concerning the clasming industry of that river.

In two memoral regions in the St. Joseph River is the clamming industry at present being carried on. The first of these covers that section of the river between Union City, Branch County, and Mendon, in St. Joseph County. The clams obtained in this section of the river are sent to Three Rivers, where a Mr. Morris buys from the clammers. The second area lies between Berrien Springs and the mouth of the river. The clams from this region are handled by a dealer at Berrien Springs.



At Three Rivers, Mr. Morris has about an acre of ground upon which are large piles of claus. (See Photographs).

These are covered by straw to prevent weathering. We only managed to get three species here the there were many nore.—The ones we get were:

1. <u>Lasmigone costata</u> Rafinesque "Flutea Shell" "Sand Mussel"



- 2. <u>Langeills ventricoea</u> Barres
 "Pocket Book"
- 3. Actinonaias carinata Farnes

At Berrien Springs the dealer has assorted piles of class shells. He also runs a shop in which lutton blanks are made. Quite a few specimens were ob-

tained from this dealer's collection. The species list is as follows:

- 1. Ligumia recta latissima (Eafinesque)
- 2. Fusconala flara (Rafinesque)
- 2 3. <u>Lampsilis ventricosa</u> (Barnes)
- 7) 4. Actinonaias carinata (Barnes)
 - 5. Lasmigona costata (Rafiresque)
 - 6. Amblema costata (Rafinesque)
 - 7. <u>Lasmigona complanata</u> (Farnes)
 - S. Cyclonomaias tuberculata (Rafinesque)
 - 9. Elliptio Gilatatus (Rafinesque)
 - 10. Quadrula pustulosa (Lea)
 - 11. Alasmidonta marginata (Say)

- "Sand Shell" "Black Sand Shell"
- "Fig Toe"
- "Focket Pools"
- "Mucket"
- "Fluted Shell" "Squaw Foot" "Sand
 Mussel"
- "Wash Board" "Three Ridge" "Dlue Point" "Flat Flicate" "Fluter"
- "Heel Splitter" "Hatchet Back"
- "Fancake"

Back"

- "Leer Horn" "Ruck Horn"
- "Lady Finger" "Solke"
- "Werty Back" "Warty Fistoe" "Nimple
- "Miswer Toe" "Elk Toe"

Of the above list, all species except the last (<u>Alamidonta margicata</u>) are good shells for buttons. This species must have gotten into the piles by accident because I do not believe it has a thick enough shell to be of any co percial importance. The

above list will, them, serve well to show what species are being used in the St. Joseph River between Bearien Springs and the coath of that stream in the chamming industry.

The three species most used by the industry, in the lower St. Joseph, were found to be, in order of abundance-

1. Actinopolas carinata Lafinesque

"Lacket"

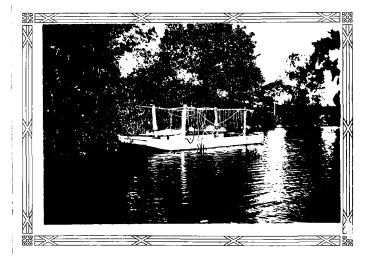
2. <u>Lemosilis ventricosa</u> Barnes

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3. Liguria recta latissima Pafinesque

"Sand Shell" "Black Sand Shell"

The boats used by the clambers along the St. Joseph River are of the usual type. They are flat bottomed scows about twelve feet long, to the sides of which are attached the various clamming devises. Some of these boats are powered by outdoor noters.



The price and to the claumers for their shells varies according to the size and the quality of the shells brought in. The highest price was \$0.05 per pound.

The buttons cut at Berrien Springs are of two sizes, a 3/4 inch size and a 1/2 inch.

A medium-sized class shell will produce so ewhere in the neighborhood of 20 half-inch
buttons or 14 three-quarter-inch buttons. Seven moderate sized class shells weigh about
a pound. Consequently, a pound of large shells will produce roughly one hundred threequarter-inch buttons, or about one hundred and forty of the smaller buttons. From a smaller

sized shell about seven three-quarter-inch buttons may be obtained; and as it takes nine small shells to make a pound, approximately sixty-five buttons may be obtained from a pound of this small size. The above estimates have been made on the basis of a very small amount of material but they are probably approximately correct.

It would be quite apparent to even the most casual observer that large individuals of the various species of bivalves are missing in certain sections of the river. We observed this to be true, as indicated by the lists of species we took at each locality visited (see below). This depletion I believe may without doubt be attributed to excessive clamming. The pollution of the river is a matter of concern in legislation governing the clamming industry. The erection of artificial barriers, such as dams, is also a matter of concern to the clammers. The effects of dams, and of the their operation so as to produce sudden periodic changes in water level need investigation.

Through correspondence with Mr. Westerman of the Department of Conservation, we have ascertained that for 1929, 250 licenses were sold to clammers working on the St. Joseph River. The total number of people engaged through the state in clamming in 1929, according to the information furnished by Mr. Westerman, was 1,110. The Grand River system witnesses a greater clamming industry than the St. Joseph. Since such a large number of men are engaged in this industry, investigations concerning the conditions of the fishery should be maintained.

LIST OF CLAMS OBTAINED AT EACH LOCALITY

Collection 1.—St. Joseph River, 1 mile south of Litchfield, Hillsdale County.

At this place the stream was dammed, producing a good deal of backwater. Nost of our collecting was done in the river below the dam. At this point the St. Joseph is a stream about 30 feet wide. We were unable to obtain a single living specimen although a careful search was made and conditions seemed favorable. Shells of the following species (all dead) were obtained:

Species of commercial importance:

1.	Lasmigona	<u>costata</u>	(Rafinesque)	8	dezd	"Fluted	Shell"	"Squaw	Foot
				"Sand Mussel"					

- Fusconaia flava (Rafinesque) 2 dead "Pig Toe"
- 3. Elliptio dilatatus (Rafinesque) 1 dead "Lady Finger" "Spike"

B. Species not of commercial value:

1.	Lasmigona	compressa	(Lea)	3 dead	
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- 2. Strophitus rugosus (Swainson) 3 dead "Squaw Foot" "Creeper"
- 3. Anodonta grandis footiana Lea 1 dead "Floater"

Collection 2.-St. Joseph River, 6 miles northeast of Tekonsha, Calhoun County. Here the St. Joseph is a clear stream having a width of about 40 feet. The living bivalves we obtained were limited to small specimens, though we did find a few large specimens of a size used by clammers. Conditions seemed quite favorable for molluscan life, an abundance of good shoals composed of a fine sand was found. Our collection consisted of the following species:

A. Species of commercial importance:

1.	Elliptio dilatatus (Rafinesque)	රි dead	"Lady Finger" "Spike"				
2.	Lampsilis ventricosa (Barnes)	4 dead	"Pocket Book"				
3•	<u>Lasmigona</u> <u>costata</u> (Ra finesque)	2 dead	"Fluted Shell" "Squaw Foot" "Sand Mussel"				
4.	Fusconaia flava (Rafinesque)	1 dead	"Pig Toe"				
5•	Actinonaias carinata (Barnes)	l dead	"Mucket"				
Sp	Species not of commercial value:						

B.

1.	Micromya iris (Lea)	10 living	"Rainbow Shell"
2.	Actinonaias ellipsiformis (Conra	d) 7 "	
3•	Alasmidonta calceolus (Lea)	<u>) t</u> 59	
4.	Strophitus rugosus (Swainson)	2 "	Pig Toe"
5.	Alasmidonta marginata (Say)	1 "	"Nigger Toe" "Elk Toe"

Collection 3 .- St. Joseph River, at Telconsha, Calhoun County.

Here the river is clear and moderately rapid. It has a uniform depth with an abundance of eel-grass, algae and pond weeds. The river at this point yielded its largest catch of <u>living</u> bivalve material. Many small individuals were obtained as well as those which might be useful in the clamming industry. The following species were secured:

A. Species of commercial importance:

1.	Eliptio dilatatus (Rafinesque)	20 living	"Lady Finger" "Spike"
2.	Laupsilis ventricosa (Barnes)	19 living	"Pocket Book"
3.	Actinomaias carinata (Barnes)	16 living	"Mucket"
4.	Fusconaia flava (Rafinesque)	4 living	"Pig Toe"
5.	Lasmigona costata (Rafinesque)	l de a d	"Fluted Shell" "Squaw
			Foot" "Samé Wussel"

B. Species not of commercial value:

1.	Strophitus rugosus (Swainson)	10 living	"Squaw Foot" "Creeper"
2.	Actinonaias ellipsiformis (Conrad)	9 living	Charles (Mill Teller Mill) as a minimum of the first community of the teller minimum of the community of the
3.	Alasmidonta calceolus (Lea)	3 dëad	Margan and Control of State Control of Contr
4.	Micromya iris (Lea)	2 dead	"Rainbow Shell"
5.	Anodontoides ferussaciana (Lea)	l living	

1 dead

"Nigger Toe" "Elk Toe"

Collection 4. Hog Creek, 2 miles southeast of Union City, Branch County.

This creek was apparently favorable for the growth of bivalves, but we were unable to secure more than a few specimens. The few we found were living, and ranged in size from small shells up to one specimen which would serve well in the clamming industry.

A. Species of commercial importance:

6. Alasmidonta merginata (Say)

1.	Elliptio dilatatus (Hafinesque)	2 living	"Lady Finger" "Spike"
2.	Actinonaias carinata (Barnes)	2 living	"Mucket"

- B. Species not of commercial value:
 - 1. Micromya iris (Lea)

2 living

"Rainbow Shell"

2. Actinonaias ellipsiformis (Conrad) l living

Collection 5 .- St. Joseph River, 2 miles south of Leonidas, St. Joseph County.

Here the river is wide and clear, and is ideal for the propagation of molluscs. Most of the specimens obtained were small, although some large ones were secured from a discard pile left by the clammers. We found here many small living specimens, but we could not find any living specimens of a size used by the clammers.

- A. Species of commercial importance:
 - 1. Actinonaias carinata (Barnes) 11 living

"Mucket"

Elliptio dilatatus (Rafinesque) 8 living

"Lady Finger" "Spike"

3. Pleurobema cordatum coccineum (Conrad) 1 "

"Pink Pig Toe" "Round Pig

Toe" "Flat Nigger Head"

- 4. Lamosilis ventricosa (Barnes)
 - 1 living

"Pocket Book"

B. Species not of commercial value:

1. Actinonaias ellipsiformis (Conrad) 15 living

2. Micromya iris (Lea)

13 living

"Rainbow Shell"

3. Strophitus rugosus (Swainson) 3 living

"Squaw Foot" "Creeper"

4. Alasmidonta marginata (Say)

3 living

"Nigger Toe" "Elk Toe"

Collection 6 .- Nottawa Creek, 2 miles west of Leonidas, St. Joseph County.

We were unable to obtain a single living specimen at this place. The dead specimens found are as follows:

A. Species of commercial importance:

1. Lampsilis ventricosa (Barnes)

3 dead

"Pocket Book"

2. Lampsilis siliquoidea (Barnes)

2 de∉d

"Fat Mucket"

3. Actinonaias carinata (Barnes)

2 dead

"Mucket"

- B. Species not of commercial value:
 - 1. Strophitus rugosus (Swainson)

6 dead

"Squaw Foot" "Creeper"

2. Actinonatas ellipsiformis (Conrad) 1 dead								
Collection 7St. Joseph River, 3 miles northeast of Three Eivers, St. Joseph Count	y.							
Due to the excessive depth and width of the river at this point an adequate								
investigation could not be made by means at our disposal. A number of small dead shells	5							
were found along the banks and in the more shallow water. We found the following								
specimens:								
A. Species of commercial importance:								
l. Elliptio dilatatus (Rafinesque) 2 dead "Lady Finger" "Spike"								
2. <u>Fusconaia flava</u> (Rafinesque) l dead "Pig Toe"								
B. Species not of commercial value:								
l. Actinomaias ellipsiformis (Corrad) 25 dead (mostly)								
2. Ancdonta grandis footiana Lea 1 dead "Floater"								
3. Strophitus ragosus (Swainson) l dead "Squaw Foot" "Creeper"								
4. Alasmidonta marginata (Say) l dead "Nigger Toe" "Elk Toe"								
Collection 8Portage River, 4 miles northeast of Three Rivers, St. Joseph County.								
This shallow and roderately rapid tributary of the St. Joseph yielded but a few								
rather small living bivalves. Conditions seemed favorable for the propagation of								
molluscs. In the small collection made the following species are represented:								
A. Species of commercial importance:								
1. <u>Lamosilis ventricosa</u> (Barnes) 4 dead "Pocket Book"								
2. Elliptio dilatatus (Rafinesque) l dead "Lady Finger" "Spike"								
B. Species not of commercial value:								
1. <u>Micromya iris</u> (Lea) 1º (one-half alive) "Rainbow Shell"								
2. Actinonaias ellipsiformis (Conrad) 6 (4 living)								
Collection 9.—Frairie River, 2 miles southeast of Three Rivers, St. Joseph County.								
This river at the locality given is a fine shallow stream, and yielded an abundance								

of small and medium sized living specimens. Fine conditions exist for molluscan life in

this stream. The following list represents the species obtained:

A. Species of compercial importance:

1.	Actinonaias	cerinata	(Barnes)	12	living	"Muchet"
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- 2. Elliptio <u>dilatatus</u> (Rafinesque) 5 dead "Lady Finger" "Spike"
- 3. <u>Fusconaia flava</u> (Rafinesque) 2 living "Fig Toe"
- 4. Pleuronema cordatum coccineum (Conrad) 1 living "Pink Pig Toe" "Round Fig Toe" "Flat Nigger Head"

B. Species not of commercial value:

- 1. Micromya iris (Lea) 3 dead "Rainbow Shell"
- 2. Actinonaias ellipsiformis (Conrad) 3 (2 living)
- 3. Alasmidonta marginata (Say) 2 living "Nigger Toe" "Elk Toe"
- 4. Strophitus rugosus (Swainson) 1 living "Squaw Foot" "Creeper"

Collection 10.-White Pigeon River, at White Pigeon, St. Joseph County.

The bivalves were exceedingly scarce in this stream. Only ten dead specimens could be found after an exhaustive search of over a mile of the stream bottom. These specimens are of the following species:

A. Species of commercial importance:

1.	<u> Fusconai a</u>	flava ((Rafinesque)	2 dead	"Pig Toe"
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- 2. Actinonalas carinata (Earnes) 2 dead "Mucket"
- Relieve to dilatetus (Rafinesque) 2 desa "Iady Finger" "Spike"
- 4. Lampsilis ventricosa (Barnes) l dead "Pocket Book"
- B. Species not of commercial value:
 - 1. Micromya iris (Lea) 3 dead "Rainbow Shell"

Collection 11.-St. Joseph River, at Mottville, St. Joseph County.

The river here is below the dam at Three Rivers and is again wide and comparatively shallow. Shell life was abundant; the specimens obtained varying in size from small to large. Collecting here was second only to that of the St. Joseph at Tekonsha. Our collection contains:

A. Species of commercial importance:

7.	Actinonaias carinata (Barnes)	16	"Mucket"
2.	Fusconaia flava (Rafinesque)	14	"Fig Toe"
3.	Elliptio dilatatus (Rafinesque)	g	"Lady Finger" "Spike"
l.	Pleurobema cordatum coccineum (Conr	ad) 4	"Fink Pig Toe" "Round Pig
			Toe" "Flat Nigger Head"
5•	Lasmigona costata (Rafinesque)	3	"Fluted Shell" "Squaw Foot"
			"Sand Mussel"
6.	Cyclonaias tuberculata (Rafinesque)	1.	"Deer Horn" "Huck Horn"
7.	Lampsilis ventricosa (Barnes)	1	"Pocket Book"
. ვუ	ecies not of commercial value:		
1.	Strophitus rugosus (Swainson)	18	"Squam Foot" "Greener"
2.	Actinomaias ellipsiformis (Corrad)	7	Sentimony (Whitehorte) or consequently against
3.	Alasmidonta marginata (Say)	2	"Nigger Toe" "Elk Toe"
4.	Micromya iris (Iea)	1	"Rainbow Shell"
5•	Anodontoides ferussaciana (Lea)	1	dentite suppression require the Additional additional additional additional and additional addition

Collection 12.—Spring Run, 3 miles west of Mottville, Cass County.

This was a very clear little stream with a good sandy bottom. We obtained few specimens from it. In over a half mile of the stream bottom which we covered, only eight specimens of the following species were obtained:

A. Species of commercial importance:

2. Lasmigona compressa (Lea)

В.

	1.	Elliptio	dilatatus (Lafinesque)	2 dead	"Lady Finger" "Spike"
В.	az	e cies not	of commercial value:		
	1.	<u>Micromya</u>	iris (Lea)	5 (3 living)	"Rainbow Shell"

1 dead

Collection 13.-Downgiac Creek, st Kiles, Berrien County.

This stream is canned at Miles and periodically the water is released causing an

alternation of high and low water in the stream. With such conditions the bivalues proved very scarce. All our material here was dead. The following species were found:

- A. Species of commercial importance:
 - 1. <u>Elliptio dilatatus</u> (Rafinesque) 4 deed "Lady Finger" "Spike"
- B. Species not of commercial value:
 - 1. Actinonaias ellipsiformis (Conrad) 2 dead
 - l dead 2. Lasnigona compressa (Lea)
 - 7. Anodontoides ferussaciana (Lea) 1 dead

Collection 14. St. Joseph River, at St. Joseph, Berrien County.

There are large resorts at the routh of the river and to make a teach this region is deriodically dreduced. The soccinens we obtained were taken from the backwater. No specimens could be obtained along the lake shore, although a wide area was semrehed. One species was obtoined in the brickwater:

1. Ancdonta grandis footiana Lea 1 living "Floater"

LIST OF CLAMS OFTAITED AT ALL 15 LOCALITIES VISITED IN THE ST. JOSEPH RIVER SYSTEM

Α.	Spec	cies of convercial importance Number		
	1.	et whice <u>Elliptio diletatus</u> (Eafinesque)	ch obteine 12	d. "Dedy Finger" "Spike"
	2.	Actinonaias carinata (Darnes)	S	⁸ Liucket ⁸
	3•	Tusconaia flava (Carinesque)	7	"Tig Toe"
	$\sum_{r,\bullet}$	Campsilis ventricosa (Carnes)	7	"Traket Book"
	5.	Lasnigona costata (Rafinesque)	<u>t</u> į	"Fluted Shell" "Squam Foot"
				"Send Mussel"
	6.	Pleurchama cordatum coccineum (Conrad	3	"Pink Pig Toe" "Round Pig Toe"
	7.	Lampsilis siliquoidea (Barnes)		"Flat Nigger Head" "Fat Mucket"
	₹.	Cycloneias tuberculata (Kafinesque)	1	"Deer Lorn" "Buck Horn"

B.	<u></u> <u> </u>	ecies not of commercial value	Number of localities at which obtained	
	1.	Actinonaias ellipsiformis (Conrad)	10	William Springer - Nacional Administration of the Control of the C
	2.	Micromya iris (Lea)	9	"Rainbow Shell"
	3.	Strophitus rugosus (Swainson)	క	"Squaw Foot" "Creeper"
	4.	Alasmidonta marginata (Say)	6	"Nigger Toe" "Elk Toe"
	5.	Anodonta grandis footiana Lea	3	"Floater"
	ნ.	Lasnigona compressa (Lea)	3	Table of respective for all other transfer and transfer a
	7.	Anodontoides ferussaciana (Lea)	3	
	౭.	Alasmidonta calceolus (Lea)	2	

The common names used in all the species lists are taken from published pamers. What common names are used in Michigan ought to be determined.

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1.	Ligumia rec	ta latissima	(Rafinesque)	"Sand S	Shell#	"Black	Sand	Shell"
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2. Fusconaia flava (Rafinesque) "Pig Toe"

3. Lampsilis ventricosa (Barnes) "Pocket Book"

4. Actinonaias carinata (Barnes) "Mucket"

5. <u>Lasmigona costata</u> (Rafinesque) "Fluted Shell" Squaw Foot" "Sand

Mussel#

6. Amblema costata (Rafinesque) *Wash Board* *Three Ridge* "Blue

Point "Flat Plicate" "Fluter"

7. Lasmigona complanata (Barnes) "Heel Splitter" "Hatchet Back"

"Pancake"

8. Cyclonomaias tuberculata (Rafinesque) "Deer Horn" "Buck Horn"

9. Elliptio dilatatus (Rafinesque) "Lady Finger" "Spike"

10. Quadrula pustulosa (Lea) "Warty Back" "Warty Pigtoe" "Pimple

Back#

11. Alasmidonta marginata (Say) "Nigger Toe" "Elk Toe"

Of the above list, all species except the last (Alasmidonta marginata) are good shells for buttons. This species must have gotten into the piles by accident because I do not believe it has a thick enough shell to be of any commercial importance. The

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A. Species of commercial importance:

1.	Lasmigona	costata	(Rafinesque)	8	dead	"Fluted Shell" "Sand Mussel"	"Squaw Foot"
		#		_			

- 2. Fusconaia flava (Rafinesque) 2 dead "Pig Toe"
- 3. Elliptic dilatatus (Rafinesque) 1 dead "Lady Finger" "Spike"
- B. Species not of commercial value:

 - 2. Strophitus rugosus (Swainson) 3 dead "Squaw Foot" "Creeper"
 - 3. Anodonta grandis footiana (Lea) 1 dead "Floater"

Collection 2.-St. Joseph River, 6 miles northeast of Tekonsha, Calhoun County.

Here the St. Joseph is a clear stream having a width of about 40 feet. The living bivalves we obtained were limited to small specimens, though we did find a few large specimens of a size used by clammers. Conditions seemed quite favorable for molluscan life, an abundance of good shoals composed of a fine sand was found.

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A. Species of commercial importance:

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2.	Lampsilis ventricosa (Barnes)	4 dead	"Pocket Book"	
3.	Lasmigona costata (Rafinesque)	2 dead	"Fluted Shell" "Sand Mussel"	"Squaw Foot
	a an decay s			

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- 5. Actinonaias carinata (Barnes) 1 dead "Mucket"

B. Species not of commercial value:

1.	Micromya iris (Lea)	10 living	"Rainbow Shell"
2.	Actinomaias ellipsiformis (Conrad)	7 . *	this diffe although also apa also fair agis you san the different diff
3.	Alasmidonta calceolus (Lea)	<u>t</u> , n	医 医
4.	Strochitus rugosus (Swainson)	2 #	"Pig Toe"
5.	Alasmidonta marginata (Say)	1 "	"Nigger Toe" "Elk Toe"

Collection 3. - St. Joseph River, at Tekonsha, Calhoun County.

Here the river is clear and moderately rapid. It has a uniform depth with an abundance of eel-grass, algae and pond weeds. The river at this point yielded its largest catch of <u>living</u> bivalve material. Many small individuals were obtained as well as those which might be useful in the clamming industry. The following species were secured:

A. Species of commercial importance:

1. Eliptio dilatatus (Rafinesque)	20 living	"Lady Finger" "Spike"
2. Lampsilis ventricosa (Barnes)	19 living	"Pocket Book"
3. Actinonalas carinata (Barnes)	16 living	"Mucket"
4. Fusconaia flava (Rafinesque)	4 living	"Pig Toe"
5. Lasmigona costata (Rafinesque)	1 dead	"Fluted Shell" "Squaw
,		foot" "Sand Mussel"

B. Species not of commercial value:

1. Strophitus rugosus (Swainson)	10 living	"Squaw Foot" "Creeper"
2. Actinomaias ellipsiformis (Conrad)	9 living	ينتها فيت بين بايد بايد ويت من من بين الله بين
3. Alasmidonta calceolus (Lea)	3 dead	الله على الله الله الله الله الله الله الله ال
4. Micromya iris (Lea)	2 dead	"Rainbow Shell"
5. Anodontoides ferussaciana (Lea)	l living	ويو چون داده داده ويو ويو ۱۹۵۰ داده داده داده داده داده داده داده داد
6. Alasmidonta marginata (Say)	1 dead	*Nigger Toe" "Elk Toe"

Collection 4.-Hog Creek, 2 miles southeast of Union City, Branch County.

This creek was apparently favorable for the growth of bivalves, but we were unable to secure more than a few specimens. The few we found were living, and ranged in size from small shells up to one specimen which would serve well in the clamming industry.

A. Species of commercial importance:

2 living "Lady Finger" "Spike"

1. Elliptio dilatetus (Rafinesque)

- 2. Actinonaias carinata (Barnes) 2 living "Mucket"
- B. Species not of commercial value:
 - 1. Micromya iris (Lea) 2 living "Rainbow Shell"
 - 2. Actinonaias ellipsiformis (Conrad) 1 living -----

Collection 5 .- St. Joseph River, 2 miles south of Leonidas, St. Joseph County.

Here the river is wide and clear, and is ideal for the propagation of molluscs.

Most of the specimens obtained were small, although some large ones were secured from a discard pile left by the clammers. We found here many small living specimens, but we could not find any living specimens of a size used by the clammers.

- A. Species of commercial importance:
 - 1. Actinonaias carinata (Barnes) 11 living "Mucket"
 - 2. Elliptio dilatatus (Rafinesque) 8 living "Lady Finger" "Spike"
 - 3. Pleurobema cordatum coccineum (Conrad)

 1 "Toe" "Flat Nigger Head"
 - 4. Lampsilis ventricosa (Barnes) 1 living "Pocket Book"
- B. Species not of commercial value:
 - 1. Actinonaias ellipsiformis (Conrad) 15 living -----
 - 2. Micromya iris (Lea) 13 living "Rainbow Shell"
 - 3. Strophitus rugosus (Swainson) 3 living "Squaw Foot" "Creeper"
 - 4. Alasmidonta marginata (Say) 3 living "Nigger Toe" "Elk Toe"

Collection 6. - Nottawa Creek, 2 miles west of Leonidas, St. Joseph County.

We were unable to obtain a single living specimen at this place. The dead specimens found are as follows:

- A. Species of commercial importance:
 - 1. Lampsilis ventricosa (Barnes) 3 dead "Pocket Book"
 - 2. Lampsilis siliquoidea (Barnes) 2 dead "Fat Mucket"
 - 3. Actinopaias carinata (Barnes) 2 dead "Mucket"
- B. Species not of commercial value:
 - 1. Strophitus rugosus (Swainson) 6 dead "Squaw Foot" "Creeper"

•		
2. Actinomaias ellipsiformis (Conrad)	1 dead	حيَّة على حيث الله على على حيث على حيث الله على
Collection 7 St. Joseph River, 3 miles no	ortheast of Thre	e Rivers, St. Joseph
County.		•
Due to the excessive depth and width of the	river at this p	oint an adequate
investigation could not be made by means at our	disposal. A num	ber of small dead
shells were found along the banks and in the more	e shallow water.	We found the
following specimens:		
A. Species of commercial importance:		
1. Elliptio dilatatus (Rafinesque)	2 dead	"Lady Finger" "Spike"
2. Fusconaia flava (Rafinesque)	l deed	"Pig Toe"
B. Species not of commercial value:	•	
1. Actinomaias ellipsiformis (Conrad)	25 dead (most	ly)
2. Anodonta grandis footiana (Lea)	1 dead	"Floater"
3. Strophitus rugosus (Swainson)	1 dead	"Squaw Fnot" "Creeper
4. Alasmidonta marginata (Say)	1 dead	"Nigger Toe" "Elk Toe
Collection 8Portage River, 4 miles norther	ast of Three Riv	ers, St. Joseph County.
This shallow and moderately rapid tributary	of the St. Jose	ph yielded but a few
rather small living bivalves. Conditions seemed	favorable for t	he propagation of
molluscs. In the small collection made the following	owing species ar	e regresented:
A. Species of commercial importance:		
1. Lamosilis ventricosa (Barnes)	4 dead	"Pocket Book"
2. Elliptio dilatatus (Rafinesque)	1 dead	"Lady Finger" "Spike"
B. Species not of commercial value:		
1. Micromya iris (Lea)	14 (one-half alive)	"Rainbow Shell"
2. Actinomaias ellipsiformis (Conrad)	6 (4 living)
Collection 9Prairie River, 2 miles souther	ast of Three Riv	ers, St. Joseph County.
This river at the locality given is a fine	Shallow stream,	and yielded an abundanc

This river at the locality given is a fine shallow stream, and yielded an abundance of small and medium sized living specimens. Fine conditions exist for molluscan life in

this stream. The following list represents the species obtained:

A. Species of commercial importance:

1.	Actinomaias carinata (Barnes)	12	living	"Mucket"
2.	Elliptic dilatatus (Rafinesque)	5	dead	"Lady Finger" "Spike"
3.	Fusconaia flava (Rafinesque)	2	living	"Pig Toe"
4.	Pleurobema cordatum coccineum (Conrad)	1	living	"Pink Pig Toe" "Round Pig Toe" "Flat Nigger Head"

B. Species not of commercial value:

abantan maa ar commareter terrent		
1. Micromya iris (Lea)	3 dead	"Rainbow Shell"
2. Actinomaias ellipsiformis (Conrad)	3 (2 living)	भीन कीए क्या, बांक बंगा-बांग जाने होता बांग बाब बाबू बान क्या गाड़ी कीन ब्यंत बांग प्रकृ पड़न
3. Alasmidonta marginata (Say)	2 living	"Nigger Toe" "Elk Toe"
4. Strophitus rugosus (Swainson)	1 living	"Squaw Foot" "Creeper"

Collection 10 .- White Pigeon River, at White Pigeon, St. Joseph County.

The bivalves were exceedingly scarce in this stream. Only ten dead specimens could be found after an exhaustive search of over a mile of the stream bottom. These specimens are of the following species:

A. Species of commercial importance:

1. <u>Fusconaia flava</u> (Rafinesque)	2 dead	"Pig Toe"
2. Actinomaias carinata (Barnes)	2 dead	"Mucket"
3. Elliptio dilatatus (Rafinesque)	2 dead	"Lady Finger" "Spike"
4. Lampsilis ventricosa (Barnes)	1 dead	"Pocket Book"

B. Species not of commercial value:

1.	Micromya iris	(Lea)	3 dead	"Rainbow	Shell#
1.	Micromya iris	(Lea)	3 dead	"Rainbow	She

Collection 11 .- St. Joseph River, at Mottville, St. Joseph County.

The river here is below the dam at Three Rivers and is again wide and comparatively shallow. Shell life was abundant; the specimens obtained varying in size from small to large. Collecting here was second only to that of the St. Joseph at Tekonsha. Our collection contains:

A.	Spe	Species of commercial importance:					
	1.	Actinopaias carinata (Barnes)	16	"Mucket"			
	2.	Fusconaia flava (Rafinesque)	14	"Pig Toe"			
	3.	Elliptio dilatatus (Rafinesque)	8	"Lady Finger" "Spike"			
	4.	Pleurobema cordatum coccineum(Conrad)	4	"Pink Pig Toe" "Round Pig			
				Toe" "Flat Nigger Head"			
	5.	Lasmigona costata (Rafinesque)	3	"Fluted Shell" Squaw Foot"			
				"Sand Mussel"			
	6.	Cyclonaias tuberculata (Rafinesque)	1	"Deer Horn" "Huck Horn"			
	7.	Lampsilis ventricosa (Barnes)	1	"Pocket Book"			
В.	Spe	cies not of commercial value:					
	1.	Strophitus rugosus (Swainson)	18	"Squaw Foot" "Creeper"			
	2.	Actinomaias ellipsiformis (Conrad)	7				
	3.	Alasmidonta marginata (Say)	2	"Nigger Toe" "ElkToe"			
	4.	Micromya iris (Lea)	1	"Rainbow Shell"			
	5.	Anodontoides ferussaciana (Lea)	1				
	Co	llection 12 Spring Run, 3 miles west	of Mottville,	CassCounty.			
	Th	is was a very clear little stream with	a good sandy l	bottom. We obtained			
few	ape	cimens from it. In over a half mile of	f the stream bo	ottom which we covered,			
onl	y ei	ght specimens of the following species	were obtained				
A.	Spe	cies of commercial importance:					
	1.	Elliptio dilatatus (Rafinesque)	2 dead	"Lady Finger" "Spike"			
в.	Spe	cies not of commercial value;					
	1. }	Micromya iris (Lea)	5 (3 living)	"Rainbow Shell"			
	2. ;	Lasmigona compressa (Lea	1 dead	वैद्वीत तथा प्रोप्ते संपंप त्रीता पद्मा स्थान प्रमुप स्थान प्रमुप पूर्वा पूर्वा प्रमुप प्रमुप स्थान स्थान होत्य			
	Collection 13Dowagiac Creek, at Miles, Berrien County.						

This stream is dammed at Niles and periodically the water is released causing an

Pig

alternation of high and low water in the stream. With such conditions the bivalves proved very scarce. All our material here was dead. The following species were found:

- A. Species of commercial importance:
 - 1. Elliptio dilatatus (Rafinesque) 4 dead "Lady Finger" "Spike"
- B. Species not of commercial value:
 - 1. Actinomaias ellipsiformis (Conrad) 2 dead -----
 - 2. Lasmigona comoressa (Lea) 1 dead -----
 - 3. Anodontoides ferussaciana (Lea) 1 dead -----

Collection 14. - St. Joseph River, at St. Joseph, Berrien County.

8. Cyclonaias tuberculata (Rafinesque) 1

There are large resorts at the mouth of the river and to make a beach this region is periodically dredged. The specimens we obtained were taken from the backwater. No specimens could be obtained along the lake shore, although a wide area was searched. One species was obtained in the backwater:

1. Anodonta grandis footiana (Lea) 1 living "Floater"

LIST OF CLAMS OBTAINED AT ALL 15 LOCALITIES VISITED

IN THE ST. JOSEPH RIVER SYSTEM

A.	Species of commercial importance	Number of Localities	
	1. Elliptio dilatatus (Rafinesque)	at which obtain 12	ned. "Lady Finger" "Spike"
	2. Actinonaies carinate (Barnes)	8	"Mucket"
	3. Fusconaia flava (Rafinesque)	7	"Pig Toe"
	4. Lamosilis ventricosa (Barnes)	7	"Pocket Book"
	5. Lasmigona costata (Rafinesque)	L	"Fluted Shell" "Squaw Foot"
			"Sand Mussel"
	6. Pleurobema cordatum coccineum (Conr	rad) 3	"Pink Pig Toe" "Round
			Pig Toe""Flat Nigger Head"
	7. Lampsilis siliquoidea (Barnes)	1	"Fat Mucket"

"Deer Horn" "Buck Horn"

B.	Species not of Commercial value:	Number of localities at which obtained		
	1. Actinomaias ellipsiformis (Conrad)	10	الإنجابية والإنجاب والمراجعة والمراج	
	2. Micromye iris (Lea)	9	"Rainbow Shell"	
	3. Strophitus rugopus (Swainson)	8	"Squaw Foot" "Creeper"	
	4. Alasmidonta marginata (Say)	6	"Nigger Toe" "Elk Toe"	
	5. Anodonta grandis footlana (Lea)	3	"Floater"	
	6. Lasmisona comercasa (Lea)	3	the destination of the second section is a second section of the section of the second section of the section of the second section of the s	
	7. Anodontoides ferussaciena (Les)	3	वक व्यानको भंग क्षेत्र श्रीत निर्माणक एक प्रीत स्थानको स्थान स्थान स्थान स्थान स्थान स्थान स्थान स्थान स्थान	
	8. Alasmidonta calcoolus (Lea)	2	الإنجاب والمناسبة	

The common names used in all the species lists are taken from published papers. What common names are used in Michigan ought to be determined.