

RIVER TRANSPORTATION

By Teresa Branson

GRADE LEVEL: Elementary

Prepared in partial fulfillment of requirements for
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TRANSPORTATION

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LESSON ONE: The Wabash and the Ohio Rivers

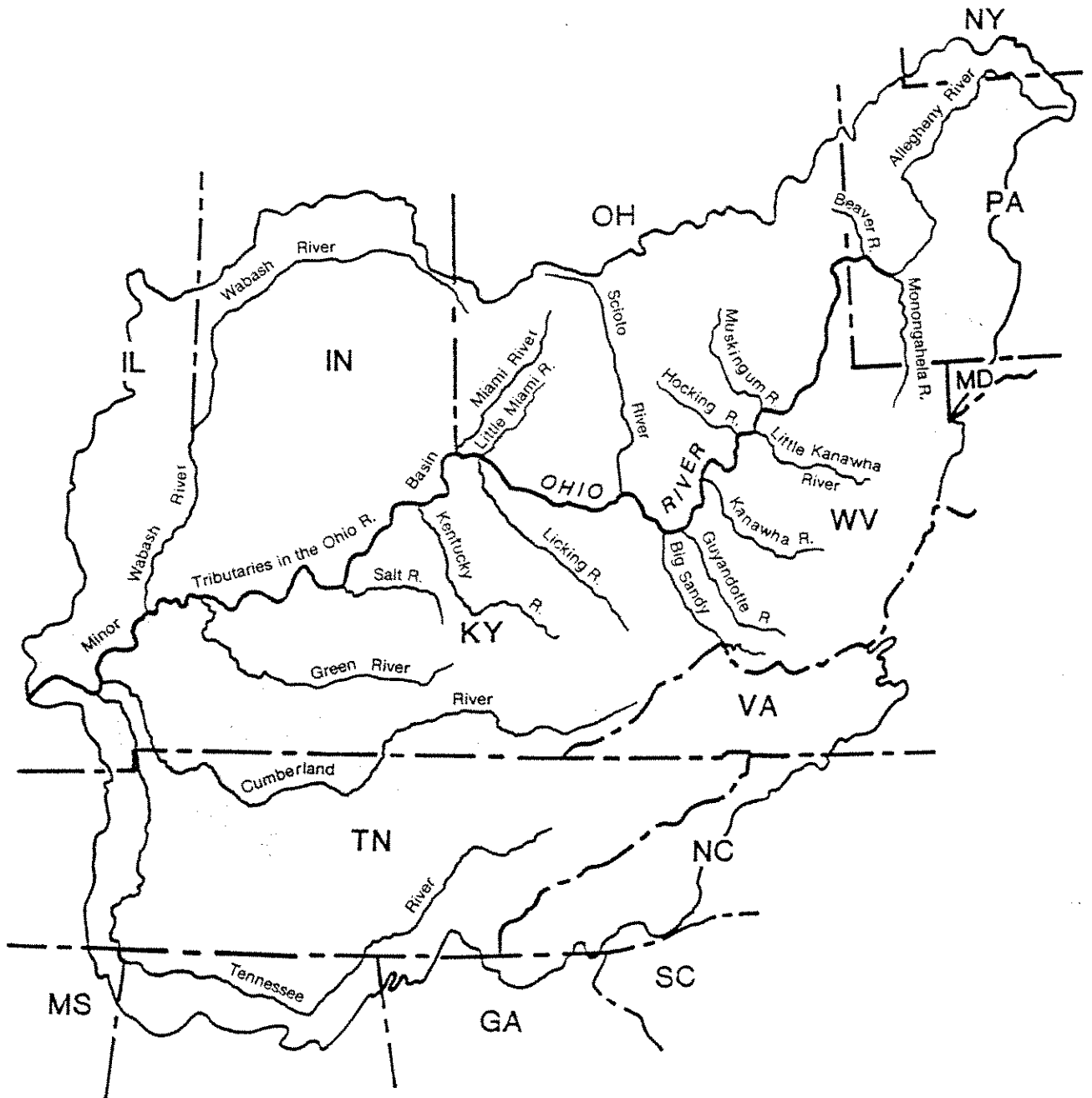
PURPOSE: The students will locate the Wabash and the Ohio River. The students will be able to name some of the effects both rivers had on Indiana. Students will recognize some of the problems of river travel.

MATERIALS: Transparencies of Major Rivers of Indiana, Ohio River, and Counties of 1816 in Indiana. Also copies of each map for each student or group of students. Materials from this packet.

PROCEDURE:

- * Using the transparency of the Ohio River discuss the relationship of the Ohio River to the eastern states and to Indiana.
- * Have students trace the Ohio River on their maps with a blue crayon or marker.
- * Show transparency of Indiana Rivers. Locate the Wabash River. Discuss its importance to the state as a major highway. Point out the Wabash's relationship to the St. Joseph and Kankakee Rivers. Remind students of La Salle's first night in Indiana.
- * Have the students locate the Wabash river on their maps and trace with a blue crayon or marker.
- * Have students locate other possible Portages connecting to the Wabash river. Mark with a green X.
- * Show the Transparency of Counties of 1816 in Indiana.
- * Discuss with students possible reasons for the location of the first counties in the state along the Ohio River. Be sure they include the Indians still owning land to the north as well as its relationship to the river.
- * Discuss problems with river travel. Have the students list possible problems that might arise in the summer and winter that would hinder river travel.

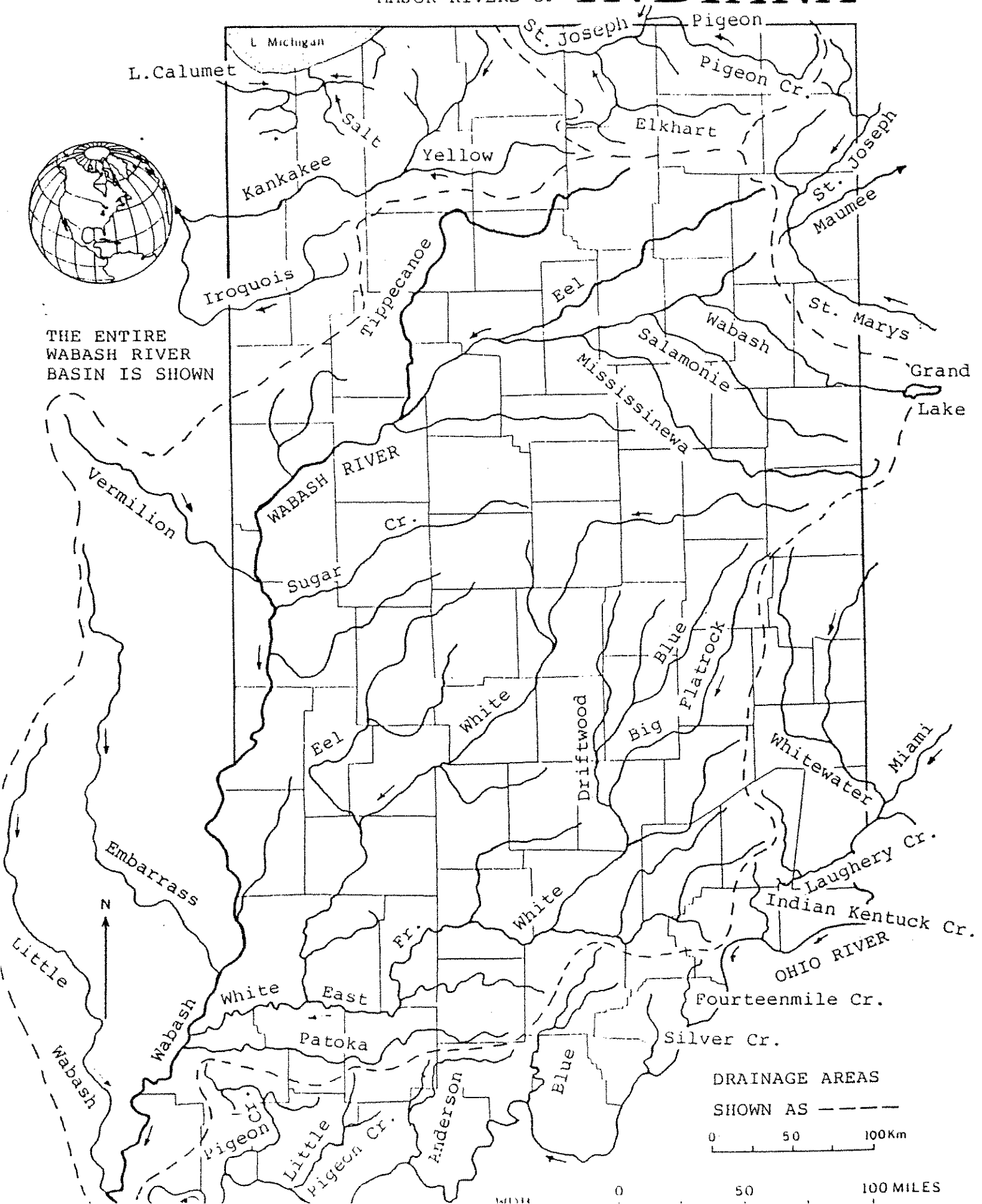
PLATE 6 — OHIO RIVER DRAINAGE BASINS



MAJOR RIVERS OF INDIANA



THE ENTIRE
WABASH RIVER
BASIN IS SHOWN



DRAINAGE AREAS
SHOWN AS - - - -

0 50 100 Km

0 50 100 MILES

LESSON TWO: Flatboats, Keelboats, and Ferryboats

PURPOSE: The students will learn the uses and descriptions of each type of boat.

Materials: Pages 115 - 117 of "Living Indiana History", Pictures of each type of boat, copy of "Impact of the Ohio River on the Development of Mt. Vernon" (pg. 4 & 5), and information in this packet.

PROCEDURE:

* Have students research these different types of boats. Discuss each boat's characteristics and uses.

* Make these headings across the top of the board or chart paper: WHAT TYPE, USES, DESCRIPTION, ADVANTAGES, and DISADVANTAGES. Under TYPE list the different types of boats from this lesson. Have the students fill in the other columns.

* Have students choose one type of boat and make a drawing of it. Then, write a paragraph about it's trip down the Ohio. Where was it going? Why was it being used instead of another type of boat? Who was riding on it? What things did it encounter along the way?

Flatboats

Flatboats were rectangular with a cabin on top and flat bottoms. They were steered by a man at the end of the boat with a long pole. Other poles were used to help push away from the shore, get past sandbars, floating logs, or snags in the river. Flatboats were only able to go down stream. It was usually sold as firewood when it reached New Orleans. If a family was using it to move, the wood was often used to build an open-faced cabin or other shelter until the cabin could be built.

Ferryboats

Ferryboats were used to help people cross the river when a ford, or low place in the river, could not be found. Usually an operator would live near the river and earn his living by hauling people across the river. The ferryboats were attached to a cable that ran from one side of the river to the other. This kept the ferry from drifting down stream. They were strong wooden rafts large enough to carry a settler and his belongings or a farmer and his crops and animals.

Keelboats

Keelboats were long and narrow and easier to steer than flatboats. With the help of sails and poles the keelboats could travel upstream. Usually 6 to 8 men were needed to pole upstream. They had poles long enough to reach the bottom of the river. One end of the pole was placed on the river bottom. Then, they pushed the top of the pole with their shoulders as they walked up the deck. This moved the boat upstream. When they reached the end they had to quickly run back to their places and start over again before the boat could float back downstream again. Other keelboats used rowers and oars. Either way it was a long difficult trip. It would often take 3 months to get back upriver from New Orleans to Indiana.

GLASS BOATS

I WAS NEVER SAW A "GLASS BOAT", THOUGH I HAVE HEARD OF THEM SINCE LEAVING THE RIVER COUNTRY, SO I READ WITH MUCH INTEREST LAST WEEK CLARENCE WOLFE'S PARAGRAPHS ABOUT THE GLASS BOAT IN THE NEW HARMONY TIMES. MR. & MRS. WOLFE HAD BEEN TALKING WITH MR. & MRS. THOMAS MUMFORD OF NEW HARMONY, WHEN SAYS MR. WOLFE, "IN OUR DISCUSSION MRS. MUMFORD MADE A STATEMENT ABOUT THE GLASS BOATS WHOSE COMING BROUGHT A THRILL TO THE DWELLERS ALONG THE BANKS OF THE WABASH THREE-QUARTERS OF A CENTURY AGO. IT WAS THE FIRST TIME WE HAD EVER HEARD THIS PHASE OF NAVIGATION MENTIONED.

"BOTH MR. & MRS. MUMFORD RECALL THE VISITS OF THE "GLASS BOAT", WHICH WAS NOT, AS THE NAME IMPLIES, CONSTRUCTED OF GLASS, BUT CARRIED AS ITS CARGO A MULTITUDE OF PIECES OF GLASSWARE OF EVERY SHAPE AND DESIGN," MR. WOLFE CONTINUED. "IT WAS A CRUDE AFFAIR, A CABIN BUILT UPON A FLATBOAT AND STEERED BY A STERN OAR, WITHOUT PROPELLING POWER, AND DEPENDING UPON THE ALWAYS PLACID CURRENT OF THE WABASH TO CARRY IT ON TO ITS DESTINATION, SOMETIMES, NO DOUBT, TO NEW ORLEANS. THE "GLASS BOAT," LIKE THE BUTTERFLY, LASTED FOR ONE BRIEF SEASON, AND AT THE END OF ITS JOURNEY IT WAS DISMANTLED AND ITS TIMBERS USED FOR BUILDING PURPOSES. NO ONE EVER SAW A "GLASS BOAT" GOING UP STREAM.

"THE COMING OF THE "GLASS BOAT" WAS LOOKED FORWARD TO WITH PLEASURE BY THE PEOPLE OF THOSE EARLY DAYS, FOR IT MEANT A REPLENISHING OF THE CUPBOARDS OF THE TOWN. THE BOAT USUALLY ANCHORED AT A CONVENIENT PLACE BENEATH THE BANK AND SOON THE PEOPLE OF THE TOWN HURRIED TO THE RIVER. THE CHILDREN, IN ANTICIPATION OF THE BOAT'S COMING, HAD BEEN GATHERING AND SAVING RAGS WHICH WERE BARTERED FOR CHOICE BITS OF GLASSWARE DEAR TO THE CHILDISH HEART. THEIR ELDERS MADE PURCHASES OF MORE PRACTICAL STUFF, TUMBLERS, CAKE PLATES AND BOWLS OF VARIOUS SIZES, WHICH TO THIS DAY ARE TO BE FOUND IN THE RECESSES OF THE CUPBOARD, UNTIL RECENTLY STORED AWAY ON REMOTE SHELVES OR IN THE ATTIC UNTIL THE CRAZE FOR OLD GLASSWARE BROUGHT THEM OUT. IT IS AN INTERESTING FACT THAT MANY OF THE PRIZED PIECES OF THE LOCAL COLLECTOR CAME TO NEW HARMONY SEVENTY-FIVE YEARS AGO ABOARD THE "GLASS BOAT" AND WHERE PERHAPS PURCHASED WITH THE RAGS GATHERED BY CHILDREN WHO DURING THE INTERVENING YEARS HAVE FOUND REST AND PEACE BENEATH THE GRASSGROWN SLOPE OF MAPLE HILL."

FROM: THE INDIANAPOLIS STAR, SEPT. 23, 1934
A HOOSIER LISTENING POST, BY KATE MILNER RABB

"HERE COMES THE GLASS BOAT"

. TO THE MT. VERNON WHARF

By LOUISE A. BALDWIN

"Hello! The Boat"—was a welcome and familiar cry along the Ohio river in the years immediately preceding the Civil War, when the water-lanes from Pittsburgh to New Orleans were an important factor in the trade of those early days.

Trading-scows or "Yankee Notion Boats" which followed the crops as they ripened—through the corn belt, the cotton belt, the sugar cane—were hailed by the inhabitants of every little river-town and landing and plantation, because they furnished a link with important centers of trade.

No boats were more welcome nor more eagerly awaited than the Glass Boats so-called because of their stock of glassware of all kinds, from the fine French china, manufactured in Cincinnati, to cut-glass from Pittsburgh.

Older Resident Remember

Many older residents of Posey county remember the visits of these Glass Boats, and how for months before their arrival, the women and children saved rags, and broken glass, so that they might have something to trade for badly needed dishes. Brides-to-be stocked their hope-chests, saloons and barber shops bought the beautifully painted or exquisitely cut bottles, and many a man surreptitiously traded pecans or honey or coonskins for a set of chinaware with which to surprise his wife.

Upon the arrival of the boat, the clay banks of the levee were strewn with cinders and ashes for a foot-hold. A large bell suspended on a pole above the roof, clanged a wel-

come and soon the townspeople were hurrying to a common center, the wharf. Handbills were passed advertising the wares on board, and often an added attraction like a performing bear or an alligator, drew a large and curious crowd.

In size, the Glass Boats varied greatly, most of them being built with reference to the particular needs of the families using them. Most of them were barges, with a rectangular cabin which was divided into four rooms, arranged "shot-gun" fashion. The long front room was used for display of goods; the rooms in the rear provided living quarters for the owner family.

Through the center of the store-room was a long, tiered table on which were arranged the sets of dishes, the vases and the fine glass bottles which were for sale or trade. Clear glass lamps were also sold, filled with "ruby oil", a tinted kerosene, which gave the lamps a decorative appearance and added to their selling value.

Oil-Flares Guided Traders

For the benefit of those who wished to do their trading during evening hours, flaming oil-flares on tall poles stuck in the deep clay banks lighted the way to the water's edge. Over the entrance hung a smoky torch-basket and the display-room was lighted by flickering lanterns filled with lard oil.

For the families of the proprietors of the storeboats, life on the river did not differ much from that on land, except for the actual work of navigation. Living quarters were comfortable, and there was ample room for the storage of provisions and cargo. They ate the best the

country-side afforded—fresh fruits and vegetables, country cream and butter. All drank the water dipped out of the river on which they happened to be floating. In one corner of the living-room stood the settling barrel. Here the river water, dipped up in buckets, was left to settle before drinking. At the bottom of the barrel, after it was three-quarters empty, one might find a rich layer of Ohio river mud, intermingled with odds and ends of all kinds, including sometimes, a fish or two.

The boats were propelled by a long oar astern which served as a rudder, and a short oar in front known as the "gouger." Although these were used to maneuver the boat out of shallow water, the main reliance was upon the current. Drifting along leisurely, they tried to reach the Mississippi river before winter, as the boats were not built substantially enough to withstand the ice that formed in the Ohio during severely cold weather.

Journey One-Way Passage

The journey of the Glass Boats was a one-way passage. Arriving in New Orleans, they were dismantled and the wood sold for building purposes. Their owners, disposing also of the cargo they had collected enroute, returned upstream by steamboat.

With the outbreak of the Civil War, which made river-travel dangerous for small craft, the floating stores disappeared.

But today many collectors of old glassware cherish in their cupboards pieces prized particularly because they were purchased over seventy-five years ago aboard a Glass Boat.

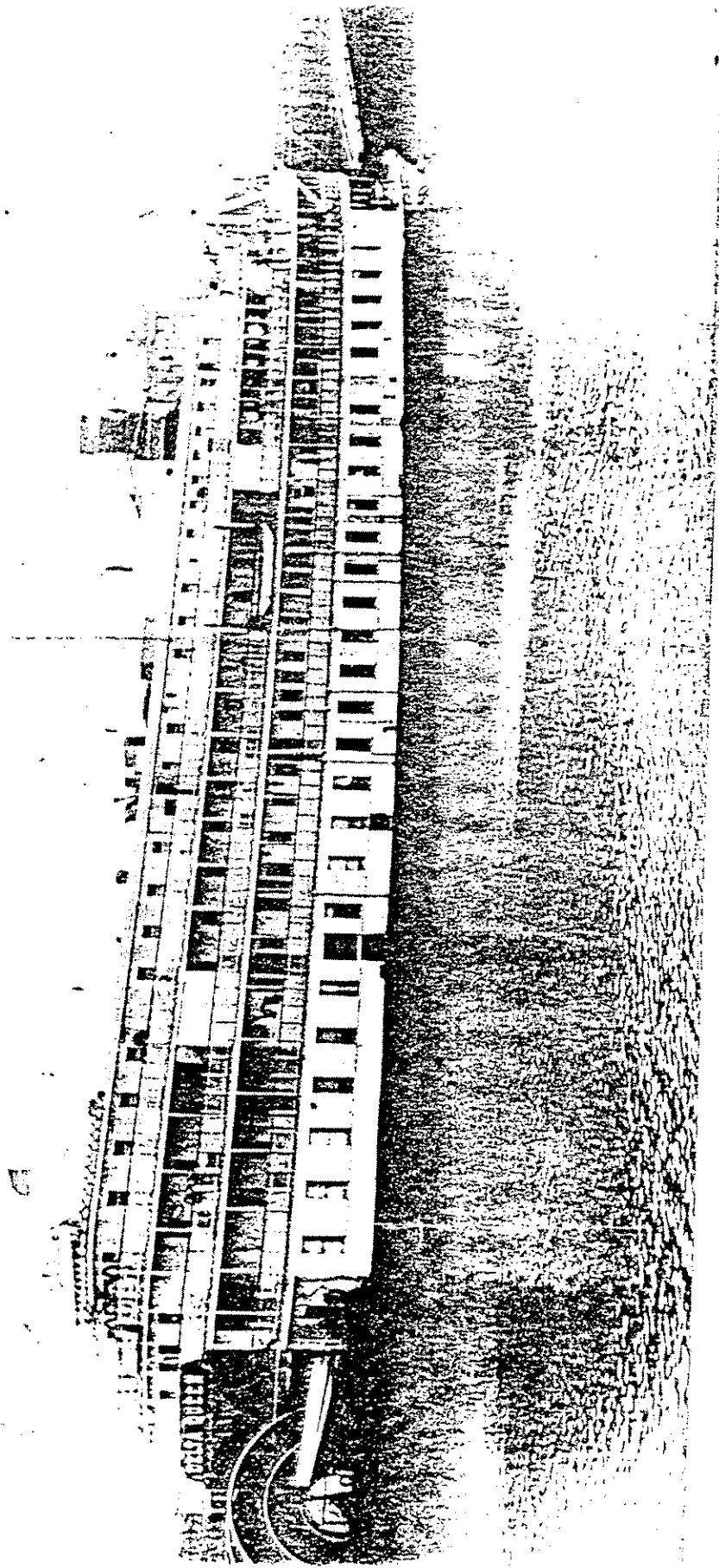
LESSON THREE: Steamboats and Showboats

PURPOSE: Students will identify steamboats uses for transporting people and merchandise as well as its importance to the settlers along the Ohio.

MATERIALS: Information from this packet, pages 118-121 of "Living Indiana History", copy of IMPACT OF THE OHIO RIVER ON THE DEVELOPMENT OF MT. VERNON, a copy of THE NINETEENTH STATE "Steamboating on the Ohio" cassette tape, slides of the Howard Steamboat Museum in New Albany.

PROCEDURE:

- * Play "Steamboating on the Ohio" to the class.
- * Discuss the designs of the steamboats and why they were a better way for farmers to get produce to market. What were the advantages and disadvantages of using the steamboats?
- * Discuss the use of steamboats as Showboats.
- * Locate Jeffersonville and New Albany on a map of Indiana and discuss their shipbuilding days. Show slides of Howard Steamboat Museum.
- * Have students write a letter to a friend describing their journey aboard a steamboat, be sure to describe things they would have seen, heard, and done while on the boat. OR write a letter to a friend describing a showboat and a play they might have seen on board.



BOATS. THE FAMOUS ROBERT E. LEE WAS BUILT IN NEW ALBANY BY THE
HOWARD FAMILY.

THERE WERE OTHER DANGERS FOR THE STEAMBOATS BESIDES THE
SANDBARS AND SNAGS. MANY BURNED AND SANK WHEN THEIR BOILERS
EXPLODED OR THE SPARKS FROM THE FURNACES WOULD CATCH THEM ON
FIRE.

Mt. Vernon Western Star
Mt. Vernon, IN Thursday Oct. 23, 1890

Steamer John S. Hopkins.

The champion of all the sternwheelers, the John S. Hopkins, resumes her place in the mail trade between Evansville and Paducah to-day, after a withdrawal of some sixty days, during which time she has been thoroughly rebuilt and repaired in every particular. Her hull and cabin work was done at the Madison Marine Ways; her engines by the Mechanics Foundry; her boilers by Pelz & Co.; her chimneys and sheet iron works by Kreipke & Co.; her cabin and joiner work by Jacob Meyer & Son; her painting by Wm. A. Woods and Son; her outfit in linens, tapestries, etc., by Lahr, Hopkins Co., and queensware, cutlery, etc., by Blackburn & Lunkenheimer, making the steamer as good as new in every detail.

The steamer Hopkins has been favored with a most remarkable career. She has made more trips between Evansville and Paducah than any other steamer ever accomplished, and by her promptness and punctuality her name has become more familiar than any other steamer that has been connected with the trade between Evansville and Cairo. This boat was originally constructed in Pittsburgh in 1880, creating a new era and departure in fast sternwheel

mail and passenger packets, displacing the sidewheel boats and accomplishing their service with much better results than ever accomplished by any sidewheel boat. The evidence of her superior construction, as to her machinery, hull and general make-up, is verified by the success of her operations.

She has likewise created a revolution in the character of navigating the Ohio River with Packet steamers. As an evidence of her superiority over other boats of her class and kind during her existence of ten years, she has proven herself not only to be one of the fastest and safest boats that navigate the Ohio, but without disparagement to others, every attempt that has been made (which have been many) to improve on her plan of construction have failed to improve on her, either in speed, economy, capacity or safety, she never having failed to show her heels to her rivals. During her business career she has at no time ever lost a life or limb, she has never met with an accident of any character that caused detention of a trip, and has proven in every particular, a most servicable, economical and successful boat.

She resumes her place to-day in the trade between Evansville and Paducah officered by the following competent and agreeable men: Captain, Geo. S. Throop; clerks, Jas. Howard, Jr., and William Crozier; pilots, Wm. Lutz and John Throop; engineers, B. W. Reynolds and Chas. Dexter; mate, John Waits; carpenter, John Powell; her steward being the incomparable chef de cuisine, John Cooper, making the boat and crew unequalled without question. In her new condition she certainly invites a full share of the business from the general public, with which she has ever been favored.

TEN THOUSAND PADS.

Immense Preparations for the Election.

An Army of Twenty-one Thou-

Show-Boat Sinks At Local Wharf

Steamer Jewel and Cotton Blossom Floating Theatre Go
Down Just West of Water Works.

The steamer Jewel and floating theater Cotton Blossom, the former used in towing the latter, and both owned by Capt. Otto Hittner of Parkersburg, West Virginia., were torn loose from their moorings by the moving ice Saturday night at 7:00 o'clock, and sank on the reef just west of the water works plant. The Cotton Blossom, which is broken in two, has her nose touching the bank, and the Jewel is lying lengthwise at the stern of the former, water covering her lower deck. Both these boats have been lying at our wharf for the past three months, and the freeze up in the river was so sudden that Capt. Hittner was unable to remove them to a safe harbor. These two boats cost when new about \$25,000, and both will be wrecked when the ice again begins to move. The loss is partly covered by insurance.

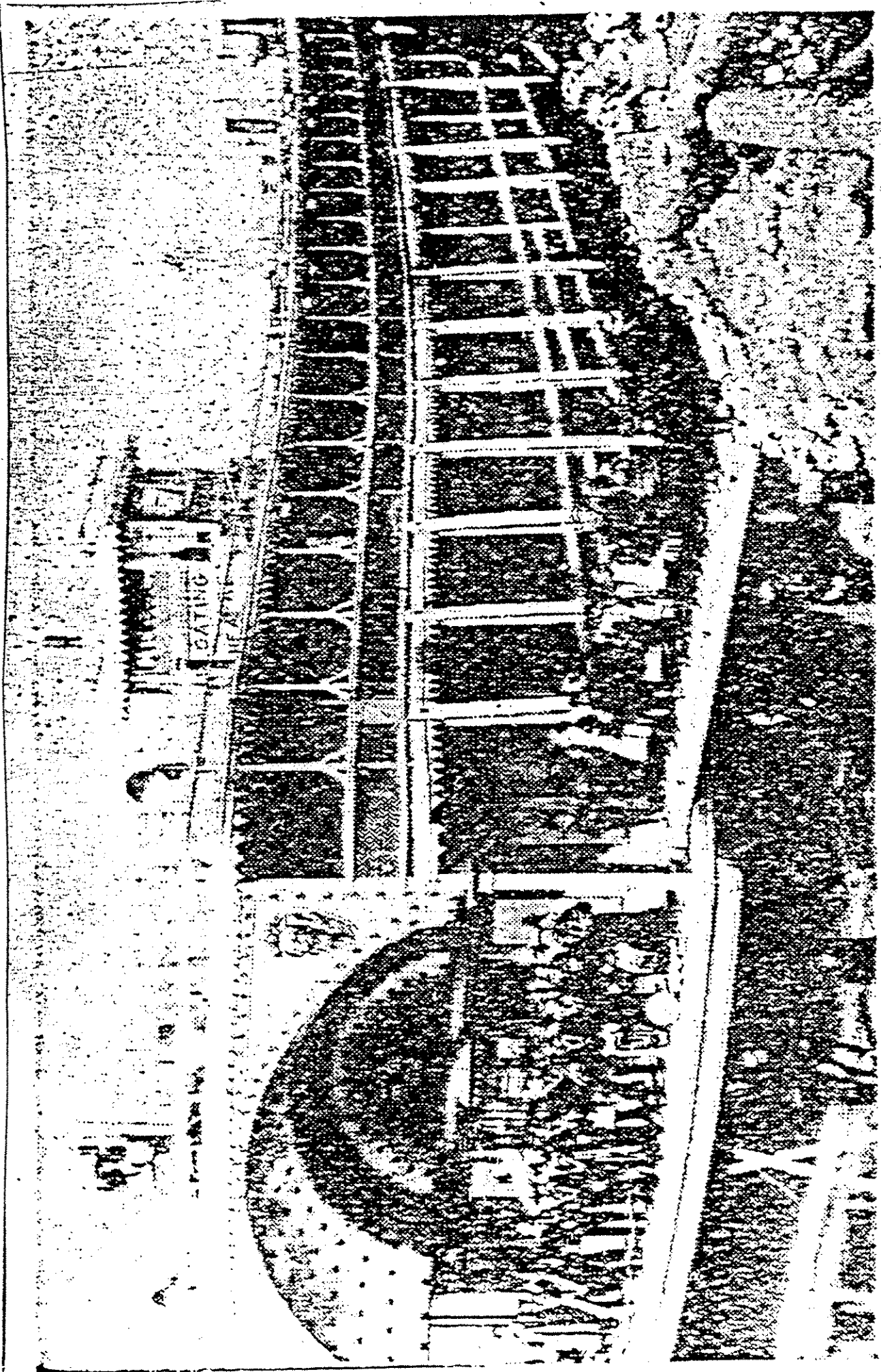
The dismantled steamer Clyde, lying above the Hominy Mills, and belonging to the Flesher Boat Co., also broke loose and was carried down the stream by the ice and lodged against the model covered barge, Belle V. Flesher, and it is feared both will be lost when the break comes. The steamer D. T. Flesher and barges, tied in clear water below McFaddin's creek, are supposed to be in safe harbor as they are lying in the bend of the river, which has thus far not been frozen over, but when the thick ice begins to move it may strike and break them loose from their mooring s. A flatboat belonging to the Fleshers, was carried down to the foot of Store street and sunk.

The marine adjuster was in the city yesterday and satisfactorily settled the loss sustained by Capt. Hittner, and after making the settlement sold the theatre-boat Cotton Blossom back to Capt.

Hittner , and the towbaot Jewelm

Hittner, and the towboat Jewel, to the Flescher Co., the price paid for these boats is kept private, but it is said the figures were very low. Both boats are now being dismantled, and a big crew of men are at work to get everything off the boats before the ice breaks, as what is left will be swept away by the heavy ice when the break comes.

From: The Western Star (a weekly paper)
Mt. Vernon, Indiana Thursday, January 10, 1918



THIS IS THE SHOWBOAT which bore the name of Eisenbarth-Henderson Floating Theatre—The New Modern Temple of Amusement. Later the craft's name was changed to The Cotton Blossom and probably is better remembered by that name. It was destroyed by ice in 1917.

Menke Showboat Golden Rod Gets Steel Hull; May Resume Touring

Only the present high stage of the Mississippi river is preventing Capt. J. W. (Billy) Menke from going ahead on what is to be the first steel-hulled showboat on the western rivers, a recent issue of The Waterways Journal said.

Capt. Menke is well known in Mt. Vernon. He spent several seasons here during the heyday of the Ohio river showboat.

What's more, the Waterways Journal continued. Capt. Menke plans to make his boat self-propelled, another "first." The Golden Rod, the Menke showboat, has become an institution on the St. Louis waterfront where it has had a 10-year continuous run.

Utilizes Oil Barge

Capt. Menke in December of last year, according to The Waterways Journal, bought a former DPC oil barge from the US Maritime Commission.

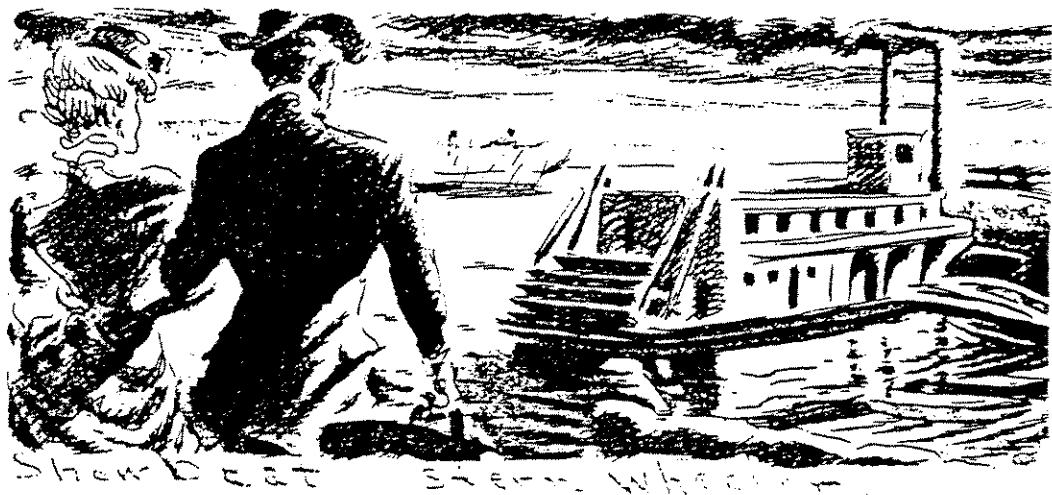
Workmen have been cutting out the deck and compartments of the barge so that the Golden Rod will fit inside. When completed the main deck of the showboat and the top of the barge's hull will be flush.

The showboat and the barge both will be towed to the St. Louis Shipbuilding and Steel Company drydock. There the barge will be submerged in position over it. The barge will be raised and pumped out and the showboat will have a steel hull, 230x45 feet. The present wood hull is about the same beam but only 161 feet long.

Propelling Machinery

Ample room will remain for the installation of propellers and auxiliary machinery.

Once completed, the Menke showboat will again tour the rivers, making "one night stands" as of old.



SHOWBOAT STEAM WHEELER

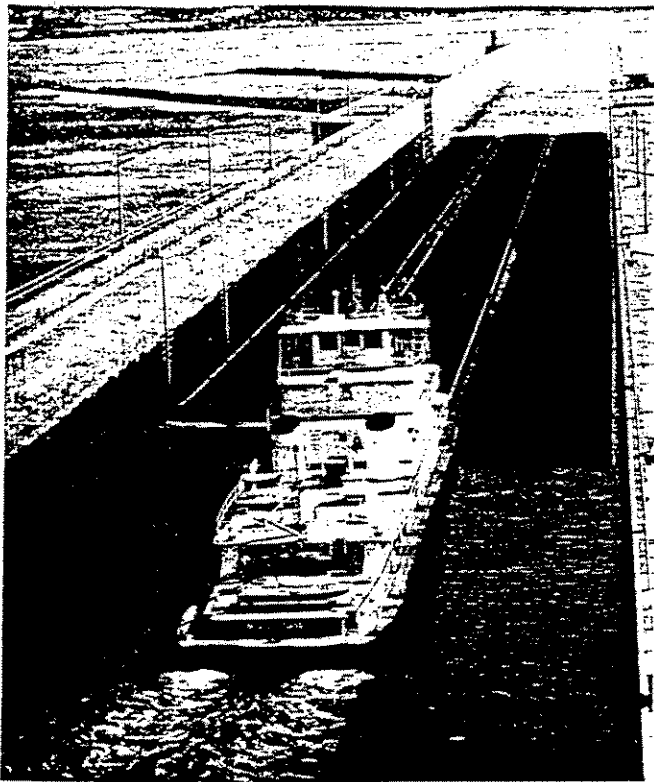
LESSON FOUR: Barges and Tows

PURPOSE: Students will learn uses of barges and tows in transporting commodities.

MATERIALS: US Army Corps of Engineers Ohio River Navigation System 1988 Report (pgs. 6, 7, and 9) included in this packet. Transparency of page 9.

PROCEDURE:

- * Discuss with students the sizes and different types of towboats and barges.
- * Use the Southwind Maritime Centre Tonnage figures for 1977 - 1989. Have students look at the commodities that have been transported from Southwind and decide what types of barges were probably used.
- * Have students choose one type of barge. Draw a picture of the tow showing what it is transporting. Label the picture.
- * Use the transparency of the Cargo Capacity Comparison Sheet. Discuss differences in amounts that each can haul and make some comparisons as to which would be the cheapest way to haul different items.



Coal tow downbound out of Smithland Locks and Dam

system are generally powered with engines of 300 to 7,000 horsepower. The Ohio River towboats seldom exceed 6,500 horsepower and push an average maximum size tow of about 30 barges. (Refer to TABLE 35 for average tow configurations at ORB locks).

Four types of barges are used: open hopper, covered hopper, deck, and tank. The dimensions and capacities of several of the basic types are shown on PLATE 3. These may be further categorized by length and width into 47 barge types in use on the Mississippi River System and the Gulf Intracoastal Waterway.

Open hopper barges can be used for all types of bulk solid cargo and provide about 45 percent of the tonnage capacity on the inland waterways. Covered hopper barges provide nearly 25 percent of the capacity; tank barges about 22 percent; and deck barges eight percent. Barge hulls are shaped to facilitate their

assembly into a tow that provides an efficient underwater configuration, similar to that of a single vessel. The leading barges in the tow usually have raked bows to reduce drag and the other barges have squared bows to provide efficient tow makeup.

An integrated tow is designed to function as a single vessel which is especially applicable to the movement of chemical and petroleum products. They are made up of tank barges and are rarely broken up in order to use the barges independently.

PLATE 3 — TYPES OF TOWBOATS AND BARGES



OPEN HOPPER BARGES

TYPE	LENGTH FEET	BREADTH FEET	DRAFT FEET	CAPACITY TONS
STANDARD	175	26	9	1000
JUMBO	195	35	9	1500
SUPER JUMBO	250-290	40-52		2500-3000



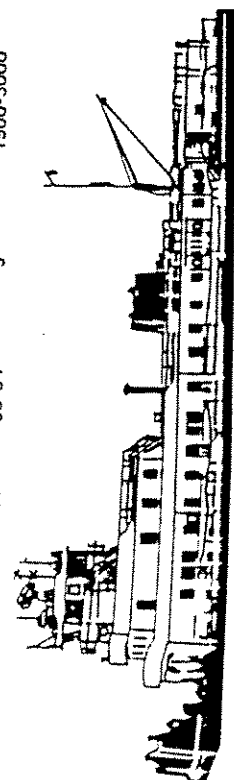
COVERED HOPPER BARGES

TYPE	LENGTH FEET	BREADTH FEET	DRAFT FEET	CAPACITY TONS
STANDARD	175	26	9	1000
JUMBO	195	35	9	1500



INTEGRATED CHEMICAL AND PETROLEUM BARGES

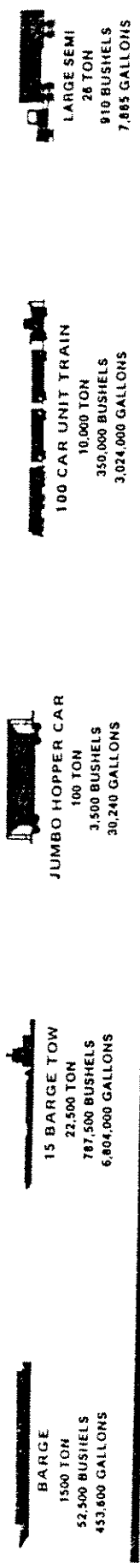
LENGTH FEET	BREADTH FEET	DRAFT FEET	CAPACITY TONS
150-300	50-54	9	1900-3000



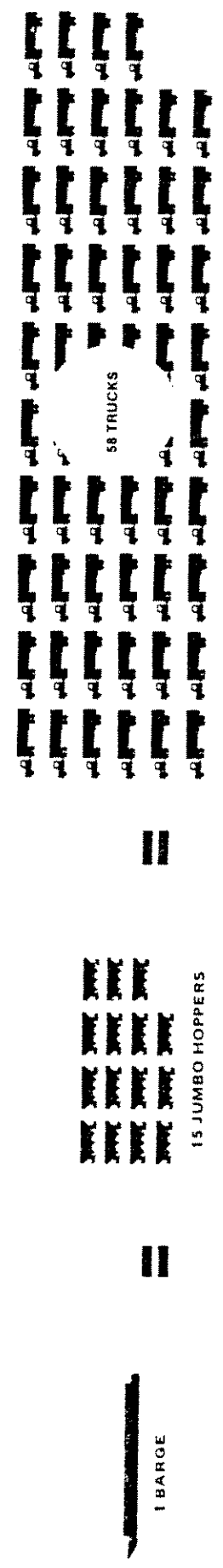
TOWBOATS

LENGTH FEET	BREADTH FEET	DRAFT FEET	HORSEPOWER
65-160	24-50	5-9	300-7000

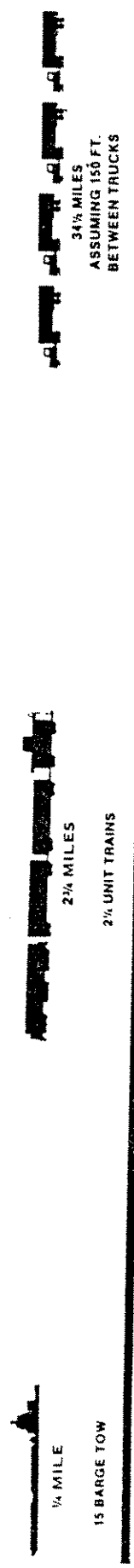
PLATE 4 — ALTERNATE TRANSPORTATION MODE COMPARISONS



EQUIVALENT UNITS



EQUIVALENT LENGTHS



NON

SOUTHWIND MARITIME CENTRE TONNAGE

YEAR	COMMODITY	TONS
1977	Grain	84,355.78
	Fertilizer	69,871.47
	Logs	2,659.00
	Manhole Covers	167.66
	Coal	200.00
	TOTAL TONS FOR 1977	157,253.91
1978	Grain	311,331.42
	Fertilizer	59,061.23
	Iron Castings, Logs and Pipe	16,069.30
	TOTAL TONS FOR 1978	386,461.95
1979	Grain	583,177.83
	Fertilizer	58,649.07
	Logs, Manhole Covers, Coal, Salt, Soybean Oil, Steel and Construction Equipment	29,253.41
	TOTAL TONS FOR 1979	671,080.31
1980	Grain	530,706.32
	Fertilizer	64,387.39
	Manhole Covers	898.80
	Logs	4,883.12
	Pipe	2,367.75
	Machinery	555.00
	Poles	1,010.23
	TOTAL TONS FOR 1980	604,808.61
1981	Grain	870,522.12
	Fertilizer	61,908.14
	Pipe, Manhole Covers, Logs	11,262.63
	TOTAL TONS FOR 1981	943,692.89

SOUTHWIND MARITIME CENTRE TONNAGE

YEAR	COMMODITY	TONS
1982	Grain	1,521,716.31
	Fertilizer	143,832.51
	Pipe	4,121.79
	Logs	4,467.39
	TOTAL TONS FOR 1982	1,674,138.00
1983	Grain	975,030.04
	Fertilizer	241,631.41
	Coal	646,030.23
	Pipe	2,975.87
	Logs	4,918.28
	Bridge Parts, Coking Coal and Petroleum Coke	6,536.00
TOTAL TONS FOR 1983	1,877,121.83	
1984	Grain	1,123,981.12
	Fertilizer	221,331.23
	Coal	2,183,420.05
	Pipe	4,029.93
	Logs	5,011.29
	Tubing	645.71
	TOTAL TONS FOR 1984	3,538,419.33
1985	Grain	1,302,093.23
	Fertilizer	181,438.79
	Coal	2,197,825.43
	Pipe	5,625.26
	Logs	2,923.11
	Equipment	1,528.41
TOTAL TONS FOR 1985	3,691,434.23	
1986	Grain	1,013,488.02
	Fertilizer	156,683.30
	Coal	2,867,207.79
	Pipe	7,702.31
	Logs	5,028.50
	Bridge Parts, Vessel	3,134.83
	TOTAL TONS FOR 1986	4,053,244.75

SOUTHWIND MARITIME CENTRE TONNAGE

YEAR	COMMODITY	TONS
1987	Grain	1,250,716.38
	Fertilizer	204,652.37
	Coal	2,546,958.15
	Pipe	6,004.55
	Logs	2,054.95
	Steel	1,174.31
	TOTAL TONS FOR 1987	4,011,560.71
1988	Grain	885,140.39
	Fertilizer	184,869.62
	Coal	2,529,939.34
	Pipe	5,863.76
	Logs	2,742.15
	TOTAL TONS FOR 1988	3,608,555.26
1989	Grain	1,313,904.84
	Fertilizer	193,058.59
	Coal	2,951,202.93
	Pipe	1,905.09
	Logs	3,968.51
	Coke	1,355.07
	Containers	3,677.05
TOTAL TONS FOR 1989	4,469,072.08	
TOTAL TONNAGE THROUGH SOUTHWIND 1977 THROUGH 1989		29,686,843.86

outbound?

LESSON FIVE: The Port System and Locks & Dams on the Ohio River

PURPOSE: Students will become aware of the need for the lock and dam system. Students will compare commodities shipped from Mt. Vernon in it's youth to those being shipped out of Southwind Maritime Centre today.

MATERIALS: Transparency of "Plate 9-Ohio River Plan and Profile", Transparency of Cargo Capacity Comparison Sheet, Copy of Ohio River Map Charts 29-32. Southwind Maritime Centre, U.S.A. video, information from this packet, and a copy of IMPACT OF THE OHIO RIVER ON THE DEVELOPMENT OF MT. VERNON (pg.4,6,11-13).

PROCEDURE:

* Show the transparency of "Ohio River Plan and Profile" to the students. Pointing out the drops in elevation of the river as it flows from Pittsburgh to Cairo. Discuss the hazards and problems these elevation differences would cause in shipping. Ask students why locks and dams would be necessary to make transporting good safer.

* Show students the Ohio River Chart 29- 32. Explain that this is the "road" map for the barge captains as they travel up and down the river. Point out how the maps match and how the river does not flow in a straight line. Also point out the mile markers in the middle of the river are numbering the miles below Pittsburgh. You might also tell them that a captain is only licensed to pilot one part of the river. When he gets as far as he is licensed to go he trades tows with a captain who has gone as far as he can. Then, they both turn around and go back over their same route. Ask how this would be good for the captains and how it could be bad.

* Show students the "Southwind Maritime Centre, U.S.A." video (9.32min.).

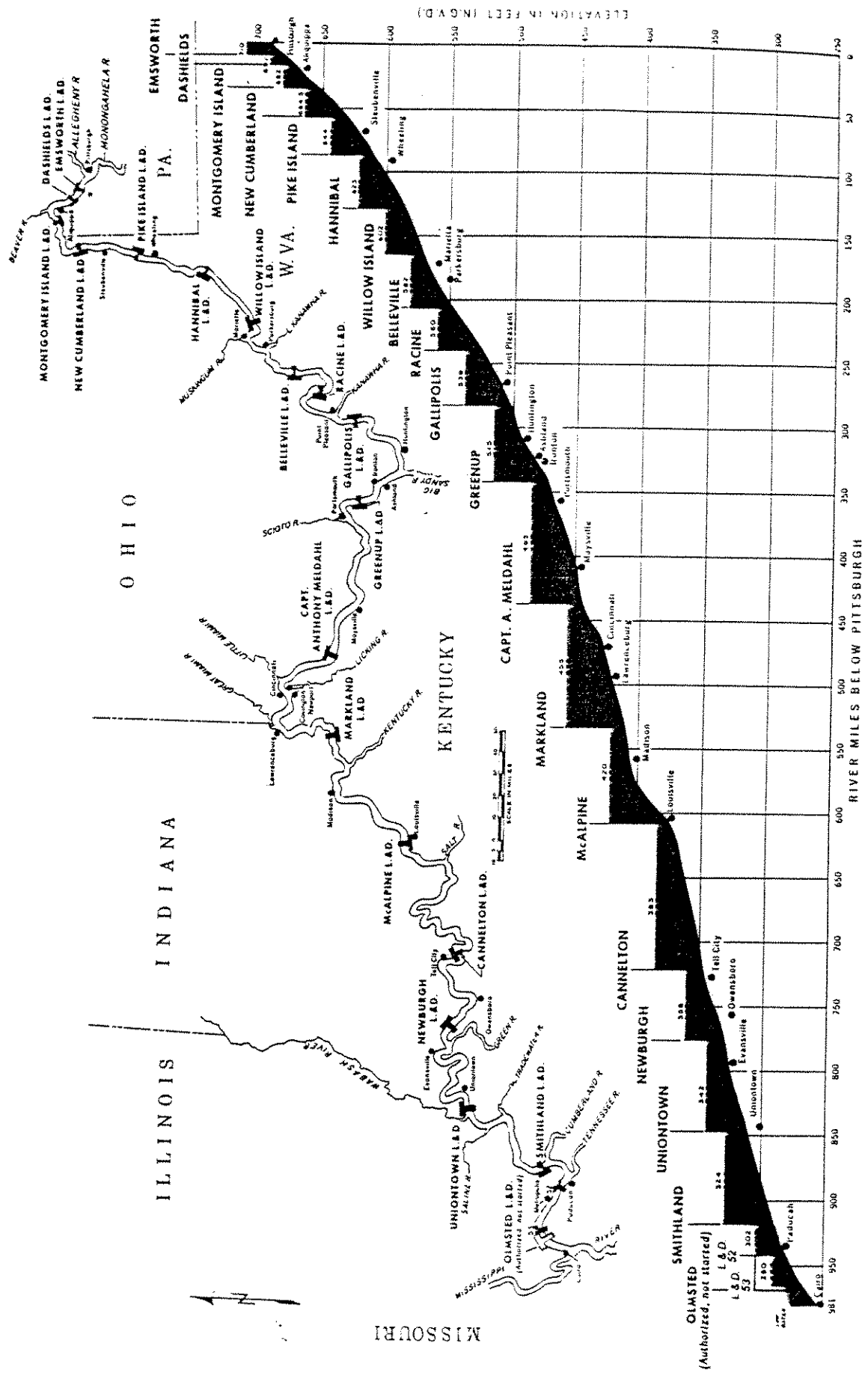
* Make lists of items shipped from Mt. Vernon by river per the video and the research paper. Have students brainstorm reasons for the changes and what was happening to the state to cause these changes. For example: Why would deerskins no longer be shipped down river? What has happened to allow us to ship more grain than logs?

* Using the SOUTHWIND MARITIME CENTRE TONNAGE charts have students choose two or three years from 1977 - 1989 and have them compare the differences in commodities shipped each year, and make a bar graph to show those differences.

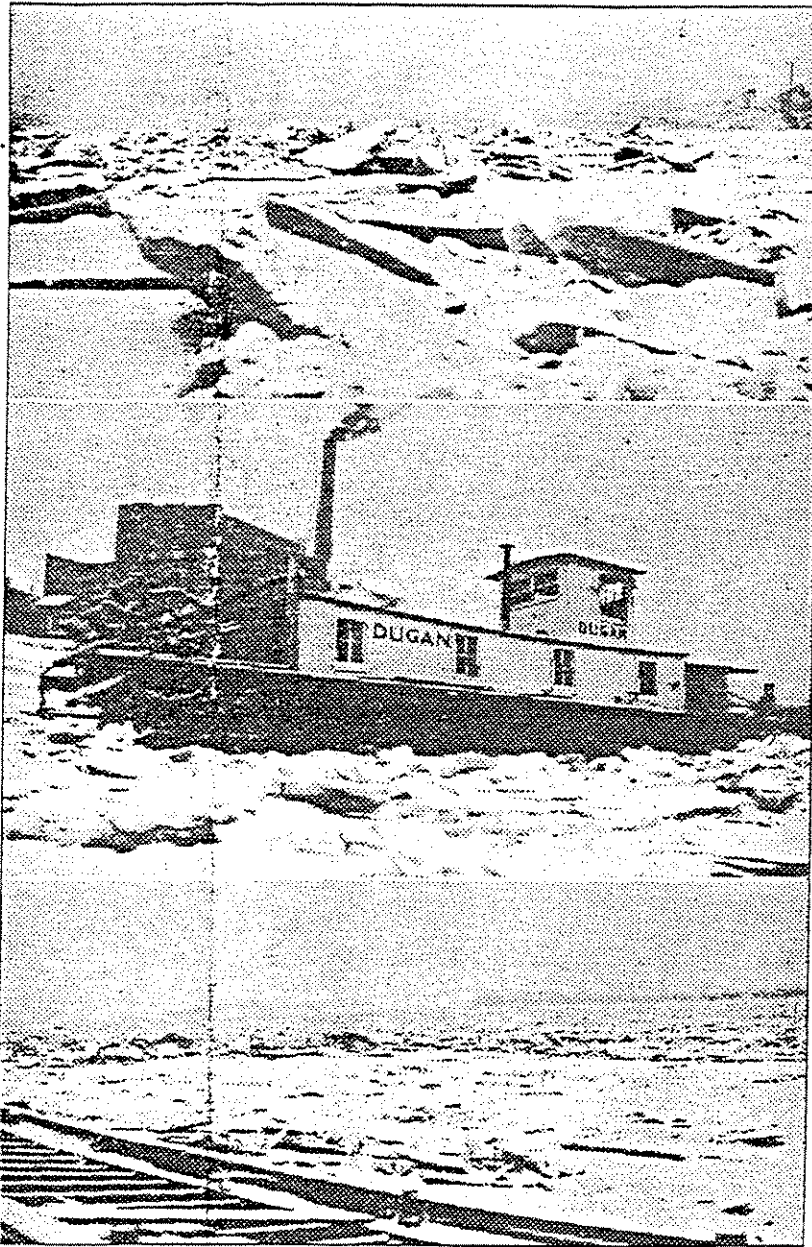
* Using the same charts have students make a line graph showing the changes in TOTAL TONS for each year from 1977-1989.

* Using the same charts have students choose one year and make a pie graph showing the portions each commodity represents of the total tonnage for that year.

PLATE 9 — OHIO RIVER PLAN AND PROFILE



FIRST PHOTOS OF THE ICE GORGE AT MT. VERNON



Views of the ice-locked Ohio river taken by The Western Star's camera man early this week. (Upper) A close up view of the huge cakes of ice, looking down stream. (Center) Ferry boat Dugan, securely locked by the ice. (Lower) View taken from the top of a barge, looking up stream. As far as the eye can see, only ice is visible.

Ice at Mt. Vernon were made Saturday when men from Kentucky came to this city and a number from here walked across the ice to the Kentucky shore.

The gorge in the Ohio originally extended as far down the stream as Carrsville. The gorge at that place broke Friday with a roar.

That the gorge has been materially affecting the stage of the Ohio is indicated by the rapid drop of nearly eight feet at Dam 49 during the 24 hours ending Friday afternoon, but the stream rose again for a few feet before coming to a stand-

...ent ice jam years. At no time has such ice in the

OVERFLOW WATER HELD BACK; FEAR EFFECT OF BREAK

Some of Flood Passing under Ice as Evidenced by Rising Stage at Uniontown Dam

DYNAMITING IS HELD INEFFECTIVE

Louisville District Engineer's Office Says Only Thaw Will Release Ice Barrier

LATE BULLETIN

The Ohio ice gorge broke at Owensboro this afternoon and at 3:15 o'clock the river there was filled with heavy running ice. Slight breaks also occurred at the Henderson railroad bridge and at Dam 48, but the river jammed again.

A 100-mile-long ice gorge, one of the most extensive on record, locked the Ohio river from above Dam 49 at Uniontown, Ky. to Rockport, Ind. at noon today.

There was no indication at that hour of a break of any consequence.

Fears among shipping and lowland agricultural interests mounted hourly as they speculated on the effect of the release of the wall of overflow water above the gorge when the break did come.

43-Foot Stage in Sight

The Weather Bureau continued its forecast of a 43-foot stage at Evansville, which may be further increased by the continued thaw. At the same time a continuance of the thaw appeared the only means of releasing the gorge.

On the appeal of local shipping and agricultural interests The Democrat today contacted the district engineer's office at Louisville, Ky. relative to releasing the gorge by dynamiting at its head near Dam 49. Captain Gullede informed the newspaper that dynamiting had been tried as a means of releasing a gorge at Louisville but had proved ineffective. "It would take all the dynamite in the world to break the gorge loose to any extent," Captain Gullede said.

River Rising at 49

That some of the overflow water is passing under the gorge is evidenced by the whirlpool at the head of the gorge and the rising stage at Dam 49. The river rose 1.3 feet at Dam 49 in the 24 hours ending this morning, the stage at that hour being 23.4 feet. The Evansville stage at 7 o'clock was 36.3 feet.

Unsettled weather with little change in temperature was forecast

NOTE: Whenever the river stage exceeds the level of "ordinary high water" (O.H.W.), all vessels should be operated well off the banks, near the sailing line, to minimize their effects on caving banks, bank vegetation, levees, flood protection works, and other man-made structures which may be vulnerable due to being partially or totally submerged. (See 33 C.F.R. 207.300 (u)).



INDIANA
POSEY COUNTY

UNIONTOWN LOCKS AND DAM
NI. 846.0
Telephone 812-838-5836
Maximum Locking Stage
29.1 Feet Upper Gage
Upper Gage OHW 343.9
Lower Gage OHW 342.7

Note: Old Lock & Dam No. 49, Mile 845.0.
All structures removed to a depth of 20' or more below normal pool.

Wabash Island (Ky)
Federal Mooring Buoys for Emergency Use

NORMAL POOL SMITHLAND DAM ELEV. 324.0

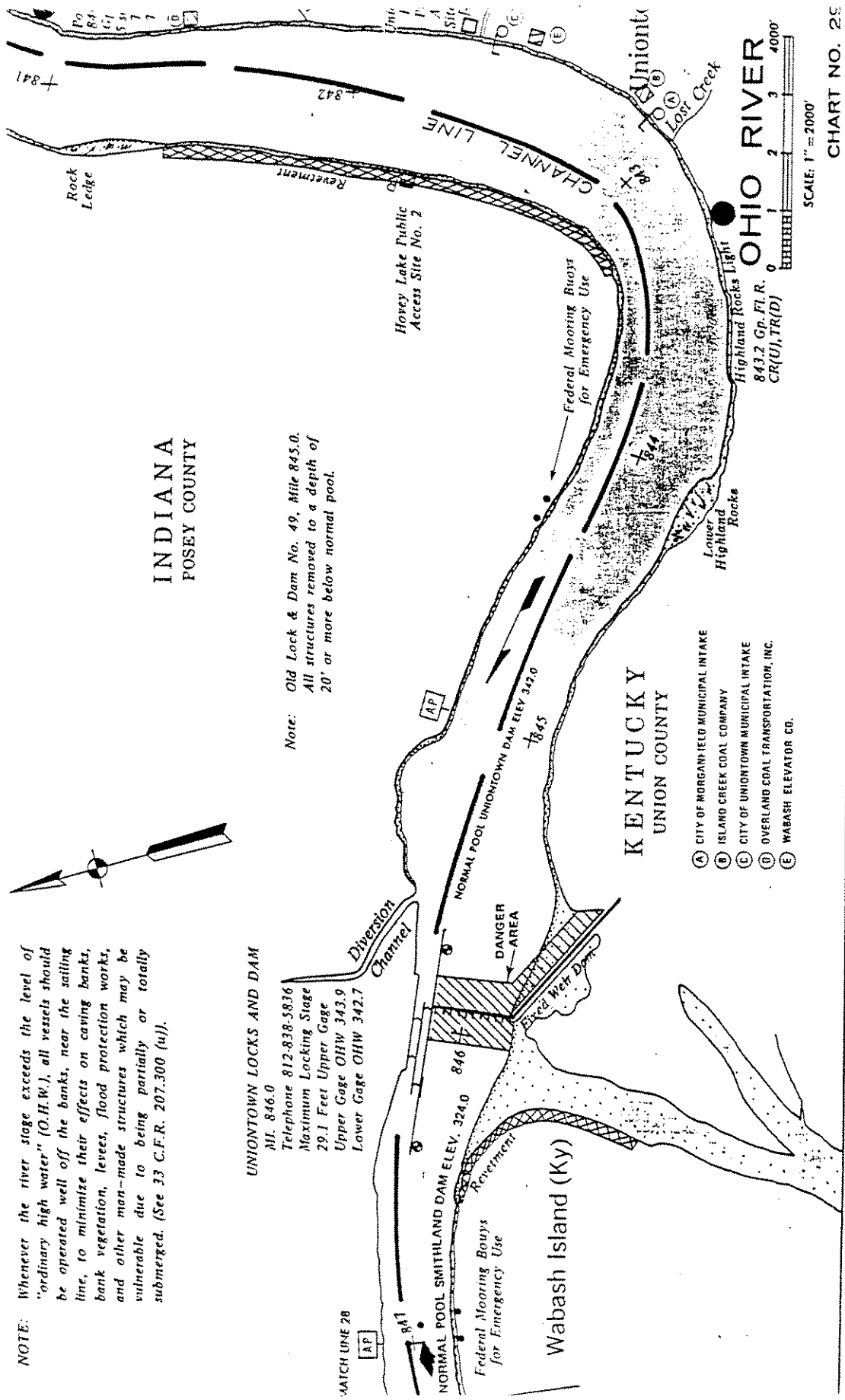
NORMAL POOL UNIONTOWN DAM ELEV 342.0

DANGER AREA

Fixed Net Dam

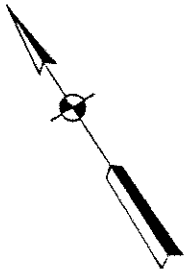
KENTUCKY
UNION COUNTY

- (A) CITY OF MORGANTOWN MUNICIPAL INTAKE
- (B) ISLAND CREEK COAL COMPANY
- (C) CITY OF UNIONTOWN MUNICIPAL INTAKE
- (D) OVERLAND COAL TRANSPORTATION, INC.
- (E) WABASH ELEVATOR CO.



OHIO RIVER
843.2 Gp. Ft. R. CR(U), TR(D)
Highland Rocks Light
SCALE: 1" = 2000'
CHART NO. 25

INDIANA
POSEY COUNTY



NOTE:
Whenever the river stage exceeds the level of "ordinary high water" (O.H.W.), all vessels should be operated well off the banks, near the sailing line, to minimize their effects on casing banks, bank vegetation, levees, flood protection works, and other man-made structures which may be vulnerable due to being partially or totally submerged. (See 33 C.F.R. 207.300 (w)).

Creek

KENTUCKY
UNION COUNTY

O.H.W.
345.6

840

MATCH LINE 29

CHANNEL LINE

830

(A)

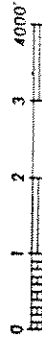
MORGANFIELD MUNICIPAL INTAKE

Mississippi Bend Light 838.8
Co. Ft. W., 5 sec., 2 Fl.; TR(U), TR(D)

Federal Mooring B buoy
for Emergency Use

Slim Island Low Water

OHIO RIVER



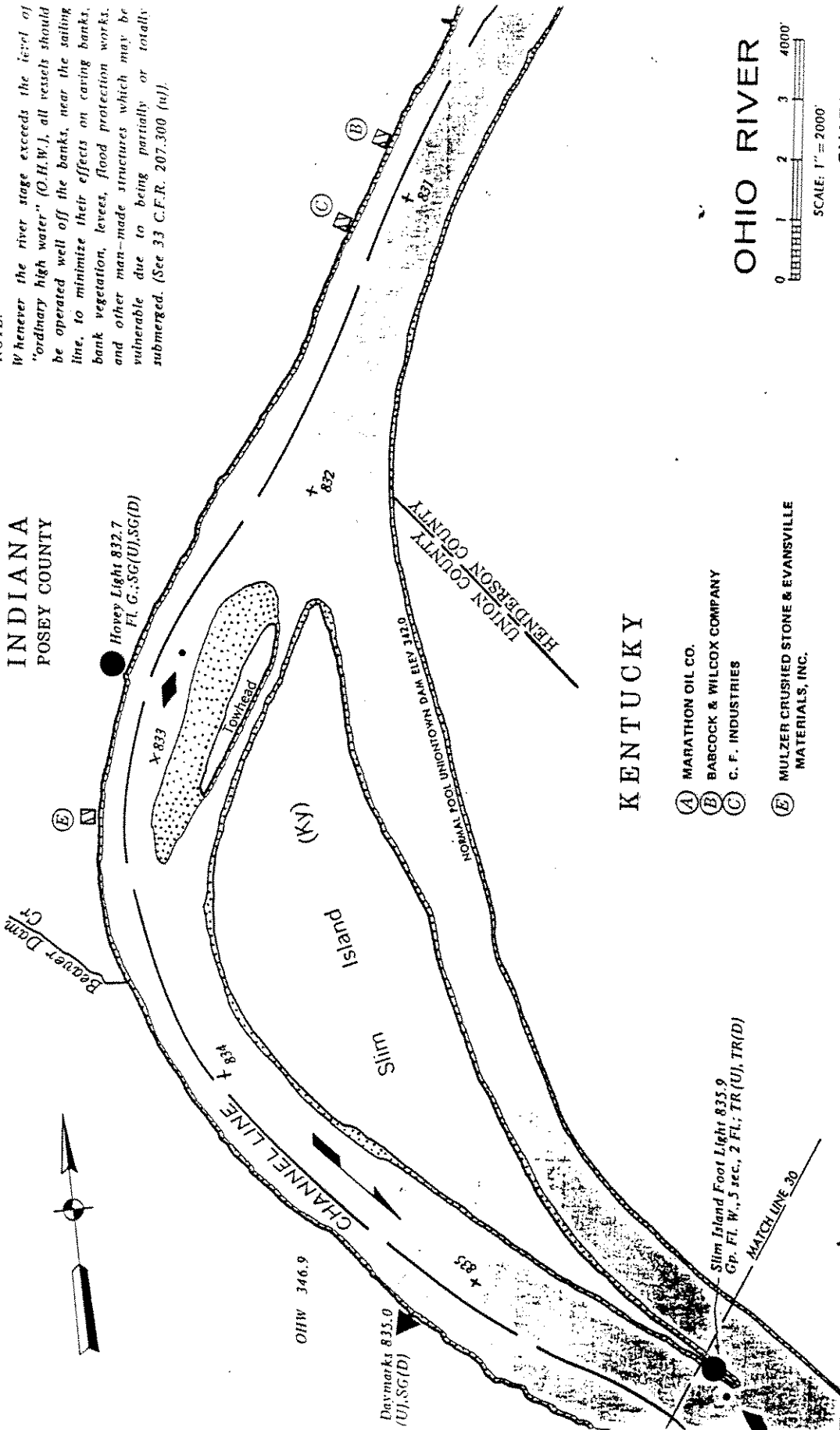
SCALE: 1" = 2000'

CHART NO. 30

Sum Island Root Light 822.7
Co. Ft. W., 5 sec., 2 Fl.; TR(U); 71

NOTE:
Whenever the river stage exceeds the level of "ordinary high water" (O.H.W.), all vessels should be operated well off the banks, near the sailing line, to minimize their effects on caving banks, bank vegetation, levees, flood protection works, and other man-made structures which may be vulnerable due to being partially or totally submerged. (See 33 C.F.R. 207.300 (a)).

INDIANA
POSEY COUNTY



KENTUCKY

- (A) MARATHON OIL CO.
- (B) BABCOCK & WILCOX COMPANY
- (C) C. F. INDUSTRIES
- (E) MULZER CRUSHED STONE & EVANSVILLE MATERIALS, INC.

OHIO RIVER

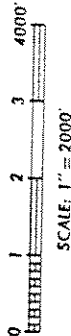
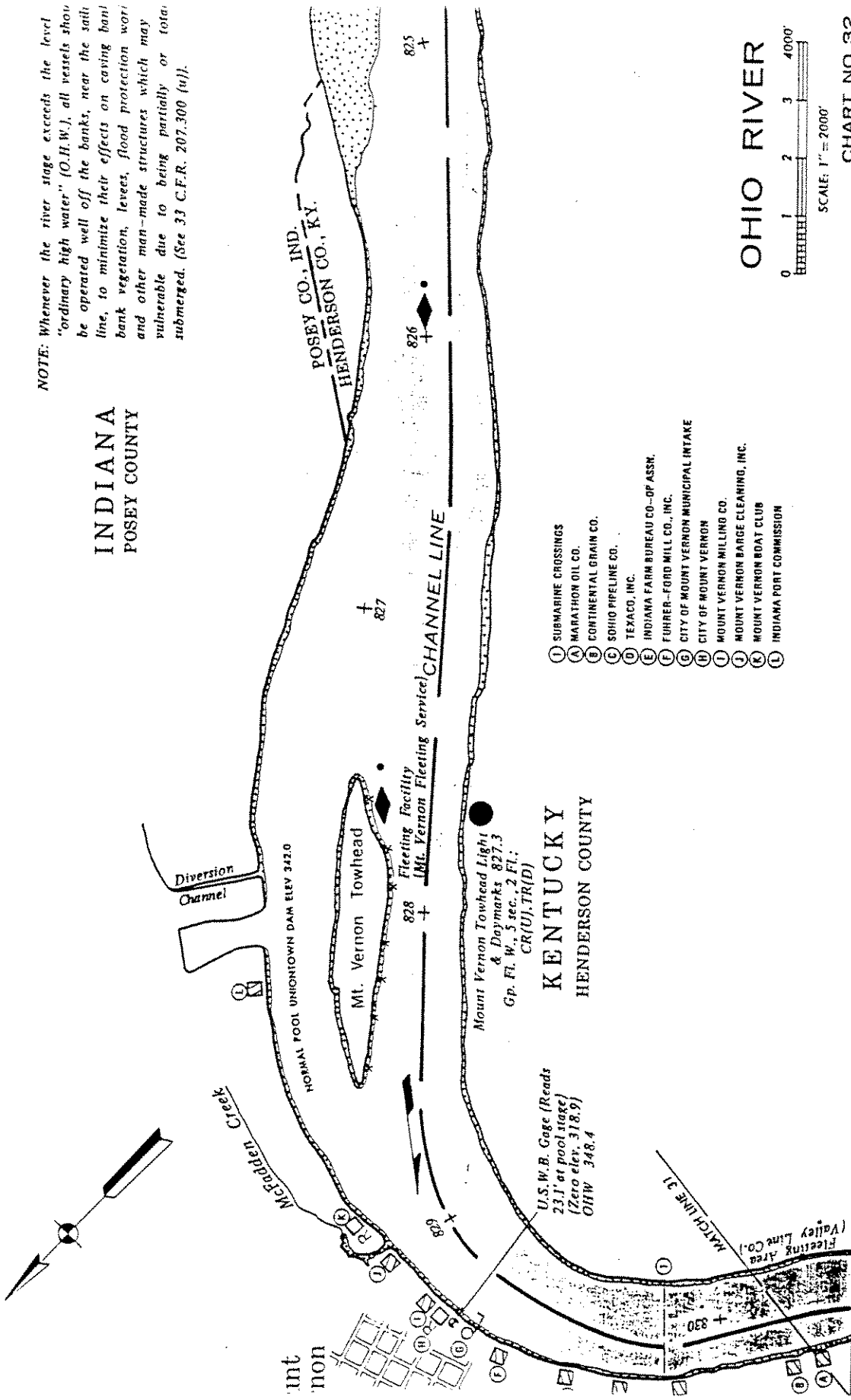


CHART NO. 31

NOTE: Whenever the river stage exceeds the level "ordinary high water" (O.H.W.), all vessels should be operated well off the banks, near the sail line, to minimize their effects on caving bank bank vegetation, levees, flood protection works and other man-made structures which may be vulnerable due to being partially or totally submerged. (See 33 C.F.R. 207.300 (a)).

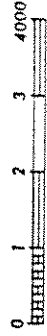
INDIANA
POSEY COUNTY

KENTUCKY
HENDERSON COUNTY



- (1) SUBMARINE CROSSINGS
- (A) MARATHON OIL CO.
- (B) CONTINENTAL GRAIN CO.
- (C) SOHIO PIPELINE CO.
- (D) TEXACO, INC.
- (E) INDIANA FARM BUREAU CO.-OF ASSN.
- (F) FUHRER-FORD MILL CO., INC.
- (G) CITY OF MOUNT VERNON MUNICIPAL INTAKE
- (H) CITY OF MOUNT VERNON
- (I) MOUNT VERNON MILLING CO.
- (J) MOUNT VERNON BARGE CLEANING, INC.
- (K) MOUNT VERNON BOAT CLUB
- (L) INDIANA PORT COMMISSION

OHIO RIVER



SCALE: 1" = 2000'

CHART NO. 32

CULMINATION: Southwind Maritime Centre

PURPOSE: Students will become familiar with the Mt. Vernon port site.

MATERIALS: Map of Southwind Maritime Centre provided in packet.

PROCEDURE:

* Tell the students they will "visit" the Southwind River Port. Show the map of the port. Discuss the various companies located at the port and how materials can be brought to the river for shipment. Discuss various activities that might be taking place at the port. What the buildings might be used for.

* Arrange a tour of the Southwind Maritime Centre. If a tour can not be arranged, Mr. Snyder does visit schools. Call Don Snyder Port Director 812-838-4382. Or write to: Port Director, 1700 Bluff Road, Mt. Vernon, IN 47620.

* Have students write a paragraph describing the trip. Should also write thanking the port director for the tour.