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ABSTRACT

This collection of essays offers many ideas, observations, and descriptions of the state of Indiana to stimulate the study of Indiana's geography. The 25 essays in the collection are as follows: (1) "The Changing Geographic Personality of Indiana" (William A. Dando); (2) "The Ice Age Legacy" (Susan M. Berta); (3) "The Indians" (Ronald A. Janke); (4) "The Pioneer Era" (John R. McGregor); (5) "Indiana since the End of the Civil War" (Darrel Bigham); (6) "The African-American Experience" (Curtis Stevens); (7) "Tracing the Settlement of Indiana through Antique Maps" (Brooks Pearson); (8) "Indianapolis: A Study in Centrality" (Robert Larson); (9) "Industry Serving a Region, a Nation, and a World" (Daniel Knudsen); (10) "Hoosier Hysteria: In the Beginning" (Roger Jenkinson); (11) "The National Road" (Thomas Schlereth); (12) "Notable Weather Events" (Gregory Bierly); (13) "Festivals" (Robert Beck); (14) "Simple and Plain: A Glimpse of the Amish" (Claudia Crump); (15) "The Dunes" (Stanley Shimer); (16) "Towns and Cities of the Ohio: Reflections" (Claudia Crump); (17) "The Gary Steel Industry" (Mark Reshkin); (18) "The 'Indy 500'" (Gerald Showalter); (19) "The National Geography Standards"; (20) "Graves, Griffins, and Graffiti" (Anne H. Gardner; Connie S. Yeaton); (21) "Exploring the Ohio Valley" (Anna Zervos); (22) "Human Influences on the Great Lakes" (Mary Groesch) (23) "Indiana's International Port on the Lake, a Link to the World" (Susan Hume); (24) "Indiana's Underground Railroad" (Angela Doherty); and (25) "Indiana Geography Education Resources" (Kathleen Lamb Kozenski, Comp.). Essays 19 through 24 focus on learning activities. The text concludes with a list of selected resources and maps of counties, largest cities, county seats, year of county organization, median family income, population, historic sites, glacial periods, tornadoes, and state forest and parks. (BT)

A PATHWAYS IN GEOGRAPHY
Resource Publication

National Council for
Geographic Education

RENAISSANCE IN THE HEARTLAND: THE INDIANA EXPERIENCE — IMAGES AND ENCOUNTERS

John E. Oliver, Editor

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Preface

Before arriving in Indiana from England, my image of the state was a somewhat fuzzy one. As a geographer, I was aware of the industrial capacity, yet I also knew the state as a center of productive agriculture. The image of the physiography was not well defined in my mind, although the idea of continental glaciation as a prime agency was to the fore. Since arriving and making the state my home, these images have become defined, and I have found Indiana to be a delightful state, where people, the landscape, and their interactions produce a fascinating arena for the geographer. The content of the essays in this work verify this view.

The theme of the NCGE 1998 meeting "Renaissance in the Heartland: Technology, Industry, Education, and Sports: It all TIES together" provides an editor with a wealth of potential topics for inclusion. In an effort to include as much variety as possible, while also providing interesting and informative essays about the state, the content begins with Part I: Overview (of its geography). Thereafter, to provide a background to the study of Indiana, we give considerable attention to the factors that led to the present-day human, economic, and physical landscapes. Part II: Traces of the Past represents this viewpoint. The contributions provide, in the limited space made available to the authors, a splendid account of the variety of factors that make Indiana the way that it is today.

Part III: The Heartland Today is a succinct account of the state capital, the state industry, and a component of the state sporting scene. The latter deals with the origins of "Hoosier Hysteria," an annual basketball feast of considerable proportion.

For the reader to obtain a broader idea of the real Indiana, Part IV: The Regional Character: A Sampling of Vignettes, outlines a variety of features and events that are typically Hoosier. Ranging from industry in the north to river communities in the south, they are but representative facets of the state; many more equally fascinating topics could have been added had space permitted. The same is true of the contributions to Part V., Learning Activities. This section represents lessons and lesson plans written by teachers active in the Geography Educators' Network of Indiana (GENI). Here, for example, we learn how teachers can introduce subjects as diverse as cemeteries and Great Lakes ports into the classroom. Generally, these classroom plans are related to topics in the body of the text. Finally, a listing of resources may assist one to find data and information on many aspects of the geography of Indiana and a selection of maps available from the GENI Indiana map series.

The editor hopes that the many ideas, observations, and descriptions offered within *Renaissance in the Heartland* will be of interest and will stimulate the study of the geography of Indiana. All credit must go to the many authors who contributed items for this publication. Errors and omissions that may have crept in are the responsibility of the editor.

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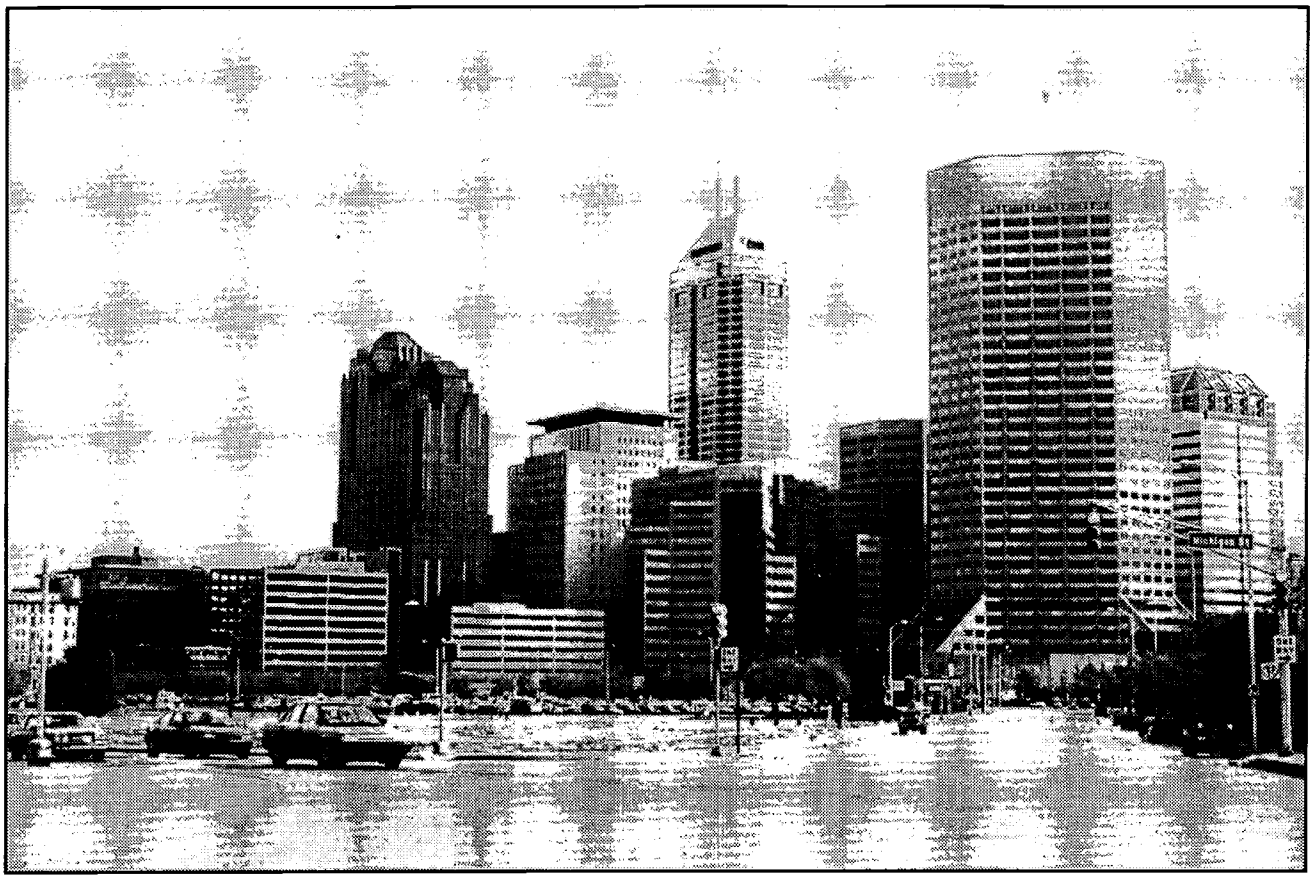


A view of Indianapolis (Brian Covert)

PART I: OVERVIEW: THE INDIANA EXPERIENCE

1. THE CHANGING GEOGRAPHIC PERSONALITY OF INDIANA

William A. Dando

Hoosiers strongly identify with their state and are proud of the renaissance taking place in the nation's heartland. The changing geographic personality of Indiana lies not only in the people's pride of the place but also the attachment they have for the deep rich soils of the state, the rolling hills of the south and the flat plains of the north, the long slow-moving rivers that sweep grandly across the state, the salubrious climate with four distinct seasons and variable weather, the industrially important coal-petroleum-limestone resources of the west and central, the large corn-wheat-hog farms of the east and the beautiful forests of the south, the vast steel and petroleum refining complexes in the northwest, the efficient transportation system and modern river and lake port facilities, the highly diversified industrial complex advantageously located within the state and nation, the excellent universities, colleges and schools, the exciting sports and entertainment events, and the centrally located dynamic state capital—Indianapolis. Indiana is physically, culturally, economically, and socially diverse, and this diversity enhances the state and makes it a vibrant place to live. Hoosiers who know their state understand the significance of location, the unity of the physical and cultural environments, and the importance of connections between places in the state, the nation, and the world. Hoosiers see daily, are influenced constantly, and appreciate deeply the complex web of relationships among the state's peoples, places, and environments. Decision makers in Indiana believe that they live and work in the "Crossroads of America," and that the state's central location has enabled people and ideas to meet and merge for more than 266 years.

The Significance of Location (Site)

Geology and Physiography

Location affected all aspects of the natural processes in the past and of the physical environment today. Lack of topographic variety and mineral resources needed to enhance the state's economic development masks the complex physiographic structure of the state (Fig. 1). During most of its geologic history, Indiana lay at the bottom of oceans and seas. The basic rock structure of Indiana was formed as layer after layer of Precambrian Era sediments were deposited 1.3 billion years ago. Shallow seas, connecting the Arctic, Atlantic, and Pacific oceans, covered what is now Indiana. During the Cambrian and most of the Ordovician Periods of the Paleozoic Era, 300 million to 100 million years ago, additional sediment deposition formed thick layers of limestone, sandstone, and shale. In the Silurian Period of the Paleozoic Era, coral reefs in northern Indiana grew and eventually solidified into Dolomite Limestone, and sediment deposits eventually became thin-bedded limestones. The seas were relatively clear of large size sediments in the Devonian Period of the Paleozoic Era. Deposits at this time eventually resulted in a vast area of thick-bedded limestone.

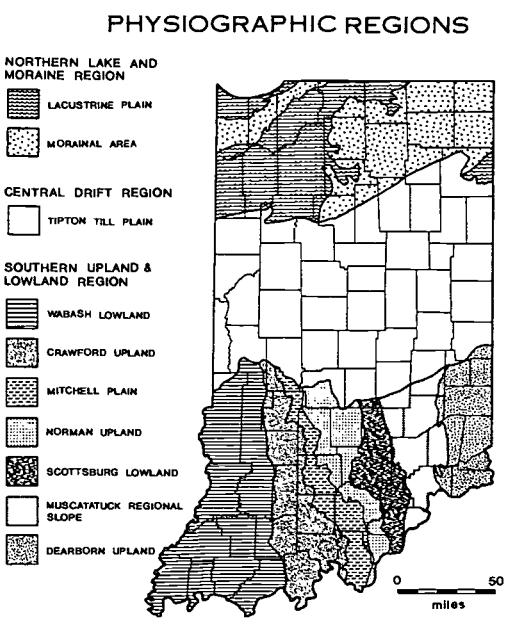


Figure 1. Physiographic Regions of Indiana (after Lyon and Dillon 1986)

These Devonian deposits are currently an important source of petroleum products in southwestern Indiana. Then thick deposits of mud and sand were deposited in

the Carboniferous Period of the Paleozoic Era. Limestone created from sedimentation during this period is quarried today for building stone in the Bedford-Bloomington region. The area of what is now the state of Indiana became alternately a great swamp then a shallow sea. Vegetation that grew in the vast swamp was covered with layers of mud and sand. Today the strata contain much of the state's coal, petroleum, fire clay, and shales. At the end of the Paleozoic Era, the seas receded, the swamps dried, and the land rose. Rock exposed experienced the results of chemical and mechanical erosion during the Mesozoic Era, 100 million to 50 million years ago. At the beginning of the Cenozoic Era, 50 million years ago, the topography of Indiana resembled the rugged landscape seen today in areas of south-central Indiana.

The continental glaciers of the Pleistocene Epoch, about 2 million to 10,000 years ago, dramatically changed most landforms. A series of thick ice sheets covered most of Indiana. As one continental glacier advanced and retreated it obliterated landforms created by a previous continental glacier. The Kansan, Illinoian, and Wisconsin glaciers created then removed landscape features. The Wisconsin continental glacier created much of the present day surface configuration and the drainage patterns in Indiana. Susan Berta, in Chapter 2 provides more detail of the importance of glaciation.

Climate and Weather

Indiana's climate and changeable weather are results of its location in the midlatitudes, in the center of a continent, and within the belt of prevailing westerly winds. The basic elements and controls of climate are determined by location on the surface of the earth. The state's location influenced the amount of solar radiation received, moisture precipitated, as well as all aspects of daily weather. Situated in a relatively flat continental interior of the North American continent where cold, dry continental air masses from the north and warm, moist tropical maritime air masses from the south meet help to create Indiana's weather and climate. Fronts along the leading edges of these air masses bring precipitation and violent weather at times. According to Trewartha's modified Köppen's world climatic classification, the southern quarter of Indiana is located within the Humid Subtropical climatic region (Caf) and the northern three-quarters located within the Humid Continental with Warm Summers climatic region (Daf). Mean annual temperatures decrease from south to north and from west to east. The highest temperature recorded was 116°F (46.7°C) in 1936, and the lowest temperature recorded was -35°F (-37.2°C) in 1951. The mean annual temperature of the state is 52.3°F (11.3°C). Average January temperatures range from 34° to 25° F (1.1° to -3.9°C), and average July temperatures range from 79° to 73°F (26.7° to 22.8°C). Precipitation received, from 54 inches (130 cm) per year in the south to 36 inches (91 cm) in the north, is generally dependable and adequate for modern agricultural and industrial needs. Figure 2 provides selected climatic data for the state.

Contrasting continental and maritime air masses not only bring moisture and variable temperatures to Indiana, they also bring violent and nonviolent storms. Lightning, high winds, thunderstorms, and hail affect all aspects of life in Indiana, but the most destructive weather occurrences are tornadoes. The state averages about 200 thunderstorms and 22 tornadoes per year. March through July is Indiana's severe weather season. In his vignette on severe weather, Gregory Bierly (Chapter 12) shows how destructive these storms can be.

A Lake Michigan influence upon the weather and climate is found in northwestern Indiana. This lake effect, most pronounced within a few miles of the lake, results in delayed frosts and higher temperatures in the fall and later frosts and cooler temperatures in the spring. A Chicago Metropolitan Area also influences the weather of the same portion of Indiana. An unusual weather anomaly has been identified in the La Porte area. A relationship between industrial activity in Chicago and Gary and in increased thunderstorms, rain and hail occurrences has been observed in La Porte. Project "Metromex" corroborated the influence of urban industrial activity upon weather events downwind. The location of the state does define its broad climates and its seasonal weather patterns; human activities are now modifying natural patterns and are creating new urban and rural climates.

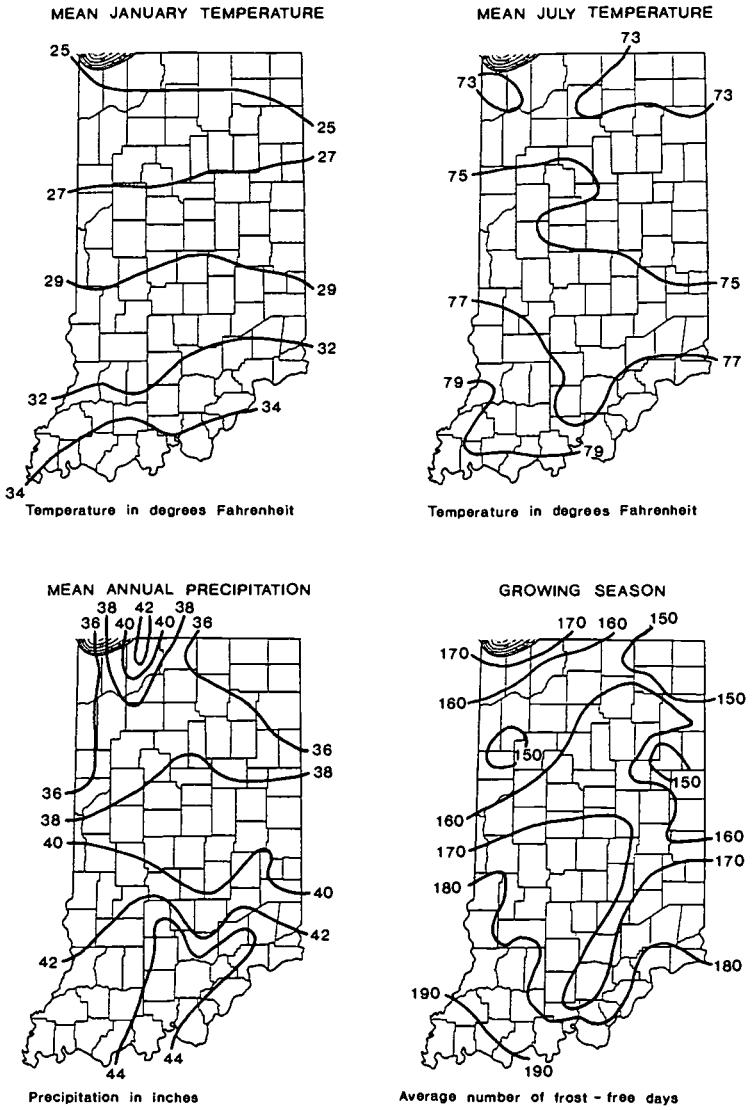


Figure 2. Distribution of Selected Climatic Data

Vegetation and Soils

The integrated long-term effect of weather and climate acting upon parent material at the surface of relatively flat topographical features produced the soils that support vegetation in Indiana. At the time of the first European settlement, 87 percent of Indiana was covered by deciduous forests and 13 percent by prairie grasses. Trees dominated the landscape and native prairie grasses of northwestern Indiana reached heights of 8 to 10 feet (2.4 to 3.04 m). Its forests and grasslands have been severely exploited and changed by human activities. Few areas of undisturbed natural vegetation remain. Hardwood forests of white oak, hickory, black oak, hard maple, and red oak dominate the forest landscape of Indiana today. Black walnut, ash, sycamores, yellow poplar, and beech are also common trees. Most of the prairie grasslands have been converted to productive farmlands, and the forests that remain are a source of fine hardwood timber, face veneers, and special wood products.

Soils of Indiana were formed primarily upon glacier-created landforms and mineral earth and given character by forest vegetation and prairie grasses. Parent material was either water-laid, ice-laid, wind-laid, or residual material of the three major glacial periods. Decomposed trees, shrubs,

and grasses growing upon hills and knolls, rolling uplands and karst features, and level plains and river floodplains provided vegetative matter. All soils developed in climates with definite seasonal change and in weather with variable daily temperatures and precipitation forms. Major soil groups are the inceptisols (young soils) of southeastern Indiana, the ultisols (old soils) of south-central Indiana, the alfisols (moist mineral soils) of central and eastern Indiana, the mollisols (prairie soils) of northwestern and southwestern Indiana, and the entisols (alluvium soils) in northwestern Indiana. Created through natural processes and enhanced by human activities, the soils of Indiana are fertile. These fertile soils, relatively level terrain, and favorable weather and climate combine to offer agriculturalists in Indiana excellent opportunities to grow the food needed in an urbanized world. The distribution of soils, together with that of natural vegetation, is shown in Figure 3.

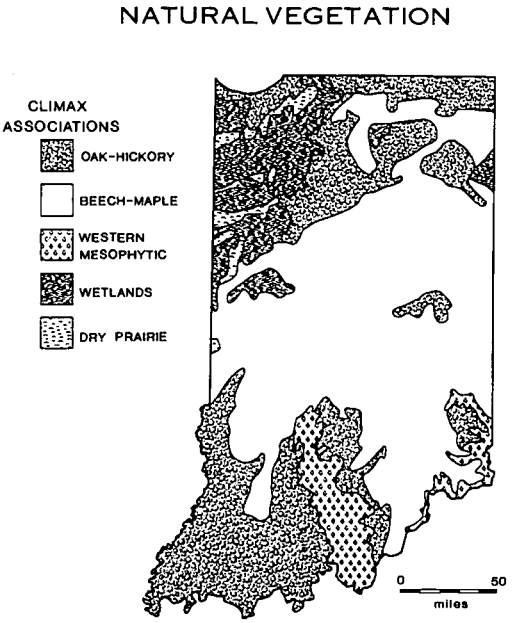


Figure 3. Natural vegetation of Indiana

The Significance of Location (Situation)

Settlement

Situation, location of a site in respect to other places and regions and the linking together of places and events through time, has influenced all aspects of the cultural, social, and economic activities of those who lived or are living in Indiana. As it was in the past, the way Indiana is linked with the mainstream of human activities worldwide will determine the economic viability and the quality of each citizen's life in the future. Indiana (the home of Indians), was occupied at least 10,000 years before European settlement. The Shell Mound, Woodland, Hopewell, Middle Mississippi, and Fort Ancient tribes hunted and farmed in Indiana. Later Miamis and Potawatomi settled in northeastern Indiana, the Delawares in central and east-central Indiana, and the Kickapoo, Shawnee, Piankashaw, Wea, Wyandot, and Munsee in various locations. In 1679, Robert Cavalier Sieur De LaSalle explored portions of Indiana. As a result of his reports, the French constructed three forts in Indiana. Fort Vincennes (in southwestern Indiana), built in 1732, became Indiana's first permanent European settlement. The French claimed Indiana and it was part of New France for 84 years. Defeated by the British in the French and Indian War of 1763, the French relinquished political control. The British Crown decreed that Indiana was to remain a wilderness closed to settlement; it was to be the home and hunting grounds for the tribes who lived there.

The various stages of the fascinating story of Indiana are outlined in Part II under the title Traces of the Past. Given are accounts of Indians and Pioneers, African-American experiences and entrepreneurial endeavors. It remains here to note that settlement in central Indiana was stimulated by the selection of a new state capital site at the juncture of the White River and Fall Creek. Its location, almost equidistant from north and south, and from east and west, was determined in response to objections raised to accessibility problems with former administrative centers. The new state capital was named Indianapolis (meaning Indiana city). The site of the new capital city was in a wilderness. There existed no roads, the White River was not navigable, few people lived there, and the nearest town of importance was 60 miles away. A planned city, Indianapolis was designed by Alexander Ralston. Ralston was a former employee of the French city planner and engineer L'Enfant. Following the plan of Washington, D.C., the new city was to be one mile square, all streets were to cross at wide angles, and four major avenues were to focus upon a circle in the center of the square. Although settlement of the new city was slow, by the eve of the Civil War Indianapolis was the state's largest city with a population of 19,000.

Early Transportation Network: Linking Places in the State and in the Nation

The early settlers, land investment companies, and industrialists recognized the significance of a functioning and integrated transportation network. Key to the survival of all who lived in Indiana and to their prosperity was their ability to transport products and finished goods to market. Distance was viewed as an economic limitation and had to be ameliorated. Development of Indiana's transportation system took place in three distinct periods: (1) the river and canal era of 1732-1840; (2) the railroad era of 1840-1920; and (3) the automobile-truck era of 1920 to the present. Strategically located in the center of North America's economic heartland, Indiana intensified its agricultural sector, expanded its industrial base, and enriched the daily lives of its citizens culturally. Its river ports on the Ohio River, and its lake ports on Lake Michigan when linked by a complex railroad network, pipelines and air transportation, and a superb interstate and state highway system stimulated greater economic growth. The state's population reached 2.5 million in 1900, 4.7 million in 1960, and 5.8 million in 1996.

Cultural Development

From the time of Indiana's first settler, religion and education have played important roles in all aspects of socioeconomic development. Native Americans believed in the mysterious, magic force of nature. They considered the unseen spirit power superior to humans and capable of influencing their lives. Shamans and priests went through long periods of informal and formal training. European and American settlers brought Christianity and Judaism. French Jesuits came first and the Catholics were the first organized religious group in Indiana. Later, most of those who settled in Indiana were Protestants. As the rural areas increased in population and as the towns and cities grew, churches were constructed and became a bonding cultural force. Religious groups established many of the state's first schools, colleges, and universities. Hanover was founded in 1827, Wabash in 1832, Franklin in 1834, DePauw in 1837, St. Mary-of-the-Woods in 1840, Notre Dame in 1842, Taylor in 1846, Earlham in 1847, Butler in 1855, Valparaiso in 1859, and Rose-Hulman in 1874. The first colleges chartered by the Indiana legislature were Vincennes in 1806 and Indiana University in 1820. They were followed by Indiana State University in 1865, Purdue University in 1869, and Ball State University in 1918. Indiana's 67 colleges and universities have provided well-educated leaders and decision makers who have enriched the state in a myriad of ways.

Economic Growth Today: The End Result of Restructuring

In Part III. *The Heartland Today*, the regional economy is considered as part of a one-world system. The following will merely highlight some facets of the economic growth.

The Civil War, World Wars I and II, and the Cold War greatly affected economic growth in Indiana. Socioeconomic change accelerated as the needs of the nation and of the world stimulated agriculture, commerce, and industry. Located in the midwestern region of the United States in America's industrial and agricultural heartland, Indiana's small area (ranks thirty-eighth in state size) belies its contribution to the American economy. Its waterways and ports, highways and railroads, pipelines and airports make the products of Indiana accessible to the world. Annually, Indiana ranks among the top ten states in both agricultural and industrial output.

More than 25 percent of all employed in Indiana work in manufacturing. The state is a national leader in the production of electrical switches and relays, electrical wire, scientific instruments, aircraft engine parts and accessories, chemicals, pharmaceuticals, plastics, environmental control instruments, automobile parts, surgical instruments, radios, and television sets. It produces more than 22 percent of the nation's steel. The state is a leading producer of hardwood lumber and veneers, and ranks first in the production of hardwood office furniture. At minimum, 40 percent of all domestic recreational vehicles are manufactured in Indiana. It also ranks twenty-fifth in value of minerals extracted. Coal accounts for 77 percent of the total value and most of the coal is used in generating electricity. Indiana is one of the leading manufacturing states in the United States (Tables 1, 2, and 3).

Table 1. Indiana, Earnings by Industry (fourth quarter, 1994)

Industry	*Amount ($ Million)*	*Percent*
Manufacturing	27,763	31.7
Services	18,299	20.9
Wholesale/Retail	13,426	15.3
Government	10,890	12.4
Transportation, Communication, Utilities	5,634	6.4
Construction	5,386	6.1
Financial, Insurance, Real Estate	4,576	5.2
Farm, Forestry, Fisheries	1,303	1.5
Mining	353	0.4

Source: U.S. Bureau of Economic Analysis

Table 2. Employee Distribution: Indiana

Category	*Percent*
Manufacturing	25.5
Services	21.5
Retail Trade	19.6
Government	12.2
Transportation/Communication/Public Utilities	5.0
Finance/Insurance/Real Estate	5.0
Wholesale Trade	5.1
Agriculture	1.0

Source: Indiana Department of Training & Employment Services

Table 3. Indiana Manufacturing Rankings

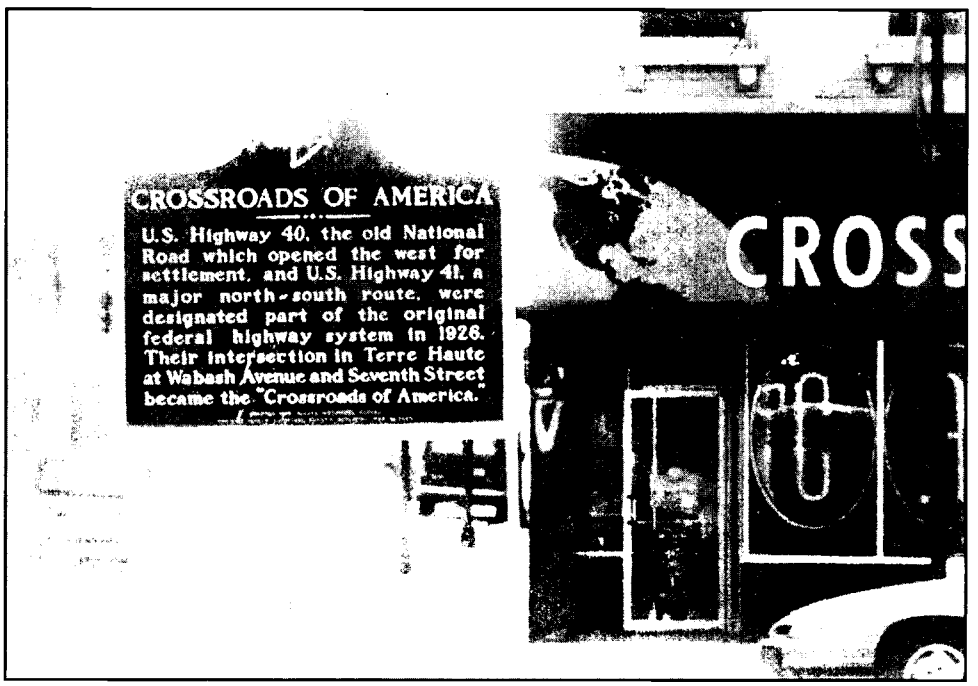
Product Classification	*National Rank*
Raw Steel Production	1
Mobile Homes/Motor Homes/ Travel Trailers and Campers	1
Radios and Television Sets	1
Engine Electrical Equipment	1
Electric Coils and Transformers	1
Truck and Bus Bodies	1
Wood Office Furniture	1
Elevators & Escalators	1
Household Refrigerators	1
Vehicular Lighting	1
Rubber Gaskets & Seals	2
Carburetors, Pistons, Rings, and Valves	2
Motor Vehicle Parts	3
Automobile Stampings	3
Records & Tapes	3
Potato Chips and Snacks	4
Refrigeration and Heating Equipment	4
Pharmaceuticals	5
Surgical Supplies	5
Miscellaneous Plastic Products	5
Ball & Roller Bearings	5
Aircraft Engines & Parts	5

Source: Bureau of Labor Statistics, 1993

Modern Transportation Network: Linking the State with the World

Indiana has experienced a late twentieth century socioeconomic rejuvenation primarily because of its superb transportation network that has made Indiana products accessible to local, national, and international markets. Old farming practices, outdated manufacturing plants, and cumbersome institutions that dominated the state for decades were eliminated, renovated, upgraded, or replaced. Interaction and linkage with the world's markets and ideas have brought new approaches to the agricultural-industrial economic sector and positive attitudes that are changing the geographic personality of Indiana. The site of Indiana has not changed, but its situation in the economic and social mainstream of the nation and the world has changed.

The state's motto, "The Crossroads of America," refers to Indiana's location in the mainstream of North American commercial traffic routes. Most of the east-west commercial traffic north of the Ohio River, and much of the north-south commercial traffic east of the Mississippi River cross the state. Indiana is served by 32 operating railroads with 4,600 miles of top-grade track. It has 12,000 miles of multiple lane highways and interstate routes—more than any other state of comparable size. Major interstate highways focus upon Indianapolis in seven directions. This concentration of interstate highways is one of the highest in the United States. Cognizant of the role Indiana plays in international trade, the state administers three modern ports: the International Port on Lake Michigan, the Clark Maritime Center, and the Southwind Maritime Center on the Ohio River. To complement the railroad net, the highway system, and lake and river ports, Indiana has more than 680 airports and ranks seventh in the nation in air transportation. Thirteen major airlines and four commuter airlines provide carrier service to 10 Indiana cities. Its splendid transportation system—air, water, highways, and rail—connects the state to the markets of the world and makes it an attractive site for economic activities involved in a one-world economy.



Crossroads marker at US 40 and US 41, Terre Haute (Norman Cooprider)

Prospects for the Future

Indiana's Renaissance

In modern international and national economic development, location is everything. Indiana's renaissance is attributed to talented decision makers and to skilled and dedicated workers who have taken full advantage of the state's site and situation. The pace of change has quickened and Indiana has made a smooth transition from a farm-based economy to a manufacturing-service economy. Of the

state's 2.9 million workers, 25 percent are employed in manufacturing and 1 percent are employed in agriculture. Diversification and quality products are the key to Indiana's economic ability. Unlike some midwestern states, Indiana's population continues to grow as well as does the state's commitment to educating its citizens. Personal income, in the past five years, has grown faster than the national average. A sense of neighborhood in communities is apparent throughout the state as well as a pride in home-farm-factory ownership. The state's crime rate is 18 percent lower than the national average and Indiana is the second least litigious state in the United States. A wide spectrum of economic activities has kept the state on a steady growth track and out of the boom-or-bust cycles that affect many states.

Much of what is produced in Indiana is sent to other nations of the world for sale or consumption. Value of agricultural commodities exported exceeds $2 billion per year, and sales of agricultural commodities account for approximately 2 percent of all state earnings. Manufacturing accounts for nearly 32 percent of the state's total earnings and the service sector about 21 percent. Indiana has increased the establishment of new industries 2 percent above the national average and has exceeded the nation's job growth by a minimum of 5 percent. The single largest segment of the manufacturing sector is automotive, employing approximately 18 percent of Indiana's workers. Automotive manufacturing in the state continues to increase and 9 percent of the national motor vehicle manufacturing employment occurs here. Table 1 displays data applicable to this growth. The state's vibrant economy and supportive business climate are reflected in the growth and development of all industrial regions in Indiana that are outlined in a later vignette.

Indiana, once a place of opportunities for Native American tribes, is now a place of opportunity for all who wish to grow professionally, raise a family securely, and enhance themselves economically. The future is a top priority in state and commercial-industrial planning. Prospects for continued future growth and development are considered excellent. The state is reaping the benefits of location and the opportunities accessibility brings to creative people. The geographic personality of Indiana will constantly change and the only difference between the way change occurred in 1679 and change taking place today is the speed of change.

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PART II: TRACES OF THE PAST

2. THE ICE AGE LEGACY

Susan M. Berta

Most of the topography within the state of Indiana has succumbed, at one time or another, to the effects of glaciers as they advanced, came to a standstill, and eventually melted. The various glacial periods left shattered and pulverized rocks interlaced with large blocks of buried ice and vast amounts of meltwater deposited materials (glacial water carrying rock debris) to redefine the surface now known as Indiana.

Glacial Formation and Movement

Snow and ice, left to accumulate on the landscape, will undergo periodic melting and re-freezing forming an ice material referred to as *firn.* As the landscape continues to be covered in an increasingly thicker blanket of snow, firn, and ice, the mass begins to move under the influence of gravity; hence, a glacier is created.

Scientists have identified numerous lobes of ice that moved, rarely synchronously, with one another, across the North American continent leaving sags and glacier-carved basins where ice accumulations were once very thick. Four large basins that once contained major lobes of ice that create Indiana's present-day landscape include three lake basins (Lakes Michigan, Huron, and Erie) and a bay (Saginaw Bay). These lobes of ice transported shattered and pulverized rock and ice material generally referred to as till. Till units are unique for each ice lobe and may be used to distinguish ice lobe activity. These units are identified primarily by differences in texture and color. Moraines are hills composed of glacial till that mark the locations where glaciers either paused on the landscape or where stagnating or *stillstands* of ice caused moraines to form. Glaciers act much like conveyor belts; even though the glacier itself may not be moving across the landscape, the conveyor belt beneath the glacier continues to carry and deposit glacial material at the end of the ice lobe. Rock and ice simply pile up to great depths whenever a glacier stalls for a time. Today, moraines appear as linear trending hills pock-marked with depressions called *kettles* that indicate the path and longevity of ice in that location. By examining the till in the moraines, researchers have determined that some readvances may be attributed to surges in glacial movement that resulted in massive flood events. Surging glaciers occur when the end or toe of the glacier freezes to its bed while water continues to build up underneath the glacier itself. When the pressures from the moving glacier force the toe to move, the release of confined water from underneath the glacier can be catastrophic. Research in Indiana continues to focus on the identification and correlation of end moraines to determine Indiana's ice legacy (Melhorn 1997, and Fleming *et al.* 1995).

The glacial ice responsible for sculpting the Indiana landscape originated in the Labrador Highlands of Canada, advanced into Indiana as long ago as 1.9 million years before present (B.P.), and marked the beginning of a series of glacial advances and retreats recognized throughout North America and referred to as the Pleistocene glacial period. During that time span, 1.9 million to 10,000 B.P., glaciers advanced and retreated (melted back) during four critical time periods. Figure 4 depicts the moraines that serve as markers of glacial activity in Indiana throughout the major time periods during the Pleistocene. The time periods are known as the Kansan, Illinoian, and Wisconsin glacial events. The Nebraskan time period is not represented on these diagrams. To date, no direct evidence of Nebraskan deposits have been identified (Wayne 1966 and Fleming, personal communication 1997) but most likely will be found in the northeastern part of the state buried deep beneath more recent glacial material. The four glacial periods were named based on the states that were completely covered during the major advances of ice throughout Pleistocene time. In Indiana, as is true throughout North America, the effects of glaciation are most easily recognized on the landscape for the most recent glacial time period, the Wisconsin stage. One of

the best ways to convey Indiana's ice legacy is to examine, in chronological order, the evidence of glacial activity found throughout the state (Mickelson, *et al.* 1988).

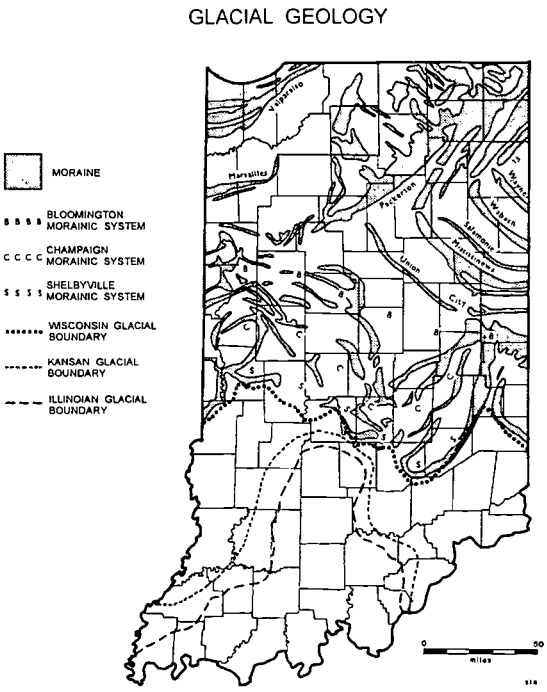

Figure 4. Glacial map of Indiana (after Lyon and Dillon)

Pre-Wisconsin Glacial Activity

Approximately 700,000 years ago, during the Kansan glacial period, the Laurentide Ice Sheet occupied more than two-thirds of the state of Indiana although the glacial advance during the Illinoian (at least 500,000-140,000 B.P.) exceeded that of the Kansan advance (Fig. 4). Evidence on the landscape of these events may be found in the soil profiles and glacial till identified as unsorted rock material carried by the glaciers. Wayne (1957) describes two prime locations for observing these older glacial tills; near Cagle's Mill in southern Putnam County (west central Indiana) and at Bean Blossom Reservoir in northern Monroe County (north of Bloomington). For instance, at the northeast end of the emergency spillway at Cagle's Mill, glacial till from the Wisconsin time period occupies, on average, the top three feet of earth followed by 23 feet (7 m) of Illinoian till and then 32 feet (9.8 m) of Kansan till for a total thickness of till equal to approximately 58 feet (17.7 m) of sediments laid down during the Pleistocene.

Other features that still can be visualized on the landscape, although they long ago ceased to exist, are the proglacial lakes that have been identified in the southern part of the state (Fig. 5). A proglacial lake is a lake formed in front of a glacier that is generally in contact with the glacier. In Thornbury's article (1950), he identifies glacial Lake Quincy, an Illinoian-aged proglacial lake that extended far beyond the modern day Mill Creek Reservoir covering portions of Owen, Putnam, and Monroe counties (see map of Indiana counties, Chapter 26). Two other proglacial lakes of Illinoian age are glacial Lake Patoka (Pike and Dubois counties) and Lake Cynthiana in Posey, Gibson, and Vanderburgh counties. Numerous glacial lakes and sluiceways (glacial drainage ways) of Wisconsin age have been mapped throughout the southern third of the state with a majority of lakes draining into the Wabash or the Ohio rivers (Chapter 26, Major Rivers).

Wisconsin Glacial Advances

Evidence of the first Wisconsin glacial advance in Indiana is dated at approximately 21,000 years B.P. Moraines, like tills, are given names to distinguish the episodes of deposition from event to event. Typically, moraines are assigned the name of the location, oftentimes a city, where the moraine was first identified. The oldest known Wisconsin moraine exists in southeastern Indiana and is identified in Figure 4 as the Shelbyville Moraine. The Shelbyville Till contains materials indicating its origin to be from the Lake Huron area. Limits of the glacial advance at this time are nearly identical to those found extending into central Illinois and central Ohio. The till deposits throughout this area were further developed approximately 20,000 years ago when the moraines laid down during the earlier glacial advance were buried only a few kilometers north of this more recent glacial advance. The close coincidence of the two glacial limits is considered remarkable.

The Bloomington Moraine, found in west-central Indiana, marks the 19,000 year-old advance of

the ice lobe. Three, and possibly four, significant readvances have been identified in that area. The ice-margin is believed to have retreated at least 150 km to 210 km (93 to 131 mi) and then to have readvanced 1,000 years later from the present day Lake Michigan basin. This readvance would have covered a distance of more than 200 km (124 mi). The glacial limit of the 19,000 B.P. advance was overridden and subsequently the Champaign Moraine was deposited.

A major change in ice dispersal paths occurred around 16,700 years B.P. In west-central Indiana, the ice margin of a lobe originating from the Lake Huron area advanced at least 40 km (25 mi) westward over the lobe from the Lake Michigan area. For the first time, the dominance of flow involving these lobes switched from the more northwestern locale to a northeastern locale. The Lake Huron lobe is recognized as the source of ice responsible for creating the Crawfordsville moraine (16,100 years B.P.) found in western Indiana. According to Wayne (1966), the Knightstown Moraine formed after the active ice margin had melted and the entire lobe in central Indiana ceased to move.

Eskers, noted on Figure 4 throughout central Indiana, are glacial landforms that appear as snake-shaped ridges on the modern landscape. According to most glaciologists, eskers are the remains of stream channels that existed beneath active glaciers. After the ice sheet ceases to advance, the channels slowly fill with the sediment from the dissipating stream beneath the glacier. Once the former stream channel fills with sediment and the surrounding ice completely melts away, a ridge known as an esker is revealed. The presence of eskers throughout central Indiana attest to the presence of stagnating ice throughout this area.

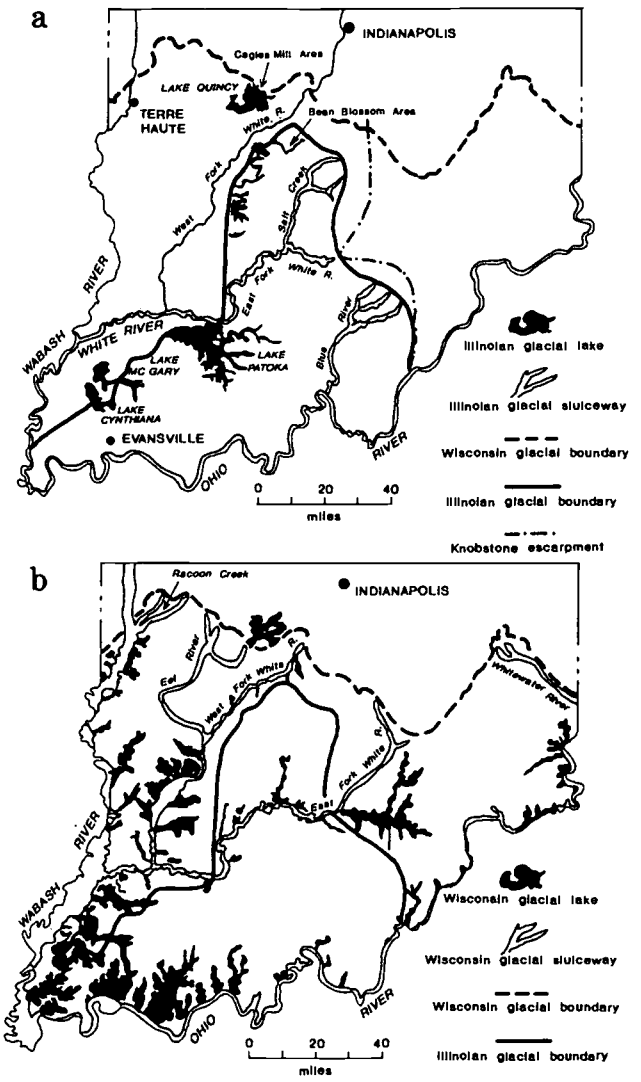

Figure 5. Southern Indiana showing (a) Illinoian and (b) Wisconsin glacial lakes and sluiceways (both modified from Thornbury 1950)

The Saginaw lobe, originating from the Saginaw Bay area and central Michigan, left behind massive blocks of ice buried in glacially reworked rock and fine materials. As the ice blocks melted out the result was a massive flooding event. The "Kankakee flood" or "Kankakee torrent" is depicted as a catastrophic event (referred to as a jokulhlaup event) occurring at a time when vast amounts of meltwater were released from a stagnating Saginaw lobe. The Saginaw lobe, itself, was confined on all sides by active ice present in the Lake Erie, Lake Huron, and Lake Michigan basins forming the Maxinkuckee and Packerton moraines. As a result, a large release of meltwater was discharged from the melting, stagnated ice which was in the Delphi, Indiana, area (c15 mi or 24

km northeast of Lafayette) and funneled southwestward into Illinois.

Construction of the Valparaiso Moraine in northwestern Indiana occurred 15,500 years ago. At approximately the same time that the Union City, Mississinewa, and Salamonie moraines were deposited in northeastern Indiana. Proglacial lakes formed just beyond the glacier's limit throughout these areas. Eventually the ice is said to have retreated to just north of what is now the south shore of Lake Erie.

The last known major episode of glacial advance occurred approximately 14,800 years ago resulting in the formation of the Wabash Moraine. The till comprising the Wabash Moraine, not surprisingly, contains large quantities of proglacial lake sediments. Late in this time period, the Fort Wayne Moraine was deposited.

A second extreme flow event is recorded in the sediments found in the Wabash Valley (Fraser and Bleuer 1988). Beach ridges noted on the Fort Wayne Moraine are believed to have formed at the edge of the predecessor to Lake Erie, along the shores of glacial Lake Maumee. Immediately north of the town of Fort Wayne there is a notch in the moraine that, when formed, released a torrent of water along the valley and onto upland surfaces adjacent to the valley where the torrent must have overflowed the valley margins. This event is referred to as the Maumee Torrent or Maumee Flood (Fraser and Bleuer 1988). Evidence of this flood event can be found along the Wabash River as far south as Terre Haute, Indiana.

This last episode of glaciation concluded when the Tinley and Lake Border moraines, located in northwestern Indiana, formed once Glacial Lake Chicago had drained, while to the east the Defiance Moraine was deposited along the Lake Erie basin. Glaciers have since ceased to exist in Indiana.

Summary

Traces of Pleistocene glaciation can be found in portions of 95 of the 99 counties in Indiana. Moraines, eskers, kettle lakes, proglacial lakes, and flood deposits remain as evidence of this historic past. The ice lobes responsible for reworking Indiana's landscape have not been present for more than 13,000 years. It took hundreds, if not thousands, of years before the buried blocks of ice beneath the glacial debris completely melted away. Today, the northern portions of Indiana are pock-marked with hundreds of water bodies that represent these formerly buried ice blocks. The eskers that were once numerous throughout central Indiana have been greatly modified and, in some locations, completely excavated from the landscape as eskers prove a ready source of sands and gravels used in construction.

What clearly remains on the landscape are the numerous moraines rising, often subtly, above the gently sloping farmlands across Indiana. From atop these features one can better envision the masses of moving ice that dropped tons of materials onto these locales. At one time, large river channels funneled water beneath the lobes of ice and released frigid water, sometimes in torrents, onto the land beyond the moraines. More commonly, rivers beyond the limits of the glaciers eroded the landscape as they swelled to capacity carrying sediment-rich water away from the melting ice lobes.

Before the glaciers occupied Indiana, the northern reaches were similar to the rugged landscape found in south-central Indiana. During the Pleistocene, glaciers pulverized the high points and filled in the low points much as a bulldozer would while reworking the same piece of ground over and over again. The rich agricultural lands and predominance of lakes and wetlands found throughout the glaciated portions of Indiana have been left to us as part of Indiana's Ice Age legacy.

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3. THE INDIANS

Ronald A. Janke

One might think that because today no Indian reservations are within the State of Indiana that our Indian history is considerably less important than such western states as South Dakota, Nebraska, and Wyoming. It is just the opposite. In the Plains, American Indian populations arrived only after the horse was introduced in Mexico by the Spanish and gradually spread northward into the Plains. Plains culture as many of us are aware, especially with the images portrayed in movies and television, existed for only a short time (50 years) and much of this culture was greatly influenced and modified by European ideas. In Indiana, large non-nomadic populations of Indians began to settle as early as 200 A.D. and these agricultural villages remained in essentially the same locations for more than a thousand years. Furthermore, these early native people were influenced only by other New World societies.

Indiana had been occupied by Indian groups thousands of years prior to the appearance of European settlers and their contributions are inescapable to even the most casual observer. Thousands of prehistoric sites are extant in Indiana. Generally, Indiana occupation can be divided into four major prehistoric cultural traditions: Paleo-Indian, Archaic, Woodland, and Mississippian (Keller 1973).

The Paleo-Indian and Archaic Periods

The Indiana era of the first prehistoric Indians is known as the Paleo-Indian period that began about 12,000 B.C. and lasted to around 8,000 B.C. These people moved into Indiana when the continental glaciers of the last great ice age, the Wisconsin glacier period, began to melt. Bordering the ice sheets that stopped in the northern part of the state near Valparaiso, Indiana, was a treeless zone of rich tundra and prairie grass and in this zone lived enormous herds of mammoths (huge elephants) as well as giant bison, horses, and camels. The big-game hunters, who are called Paleo-Indians, moved into the state and its people are identified by the large projectile points that have been found throughout the state (Dorwin 1966). In addition, most of these points had a distinctive narrow vertical flake that the maker removed from both faces to produce a fluted point. The Paleo-Indian period came to an end in Indiana around 8,000 B.C. By that time, the climate of Indiana was changing rapidly and more and more of the state was being covered by forests and the kind of game they hunted diminished as the mammals migrated north to cooler climates that favored the growth of grasslands.

Following the Paleo-Indian period is the Archaic period that in Indiana lasted from 8,000 B.C. to 1,000 B.C. This tradition is characterized by change as the tundra-like climate of Indiana warmed to support coniferous forest, and subsequently to a deciduous hardwood forest. Men and women became more dependent on a variety of smaller game. They supplemented their meat diet more than in the past, they gathered berries and plant food of various kinds, particularly seeds. The population had increased in Indiana from small migrating bands to many thousands of semi-permanent villages. No systematic study of Archaic artifacts has been undertaken in Indiana, yet there are some excellent individual site studies (Lilly 1941).

The Woodland Tradition

The earliest of Woodland tradition (1,000 B.C to 100 A.D.) called the Adena culture, appears mainly in southeastern Indiana. Adena culture originated in Ohio and is widely distributed throughout the state of Ohio, but most of the remnants of the culture appear mainly along the Whitewater river valley in southeastern Indiana. Their remains have been found at Winchester, Brooksville, Lawrenceburg, and New Castle (Black 1936).

By 100 A.D., the Hopewell people had largely replaced the Adena culture in Indiana. The Hopewell spread eastward from Illinois into Ohio during the later Woodland period (100 A.D. to 900 A.D.). Unlike Adena culture, Hopewell sites have a widespread distribution throughout the

state of Indiana. Many of these sites, however, clearly seem to cluster in a number of localized sites. Hopewell mounds tend to be concentrated in La Porte County in the north, Greene, Rush, and Madison counties in the central part of the state, and Posey, Ohio, and Dearborn counties in the south. The largest site is in Mound State Park four miles (6.3 km) east of Anderson, Indiana. The park has nine mounds and recovered artifacts suggest that the inhabitants followed the Hopewell way of life.

The Mississippi Period

By 900 A.D., a time known as the Mississippi Period (900 to 1600 A.D.) began to dominate in Indiana. Archeological evidence indicates that Mississippi culture probably began in the St. Louis, Missouri, area and spread northward along the Mississippi and Illinois rivers and entered the state along the Kankakee River system. It also spread eastward along the Ohio River and then spread northward into Indiana along the Wabash, Tippecanoe, and White rivers (Resource Maps, Chapter 26).

Mississippi Mound people were farmers and they followed the rich, flat floodplains of Indiana rivers. They brought with them a well-developed agricultural complex based on three major crops—maize, beans, and squash. Corn, however, was the primary crop of Mississippi farmers. In Indiana, they grew mainly northern flint corn that had eight to ten rows of kernels and could mature in seventy to eighty days. In southern Indiana, Mississippian tribes planted two corn crops with a staggered seeding time that provided two harvests to guarantee more than adequate reserves during the winter months. They gathered a wide variety of seeds, nuts, and berries, fished and hunted for fowl to supplement their diets. With such an intensive form of agriculture, Mississippi Mound culture supported a large Indian population within the state. It was very likely that more Indian peoples than whites lived in the area when it officially became a state in 1816.

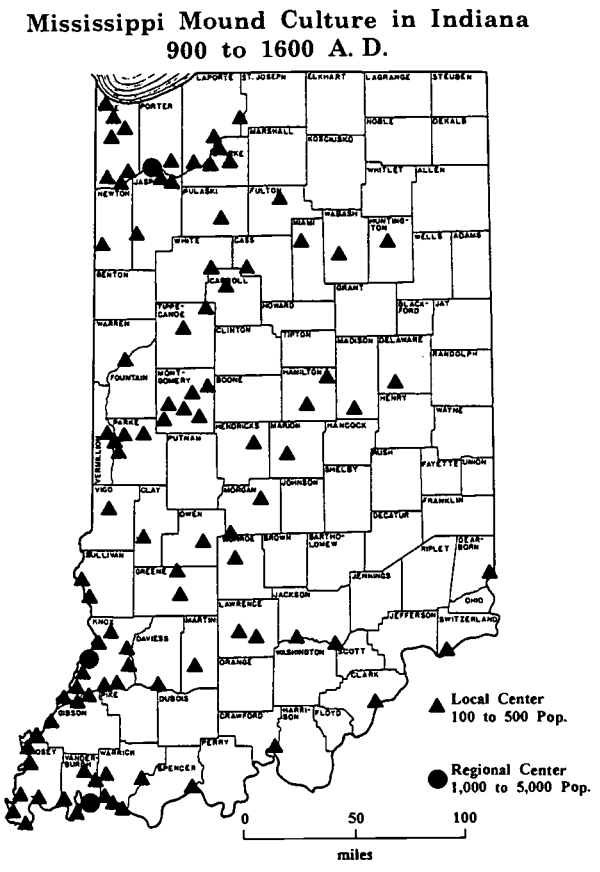

Figure 6. Mississippi Mound Culture in Indiana, 900-1600 A.D.

Large mound villages were clearly concentrated along Indiana rivers (Fig. 6). Literally thousands of mound sites existed and it is rare river floodplain that provides no such evidence of Mississippi Mound culture. The largest of the mound sites in the state of Indiana was Angel Mound, located seven miles (11.3 km) east of Evansville (Back 1967). This complex religious center had a population of around 5,000 people and had an area that extended outward for 50 to 60 miles (80 to 96 km). It was a satellite city to the main Mississippi culture city, Cahokia. Cahokia was located at St. Louis, Missouri, and was the largest of all Mississippi culture towns. No larger city existed in the United States until Philadelphia grew to more then 30,000 people in 1802. The numerous mound sites on the sand islands within the large Kankakee marsh were also satellite cities to Cahokia. The population of the Kankakee marsh sites is estimated between 10,000 and 20,000 Indians. Another major center in the state was Fort Azatlan, near Meron, on

the Wabash River (Fig. 6).

The European Settlement

The pattern of Indian agriculture and subsistence survived into the period of European settlement, though the area of Mississippi domination greatly diminished in the state during this later period. Mound culture had shifted its settlements to the southeast. Ocmulgee and Etowah in Georgia, Moundvilles in Alabama, and Natchez in Mississippi became the new capital cities of Mississippi mound culture when Europeans were arriving in North and South America. When white men began to arrive in Indiana during the seventeenth century, those Indians occupying Indiana were largely Algonquin-speaking tribes who had migrated into the state from nearby states to the north and west. Also small refugee groups, forced to give up their homelands on the east coast migrated westward and settled in eastern Indiana. All of these tribes were most likely early ancestors of Mississippi Mound culture.

Throughout the historic period, explorers, fur traders, and settlers encountered large numbers of Indian tribes who lived within the state and were dependent on its land for hunting and agriculture. Because many of these tribes were only recent arrivals into Indiana, an uncertainty arises that not only clouds the identities of many Indiana tribes, it furthers the belief that only in nearby northern states such as Wisconsin and Michigan permanent Indian tribes existed who could claim land as a result of long and continuous occupation.

Although Indiana presents difficult problems in the identification of its early occupants, the region was by no means devoid of an Indian population immediately preceding and during the early period of white penetration. In Indiana itself, a dozen historically intrusive groups lived within the borders of the state during the last two centuries.

Many of the Indian groups were economically tied to the French, so when the French established forts in the state (Ouiatanon 1717, Lafayette and Kekionga 1721, Ft. Wayne and Vincennes 1732), a large migration occurred (see Fig. 7). The Miami, which in 1680 were located on the St. Joseph River near Lake Michigan, began to migrate eastward toward the French post at Fort Wayne. They continued to migrate eastward into Ohio but after the French left in 1763, they abandoned the Ohio settlements and moved back into the state of Indiana where they settled along the Wabash, Mississinewa, and Eel rivers between Ft. Wayne and Lafayette. Two other Indian groups who were formerly part of the Miami, the Wea and Piankeshaw, also migrated from the vicinity of Chicago to Indiana. The Wea moved to the French fort of Ouiatanon (Lafayette) and further down the Wabash where the Vermillion River enters near present-day Terre Haute. The Piankeshaw were concentrated further south at the French post at Vincennes. The Miami, Wea, and Piankeshaw were distinct tribal and dialect units but all three spoke the same language (Rafert 1996).

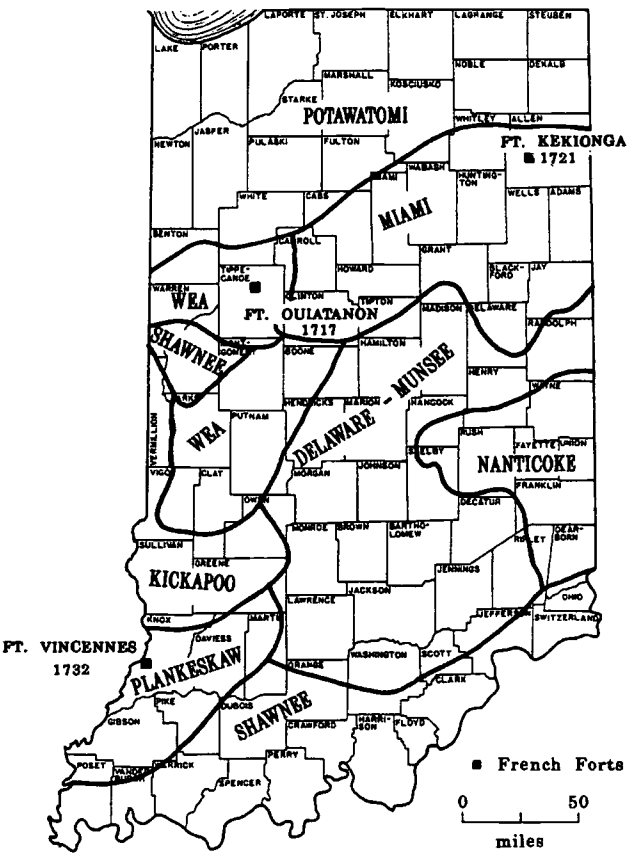

Figure 7. Indian tribes in Indiana, 1760-1840.

As Kentucky began to be settled by whites in the 1760s, Shawnee groups from that state move into most sections of extreme southern Indiana. At that time, large Shawnee villages were located near Evansville and Clarksville. In 1800, a band of Shawnee under the leadership of the Prophet established a large village called Chippoy near Lafayette. After the battle of Tippecanoe in 1811, however, the Prophet and his band of Shawnee left Indiana and moved westward (Dillion 1859).

Numerous refugees from as far away as the Atlantic Ocean settled the eastern part of the state in the 1780s. Nanticoke, originally from Maryland, lived along the Whitewater River in the southeastern part of the state. The Delaware settled along the west fork of the White River in Hamilton, Madison, and Delaware counties. A group closely related to the Delawares, the Munsee, settled near Muncie, Indiana (Weslager 1972). At the time the Delaware and Munsee entered from the east, the Kickapoo entered from the west. After the destruction of the Illinois confederacy in 1765, the Kickapoo felt safe around the forts in western Indiana. Most settled around the Vermillion and Wabash rivers and these Kickapoo became known as the Vermillion band of Kickapoo (David 1966).

The last group to move into the state was the Potawatomi from Michigan. The Potawatomi began settling along the Kankakee River marshes in northwest Indiana where they could find refuge against attack from the Iroquois confederacy. As the Miami drifted southward in the 1790s toward the Wabash River, the Potawatomi moved eastward and settled the entire northern half of the state. Potawatomi villages were especially numerous around the headwaters of the Tippecanoe River (Edmunds 1989).

Indiana Statehood

After Indiana became a state in 1816, land ownership became a center of conflict between the Indian tribes and white settlers. In 1830, the United States Congress passed the Indian Removal Act. This law required the removal of all Indian groups east of the Mississippi River. In Indiana, incessant pressure by the whites brought about a series of sixteen treaties in which the Indians relinquished all claims to their lands.

At the forks of the Wabash, the Indians and the Federal government signed treaties in 1838 and 1840 in which the government agreed to create a reservation for the Miami west of the Mississippi River. The Miami reservation in Kansas contained 324,796 acres (131,496 hectares or more than 500 square miles or 1,305 sq km) Soon white settlers in Kansas wanted the land and all but 1,000 acres (2,590 sq km) were taken from the tribe. As a result of losing most of their land, a new reservation was created in Indian territory in northeastern Oklahoma and today approximately 300 Indiana Miamis live there. However, in the 1840s, Miami chiefs negotiated for the removal of about half of the tribe. On this land, many Kansas refugees returned to live in their traditional homeland. As a result, the great majority of the Miami people, some 3,000 Indians, live in Indiana today. On the current American Indian population map for Indiana, Miami Indians live in Miami, Wabash, and Huntington counties with urban Miamis living in nearby Fort Wayne (Allen County) and Indianapolis (Marion County). Many Wea also live in Indiana and are located in Tippecanoe and Vigo Counties. Today many Piankeshaw are currently settled in Knox County.

The Potawatomi were forced to sign treaties in 1836 and a reservation was created for them in central Kansas. Many of the Potawatomi refused to leave their Indiana homes until they were rounded-up by military force in 1838. The subsequent "Trail of Tears" or "Trail of Death" resulted in about half of the Potawatomi dying in this forced march to Kansas. Once in Kansas, the reservation was allotted in the 1890s but most of the land inside the reservation was lost to white settlers. Today, less than 300 Potawatomi live in Kansas and the tribe owns less than 90 acres (about 36 hectares) of land. Much larger numbers of Potawatomi live and own land in Indiana. Most of today's Potawatomi live in counties next to the state of Michigan, that many used as a refuge when government troops were trying to remove them from Indiana. Many descendants of the Pokagon band of Potawatomi live in the Saint Joseph Valley near the South Bend area, where they

conduct annual Labor Day weekend powwows. Tuition remission exists for these Potawatomi at the University of Notre Dame.

The Kickapoo and Shawnee were also removed to reservations in Kansas but many remain in Indiana. Shawnee are quite evident in Vanderburgh and Clark counties and Kickapoo in Vermillion and Parke counties. The Delaware and Munsee were moved to the Stockbridge-Munsee reservation in Wisconsin as land was found for them inside the Menominee Indian reservation. This small 40,000-acre (16,000-ha) reservation was quickly allotted and today less than 3,000 acres (1,215 ha) are still owned by the tribe. Many Delaware and Munsee Indians still live today in Indiana counties of Delaware, Madison, and Grant, whereas urban Indians tend to be concentrated in Muncie, Indiana (Fig. 8).

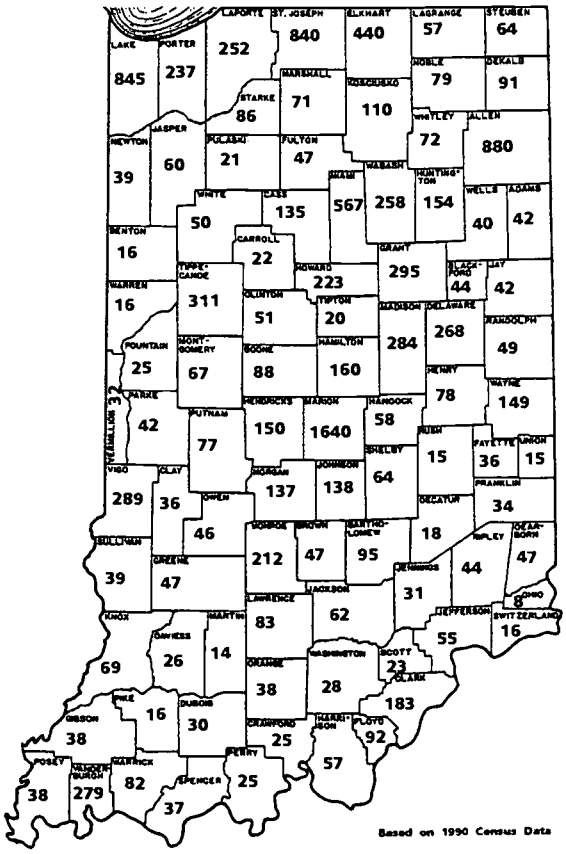

Figure 8. Current Native-American population

Persistence and Endurance

By analyzing the present pattern of Indian settlement in Indiana, it is evident that a connection exists with the historic Indian period and earlier Mississippi Mound sites (see Fig. 8). Native American geographic persistence is remarkable and is a testimony to Indian ability to adapt to changing circumstances. Early mound sites were located along the rich floodplains of Indiana's major rivers. During the historic period, Indian villages were sited also in these same locations. Such persistence is especially striking east of the Mississippi River where no Indian reservations exist today. Native American communities have not ceased to exist in Indiana and they are located in the same places in which they existed for more than a thousand years. The persistence and endurance of Native American people in Indiana illustrates their strong, sacred ties to the land—to the land that we call Indiana.

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4. The Pioneer Era

John R. McGregor

The European presence in Indiana before 1680 is uncertain. Although earlier French Canadian voyageurs might have explored the Wabash and Ohio rivers, doubt ends with the 1680 arrival of La Salle, at the Shawnee town of Kikionga (Fig. 9). The development of the fur trade and a succession of French posts along the Wabash River followed that expedition.

The initial post at Kikionga (1713) was followed by posts at Ouiatenon (1717) and Vincennes (1732). A group of Miami Indians settled at Vincennes and ceded a 40 by 78 mile (64 by 126 km) area to the French. This cession of 1742 was widely recognized by the local tribes and was a comparatively safe area for later settlers as the frontier moved into Indiana.

Following the defeat of the French in Canada (1763), British established control in Indiana. The Americans then displaced the British in 1779 with George Rogers Clark's Revolutionary War victory at Vincennes.

Early Pioneer Settlement

Pre-revolutionary English settlement in Indiana was minimal. Vincennes had only 232 residents in 1767 but by 1786, 300 houses had been constructed in the town and 70 Americans had been counted among its population (See Fig. 9 for locations cited in the text).

Along the River Deshee to the southeast of Vincennes, historic site surveys have identified rural homesteads occupied in 1783 and 1784. Archaeological collections from the Lower Wabash Valley provide clear evidence of extensive if incomplete pioneer occupation of the area by the early 1800s.

The early pioneer settlement in Indiana progressed from the south moving north along the waterways and the few trails that led into the interior. In general, overland trails were atrocious. The Buffalo Trace, extending between Louisville and Vincennes, represented a significant exception. Seasonal migrations of the buffalo had served to maintain a relatively clear overland route.

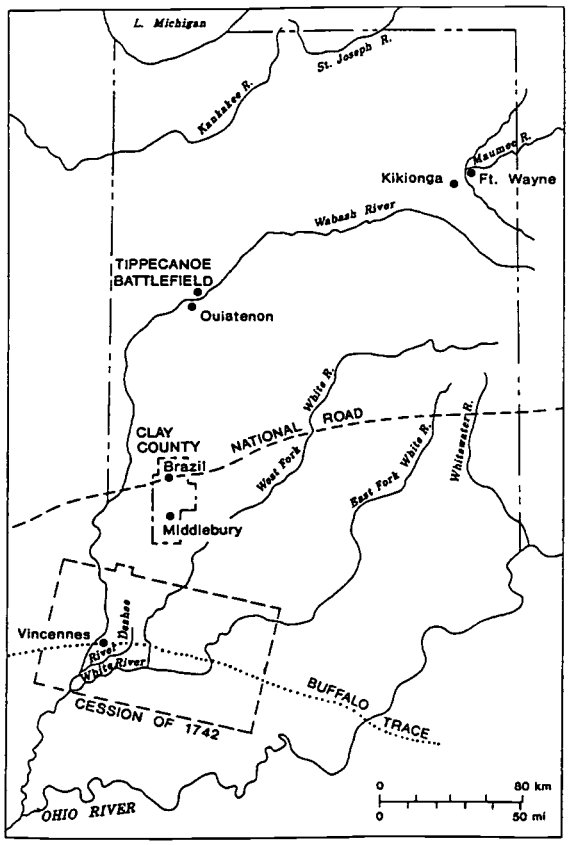


Figure 9. Locations cited in text during the Pioneer Era

The water routes, however, represented the easiest access to the lands north of the Ohio River, and they remained the main migration and trade routes until the arrival of the railroads in the mid-nineteenth century. Because the Wabash and its tributaries offered access to much of Indiana, pioneer settlement was closely related to the Wabash drainage. In southeastern Indiana the Whitewater River was an important local migration route. Northern Indiana settlement differed. In the northeast, water access to Lake Erie was available along the Maumee drainage system. The route was important to the French and by 1815 was open to American trade. With the opening of the Erie Canal, the lakes route to the eastern markets made commercial agriculture possible in that area of the state. The early development of Fort Wayne reflected those opportunities.

Elsewhere in northern Indiana streams such as the St. Joseph and Kankakee drained north and

west. Ready access to eastern and southern markets was lacking, and delayed pioneer settlement.

Overall conditions for settlement in Indiana varied widely between 1789 and 1815. For a time after Clark defeated the British at Vincennes the frontier was relatively safe. Then, between 1786 and 1794, the British supported Indian raids and isolated settlers were at risk. The frontier quieted again after Anthony Wayne defeated the Shawnee at Fallen Timbers (1795) in northwestern Ohio and reduced the British influence south of the Great Lakes.

The period of relative safety lasted from 1795 to 1805 during which the tribes displaced from Ohio increased the Indian population in Indiana and provided a base for Tecumseh and his brother, the Prophet, to organize an uprising. By about 1806, conditions again became uneasy on the Indiana frontier, and the pioneers were at risk. The situation was resolved in 1811, when William Henry Harrison brought a force north along the Wabash, and was attacked by the Prophet and his followers at Tippecanoe. Harrison's troops were alert, and withstood a massive attack at dawn. The battle was essentially a stalemate, and Harrison was able to withdraw south along the Wabash. The battle was premature for the Indians, and ended the chance for a concerted uprising along the entire frontier. The Indian threat ended across much of Indiana in 1815 with the conclusion of the War of 1812.

Pioneer Industry and the River Trade

The gradual buildup of pioneer settlement along the waterways produced an economic transition. A single pioneer cabin whose residents were isolated and produced what they required (or did without), was typical of the first step in pioneer settlement. Other family members and former neighbors then followed the initial settlers, and pioneer neighborhoods resulted.

As soon as the population in an area made it feasible, a small village tended to develop. These villages normally contained at least a general store, small milling operations, a church, and a school. Because cash was scarce, commercial activities often required the barter system, e.g., store goods were obtained for grain, and flour was exchanged for a share of grain provided by the miller. It was necessary for the merchants to ship their goods to areas where they could be sold for cash, and use the proceeds to obtain more merchandise for sale.

This initial shift from a subsistence economy to a commercial one was based on a rudimentary triangular trade generated by the merchants. Bulk product shipments were sent downriver to New Orleans by flatboat. Lacking power the flatboat simply floated downstream with the current. With crews of 6-8 men, they commonly went downstream with the spring thaw when deeper water reduced the navigational problems to one of staying-out-of-the-trees growing along the banks.

From the Wabash, the trip downriver required about three weeks. In New Orleans the cargo was sold and the boat was broken down for lumber. By doing that, the owner could normally recover the cost of the flatboat, which was too large and bulky to be moved back upstream.

The flatboat trade to New Orleans was huge, with hundreds of vessels traversing the Wabash every spring. The main disadvantage of this trade was the concentration of the season into a few weeks. The New Orleans market was flooded with goods, prices responded accordingly, and profits could vary widely for a merchant from one year to the next.

Yet, as the local area economies developed, the more successful merchants were able to generate the resources needed to expand into processing of local products. The result was a series of small industrial complexes in the villages and at rural sites with suitable water power for development. The small early pioneer mills soon began to be replaced by larger, more efficient operations.

To make this conversion, machinery and equipment were brought into the pioneer settlements. For example, French buhrs (millstones) were imported, brought inland to the Ohio River, floated downstream, and then moved along its tributaries to the settlements. The upstream movement on the tributaries was initially accomplished with keel boats that were either poled upriver or dragged against the current by rope and winch. Laboring against the river current required enormous human physical resources, and the cost of imported goods became correspondingly high.

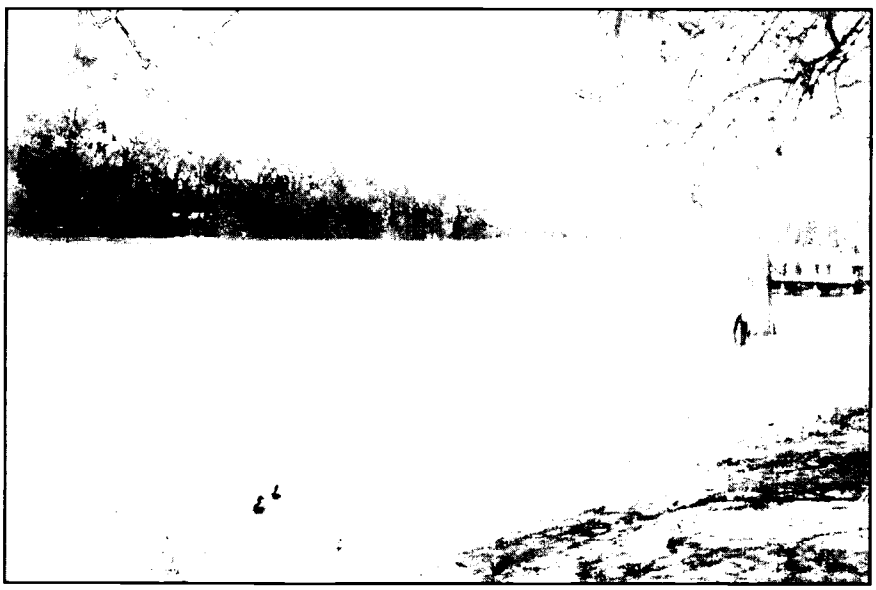
This ended with the development of the shallow draft steamboat, capable of moving well up the Wabash and other large Ohio River tributaries. With them, needed equipment could be brought in at much lower cost than before.

The water-powered industries required stream locations where water supply was adequate even under the low water conditions of late summer. In general the water mills required a sizable stream to operate reliably, and virtually all the successful commercial mills were on such streams. The pioneer river towns and rural water-powered industries were dispersed accordingly along the larger streams in the settled areas.

The rural populations with access to the developing industrial complexes found ready markets for their products. As the distance increased from such market points, the friction of distance reduced the utility of moving bulk products to the markets. From more remote locations, only more valuable products such as hogs, hides, furs, and distilled whiskey could be economically brought to the markets. Beyond the range for such goods, the growing pioneer river trade industries had little effect on the settlers. As a result, the transition of the pioneer economy was uneven, and a dual pioneer economy occurred for a time in which the more remote settlers continued to operate on a subsistence basis.

The anchor industries of the pioneer complexes included both the mills as well as pork packing operations. Hogs provided a means of converting grain to meat, thereby reducing the transport costs to the markets. Pork can be preserved readily by salting or smoking, and the result is a reasonably palatable meat product. In most of Indiana, pork packing was a dispersed, small scale pioneer industry in contrast with the large operations in Cincinnati, Ohio, often referred to as "Porkopolis."

Other industries were attracted to the complexes. Coopers were needed to produce barrels for shipping area products. Blacksmiths also provided required services. At some places, distilleries were operated to convert grain to a more valuable commodity. Tanneries were also common, and linked to the packing operations as well as to suppliers of hides and furs. In a few instances, woolen mills were developed to process local supplies. The pioneer products shipped in the river trade included grain, flour, logs, lumber, hogs, pork, hides, furs, whiskey, wool, woolens, and whatever locally gathered products were marketable.



A view of the Wabash River (Norman Cooprider)

Central Place and Resource-Based Development

As settlement progressed, the areas away from the streams attracted growing populations that required merchant goods and services. The resulting villages were small and lacked the diverse industrial activities of the river towns and rural complexes.

For example, the pioneer village of Middlebury (Fig. 9) never exceeded a few hundred people in size. Its industries were limited to a small flour mill, a cooperage, and a blacksmith. Each one served the local population and was not involved in processing surpluses for sale outside the area. The variety of goods and services available from the local merchants was correspondingly limited.

In the pioneer period, similar small centers developed in a dispersed pattern across much of Indiana. Their success was based on a monopoly of the adjoining market area. The boundary of that market area occurred where the goods and services of another village were equally accessible. Their opportunities for growth were accordingly limited by the extent of the market area open to them.

Where local resources offered other opportunities, the villages developed more complex activities. For example, Clay County (Fig. 9), has widespread deposits of stoneware clays. Pioneer potters arrived in the migration stream and began to set up small stoneware kilns in Brazil to make the jars, jugs, and crocks required by the local population. A late pioneer concentration of potteries developed in the area.

Additional examples of village and town growth based on pioneer iron furnaces, coal mining, and other resource related industries could be cited. What began as a simple scattering of villages away from the rivers, gradually became more complex in the pioneer era as resources and overland transportation were gradually developed.

Characteristics of Pioneer Rural Residential Sites

Many of the pioneers had become expert in the settling process by the time they reached Indiana. They and their predecessors had moved across the Atlantic Coastal plain and the Piedmont, crossed the Appalachian mountains and plateaus, and then occupied extensive areas of the Midwest. They would move the frontier from the Appalachian crest to the Pacific Ocean in a single century.

An analysis of their site choices provides some insights into their expertise. For example, the great majority of their residential sites were on slopes in the southern 180 degrees of arc, and most were situated at higher elevations in the local topography. The sites were mostly near smaller streams that lacked flood plains. Many were in areas of higher local relief, which offered a variety of bio-environments. Where settlers found a mix of surveyed and unsurveyed land, they located most of the early sites in the survey areas.

The locational benefits are apparent. The southern exposure provided better light, protection from northern winter winds, and earlier thaws and later freezes than north slopes. Higher site locations enjoyed good air circulation for summer cooling and insect control as well as a view. The small streams provided adequate water for household and stock, yet avoided the potential flooding and hostile traffic along the larger streams. The rougher topography in the immediate area of the house sites offered a variety of woods for fuel, building, and furniture as well as varied hunting opportunities. The surveyed land offered the pioneers legal title that avoided the chance of their losing land when the area was surveyed.

When the chosen site posed problems for residential use, a trade-off for some clear advantage was apparent. In the instances where soil wetness was severe, the soils also offered much higher yields for corn and wheat. When the sites were at risk of flooding, they were typically on areas of the large flood plains where no secure sites were available. The pioneers accepted the flood risk in order to farm the rich flood plains. In general, the residential sites were selected with obvious understanding of the local environment and the needs of pioneer settlement.

Conclusions

The pioneer era in Indiana involved a complex sequence of settlement patterns developed under diverse economic conditions. To regard the pioneer as an isolated, shadowy figure, involved only in the first wave of settlement is to miss the essence of the era. The pioneers not only endured the initial battles of the frontier and the grinding labor of clearing the land but they also developed the early Indiana economy to the extent that it played a meaningful role in the pre-1860 merchant economy of the nation. The pioneer settling and economic development of Indiana was a complex, efficient process that generated varied patterns of economic activity and settlement appropriate to the landscape and the economic context as settlements extended across the state.

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5. INDIANA SINCE THE END OF THE CIVIL WAR

Darrell E. Bigham

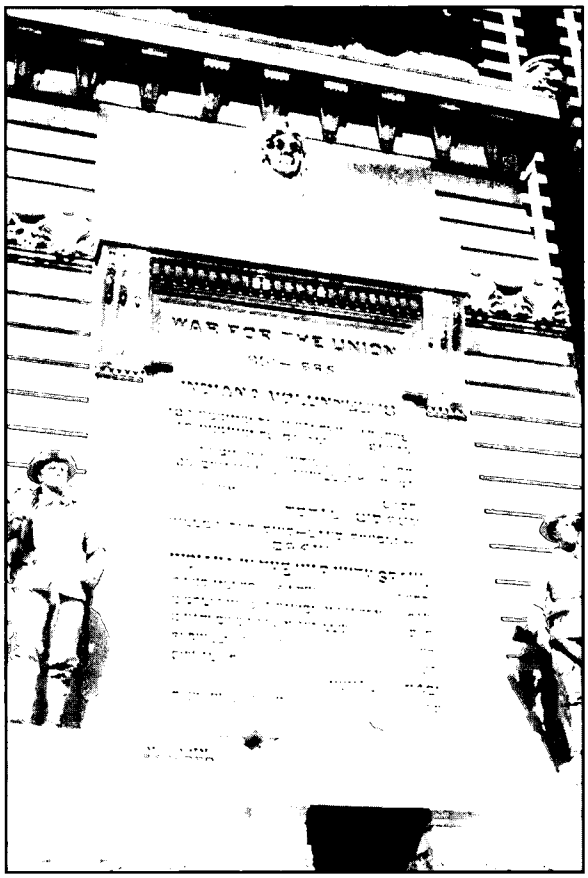
Although greatly changed since 1865, Indiana has preserved characteristics that distinguished it beforehand. Although Indiana shared roots in the Old Northwest with five other states, it "quickly developed a distinctive quality and character...[as] the most rural and homogeneous state of the region, with the highest number of Southern-born—and, conversely, the lowest number of foreign-born—citizens." Although it is one of the most industrialized, unionized, and urbanized states, as Gray (1994) notes "Indiana has retained its folksy, rural image." That is the portrait most outsiders have of Hoosiers—and one that Hoosiers seem to cherish. The state's license plate for the mid-1990s, for instance, carried a silhouette of a rural community and the legend, "Amber Waves of Grain."

Indiana remains the product of its rural, southern-oriented people and its land, which except for the Ohio River on the south and the Wabash River on the southwest, lacks any natural boundary. Until a century ago, swampy terrain in portions of northern Indiana blocked permanent settlement by many migrating from the Northeast. Southern influence, "so clearly recognized in the southern hills of Indiana, extended also into the flat, fertile plains of central and north-central Indiana"(Gray 1994). Southernness also dominated the politics and the culture of the state in the nineteenth century, accounted for its relatively poor public schools and high illiteracy rate—and "perhaps symbiotically, its rich tradition of oral and then written narratives—and its sympathy for slavery and the slaveholder." Though strongly Unionist in the Civil War, "copperhead" influence was felt, and Hoosiers were "a reluctant partner in the Reconstructionist politics of the Republican party"(Gray 1994). From 1869 until 1949, the General Assembly supported "separate but equal" schools for blacks. Attitudes toward, and treatment of black citizens remained racist—sometimes violently so.

The Civil War

The Civil War was a defining moment for Indiana. Hoosiers ranked fifth in the number of men (about 200,000) and second in percentage of population in the Union army. Powerful memories of sacrifice and patriotism would shape the state's politics and culture for many decades to come, most clearly illustrated by the massive war memorial erected in the center of the state capital.

Demand for goods to supply the Union army, combined with disruption of Ohio River commerce early in the war, helped to accelerate the economic development of the central and northern portions of the state at the expense of river towns after 1861. This was vividly illustrated by the rise of Indianapolis meat-packing industries, which benefited from the growing rail network of the central and upper Midwest and the development of refrigeration making year-round meat processing feasible. Although overshadowed by Chicago, the nation's leading meat processor, the capital city's growth contrasted with the relative decline of Cincinnati as "porkopolis" and the economic stagnation of New Albany and Madison, which in 1850 were first and third in rank among Indiana cities. Only Evansville in southern Indiana managed to grow and develop during the Civil War decade and after, largely because of its rail connections to Terre Haute and Nashville, its strong packet connections through the Upper South and the Mississippi valley, and its merchants' and industrialists' ability to fill the demand for goods and services occasioned by wartime disruptions in the Cumberland and Tennessee river valleys. Indianapolis would emerge as the state's largest city during this troubled time and would have no peer in size thereafter. Other cities in central and especially northern Indiana would also expand—notably Terre Haute on the National Road, Fort Wayne in the northeast, South Bend in the far north, and—after its creation as an industrial satellite of Chicago in 1906, Gary in the northwest. Thence into the 1990s, the only city south of the National Road to rank in the top five would be Evansville. Emma Lou Thornbrough (1965) gives a fine overview of Indiana in this period.



Monument to Indiana Volunteers in the Civil War, Indianapolis (courtesy of Brian Covert)

Population and Settlement

The population of Indiana at the end of the 1860s was almost 1.7 million. It would continue to grow thereafter: to 2.9 million in 1920, 4.7 million in 1960, and 5.5 million in 1980. Growth was higher in some periods, like the 1940s, than in others; it was flat in the 1930s and the 1980s. (In 1996 it was just above 5.8 million.) Most of the time growth rates were modest (Taylor and McBirney 1996). As before 1860, the population and the rate of growth in the Hoosier state lagged behind neighboring Illinois, Ohio, and Michigan, but outstripped Kentucky.

Several traits distinguish the Hoosier population over time. First, internal growth rates were not uniform. The southern third of the state, its most rural and least fertile region, trailed the rest of the state. Central Indiana was most populous by the late nineteenth century. The development of railroads, the draining of marshy areas, and the expansion of industry contributed to the northern tier's rapid growth by the turn of the century. Especially notable was the Calumet region, which became an industrial satellite of Chicago. With industrial decline in the 1970s and 1980s, though, the relative size of the northern portion of Indiana declined, though the cities of Fort Wayne and South Bend remained among the state's top five. For many reasons, including "unigov" in the 1970s and the largess of the General Assembly, the capital city's growth, and that of central Indiana, was impressive. Once simply a large country town, accounting for only 2.9 percent of the state's population in 1870, by 1990 Indianapolis's population was well over 13 percent of the Hoosier state (Bodenhamer and Barrows 1994).

Second, Indiana's rate of urbanization mirrored almost exactly that of the nation. At the end of the Civil War it was slightly under 15 percent. By 1920, the Census Bureau showed the nation and the state at just above 50 percent urban. By 1970 it had risen to about 60 percent (Madison 1986).

Third, Indiana's population remained overwhelmingly white and native-born. In 1870, less than 2 percent of Hoosiers were African American. Only in 1920s census did the figure rise to more than 2 percent. The total reached 4 percent in the 1940s and almost 8 percent by 1990. As earlier, almost all resided in predominantly African-American neighborhoods in larger cities. Although certain portions of the state (like German-dominated Dubois County in the south and east and Southern European-dominated Lake County) seemed like foreign enclaves, Indiana did not attract large numbers of the foreign born. The highest percentages (8.8 and 8.4, respectively) in the state's history occurred in 1850 and 1860—mostly Germans, Irish, and British. Thereafter the percentage dropped. Even in the age of the new immigrant (1880-1914) the proportion was at most 5.9 percent. By 1920, it had declined to 4.2 percent. By 1990 it would be 1.7. Indiana by the 1990s, in short, was about 92 percent white and 98 percent native-born. Its demographic homogeneity—rooted in the peoples of Northern and Western Europe, as filtered through the Upper South and the Middle Atlantic states—would be a continuing trait.

A final distinction of Indiana's population was that for a number of decades in the mid- to late-

twentieth century the proportion of its older citizens accounted for an increasing part of the total. That phenomenon reflected not only the declining number of children born to Hoosier parents but also the out-migration of Hoosiers because of job opportunities elsewhere. The 1990 census disclosed, though, that net in-migration exceeded out-migration for the first time in years.

The Economy

Demographic change reflected, and to some extent altered, the economy of the state. Although agricultural production grew markedly in the late-nineteenth century, the mixed husbandry and relatively high level of farm ownership buffered the state from the vicissitudes that rocked southern and western states and produced demands for radical political and economic changes. Agricultural education, scientific farming, mechanization, hybrid seeds, new crops like soybeans, chemical pesticides, herbicides, and fertilizers, and improvements in animal husbandry allowed Hoosier agriculture in the twentieth century to remain near the top in the production of grain and meat. As elsewhere in the nation, the number of farms and farmers dropped and the size of farms rose.

Agricultural products, forest and mineral resources, especially coal, and urban demand gave rise to the state's earliest industries—some of which continue to thrive. Industry also benefited from the stimulus of Civil War production and road and rail expansion in the mid- to late-1800s, when most of the state's rail lines had been laid and major interstate corporations dominated them. The development of vast coal reserves (and after the 1920s, petroleum) in the counties of the west and southwest and of natural gas fields in the northeast spurred factory growth even more. By the early-twentieth century, huge steel-producing plants in northwest Indiana and indigenous automobile and automobile parts production in Indianapolis, Kokomo, South Bend, and Evansville distinguished the Hoosier state, as did pharmaceuticals and nutritionals manufactured in Indianapolis, Elkhart, and Evansville (Madison 1986; Gray 1994).

The catalyst of world war in the twentieth century enhanced some patterns and introduced new ones. During 1942-1945, for instance, the industrial work force of Evansville tripled in size, to more than 60,000, as workers manufactured landing ship tanks and P-47 airplanes—new wartime products—and factories existing before the war made parts for planes and ships, cartridges, Plexiglas, and other war materiel. At the War's end, dramatic changes in consumer demands, and often obsolete factories shook this once-booming city to its core by the late 1950s, forcing it to diversify its economic base and not rely so heavily on consumer durables (automobile and refrigerator production). In many respects the river city anticipated many of the painful shifts in the state's economy in the late 1970s and early 1980s, as technological improvements, foreign competition, and labor costs shook the auto- and steel-producing centers of the state.

Yet by the 1990s, with industrial, civic, and government leadership, new economic strategies, and new forms of government-business-labor collaboration, the state's economy had become diversified and relatively strong. Certain traditions persist, such as steel production in Lake County, auto parts in Kokomo, prefabricated housing and trailers in Elkhart, and refrigerators and infant nutrititionals in Evansville. In addition, in industry as well as banking, giant and usually externally owned and controlled corporations dominate the state. Many smaller and efficient industrial companies have arisen, however, such as Hillenbrand Industries in Batesville (southeastern Indiana). New companies, like Toyota in Gibson County and AK Steel in Spencer (both in southwestern Indiana), have come to the state in the late-1990s in part because of local and state tax incentives, transportation systems, and the quality of the work force. Mineral resources—coal, gypsum, gas and oil, and limestone—are vital products of southern and western Indiana. Grain and livestock remain essential to the economy. Increasingly the urban centers of the state have become service centers to their hinterlands, providing retail shopping, government assistance, and health and medical care.

Much of the state's economic growth and development have been the result of the state's location—at the so-called "crossroads of America," connecting the Great Lakes with the Ohio, and the

east and west via the old National Road corridor. Enhancing location since the late 1950s has been the construction of a series of major interstate highways linking most of the urban centers of the state with each other and with cities on the perimeter. State-supported river ports at Jeffersonville and Mount Vernon on the Ohio and at Burns Harbor on Lake Michigan have strengthened the state's transportation system as well as the expansion of Indianapolis International Airport and the smaller regional airports at Evansville, South Bend, and Fort Wayne.

Education and Government

A final factor in the state's economic development has been the vast expansion, first fueled by the GI Bill, of post-secondary education. The state's flagship public universities, Indiana (Bloomington) and Purdue (West Lafayette), have greatly expanded their enrollments, branch campuses, and offerings, all with the aim of producing well-trained graduates. Significant development also has occurred at Indiana State (Terre Haute) and Ball State (Muncie) universities—the former established in 1865 for the training of teachers. The University of Southern Indiana (Evansville), the state's newest and fastest growing public university, is, like Ball State, a multipurpose, independent institution once governed by Indiana State University (ISU). The state's vocational training institution, Ivy Tech, with centers throughout the state, also has experienced dramatic growth since the 1970s. The state continues to enjoy the distinctive contributions of many small private colleges and universities.

Politics and government also offer evidence of change and continuity. The past remains strong in the zest with which Hoosiers involve themselves in two-party politics. Many are almost as loyal to parties as they are to their churches or synagogues. Changes in voting procedures, welfare policies, and mass communications, among others, have lessened the power and appeal of parties. A century ago, Indiana's size, location, and evenly-matched political parties made it a swing state. Hoosiers regularly appeared on national tickets—mostly as vice-presidents. Four Indiana men were elected vice-president, and one, Benjamin Harrison, was elected to a term as president. Since the 1920s, the state's relative importance has declined, though Wendell Willkie of Ellwood City was Republican presidential candidate in 1940 and Dan Quayle of Huntington was elected vice-president in 1988.

Tradition is evident in other ways. Balanced politically during most years since 1865, although prone to Republicanism since 1945, Indiana has exhibited a tendency to elect moderate candidates in both parties. Those Democratic legislators, governors, senators, and congresspersons who have been elected have been fiscal conservatives and social moderates. Township trustees, organized into a powerful lobby, remain a strong reminder of localism in Indiana, despite vast expansion in the power of state and federal government powers since the 1930s. A high level of local and state patronage jobs, until the recent past, distinguished the Hoosier state. The state legislature remains a citizen body, meeting in long and short sessions in alternate years, and only rarely as late as May or June. With the exception of the unique form of semi-consolidated government in Indianapolis and Marion County—achieved by a slick effort by a handful of state legislators—at the local levels the inefficiencies of Indiana town, city, and county governments persist.

Change and Continuity

The society and culture of Indiana also exhibit continuity. Despite improvements over time, public funding of education has remained, on a per capita basis, among the lowest in Northern states. The state, as late as the 1980s, was forty-seventh in percent of persons with four or more years of college education. Despite legislative action in 1949 and rulings by federal courts, de facto school segregation endured, and affluent suburban districts as well as rural ones had few students of color. Although, like the nation, more secular and diverse in patterns of religious affiliation, Hoosiers continued to reveal the largely evangelical Protestant (mostly Baptist, Methodist, Presbyterian) and Roman Catholic affiliations of their forebears, and political culture disclosed significant survivals of the civic religion of the past. Hoosier authors were quite active

and successful a hundred years ago—the so-called big four of Booth Tarkington, James Whitcomb Riley, Meredith Nicholson, and George Ade—but strong literary production in Indiana, supported by such diverse groups as the Indiana Historical Society and the Indiana Humanities Council, persists. Since the early part of this century, Indiana is perhaps best known for the popularity and quality of basketball at all levels of play and for its annual auto race, the world's richest, in Indianapolis (Rudolph 1995).

In sum, despite a myriad of changes, scholars agree that tradition remains a powerful force in Indiana. They concede that certain distinctive traits remain; Gray (1994) notes, "friendliness, openness, a guarded optimism, and a sometimes shallow sophistication." Another, Peckham (1978), has been struck by Hoosiers' individualism and conservatism, their "unhurried way of looking at things... . Perhaps they have the vices of their virtues. They may, for instance, be a little too self-satisfied...a little too shallow...a little too undemanding in their standards of education." Over the long haul, though, "I will bet on them to survive—with grace."

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6. The African Americans

Curtis Stevens

The African-American experience in Indiana has been a mixed bag of discrimination, achievements, suffering, triumphs, humiliation, and glory. Since their first arrival in Indiana, they have encountered prejudice, inequality and segregation from the white community. Through cooperation, self-determination, hard work, and using their own resources, African Americans established communities, institutions and developed a distinctive culture that has influenced and contributed to the rich cultural landscape of Indiana. African Americans have been a part of the Indiana cultural mosaic even before Indiana became a state in 1816.

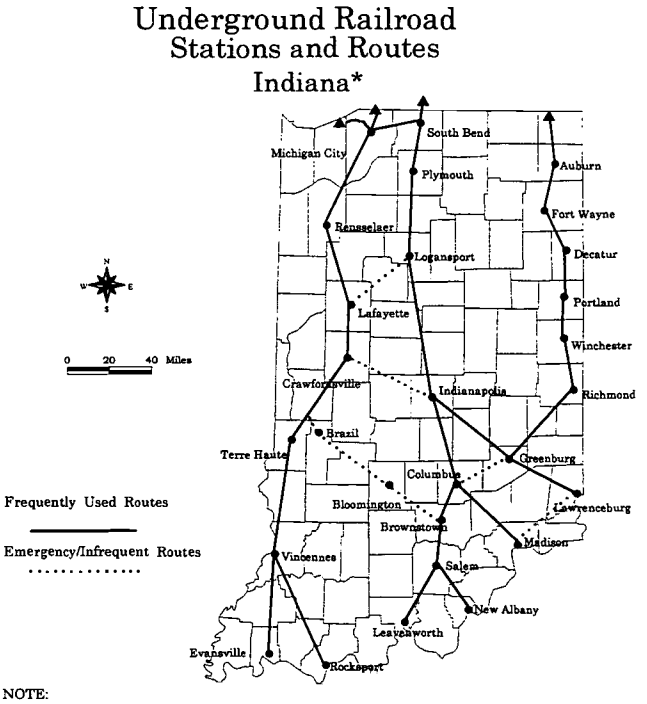
The first African Americans were reportedly slaves of the French who settled in the southern areas along the Wabash River and founded Vincennes in 1731. African Americans could have arrived in the Indiana Territory as early as the late 1600s. When the French settled and established forts in the regions of Lafayette and Fort Wayne, it is possible that they might have brought slaves into these areas. Evidence has not yet been found to support that claim.

The Northwest Ordinance, adopted in 1787 by Congress, created a government for the Northwest Territory. Article six of the Northwest Ordinance prohibited slavery and involuntary servitude in all the territory north of the Ohio River. The Indiana Territory formed from the Northwest Territory in 1800, was an attractive location for many African Americans who were seeking freedom from persecution. They also migrated into Indiana to improve their social and economic conditions.

The African Americans that settled in Indiana were a combination of individuals who were free in other states before they moved into Indiana, slaves who had gained their freedom during their arrival, and fugitive slaves. For many freed African Americans, with help from Quakers, Ohio and Indiana became resettlement areas from states such as North Carolina and Virginia. These states had a large Quaker population that began to migrate toward Ohio and Indiana. The Quakers believed that slavery was against their religious philosophy; therefore, they freed their slaves and moved into antislavery states. Along with the Quakers, freed African Americans and freed slaves began to arrive in Ohio and Indiana in the 1800s. It is estimated that more than three hundred and fifty African Americans had been moved to Quaker agents in the North by 1814 (Thornbrough 1993).

The Underground Railroad

The Underground Railroad (U.R.) also increased the number of African Americans in Indiana. It was a system of various secret routes and procedures in which freed African Americans and abolitionists helped fugitive slaves with housing and travel. Its main focus was to help fugitive slaves migrate north to free states and then to Canada. Fugitive slaves migrated to Canada because the British government would protect them



NOTE:

No exact dates mark the beginning and ending of the Underground Railroad. Nationwide, the Underground Railroad had about 3,000 members and had assisted more than 70,000 fugitive slaves by the mid 1800s. The Underground Railroad succeeded because of the dedication of numerous African Americans and of the anti-slavery organizations that were founded throughout the United States.

Figure 10. Underground railroad stations and routes in Indiana

there. The British government did not favor the extradition demands of the U. S. government. It is estimated that more than 50,000 African Americans escaped into Canada by 1861. The physiography of Illinois, Indiana, and Ohio provided favorable conditions for the Underground Railroad. With homes and churches being used in the cities, conductors and agents also used the vast river systems and thick, forested lands for hiding and transporting slaves to the North (Fig. 10).

Indiana had three principle routes of the Underground Railroad that were located in the eastern, central, and western regions of the state (Siebert 1898). On Indiana's western side, fugitive slaves crossed the Ohio River into Evansville then proceeded north through Vincennes to reach the Wabash River (Gilbert 1910; Lyles 1984). Here, fugitives would continue to travel along the Wabash River through Terre Haute then head for Crawfordsville, Lafayette, and finally to La Porte and Porter counties. The central route in Indiana began from Leavenworth in Crawford County, New Albany in Floyd County, and Madison in Jefferson County. From these locations, fugitives headed north through Indianapolis, Logansport, Plymouth, and finally into South Bend. After their arrival in South Bend, fugitives were directed toward Chicago, Illinois, following along Lake Michigan or into Cass County, Michigan. This route continued into Kalamazoo, Jackson, Ann Arbor, and finally into Detroit, Michigan (Fig. 10. See also Indiana map Series, Chapter 26 for place locations.).

The central route was highly successful in aiding slaves because each county had several members of the Underground Railroad, and some even traveled into Kentucky to help slaves escape. The eastern route of the Underground Railroad went through or near Quaker settlements that supported antislavery sentiments. This route originated from several areas in the south: New Albany, Jeffersonville, Madison, and Cincinnati, Ohio. The route went northward through Richmond, Newport, Winchester, Portland, Decatur, Fort Wayne, and finally into Auburn. Levi Coffin's home, in Newport (a small town in Vermillion County, western Indiana near the Illinois border) was a major station on the western route.

Levi Coffin, a Quaker who settled in Indiana in 1826, with the assistance of African Americans, helped many fugitive slaves escape to freedom. His success in organization for helping slaves escape through Indiana and Ohio earned him the title, "President of the Underground Railroad" (Asante 1992). The exact number of fugitive slaves passing through Indiana is uncertain; however, it is estimated at 2,000 annually. Between 1830 and 1850, it was estimated that the U.R. helped more than 62,000 slaves in Indiana (Lyda 1953). Although many fugitives used the Underground Railroad in Indiana to reach Canada, a number of African Americans permanently settled in Indiana.

Rural Settlements and Communities

In Indiana, African Americans established many settlements that were primarily farming communities. Between 1820 and 1860, the latter part of the antebellum period, more than thirty African-American communities were located throughout Indiana. The early settlements clearly developed along the various routes of the Underground Railroad. In the south, African Americans could be found in thirteen counties such as Gibson, Dubois, Orange, Jackson, Floyd, Jefferson and Clark. One of the southern communities, the Lyles Station Settlement (a rural community) in Gibson County, was developed by free African Americans where the residents worked hard and established their own schools, churches, and entertainment (Cortez 1979).

In the central Indiana, African Americans resided in Vigo, Parke, Morgan, Marion, Howard, Grant, Randolph, Rush, and Wayne counties—the largest community was in Vigo County. In 1830, large numbers of African Americans began to settle into this area. Some established communities were the Honey Creek, the Lost Creek, and the Underwood settlements. In these farming communities, however, some African Americans were servants and cooks for white residents.

African Americans from North Carolina founded the Lost Creek Settlement, the largest in Vigo County. For example, Robert Bowen, from North Carolina, traveled through the Lost Creek Township and was impressed with the area. He returned to North Carolina and expressed his

pleasure. Many families were encouraged by Bowen's words and decided to move to Indiana. As families migrated toward Indiana, many of them stopped in Orange County and lived there for several years before heading toward Vigo County.

Families that traveled from North Carolina to Vigo County were the Andersons, Archers, Chavises, Roberts, Stewarts, and Trevans. They purchased the land between 1832 and 1835, then built log cabins, a church, a school, and cultivated the land. In the east central portion of Indiana, the Greenville Settlement was the earliest in Randolph County. This area was successfully transformed into productive farmland by Thornton Alexander, the first African-American settler in the area, who came to Greenville in 1822 with his wife and nine children (Lyda 1953).

Other significant communities in central Indiana were the Beech Settlement and Weaver Settlement (fig. 11). The Beech Settlement, in Rush County, was founded around 1830 by African Americans from North Carolina and Virginia. The Weaver settlement was located in Grant County. Its development began when several African Americans (helped by Aaron Betts) purchased land within the county (Gibbs 1993). The founders were a mixture of free-born African Americans, manumitted slaves, and fugitive slaves from slave states like Kentucky and Tennessee.

In northern Indiana, African Americans settled in Allen, Adams, and St. Joseph counties. In Fort Wayne, in Allen County, freed slaves began to settle in the 1840s and by 1850 more than 81 freed African Americans lived here (Poinsatte 1969). The Huggart Settlement, the largest settlement in St. Joseph County, was established as freed African Americans and fugitive slaves decided to settle there instead of continuing into Michigan.

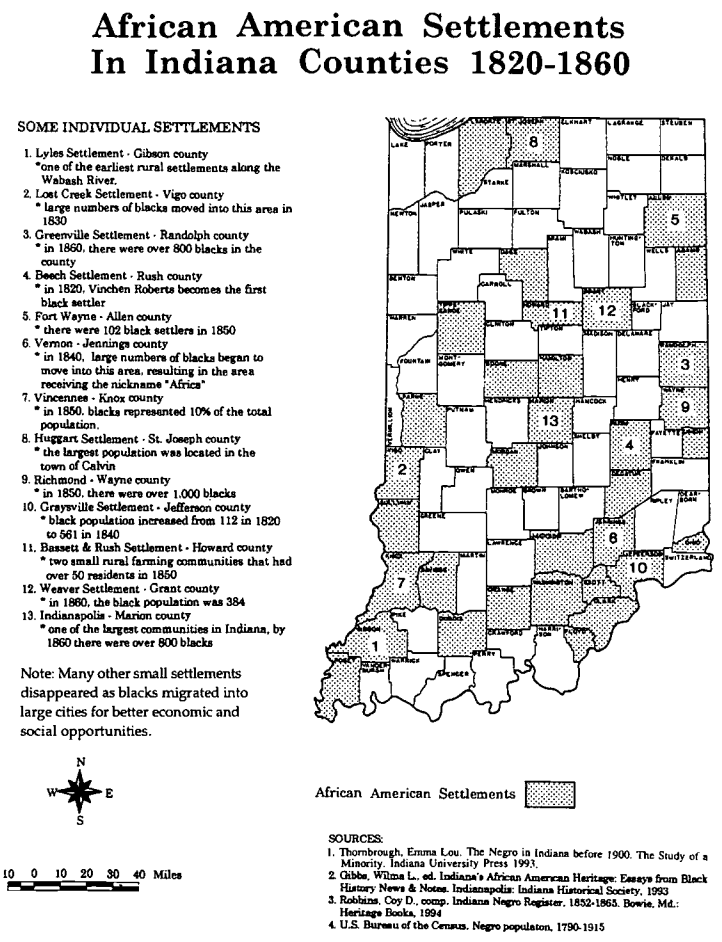


Figure 11. African -American Settlements, 1820-1860

Urban Settlement

In addition to rural settlements, many African Americans also settled in urban communities. By 1850, it is estimated that more than 2,000 African Americans lived in the major cities. Cities with large populations were Indianapolis 405, New Albany 305, Madison 296, Terre Haute 227, Jeffersonville 223, Vincennes 221, Vernon 211, and Newport (now Fountain City north of Richmond) 207. The population growth of African Americans concerned many whites and in 1851, the Indiana State Legislature adopted Article XIII in the State Constitution. It prohibited African Americans from entering and settling in Indiana. Along with Article XIII, the new Fugitive Act of 1850 drastically slowed the number of African Americans coming into the state. Between 1850 and 1860, the population increased by only 116 (Table 4). This figure represents the lowest increase, by decade, in the history of African-Americans' migration into the state of Indiana.

Major periods of urban migration took place between 1860 and 1870, 1910 and 1930, and 1950 and 1960. The increase in the population between 1860 and

Table 4. African-American Population in Indiana by Decade from 1800-1990

Year	Population	Increase
1800	298	0
1810	630	332
1820	1,420	790
1830	3,632	2,212
1840	7,168	3,536
1850	11,262	4,094
1860	11,428	166
1870	24,560	13,132
1880	39,228	14,668
1890	45,216	5,987
1900	57,505	12,290
1910	60,320	2,815
1920	80,810	20,490
1930	111,982	21,172
1940	121,916	10,934
1950	174,168	52,252
1960	269,275	95,107
1970	357,464	88,189
1980	414,489	57,025
1990	432,092	17,603

Source: U.S. Bureau of Census, *Statistical Abstract of the United States* 1971, and *Census of Population* 1990

1870 was initiated by the end of the Civil War. Many African Americans who were displeased about their situation in the South began moving into Northern cities. In addition, rural communities began to experience economic stagnation as farmland became scarce. Many rural African Americans, also began to leave rural Indiana for better opportunities in the cities. Indianapolis was the city of choice, and by 1870, the capital had more than 2,000 African-American residents. The second major period of urban migration took place during 1910 and 1930. More than 40,000 African Americans moved in the state within this period. Many cities like Indianapolis, Richmond, Terre Haute, and Evansville all experienced growth, but Gary grew faster than any other city.

Two major events that influenced the growth of northern urban cities were the "Great Migration" and World War I. The Great Migration was the massive movement of African Americans from the south to northern cities. Many African Americans were searching for better economic opportunities while others were forced off their land by Klan attacks and other discriminatory factors. World War I increased the need for military products largely made out of steel. This demand opened up numerous employment opportunities in the steel mills found in cities such as Gary, Detroit, along the Great Lakes, and Pittsburgh on the Ohio River. In addition, new and tough immigration laws reduced competition for jobs between African Americans and Europeans who had resided within these cites in the early 1900s. Gary was founded by the U. S. Steel Corporation, which bought the land in 1905. Its location midway between western iron ore resources and eastern and southeastern coal areas made it ideal for industry. With great opportunities for employment, African Americans migrated to Gary in massive numbers. Between 1910 and 1930, more than 15,000 African Americans moved into Gary, and by 1930, there were 17,922 compared with only 383 in 1910 (Thornbrough 1963).

The largest number of African Americans moving into Indiana occurred between 1950 and 1960

(Table 4). During this period, more than 90,000 African Americans moved into Indiana. The black population rose from 174,168 in 1950 to 269,275 in 1960. This trend continued into the next decade and between 1960 and 1970 more than 85,000 African Americans moved into the state.

Cities with large African-American populations were Indianapolis, Gary, Evansville, East Chicago, South Bend, and Fort Wayne. Today, more than 80 percent of the African-American population resides within these cities (Table 5).

Table 5. African-American Population in Indiana Cities by Decade from 1960 to 1990

	1960	1970*	1980	1990
Evansville	9,372	10,000	11,440	12,031
Fort Wayne	11,663	19,000	25,112	28,989
Gary	68,174	93,000	107,616	93,982
Indianapolis	98,056	134,000	152,818	165,570
South Bend	12,936	18,000	20,130	22,049

Source: U. S Bureau of Census, *Statistical Abstracts of the U.S.* 1971 and 1990.
*1970 data estimated from above 1971 source.

Religion and Education

In both rural and urban communities, African Americans established churches, schools, and other organizations. The focal point in the community was the church. It was used as a place of worship, community club house, meeting hall, and school. The first African-American denomination was African Methodist Episcopal (A.M.E.). Founded in Philadelphia in 1784 by Allen Richard, its focus was to provide spiritual enlightenment and elevate the race. Reverend William Paul Quinn was the preeminent organizer of A.M.E churches in Indiana. In 1844 he became a bishop and helped to establish many churches throughout Indiana and Illinois (about forty-seven churches). Bishop Quinn organized and assisted with the assembling of Bethel A.M.E. Chapel in Indianapolis, the Allen Chapel in Terre Haute, and several others (Gibbs 1993).

In 1854, more than 1,000 A.M.E. members attended churches throughout Indiana (Thornbrough 1963). The Baptist church grew as more African Americans migrated from the south. Several Baptist churches were established in Indiana—by 1860 in Evansville, New Albany, Rush County, Randolph County, Grant County, and Howard County. Today, Baptist churches have the largest African-American population in Indiana.

Education was a major concern of African Americans and in light of a state law prohibiting African-American children from attending public schools, they established their own. Before 1869, children had been taught in churches funded by the community. In the Beech Settlement, members of the Society of Friends taught children at the A.M.E. church. Other settlers built schools, for example, in the Lost Creek settlement, Vigo County, the first school house was built on the Roberts' property. The Weaver Settlement, in Grant County, built a school for African Americans in 1869. In the 1920s, racial separation occurred at all school levels throughout most of Indiana. This segregation resulted in the establishment of all black high schools such as Crispus Attucks High School in Indianapolis and Roosevelt High School in Gary (Thornbrough 1993). In 1949, state law ended segregation in schools and communities subsequently slowly began to integrate their school systems.

Along with churches and schools, other organizations established by African Americans helped their communities in several ways. In Indiana, the National Association for Advancement of Colored People (NAACP) began in 1913. Its purpose was to fight for absolute civil, political, and public equality. Mary E. Cable, an elementary school principal, was the founder and president. The first African-American YMCA in Indianapolis was built in 1898, and provided recreational oppor-

tunities such as arts and crafts activities. Dr. Sumer Furnis was the YMCA's first president.

Other organizations were the Colored Orphans Home, the Flanner House, the Woman's Improvement Club, Alpha Home for Aged Colored Women, Douglass Literary Society, Bethel Literary Society, and the Metropolitan Club. In 1887, two professional black baseball teams were established, the Indianapolis Browns and the Black Diamonds (Taylor 1996). The several communities, schools, and organizations that African Americans established display their cultural identity but reveal only a portion of their contribution to the rich cultural landscape of Indiana.

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7. Tracing the Settlement of Indiana through Antique Maps

Brooks C. Pearson

[Editor's note: Only samples of the maps cited appear in this article because of quality of reproduction and space considerations. Table 6 provides a listing of the maps identified by number in the text. Details of map availability may be obtained from the author]

A map captures a place for a moment and portrays its features with varying degrees of authenticity. Changes in topography generally occur rather slowly and so differences between a map's physical geography and ground truth are normally slight and irrelevant. A map's representation of human geography however, especially the built environment, quickly becomes outdated. Many new maps are essentially historical documents when issued, becoming antiquated nearly from the time of publication by continuous residential, commercial, or transportation developments on the American landscape.

A series of old maps can be a useful tool for demonstrating the changes commensurate with the settlement and population characteristics of the United States. This paper will demonstrate how antique maps of Indiana can be useful for illuminating the region's settlement history. While this presentation benefited from the resources of Indiana University's Geography and Map Library, most public and college libraries have old maps in their collections that one can use to illustrate the history of local settlement.

Table 6. Listing of Maps Referred to in the Text (see Editor's note)

Map Number	Description
1.	Portion. *Map of the State of Indiana.* J. H. Colton. 1838.
2.	*Map of the Falls of the Ohio.* J. Flint, cartographer; F. G. Gridley, publisher. 1824.
3.	"Geological of Clark County, Indiana." Portion of *Map of Clark County, Indiana.* George W. Davis, cartographer; Charles A. McCain and David S. Koons, publisher 1875.
4.	*Map of the State of Indiana and Ohio with Parts of Michigan Territory.* Unknown London publisher. 1842.
5.	Portion. *Map of the State of Indiana.* J. H. Colton 1838.
6.	*A New Map of Indiana Exhibiting the Counties, Townships, Cities, Villages, and Post Offices, Rail Roads, Canals, and Common Roads.* F. Mendenhall 1854.
7.	Portion. *Map of Marion County Indiana.* Condil, Wright, and Haydon 1855.
8.	*Map of Indiana.* Braden and Burford 1871.
9.	*A Bird's Eye View of One of the New Communities at Harmony in the State of Indiana, North America* 1968 report by Historic Urban Plans of 1825 original.
10.	*Indiana.* James Monterth, cartographer; Struthers, Servors, and Company, engravers, 1886.
11.	Portion. *Evansville, Indiana.* J. D. and M. S. Saunders 1890.
12.	Portion. *Map of the City of Indianapolis and Its Suburbs.* H. C. Carpenter, cartographer; Baker and Randolph, publisher, 1889.
13.	*Gary and Tolleston.* William H. More 1908.
14.	Portion. *Map of the City of Indianapolis and Its Suburbs.* H. C. Carpenter, cartographer; Baker and Randolph, publisher. 1889.
15.	*Bicycle and Driving Map of Indianapolis.* Fred Deserter and Theodore, cartographers; Topographical and Survey Company of Indianapolis, publisher 1900.
16.	*Industrial Terra Haute.* William Rober Paige, cartographer 1927.

(Maps were photographed by John M. Hollingsworth and Brooks Pearson)

Early Settlement

The first settlers in what is now Indiana were early mound builders like those at Cahokia, Illinois or Angel Mounds outside Evansville. Much ancient Indian life east of the Mississippi involved complex networks of settlements in loose confederations or under the control of a chieftain from the area's largest city. It was their techniques of urban construction that gave these people their sobriquet because they erected prominent buildings throughout their villages atop large mounds of earth.

By the time Europeans began recording or providing detailed comments of native lifeways, what is now Indiana included, among others, the largely sedentary Delaware, Miami, Potawattomie, Shawnee, and Wyandot. Taking full advantage of pristine woodland and prairie ecosystems, native societies integrated the cultivation of corn, beans, and squash in plots near their homes with hunting and gathering activities (Madison 1986). The map collection used for this study encompassed only nineteenth and early twentieth century cartography because it contained no materials related to the first human settlement in Indiana.

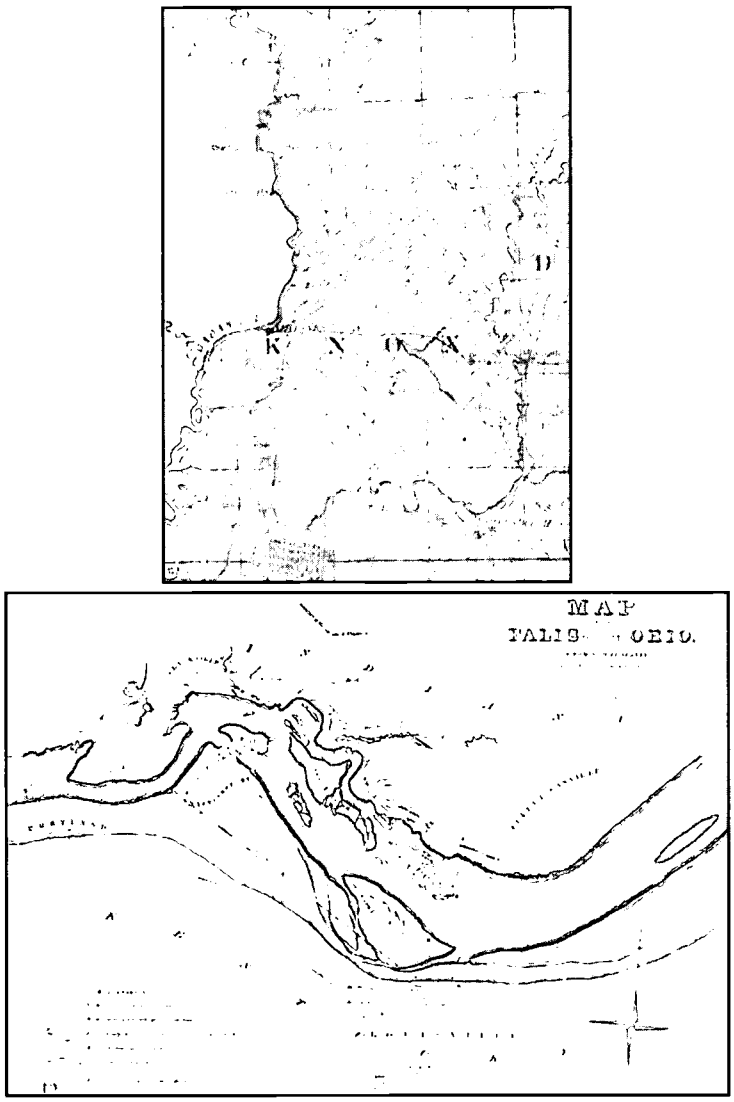

Figure 12. Upper: Portion of Colton's 1838 map of Indiana. Lower: Map of the Falls of the Ohio, 1824

Earliest European Contact

The French were the first Europeans to interact with the aboriginal populations of Indiana. Based in Canada and near Detroit, French trappers and traders began to infiltrate much of the country bordering the Great Lakes and drained by the Mississippi beginning in the late seventeenth century. Relations with tribes then inhabiting the region were generally cordial, although friction often arose from the paternalistic attitude of the French toward those whom they deemed savage. Since French settlement was not numerically great and remained largely friendly, most of the region's Indians considered it little threat to native life (Cayton 1996; Madison 1986).

The introduction of European manufactured goods, firearms, and diseases—not to mention the concept that land could be sold—ultimately decimated the fabric of native society in Indiana (as well as throughout most of the Western Hemisphere).

Wherever the French resided in North America they customarily divided lands into narrow strips called longlots that extended back from a river to insure that everyone could gain access to watercourses from their property. Without roads in the New World the French relied on water transportation

to get trade goods into and natural resources (mostly pelts) out of their territorial claims. The only place in Indiana the French intensively inhabited was the Vincennes area where this longlot system imposed a rectangularity upon the landscape that is evident in Colton's map of 1838 (fig. 12). The lines representing Knox County's political geography echo boundaries and property division systems inherited by the United States from earlier French management of the region (Johnson 1976).

Incursions into what is now Indiana from British settlements along the eastern seaboard had few effects until the end of the eighteenth century. British and French colonial administrations were reasonably successful in halting further settlement of the region between the Ohio River and the Great Lakes because they wanted to establish an indigenously populated buffer zone between their holdings. (This practice occurred elsewhere in the history of colonialism as indicated by the persistent independence of Thailand, maintained as a buffer state between French Indochina and British south Asia.) The independence of the United States disrupted the precarious balance established by colonial policy in the Ohio River country.

Opening Indiana to Settlement

The British government largely forbade settlement anywhere west of the Appalachians. Once British power faltered during the Revolution, however, colonists began streaming into Kentucky and Tennessee. High birth rates on the frontier and the great influx of migrants into the region soon encouraged settlers of the Transappalachian West to feel overcrowded in their new homes. Soon after the establishment of these two states, their populations began to demand that the area north of the Ohio River be opened for settlement. When the government finally opened these lands around the beginning of the nineteenth century, upland Southerners accounted for the bulk of the initial population in the Northwest Territories, although this cultural presence was concentrated in the southern portions of Illinois, Indiana, and Ohio (Cayton and Onuf 1990).

One early impetus for settlement of the old Northwest resulted from the practice of offering acreage instead of payment for Revolutionary War military service. Clark's Grant—essentially Clark County—was a good example of this convention that allowed the cash-poor infant Federal government to honor its debts. In reward for the services of himself and his soldiers, George Rogers Clark received from the national government title to lands above the Falls of the Ohio River (seen in 1824 map, Fig. 12). These were to be divided among the men of his command according to their rank. A major general, for example, received 15,000 acres (6,072 hectares); a captain 4,000 acres (1,619 ha); an officer 400 acres (162 ha); and a private 200 acres (81 ha) (Wilson 1986). Oriented to the river as were French properties, the land allotments resulting from Clark's Grant were maintained when the surrounding area was later platted according to the Congressional Survey System. Then non-commissioned apportionment technique is clearly evident in Map 3 where the lines denoting Clark County (and portions of Floyd and Scott) stand out against the surrounding political geography.

The Northwest Territory was opened to settlement as a result of the Land Ordinance of 1787 that established a consistent, regular method of surveying land into a grid of relatively uniform size and allowed for the efficient progression from territorial status to statehood (Cayton and Onuf 1990). By systematically dividing the Midwest into a series of survey townships, the ordinance effectively established the political boundaries that ultimately would come to dominate the region. Frequently people who fly over landscapes surveyed through this system will note the linearity of human-derived features. For Indiana and the rest of the Midwest, the system of rectangles encoded as a result of the Congressional Survey was further enhanced when roads were laid out along property lines. The result is the monotonous network of straight features intersecting at ninety degree angles that characterizes much of the American landscape (particularly west of the Appalachians and east of the Rockies and north of the Ohio and Missouri Rivers).

Although the ordinance of 1787 permitted the expansion of population into the region including Indiana, territory had to be ceded from the Indians before it could be sold to settlers.

Inasmuch as the French had early extracted rights to occupy the Vincennes vicinity, the Treaty of Greenville (1795) was the first such treaty the United States signed to obtain land in what is now Indiana. Since this treaty was primarily intended to facilitate opening Ohio to white migrants following the impending passage of the Land Ordinance, it also allowed the settlement of a small strip of land in southeast Indiana bordering Ohio called the "Gore of Indiana." The 1803 treaty signed at Fort Wayne reconfirmed earlier ones establishing the slaveholding French territory based at Vincennes. Once the Freeman Survey had been completed of the area, the initial settlement of the Wabash and White River valleys commenced (Wilson 1986).

The first treaty to open large tracts of new Indiana lands to settlement was signed at Vincennes in 1804. It was negotiated to secure pioneers the right to use the Buffalo Trace between New Albany and Vincennes. To protect this primitive roadway—the primary avenue for migrants into the territory—the treaty secured from Indians all claims to land south of Clark's Grant, Knox County, and a line a few miles north of the Buffalo Trace (roughly parallel to US 150 between New Albany and Paoli). Following this agreement, the entire southeast tip of Indiana was available for settlers. Treaties of Grouseland (1805) and Fort Wayne (1809) ceded much of the rest of southern Indiana to the United States government to sell for farmsteads (Madison 1986; Wilson 1986). Map 4 implies the extent of ceded lands within Indiana Territory around the time it entered the Union as a state. Although published in 1842 after native peoples had relinquished all lands in the state, the political geography represented on this British map is more reminiscent of conditions during early statehood.

Available lands in southern Indiana quickly became populated as a result of the 456 percent settlers' migration rate for the years between 1810 and 1820 (Cayton and Onuf 1990). In 1817 alone, the Federal land offices in Vincennes and Jeffersonville together issued title to more than half a million acres (202,430 ha) of land in the state (Rohrbough 1990). Demand to expand further motivated the 1818 New Purchase in which Indians ceded the central third of the state to white settlement. Whereas most of southern Indiana had been populated from the upland South, the New Purchase was largely colonized by migrants from the Middle-Atlantic states (Cayton and Onuf 1990). By 1832, the only remaining unceded territory was that of the Miami in the north-central part of the state; a unit of the Miami Reservation in 1838 can be seen in Map 5. By 1841, however, all lands in the state had been opened to white settlers.

Filling in the Map

By the middle decade of the nineteenth century, much of Indiana had been subject to widespread settlement for several generations. At mid-century, many locations in the southern two-thirds of the state were fairly densely populated, yet much of the north remained thinly inhabited. This distribution is evident in Map 6 from 1854. Where there was settlement, moreover, it was sparse by comparison with today. This is most pronounced in the 1855 Map of Marion County, Indiana (Map 7). In this pleasantly executed work, Indianapolis is a city—as one would expect—but a fairly small one.

Development proceeded quite rapidly over the next few decades. Indiana's excellent rail network (Map 8) provided avenues for settlers as well as vital transportation links to markets for the agricultural and manufactured goods of the state. Among the interesting groups coming to Indiana during the nineteenth century to engage in agriculture and commerce were members of the Harmony Society, which was founded in America by German religious reformer Johann Georg Rapp. Adherents to this communal, utopian faith set up their community along the Wabash River south of Vincennes in 1814, and established a thriving market center based on the resources of their 20,000 acre- (8,098 ha-) domain until macroeconomic crises and internal strife began to tell on the society. Scots social reformer Robert Owen eventually bought the community in 1825 for $150,000 and transformed it into a secular commune (Pitzer and Elliott 1979). His plans for the place were on a grand scale, as demonstrated in Figure 13, which is reproduced from a fanciful 1825 town plan that was never implemented.

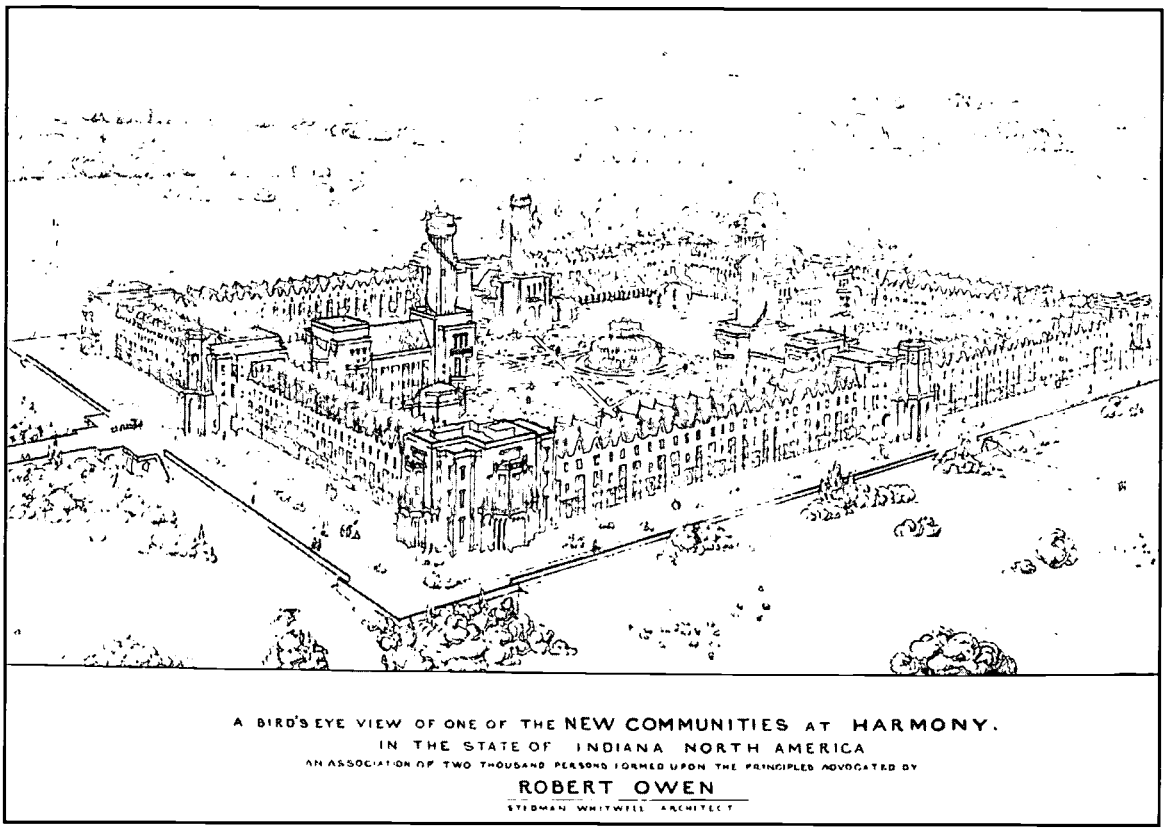

Figure 13. Plan for the new community at Harmony

Social reformers and religious orders constituted, of course, a scant percentage of nineteenth century Indiana settlers. As the population grew dramatically during the period, Indiana's map began slowly to fill in. By 1886 (Map 10) most of the state looked much as it does today. The only notable difference in the built environment is the reduced presence of highways as one would expect from a society based on horse power.

Industrial, Modern Indiana

With the advent of widespread industrialization in the United States during the last years of the nineteenth century, Indiana's economy began to diversify. Agricultural products and timber resources still flowed (although the latter would soon near exhaustion) through ports such as Evansville (Map 11) and through railheads such as those of Indianapolis (Map 12). Increasingly these transportation hubs also handled manufactured products exported from the state. Symbolic of industry's new importance to Indiana, Gary emerged along the south shore of Lake Michigan when U. S. Steel needed a place to house its workers. Map 13 presents the city and its enormous steel production facilities.

By the end of the nineteenth century, cities were developing suburbs such as the one in Indianapolis represented in Map 14. These were based on a new transportation device, the electric streetcar (Bradley 1991), which allowed a slight dispersal of people from the central city. This foreshadowed the future profound effects of people's preference would have for a low-density residential environment when this goal became more readily attainable through the immense spatial freedom introduced by the widespread availability of personal automobiles.

As Indiana entered the twentieth century, the general level of wealth had increased to the point that pleasure touring became a popular diversion to many of those benefiting from a newfound

affluence. Map 15 provides an example of the cartography aimed at meeting the needs of this new American pastime. Urbanization continued apace in the new century along with increasing national wealth. By the 1920s, Indiana cities heralded themselves as modern, vibrant, attractive business centers, as seen in Map 16 of *Industrial Terre Haute.*

Conclusions

In approximately a hundred years, the territory that is now Indiana went from pristine forest wilderness and prairie to a land of thriving cities and abundantly productive farmland. The development of the Hoosier landscape can be seen in old cartographic documents that are a useful tool for investigating a state's settlement history. Maps reflect some portion of the built environment at a given moment in time and can therefore be helpful in establishing a better understanding of place and its settlement history.

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PART III: THE HEARTLAND TODAY

8. INDIANAPOLIS: A STUDY IN CENTRALITY

Robert Larson

It would be difficult to imagine a state capital city with a greater degree of centrality than Indianapolis. Indeed, this city's centrality is evident on a wide variety of axes. Indianapolis demonstrates its centrality within Indiana in terms of geographic location, transportation, economic function, political function, education, and demography as well as in terms of the social and cultural aspects of the state.

Geographic Centrality

The geographical centrality of Indianapolis within Indiana is obvious from the first glance at the state map (fig. 14). The city is situated very close to the precise geometric center of the state. The city owes its very existence to the fact of that centrality. The early nineteenth century capital's location of Corydon, Indiana, far to the southeast, was a concern to the state's early leaders. The logical concern was that Corydon was not equally accessible to residents throughout the state. The governor and members of the General Assembly, the name given the State Legislature, wanted to correct this deficiency. The first governor of the state, John Jennings, began a search for a new capital in 1820. He sent ten commissioners out to select a new site with the express purpose of finding a more central location. Although at least three potential candidates were identified, the site chosen was at the confluence of the White River and Fall Creek, where John McCormick had built his cabin. Once the site was chosen, McCormick and others began to establish business enterprises there to take advantage of the potential growth, and the new capital's economic life had begun (Hauersperger 1997).

The site conditions were far from perfect. Although some believed that the White River would be a navigable link to other parts of the state, this was not the case. Also, the low lying and poorly drained area near the river caused problems, including malaria outbreaks in the summers of 1821 and 1822. In spite of these difficulties, the settlement's central location induced the Indiana General Assembly in 1825 to make the permanent move of government operations to the new capital, Indianapolis (Hauersperger 1997).

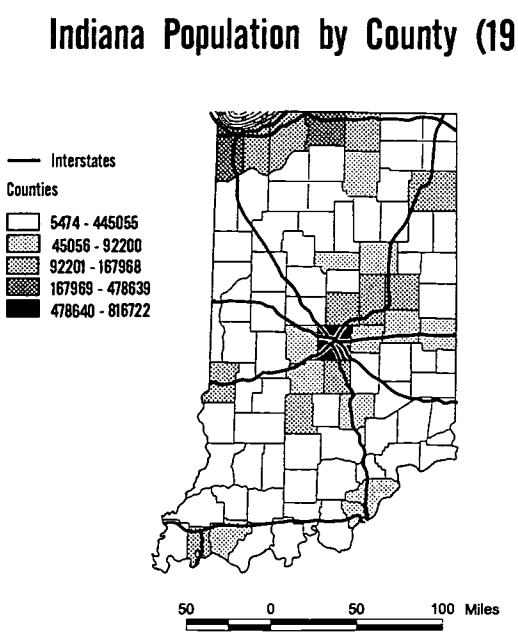

Figure 14. Indiana population and interstate highways.

Central location by itself is no guarantee of real accessibility. Without a navigable stream, Indianapolis was not well connected to its surroundings. Real connectivity and accessibility would have to wait until the mid-1830s, when private businesses and government officials would begin to address the problem of a lack of transportation. Today, the transportation centrality of Indianapolis within the state is dramatic. This is not accidental. The Indiana General Assembly of 1836 called for the development of roads, canals, and railways throughout the state (Hauersperger 1997). The National Highway (now U.S. 40) and the Michigan Road (now U.S. 421) intersected in Indianapolis and provided a focus for the intersection of other roads as well.

By the late 1830s, this growing intersection was scheduled to be linked into the Central Canal Project, connecting it to the Wabash and Erie Canals. The city, incorporated in 1847, saw its first rail lines that same year. Later in the nineteenth century, Indianapolis would become one of the largest passenger railway centers in the country. The central location of Indianapolis fostered its reputation as a transportation hub, and in 1888 the first union railroad depot was built in Indianapolis (Levathes and Felsenthal 1987).

Over time, technology and external economics would diminish the importance of the railroads to Indianapolis, and this happened in many other cities as well. Internal combustion engines came to be the dominant technology, and trains were effectively replaced by cars and trucks. Indianapolis, however, was well situated to take advantage of this change. Indianapolis, not Detroit, was the first major center of automobile production in United States. At one point, more than sixty models of cars were manufactured in the city. With somewhat greater enthusiasm and support from the local financial institutions, Indianapolis might have become the center of automobile production rather than Detroit. Indianapolis was at the center of a statewide hub of 50 communities, producing 256 makes of cars and trucks (Hudnut 1986). The automobile legacy was still very much in evidence in recent years in the form of automobile component companies such as Allison Engine Company. The Indianapolis Motor Speedway was built as a proving ground for early automobiles, and the racing legacy that followed also lives in the more than 250 motorsports related businesses currently operating in Indianapolis (Hanna 1996).

Today, newer forms of transportation centrality are clearly evident. The highway connectivity of Indianapolis is unsurpassed. One can leave the beltway surrounding Indianapolis in seven different directions using the Interstate Highway System, in addition to several other federal and state highway links. No other city has such a focus of Interstate Highway connectivity, and more than half of the country's population resides within a single day's drive of the city (Hanna 1996).

The Indianapolis International Airport has become a significant economic and transport center as well. With 19 airlines offering about 350 daily flights to more than 90 destinations for about seven million passengers per year, passenger traffic is significant (Begovich 1997). Even more important may be the facility's cargo handling capabilities. It is the twelfth largest cargo airport in the nation, moving about 600,000 tons of mail and cargo each year. The cargo center includes the second largest Federal Express hub in the nation as well as a U.S. Postal Service Hub. The one billion dollar United Airlines Maintenance Center is a new addition to the facility (Wildey 1996). Through time, as early elements of transport centrality such as the railroads have faded, newer centralities of highway and air traffic have more than compensated for the loss.

The Metropolitan Regional Effect

The powerful state and regional centrality of Indianapolis has manifested itself in a variety of other forms as well. The relative concentration of population near the state's geographic center is evident not just in Marion County, but in many counties surrounding Indianapolis (fig. 14). This kind of *metropolitan regional* effect is to be expected given the concentration of access and activity in the capital city. Indianapolis is the clear focus of state and regional social and cultural life. A nationally acclaimed children's museum and art museum in addition to an orchestra, a ballet, and opera companies provide a variety of diversions. The city is also a powerful educational focus with 15 colleges and universities including Indiana University-Purdue University at Indianapolis (IUPUI) and several private institutions such as Butler University, Marian College, and the University of Indianapolis. The Indiana University Medical School is Indianapolis is one of the nation's largest. More than 50 major hospitals and medical centers provide a powerful regional health care focus in the metropolitan area (Matarese 1997).

The political centrality of Indianapolis would appear to be obvious. The city is the state capital and geographically centered with Indiana. The Indiana capital has deep political roots. In 1880 a local attorney, Benjamin Harrison, was elected president of the United States. Over the years, a former mayor of the city headed the Democratic party, four local men were nominated for vice-

president, and the Socialist Party of America was formed in Indianapolis. Clearly the city has been a political center of some consequence for a long time (Bodenhamer and Barrows 1994).

On the other hand, perhaps the greatest political significance of Indianapolis has more contemporary roots. The years following World War II saw the central city stagnate while the surrounding area grew rapidly. This rapid suburbanization overloaded the municipal budget, and the county commissioners lacked the means to provide new demands for basic services needed for the new suburbs. By the mid-1960s the political authority of the mayor was in decline, and Mayor John Barton formed the Greater Indianapolis Progress Committee (GIPC). The first political energy toward the concept of some form of municipal consolidation was beginning to be felt. The inefficiencies of the existing system were becoming more and more evident. The current governmental arrangements of Indianapolis and Marion County were viewed as an uncoordinated set of overlapping jurisdictions with massive functional duplications (Jidmit 1986).

The movement found still greater momentum under the Lugar administration after 1967, and Unigov was approved by the General Assembly in 1969. More than forty departments were consolidated into only six departments reporting to the mayor, and political accountability was reestablished. The massive governmental duplications were reduced, and associated costs were cut dramatically. Many other benefits also ensued. Minorities gained a substantially greater share of local governmental authority. The wider consolidated tax base embodied in the Unigov framework now rested on a broader and more diversified economy. The result was much greater financial stability. Perhaps most important of all, the suburbs of Marion County were now incorporated into the city not only politically and economically, but psychologically (Hudnut 1986). A new sense of community developed that would prove to be potentially more important than any of the immediate economic or political benefits. Indianapolis' consolidation under Unigov is a remarkable accomplishment. Most large cities still suffer from the problems associated with outdated and restrictive political boundaries drawn in the nineteenth century. Few cities have found good answers to these problems. Those that have found success in some form of consolidation have typically had to compromise in some manner to create a politically viable consolidation. Indianapolis is no exception. Its detractors would point to Unigov's failure to include some specific urban functions, such as education, in the mix. Furthermore, even Unigov's critics generally recognize that the consolidation has been an essential catalyst for the city's development (Levathes and Felsenthal 1987).

The Entrepreneurial City

The centrality of Indianapolis is nowhere more clearly demonstrated than in the economy of Indiana. With the advent of Unigov, the stage was set for the development of an entrepreneurial city. The consolidation has fostered an attitude of shared destiny and partnership not only between suburb and city, but between public and private entities as well. Mayor William Hudnut referred to this as the "new civics." It is the recognition that the vast array of private and public entities can work together toward mutually desirable goals, while the risks associated with development are shared (Hudnet 1986).

Today this city, the nation's twelfth largest with almost 1.5 million people in the metropolitan area, is a key center of manufacturing, warehousing, and distribution. More than one billion dollars, mostly private money, has been spent in development efforts since consolidation (Hauersperger 1997). The gains made by Indianapolis have come despite a loss of 35,000 manufacturing jobs since 1969 (Levathes and Felsenthal 1987). Furthermore, the local economy has shown itself to be relatively stable during the most recent boom-bust cycles. The continuing public-private partnership has made Indianapolis a national leader in the privatization of services previously provided by public entities, including the wastewater treatment plants and Indianapolis International Airport. The airport is the largest in the nation under private management. When the Naval Air Warfare Center in the city was on the list for closure, a privatization plan saved it that brought in the Hughes Technical Services Company to operate the facility, sav-

ing 2,000 jobs in the city (Begovich 1997). Now the city has an array of technologies within its economic base including the pharmaceutical giant, Eli Lilly; more that 100 computer software companies; and a variety of enterprises specializing in automation and robotics (Levathes and Felsenthal).

Within Indianapolis are many of the trappings of a city that has successfully developed its central area despite suburbanization pressures. In 1995 the $320 million Circle Center Mall opened as a centerpiece of downtown revitalization (Begovich 1997). The Convention Center and RCA Dome comprise a massive central city facility: 300,000 square feet in five halls, 60 meeting rooms, three ballrooms, and a full-time technical staff. It is one of the largest convention centers in the country (Wildey 1996). The central city that was regarded as one of the dirtiest in the 1960s had become one of the cleanest by the late 1970s.

Although much that has already been said supports Indianapolis as a state or regional center, the national centrality of Indiana's capital must be appreciated as well. Indianapolis' national geographic centrality is substantial. As noted earlier, most of the U.S. population resides within a day's drive. This centrality has been strategically exploited by the city's leaders. Transportation centrality (air and highway) was noted above, but it is the exploitation of these advantages that has been unique. Under the Hudnut administration, the decision was made to build upon existing strengths (including sports, and health, and fitness) in such a way as to take maximum advantage of its centrality.

In another example of community partnerships, the Lilly Endowment spent more than $180 million on several world-class sports facilities. Despite the fact that endowment money is not generally available for capital projects, the endowment leadership recognized that the facilities were a necessity to create the national athletic focus that now exists in Indianapolis. The effort has been extremely successful (Levathes and Felsenthal 1987). The city has become the capital of amateur sports. The national governing bodies of seven sports have moved to town. Facilities are superb. For example, the IUPUI Natatorium is so superior that most coaches prefer the facility to all others in the country for their most important events. It was the site of our last two Olympic Trial swimming meets.

The health and medical sector is equally successful. As a booming medical service center, the centrality of Indianapolis is a great advantage. The Indiana University Medical Center complex in downtown Indianapolis is comprised of six hospitals, ninety clinics, schools of nursing, dentistry, and medicine; ranking among the nation's largest medical complexes. Included are pioneering cancer-research and pediatric centers (Levathes and Felsenthal 1987).

No More Naptown

The difficult economic times of the 1960s are past. Labels heard during those years, such as "Naptown" and "India-no-place" have receded. In 1984 *Time* magazine proclaimed, "India-no-place is no more." *Newsweek* called the city "the Cinderella of the Rustbelt," and the *Chicago Tribune* labeled Indianapolis "the bullet train of progress" in the Midwest (Hudnet 1986). *The Employment Review* suggest that "other cities could look at Indianapolis as a prime example of how to balance commerce and community" (Matarese 1997).

Finally, Indianapolis can rightly be viewed as a national center on another axis: ideological. Indianapolis is in many ways representative of American society. Its class structure, general racial structure, religious diversity, and political diversity are representative of the nation. It has been, over the years, a headquarters for political groups as ideologically diverse as the John Birch Society, the Ku Klux Klan, and the Socialist Party of America. In 1993, ABC News used Indianapolis to estimate public reaction to a new national administration, in the belief that the city was most representative of the nation. More than 50 years earlier, American Magazine made a similar choice in declaring that Indianapolis was the "typical city in which to find the typical American family" (Bodenhamer and Barrows 1994).

The search for a centralized state capital was initiated 178 years ago. It seems unlikely that the

ten gentlemen involved could have imagined what would become of the swampy site they selected on the White River near John McCormick's cabin. Indianapolis has adjusted quite well to a variety of changes and challenges in a part of the nation wherein many cities have not. In a great variety of respects Indianapolis has become an important state and national focus.

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9. Industry Serving a Region, a Nation, and a World

Daniel Knudsen

This chapter examines the restructuring of Midwestern manufacturing over the last two decades. My intention is not so much to provide details of the current state of manufacturing in the region, but to explain how the current state of manufacturing in the region came about.

Geographers consider the recession of the early 1980s to be one of the crises that mark a sea-change in the economies of regions. It is believed that at this time, the economies of the advanced capitalist countries moved from a period typified by economics of scale and mass production, to a period typified by economics of scope and production for niche markets. Typically, these changes have been subsumed under the overly-simplified concept of *flexible production.*

This restructuring also is said to have included a general shift of capital away from traditional manufacturing enterprise toward arms, finance, and business services (Markusen and Carlson 1989; Bartholomew, Joray, and Kochanowski 1986), the emergence of new industries (such as consumer microelectronics), and the wholesale rationalization of traditional industries (for example, Bluestone and Harrison 1982).

Furthermore, this sea-change was supposed to alter irrevocably the geography of production. Hall (1985), for example, notes that "tomorrow's industries are not born in yesterday's regions" implying that as the leading economic sectors of mass production declined in importance, so would the regions that contained them. Scott (1988), Storper and Scott (1989), and Storper and Walker (1980) also take pains to point out that emergent industries do not arise phoenix-like from the ashes of old modes of production.

Characterizing this sea-change in the economies of regions as a wholesale move to flexible production is far too simple. In reality, current capitalism contains at least three variants to flexible production: flexible specialization, lean production, and neo-Fordism. Each of these are successful approaches to flexible production and often co-exist within a region. Flexible specialization seems particularly characteristic of small firms that have difficulty raising necessary capital, medium-sized firms are typically neo-Fordist, and only the very largest of firms can engage in lean production. Nowhere is the variety of forms of flexible production more apparent than in the American Midwest.

Similarly, the region did not undergo a substantial shift in industrial mix. Although the region experienced significant employment loss in manufacturing, it is exactly the *metal bending complex* (primary metals, fabricated metals, machinery, and automobiles), that was the basis for growth in the 1950s and 1960s and is the basis for manufacturing growth in the region today.

Just as the Midwest gives lie to the notion of a single form of flexibility, so too does it disprove the notion of new industrial spaces. Capitalist production does not take place in a vacuum, but is situated within a web of social and political institutions and cultural practices that change as a result of capitalism and, in turn, articulate capitalism historically and geographically (Clark 1989). This in turn implies any number of equally successful development paths out of capitalist crises. It also implies that older industrial regions can be reborn.

Placing the Midwest's Experience in Context

Between 1940 and 1989, the U.S. underwent tremendous change in employment, with employment growing from 32,376,000 to 108,414,000, an increase of 235 percent. Growth was, of course, not evenly distributed among the principal economic sectors of the economy. Employment in mining declined, employment growth in manufacturing and transportation and public utilities was only about 80 percent, whereas growth in wholesale and retail trade exceeded 200 percent. Employment growth in construction, government, and finance, insurance, and real estate (FIRE), exceeded 300 percent, and in services exceeded 600 percent.

Growth in employment was far from evenly spread geographically. Most states in the Northeast, Midwest, and Deep South had employment growth of less than 100 percent. States in New

England, South Atlantic, and the northern tier of Mountain states experienced 100-200 percent growth, whereas Florida, Vermont, Virginia, Texas and all states in the Southwest and Far West experienced growth in excess of 200 percent. Nevada's employment grew by 1262 percent, Arizona's by 978 percent, Florida's by 760 percent, and California's by 446 percent.

During the period 1940-89, two periods of restructuring are evident. The first occurred in the early 1940s. The second is marked by a series of three years, 1979-81, two years 1985-86, and two more years, 1988-89 in the 1980s (Knudsen, Koh, and Boggs 1997). Importantly, the two periods of restructuring are a study in contrasts. The period of restructuring in the 1940s appears to take place *in situ*, since spatial shift explains relatively little of the total change in employment. Alternatively, in the 1980s restructuring appears to take place within an environment of substantial spatial shift. The differences in the two periods of restructuring can easily be explained by the differing situations of the U.S. within the global economy in the 1940s and in the 1980s. According to Kennedy (1987: 331) in 1940 the U.S. economy was vastly "underutilized," but not "structurally deficient." This situation contrasts starkly with the 1980s.

Restructuring in the Midwest, 1977-86

Having examined how restructuring in the American Midwest fits into the national picture, it is necessary to examine briefly the crucial restructuring years, 1977-86 in the American Midwest itself. Employment in the Midwest grew from 13 million jobs in 1977 to 15 million jobs in 1986, but manufacturing employment in the region declined by 1 million over the same period. None of the five Midwestern states experienced manufacturing employment growth over this period (Knudsen 1992). Despite this decline, manufacturing continues to account for approximately 30 percent of all employment in Indiana, Michigan, Ohio, and Wisconsin.

Manufacturing employment change over the decade was spatially and industrially heterogeneous. Employment in nonelectrical machinery and primary metals exhibited the greatest decline. The precipitous decline in nonelectrical machinery employment caused the industry to sink from first to second place (behind transportation equipment) as the leading industrial employer. From 1977 to 1986, the Midwest became *more* dependent on transportation equipment (chiefly automobiles), not less. Generally the region lost employment at greater than the national average in nationally declining industries, while gaining employment at less than the national average in nationally growing industries.

Despite deep national recessions in 1978-79 and 1982-83, the origins of the Midwest's recessionary problems primarily were regional and not related to industrial mix. Except for equipment manufacturing, all industrial sectors performed significantly worse than the national average in the 1978-86 period. This would seem to vindicate the view that the Midwest, at least during the late 1970s, lost its previous competitive advantage to other portions of the United States that were perceived as having better business climates, higher rates of productivity growth, and as being more receptive to new relationships between capital and labor engendered by emerging methods of production (Breckenfeld 1977; Casetti and Jones 1987; Markusen, Hall, and Glasmeier 1986; Markusen *et al.* 1991; Markusen 1987; Webber 1987).

That substantial intraregional and local variation in employment also occurred indicates that state and local labor market issues partly lay at the heart of the recent shrinkage in manufacturing employment in the American Midwest. With firms increasingly able to subdivide their operations in order to locate different activities within different local labor markets, it is perhaps not so surprising, for example, that those states with the largest percentage of unionized employees posted the largest losses of manufacturing employees. Similarly, employment change appears slightly sensitive to state-level economic incentives, right-to-work legislation, productivity, defense contracting, and capital transfers.

A New Method of Production?

If neither the industrial sectors, nor the location of manufacturing has shifted much, then sure-

ly the Midwestern industrial renaissance now exists because of the revolution in the way that we work. Studies that I have conducted of the machining industries (an industry that many industrial geographers would argue is the heart of Midwestern manufacturing) indicate that technological innovation has been moderately slow (Knudsen *et al.* 1994).

The wholesale adoption of flexible manufacturing (including technology, labor process and management organization) rarely occurs (Gertler 1992). A number of possible explanations can illuminate why this is the case. First, sales within the machinery industry are extremely cyclical. This cyclicality, when coupled with the size of firms within the industry means that many firms are often short of capital (Graham 1993). Second, the adoption of new manufacturing techniques and practices is socially conditioned (Jameson 1991; Gertler 1992, 1993). New modes of production, therefore, tend to be adopted piecemeal (Jameson 1991; Gertler 1992, 1993; Bessant and Haywood 1986, 1988; Graham 1993; USDC 1988). Often technology is adopted without adjustments in labor or management practice, or labor and management practice are altered without the adoption of new technologies (see Knudsen *et al.* 1994). As a result, there are multiple manifestations of manufacturing flexibility. In an effort to capture this diversity of approaches, we distinguished between different types of group technology cells based on the most critical resource incorporated in the cell (Jacobs, Knudsen, and Conway 1991; Knudsen *et al.* 1994). In most cases, this resource was the employees working in the cell or the equipment dedicated to the cell. We contrasted Flexible Machining Cells (FMCs) where equipment utilization is maximized with Flexible Labor Cells (FLCs) where the labor utilization is maximized. By defining FMCs and FLCs in this way, we captured the two endpoints of the *flexibility* spectrum. Within cellular, group technology, FMCs may be regarded as a technological approach to flexibility, whereas FLCs may be regarded as an organizational approach to flexibility.

The majority of machinery firms that we surveyed in the American Midwest in the early 1990s did not possess flexible manufacturing capability. Of those that did possess this capability, it appears that most adopted flexible labor cells prior to adopting flexible machining cells. Most of these cells were small, employed relatively few workers and produced a limited line of products. The impetus of adoption of flexible manufacturing techniques originated primarily with corporate or plant management. Although training, scheduling, and integration problems plagued this adoption process, most plant managers were pleased with the performance of their group technology cells. Many admit, however, that they do not use these cells to their fullest capability.

Management also was cautious in adopting many of the management techniques often associated with flexible manufacturing. Although the number of products produced has grown, and scheduling appears to be more oriented toward production for firm orders than in the past, most plants continue to build inventory in anticipation of demand. Management has been reluctant to break out of traditional relationships with suppliers, to trim levels of management, and to explore strategic alliances with competitors. However, differences between the 1991 and 1997 surveys indicate recent and rapid change in these relationships.

The Midwest Today

What then has created the economic miracle of the Midwest? I would argue two things: foreign direct investment (FDI) and squeezing of labor. Since 1982, percentage change in FDI in the American Midwest has exceeded that at the national level in all years except 1984 and 1990. FDI was a particularly important source of new capital for the region in 1983, 1985, and 1989, when FDI in the Midwest grew more than 10 percent faster than did FDI in the nation. Today, approximately 13 percent of all foreign direct investment in the U.S. is located in the American Midwest. The region is home to 13 percent of all European-based FDI in the U.S., 18 percent of all Asian-based FDI in the U.S., 10 percent of all Canadian-based and Latin American-based FDI in the U.S., and 2 percent of all Other-based (primarily African-based and Middle Eastern-based) FDI in the U.S. Midwestern states receive a greater proportion of their total FDI from Asia, and a smaller proportion of their FDI from Canada than the national as a whole. This is undoubtedly because of the

heavy investments of Japanese firms in the Midwestern metal-bending complex (primary metals, fabricated metals, machinery, and automobiles). The American Midwest has a heavier concentration of FDI in manufacturing than the U.S. and the differential between the U.S. and the Midwest has grown since 1982. Currently about 58 percent of all FDI directed toward the region is invested in manufacturing. The increasing concentration of FDI into manufacturing has come at the expense of FDI in almost every other sector of the Midwestern economy. Indeed, the Midwest accounts for 19 percent of national manufacturing-related FDI. The region accounts for nearly 40 percent of all FDI directed toward primary and fabricated metals in the U.S., about 25 percent of FDI in food and kindred products, and more than 20 percent of all FDI in machinery (Florida and Kenney 1992).

The dramatic increases in the region's productivity do not appear to come from a wholesale shift to high-technology flexible manufacturing, but from increasingly squeezing labor. Over the last decade new investment in plant and equipment has exceeded the national average, little evidence suggests that this has been funneled into the purchase of high-technology machinery. Further, although the region has benefited from high rates of foreign direct investment in manufacturing, the amount of this investment per worker is below the national average. Evidence of the squeezing of labor is available from several sources. Wages today in the region, in real terms, have only recently risen above those that prevailed in the mid 1960s, hours are up regardless of economic cycle, and although increasing functional flexibility has relieved the tedium of the assembly line, the down time during the working day has been dramatically lessened. With output at record levels, workers are being asked to do more for less. Workers thus have borne the brunt of the economic face of restructuring with the American Midwest.

FDI and low labor costs have combined to make the Midwest among the most competitive regions in the world. With labor costs that are now on par with those of Canada and Japan, and 25 to 50 percent less than those of major European competitors (U.S. Bureau of the Census 1994), the region is the primary source of manufacturing exports for the U.S. economy, with some charging that the Midwest is virtually solely responsible for any good news on U.S. export accounts. Exports in constant dollars increased between 1987 and 1993, despite a leveling (or in the case of Michigan a decline) during the most recent recession. Collectively the region accounts for approximately about 15 percent of total U.S. exports. Michigan, Indiana, and Ohio rank nationally in terms of the percentage of total jobs tied to exports (U.S. Bureau of the Census 1989), while Illinois, Michigan, and Ohio are in the top 10 states nationally in volume of exports (U.S. Bureau of the Census 1994). Naturally this exporting prowess is tied closely with how the U. S. dollar fares against the Japanese yen and the Deutsche mark.

Further, although behind in educational attainment, the U.S. lags only slightly behind that in Canada, Australia, Japan, and much of Europe. Also, although historically, the region has had relatively high rates of unemployment compared to other industrialized regions worldwide the region now has relatively less unemployment than does the U.S. and much of Europe (U.S. Bureau of the Census 1994). In a growing number of places and in particular occupations labor shortages are a problem. For example, in machining new hires have been practically nonexistent since 1979 and few machinery plants have hired substantial numbers of employees since 1970. As this existing cohort of skilled labor ages and retires in the latter part of the 1990s and first decade of the 2000s, critical shortage of skilled machinists are likely to emerge to replace the retirees (MacPherson 1994).

What has occurred in the American Midwest within the last decade and a half has seemed to many an economic miracle. Once castigated as "the Rustbelt," the region is now the healthiest of any in America. Not surprisingly, other regions that are only now undergoing restructuring are looking to the Midwest for answers. The Midwest, however, may not be the best place to look. The recent regional revival is closely tied to the particular history and culture of the region and is therefore of questionable generality. Second, a number of fundamental problems still lie just below the surface of the Midwestern economy (Heinz School... 1992).

Mass production is still very much alive and well within the Midwest. As a consequence, the production system that prevails within the Midwest, a classic hub and spoke system, is quite different from that in other regions where flexible manufacturing is said to have taken hold. It is altogether different from the Marshallian and Italianate districts of southern California, Emilio-Romagna, and Baden-Wurtemburg (Markusen 1994). It is also different from the tiered system employed within Japan (Florida and Kenney 1990). It is also more complex than this simple categorization suggests. The hub and spoke organization prevails across levels of manufacturers, say between assemblers and component suppliers. Such relationships are typically colored by a long history of mutual distrust. On the other hand, within any one level, say small subcontractors, industrial networks may exist that depend upon mutual economic interest, trust, and cooperation. A complex web of large lean assemblers, mass production parts producers, and flexibly specialized small shops results within the region.

On a variety of social issues the Midwest (based on national comparisons) lags behind most other advanced capitalist nations. Despite per capita expenditures of $1000 more than its nearest competitor (Canada) and double that in much of Europe, the region has a higher infant mortality rate and a lower life expectancy than almost every other industrialized region. It has double the poverty rate of the majority of industrialized regions, and three times the child poverty rate of most of Europe (U.S. Bureau of the Census 1994). Given that development occurs because of a variety of economic, social, and political mechanisms, current social ills may not bode well for future economic expansion. This suggests that while a new economic era is dawning, social life in the Midwest remains confused. Individuals are working longer hours and more individuals in any given household are employed. These conditions have fundamentally altered previous gender divisions of labor in the home and technical divisions of labor in the reproduction of class between the home and the school system.

The future of the Midwest as a manufacturing region hinges on two issues. First, can the regional remain competitive? Second, can the gains from this competitiveness be adequately translated into gains for the people of the Midwest as a whole?

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10. Hoosier Hysteria: In The Beginning

Roger L. Jenkinson

[Editor's Note: Because of space considerations we have included only the first part of a trilogy about "Hoosier Hysteria" by the author. Those wishing more information about the remaining sections should get in touch with Dr. Jenkinson.]

Two essential ingredients of any type of descriptive analysis are the origin and historical development of the subject, to place the study in its proper perspective and to establish the foundation upon which the diffusion process can build.

The spread of cultural elements or complexes from one society or group to another is commonly referred to as diffusion. This spread can be caused by the movements of people, goods, or ideas and can be accomplished by direct contact or by indirect transmission through a chain of intermediaries. This chapter will discuss these topics in relation to basketball.

National Origin and Development

Putting a ball through a hoop was not necessarily a practice started in Massachusetts in the latter 1800s. According to Schwomeyer (1970), even Naismith's superior stated to him prior to his developing the game, "There is nothing new under the sun." It is doubtful that he had *Tlachtli* in mind when he made that statement, but this is a game in which the prime objective is to place a ball through a hoop.

Tlachtli was somewhat like basketball, soccer, jai-lai, and volleyball combined and was played as early as the time of Christ by Mexican and Central-American Indians. It is still played today in a modified form along the northwestern coast of Mexico in the states of Mayarit and Sinaloa.

The hoops for Tlachtli were vertical and located on each side of an "I" shaped court, twenty-four feet above the ground. They were carved from stone, four feet in diameter and eleven inches thick. Amazingly, the hole in the hoop was eighteen inches in diameter, the same as today's basket. The size of the playing area was comparable to a present-day football field. The object of the game was to propel the solid rubber ball through the hoop, a most difficult feat since it was illegal to use the hands, feet or calves. However, the five-pound ball was usually kept in play by blows from elbows, knees, and hips. For their own protection, the players wore elbow and knee pads of quilted cotton, plus heavy belts or yokes of leather or basketry that protected the player's waist (Mokray 1971).

The number of players varied on different occasions—usually nine to eleven on a side. When the highly skilled played, the teams were limited to only two or three players. The game was so strenuous that on some occasions players were carried off the playing area dead from exhaustion.

Scoring occurred in a variety of ways, but when a player made a basket, which was extremely hard to accomplish, the game ended in tremendous excitement and applause. The star who made the deciding play thus was entitled to all the jewels and clothing of all who had watched the game. As a rule, a wild scramble followed, with a mass exodus of all spectators.

Columbus brought back a rubber ball to Spain upon his return from the island of Hispaniola. In 1519, Montezuma delighted the soldiers of Hernando Cortez with an exhibition of Tlachtli and the Spanish explorer staged several games for the court of Charles V, using Aztec players (Mokray 1970).

Jack Naismith's Contributions

After two protests by disgruntled students who were training to become general secretaries of the YMCA, Dr. Luther Gulick, in December of 1891, head of the physical education department of the International YMCA Training School in Springfield, Massachusetts, selected a young instructor by the name of Jack Naismith to develop a new indoor game that would fill the gap between the football and baseball seasons. When asked about this modern game that concentrated on putting

a ball through a hoop, Naismith stated that the invention of basketball was not an accident. He developed it to meet a need.

The assigned task of Naismith was to develop a recreational game, vigorous enough to attract football men, simple enough so anyone could play it, difficult enough to challenge even the best, and interesting and competitive enough to play indoors. Because of a boyhood game he played in Canada, he decided that his new game should have a ball tossed at some type of goal. Since a goal would be too easy to guard if it were on the floor, he placed it on a rail located ten feet above the floor. At first he wanted a box to function as the goal, but the janitor could supply him with only a couple of peach baskets.

Eighteen members were in his class, so he divided them into two teams of nine members each. The name of the positions were taken from the Canadian game of lacrosse: home, right forward, left forward, center, right center, left center, goal, right back, and left back. He developed thirteen basic rules that embodied five principles that still govern the game today (They will not be discussed since they are concerned with the fundamental aspects of the game and can be found in a variety of sources.).

"Just another game!" was the first exclamation when the 18 secretaries-to-be came for their exercise. "I divided the squad and started the game. It took." (Schwomeyer, 1970). As indicated in Naismith's own words, the game of basketball was on its way. The American boy likes games in which he can feel free to express his individuality. It was no accident that Naismith came upon basketball. It was the result of his sensing the situation and showing enough initiative to find the answer. Basketball is the only game devised in the United States with no direct roots in sports of other nations. For this reason, Dr. Naismith devised the original basketball rules in 1892. Basketball has been afflicted with growing pains, partly because the rules were not standardized until 1934.

Several rule changes and equipment improvements have occurred over the years, but these items fall out of the realm of this chapter.

National Diffusion

When the diffusion process takes place, usually some type of concept or product has enough appeal to go from a place of origin into other areas. It is difficult to explain why basketball had such a phenomenal growth and success from its very beginning. Some have suggested that the best way to explain this phenomenon is to look at the appealing qualities that would cause people to demonstrate enthusiasm so quickly.

In his book, *Basketball Around the World*, Don Odle (1961) suggested five such qualities:

> First the very nature of the game itself has some decided advantages over other team sports. One boy can [install] a hoop on his barn, or garage, and take almost any size ball and throw [it] at a hoop of any circumference... . The game has such an individual challenge and recreational value that one person can practice...with no one around and derive much pleasure and enjoyment.
>
> The second factor of importance is only a small area for participation is needed and it can be on any type of terrain. We have seen enthusiastic basketball games played on crushed stone, dirt, cement, dust, mud, wood, tile, and grass.
>
> Thirdly, it is a fast-moving game with a lot of action for both the player and the spectator... .
>
> The fourth factor is that the game is inexpensive. Compared to other team sports, it is possible to field a basketball team cheaper than most other squads... .
>
> The last point is that the skills are easy to learn... . Naturally, it takes much practice to become an expert but young boys can pick up the game in almost no time at all to become a member of some backyard team.

Because of the appealing qualities mentioned above, basketball moved throughout the country

and the world with a certain decisiveness, which makes it extremely difficult, if not impossible, to plot the spread of this new sport on a map. The early diffusion process seems to have been centered around individuals and the YMCA organization.

Naismith helped spread his invention. He introduced basketball to some of the young men in Denver, Colorado, when he was in medical school between 1894 and 1898. He also took the game with him to the University of Kansas in the fall of 1898.

Secretaries from several YMCAs wrote Naismith for information about the game. In that way C. D. Bemis learned of it, and started it at Geneva College, Beaver Falls, Pennsylvania. This is believed to be the first college to introduce the sport. The University of Iowa and University of Chicago played the first intercollegiate game, with five players on a side, on January 18, 1896. It is important to note that H. F. Kanlenberg, who left Springfield in 1890, had been in touch with his old school about basketball and introduced it to the University of Iowa in 1892. Likewise, Alonzo Stagg, the famous football coach at the University of Chicago, was Naismith's classmate at Springfield. These two men, acquainted with Naismith, were instrumental in the development of the first intercollegiate basketball game. This helps to support the fact that individuals, most of whom knew Naismith personally, constituted the driving force behind the basketball diffusion process.

Since five of the original players were Canadians, it is not surprising to learn that Canada was the first nation to play it. France took it up in 1893, China and India the following year. A missionary introduced it in Brazil in 1896. The game was demonstrated in London in June, 1894, the thirtieth anniversary of the founding of the YMCA (Lord 1971).

The high school diffusion process has the same developmental history as discussed above. This diffusion was also dependent upon individuals and followed no set pattern. One suggestion concerning the development of some type of pattern of diffusion would be the establishment of some system based on the initiation of a state tournament in basketball. This could be done, but its validity in relationship to the diffusion concept would be suspect, because several states developed state tournaments many years after basketball arrived in their area. One such example would be the state of Massachusetts, where the game originated, but did not conduct a state tournament until 1965. By the 1970s most of the approximately 20,000 high schools in the nation played basketball, with 48 states conducting state tournaments.

Indiana Origin and Development

The game was first introduced in the Middle West by the Reverend Nicholas C. Mackay, Presbyterian minister, a native of England, who became YMCA secretary in Crawfordsville in the 1890s. The exact date for this event is not certain; but, according to the *Crawfordsville Journal* and Review, the first game played in the United States outside the state of Massachusetts was in the spring of 1893, in Crawfordsville, Indiana.

For a brief period, Reverend Mackay had attended the training school at Springfield during the tenure of Naismith. It is believed that Mackay was not a member of the first class at Springfield, when basketball was first introduced, but it is very likely that he was in one of the first.

On Friday, March 16, 1894, the YMCA teams of Crawfordsville and Lafayette played what was probably the first scheduled basketball game in Indiana. The game was played in the Crawfordsville YMCA gym. In an article in the *Indianapolis Star Magazine*, the author claimed that the first basketball game in Indiana was played in 1892. However, the date, teams participating, and score of the game are not mentioned.

The popularity of the game was quickly evident throughout the state. Teams were organized in every type of community, and it developed in the high schools at the turn of the century. In 1901, a basketball series, home-and-home, was played between Crawfordsville and Shortridge High School of Indianapolis. Crawfordsville won both games and proclaimed itself the state champion. The facilities were quite varied during the early years in Indiana. Madison used a skating rink; Carmel used the driveway of a lumber yard; Atlanta employed a disbanded church; and, St. Paul

used the auditorium in the schoolhouse. Others used halls, barns, garages, and some played their games outdoors.

The stage was now set. Basketball had taken hold within the state, and from its very inception the enthusiasm for the game began to mount. The intensity became so great that hysteria is the best term to describe the relationship that developed between basketball and the people of Indiana.

Indiana Diffusion

Because of its immediate popularity and success within the state of Indiana, the diffusion process of basketball is very difficult to follow. Leagues and associations developed to improve and control athletics on the high school level. The state organization, the Indiana High School Athletic Association, was officially approved and accepted at the meeting of the State Teacher's Association in Indianapolis, on December 29, 1903.

Diffusion had already taken place throughout the state by the time the first two official high school state championships were conducted in 1911 and 1912 (fig. 15). Twelve schools entered the first championship, and thirteen in the second. Crawfordsville High School won the first official state championship in 1911.

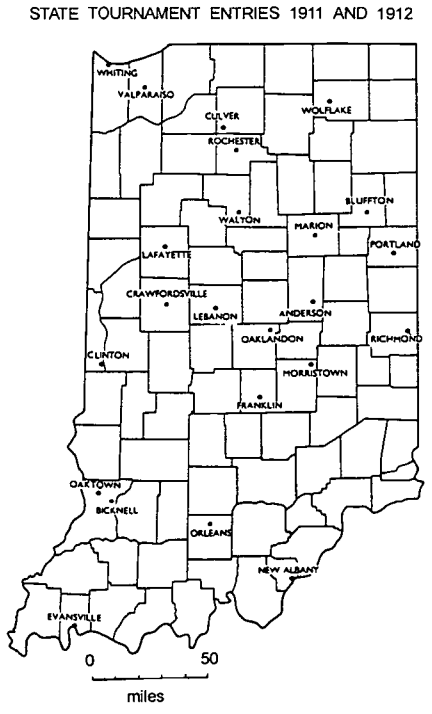

Figure 15. State basketball tournament entries in 1911 and 1912.

One type of diffusion, that concerned with emphasis and basketball strength exemplified in the ability to win the state championship, can be seen by studying the state high school champions from 1911 through 1972. A marked difference was apparent between the champions prior to 1942 and those coming after that date.

The period from 1911 to 1942 was dominated by three factors: the success of the small high schools; the formation of three clearly defined core areas; and the excellence of a few coaches. After 1942, the state championships predominately belonged to the large cities.

Small Town, Core, and Coach Era

Wingate, Thorntown, Lebanon, Martinsville, Franklin, and Frankfort are names that are well-known to Hoosiers when they talk of the history of basketball within their state, but their era has long passed to make room for the much larger cities. Only Milan (population 1,529 in 1990) has given the smaller towns hope in the last few decades when they defeated powerful Muncie Central in 1954 (Muncie, population more than 70,000 in 1990).

The Golden Era of the small towns helped in the overall development of basketball within the state. During this period, basketball penetrated the grass roots of the community system with a great deal of success and even today continues to play an important role. At every level of the state championship tournament, a higher percentage of small towns than larger towns were represented during this early period. This changed rapidly during World War III, and today if such a school reaches the finals, it rapidly becomes the Cinderella team.

One of the most interesting observations one can make about the period between 1911 and 1942 is the development of three core areas (fig. 16). Core I dominated during the years from 1911 through 1918, and included the three-county area of Tippecanoe, Montgomery, and Boone. Core II, 1919-1924, was located in the southern part of the state extending from Knox and Davies counties in the southwest, to Morgan and Johnson counties in the south-central portion of the

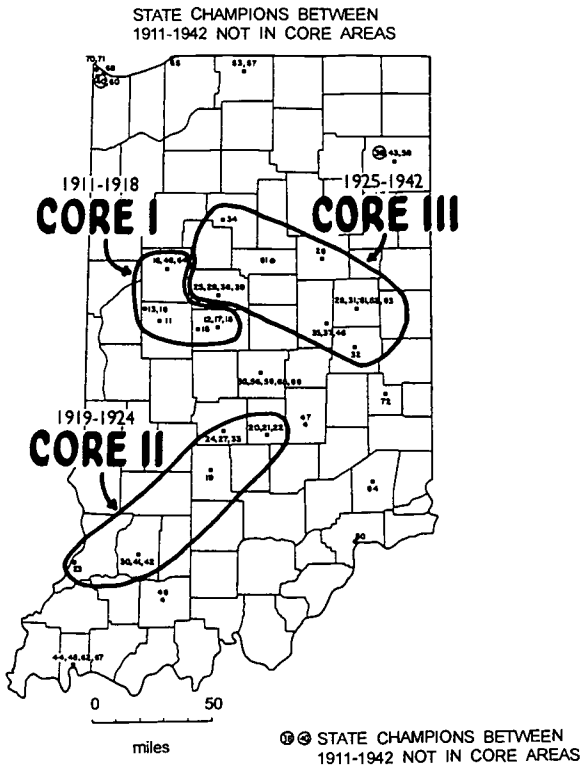

Figure 16. State basketball champions, 1911-1942

state. The last core, Core III, 1925-1942, was in the north-central region of Indiana and extended from Delaware and Henry counties in the east, to Cass and Clinton counties in the west. Every championship team from this early period was from one of these three regions except two: Fort Wayne South in 1938 and Hammond Tech in 1940.

The core development during specific periods indicates that considerable local emphasis, enthusiasm, and interest existed among towns in close proximity to one another. Convincing evidence of the (local) interest in the game of basketball in that area, i.e., Core I, is the fact that teams within a distance of approximately thirty miles of Crawfordsville won the state championship the first eight years the tourney was played; Crawfordsville, 1911; Lebanon, 1912, 1917, 1918; Wingate, 1913, 1914; Thorntown, 1915; Lafayette, 1916.

Marion Crawley, considered by many as the Dean of Indiana basketball, strongly indicated in a personal interview that this interest and enthusiasm played an important part in the development of strong pocket areas. He observed this during his coaching days at Washington High School (Core II). This contagion diffusion, interaction, and circulation within local areas is quite common.

Core III has been one of the most powerful areas of the state throughout the entire history of Indiana basketball. The high schools that have won the most state championships, Muncie Central (1928, 1931, 1951, 1952, 1963, 1978, 1979, and 1988), and Marion (1926, 1975, 1976, 1985, 1986, and 1987) are located in this core.

This early period was also greatly influenced by individuals. Eight coaches won two or more championships, three of them winning four apiece: Glenn Curtis, Everett Case, and Marion Crawley. These eight coaches accounted for twenty-three out of the thirty-two championships from 1911 through 1942. After 1942, only three coaches won repeated victories. Three of these coaches of the latter period won back-to-back championships, indicating that a team could be fortunate enough to repeat. A good example of this would be the team led by the famous Oscar Robertson at Indianapolis Attucks and coached by Ray Crowe (1955 and 1956); Bill Harrell of Muncie Central (1978 and 1979); and Bill Green (1975 and 1976; 1985, 1986, and 1987) of Marion.

Another good example of diffusion is illustrated by some of the coaches representing the early period. Four of the coaches won championships at two different high schools. This indicates an individual relocation diffusion where, in the case of basketball, the style, philosophy, and enthusiasm of the person is carried from one place to another. Three of these coaches moved from one core to another: Glenn Curtis (Lebanon to Martinsville); Cliff Wells (Bloomington to Logansport); and Marion Crawley (Washington to Lafayette). The repeat coaches of the later period individually won their championships at only one school, except for Bill Greene (Indianapolis Washington and Marion).

The process of diffusion can be demonstrated from the study of each of these three items during the early period of basketball in Indiana. Each has played an important role in this historical development.

Urban Center Era

After 1942, the larger cities (more than 25,000 in population) took over as the state champions. This recent era has belonged to Indianapolis, Muncie, Ft. Wayne, Lafayette, Evansville, Marion, South Bend, Hammond, and East Chicago. Only one small town, Milan, with less than 5,000 in population invaded this period, in 1954. On four occasions medium-sized cities (between 5,000 and 25,000 in population) took the top honor: Shelbyville, Jasper, Madison, and Connersville. The big cities claimed twenty-five of thirty-one championships.

During the early period, 1911-1942, several coaches who were influenced by the high school systems, both as players and as coaches, successfully advanced to the collegiate ranks during the latter period. On the "winningest coaches" list of 1970, published by the Converse Rubber Company, five Hoosiers were ranked within the top seventeen mentioned: Tony Hinkle, Butler University; John Wooden, UCLA (played for Martinsville High School and Purdue University); Arad McCutchan, Evansville University; Angus Nicoson, Indiana Central College; and Don Odle, Taylor University. Almost one-third of the top coaches were from the state of Indiana. Another individual who would be comparable to those already mentioned is Everett Case, who won four state high school championships. In the latter years of his life he helped to develop a strong basketball system in the collegiate ranks in North Carolina.

Several rivalries developed between these coaches that helped keep the enthusiasm at a high pitch during the last three decades. The most interesting was between Nicoson (Indiana Central) and Odle (Taylor). They played against each other as college athletes, played with each other in the pro ranks, and have coached against each other in both high school and college.

Market Square Arena, Indianpolis (Richard Snow)

Conclusion

The origin and historical development of basketball in Springfield, Massachusetts, was extremely significant in relationship to our cultural history and is uniquely American. It has been a particular sport that has captured the interest and enthusiasm of the American people and during the past half-century spread literally throughout the world at every level of organization. The geographical concept of origins is distinct with basketball and easily understood. The opposite is true with the concept of diffusion. The explosive effects were so sudden, it is almost impossible to follow a diffusion pattern.

Indiana presents an interesting illustration of these concepts. The influence within this state has been so unique, that only one word, hysteria, could apply to this situation. Each individual state within the Union can present its story, and for each it would be just as significant. With the Hoosier state, it has been recognized as a cultural phenomenon.

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PART IV:
THE REGIONAL CHARACTER: A SAMPLING OF VIGNETTES

11. THE NATIONAL ROAD IN INDIANA

Thomas J. Schlereth

In an 1846 Thanksgiving Day sermon, Horace Bushnell gave a now famous discourse on "The Day of Roads," later published in a book of his essays titled *Work and Play* (1864). In his address, the American minister and essayist made an extraordinary claim: "The road is that physical sign or symbol by which you best understand any age or people...for the road is a creation of man and a type of civilized society." The New England clergyman grasped an important insight in recognizing that the road could be viewed as a cultural artifact, a physical entity both reflecting and affecting human behavior. He acknowledged that American history had been, in part, shaped by American roads. In turn, the American character, particularly our fascination with movement, migration, and mobility, had shaped our roads.

Relationships between People and Roads: Material Culture

Bushnell also realized that much of the evidence for understanding this relationship of people and roads was to be found out on the road itself: "You may learn something by going into universities and libraries," he told his nineteenth-century audience, "but quite as much by looking at the road." Bushnell was aware that artifacts such as road surfaces, roadside structures, even road names, contained clues to a nation's cultural history.

How might Bushnell's mid-nineteenth century insights be applied to a brief late twentieth-century investigation of the National Road built across Indiana from Richmond to Terre Haute between 1827 and 1839, and that now largely follows the route of U.S. 40?

Surviving place-names are one place to begin. As U.S. 40 moves through several Indiana towns, locally it often is still called the National Road, National Pike, National Avenue, or Cumberland Street or Avenue. The latter place-name is derived from the official government name for the route, so designated because it began in Cumberland, Maryland. In turn, Cumberland, Indiana (platted in 1831), in Marion County, was so named because it grew up directly along the Cumberland Road. Knightstown, in Henry County, owes its name and location to being platted in 1827 by Jonathan Knight, the federal commissioner in charge of surveying and overseeing construction of the route across Indiana.

Unfortunately the typical milestones once used to mark one's progress, at between six and twelve miles an hour, on a typical National Road journey are no longer astride the route in Indiana. Several original milestones, however, still survive along U.S. 40 in Ohio. The number at the top of each of these stones informed travelers how far they were from Cumberland, Maryland, where a marker stands today. The marker denotes the spot in the corner of lot No. 1 where David Schriver, first superintendent of construction, began the road. In pointing his transit from this beginning milestone in Cumberland, Schriver was consciously replicating a road building tradition that started with the Romans, who marked all their major highways from the golden milestone that stood in the center of the Roman Forum. It was not without reason, therefore, that nineteenth century American orators were wont to describe the National Road as their country's Appian Way.

Several early structures that once serviced that road are still evident along the U.S. 40 route in Indiana. Among the first business ventures to appear along the road were blacksmith and wagon shops, such as those still extant in Dublin and Centerville. These, together with a tavern (e.g., like the one formerly at Mount Meridian, now relocated as an antique shop in Greencastle) and a general store, marked the beginning of many a new town along the new road. East Germantown,

founded in 1827, Belleville in 1829, Stilesville in 1828, and Manhattan in 1829 grew in exactly that way.

Also located along the road were wagon house yards and drovers' stands. At such sites, drovers corralled herds of hogs, cattle, sheep, even turkeys for the night. Just west of Cambridge City, Indiana, in Mount Auburn, still stands the Huddleston House, built in the early 1840s, a handsome three-story, Federal-style brick home, where numerous emigrant wagons camped on their way west.

Centerville, Indiana, immediately strikes the landscape historian as a community aptly representative of the National Road era of U.S. 40. Located at the center of Wayne County, it was the county seat from 1818 to 1873, when the seat of government was transferred to Richmond. Centerville was the only community besides Indianapolis in existence between Richmond and Terre Haute along the route that Jonathan Knight surveyed for the new federal thoroughfare in 1827. The boom days of National Road traffic accelerated the population increase and land use that had begun in the decade after the community had been declared the county seat. Lots in Centerville sold rapidly and land values rose quickly. Some of the streets, originally 100 feet (30.5 m) wide, were narrowed to 60 (18.3) and even 40 feet (12.2 m). As people began attaching additions to structures originally set back from the road, new building construction was at times flush with the sidewalk. Maximum space use was evident in new houses built with common side ways, creating Centerville's Federal-style row housing. This building boom was also responsible for archway architecture: the original houses, no longer on the main street, could be reached only by leaving passageways between the new facades. Even the space above these passage-ways was used for additional room.

Centerville, with its modest brick and frame dwellings, has almost all the material culture remains of a typical National Road town *in situ*: the Lents wagon shop (212-14 West Main), the American House Inn (101 West Main), the Mansion House stagecoach station (214 East Main), the Old Cumberland Church (110-12 North Morton), a blacksmith shop, and several imposing town residences, such as the Own House (210 East Main), the Radian House (120 West Main), and the Greek Revival home (319 West Main) of Oliver P. Morton, Indiana's Civil War governor. All that is visually missing from this town-as-museum setting are the stone blocks (one to two feet in length, six inches broad, and a foot wide) that once constituted the paving of the National Road as it passed through the town. This was the first section of the route in Indiana to be paved in this way—the road blocks were quarried southeast of Centerville, finished as smooth as building stone, and laid with wonderful precision. Local historian Arthur Whallon, writing in *Centerville, Indiana: A National Road Town* (1970), speculates that "there are probably still enough of the old stones left beneath modern U.S. 40 to build a court house."

Historical Consciousness

Historical consciousness of the effects of the National Road also is discernible along the U.S. 40 route where deliberate attempts have been made to create historic markers and monuments. With the notable exception of the stone marker in Plainfield, designating the site where President Martin Van Buren (an opponent of internal improvements supported by the federal treasury) was "accidentally" dumped from his stagecoach into the mud in 1842 as an object lesson of the importance of keeping the highway in good repair. Historical markers on the road are almost all east of Indianapolis. Historical markers on the National Road can be found in front of the Indiana State Capitol at the intersection of U.S. 40 and Interstate 465, as well as at the Knightstown Spring.

The Madonna of the Trail monument in Richmond's Glen Miller Park culminates or initiates (depending on whether you are traveling east or west) this string of deliberate historical memorials in Indiana. The Madonna, one of twelve such sculptures placed on the National Old Trails Road from Maryland to California by the DAR, was unveiled in 1928. The density of National Road markers increases as such monuments become even more frequent the farther east one travels.

Such artifacts always contain at least two significant messages. In addition to conveying factual historical information about the specific event, person, or place that they are designed to commemorate, historical markers also tell us a great deal about what was important to the generation that first set them in place and to the people who continue to preserve and maintain them as civic totems.

12. Notable Weather Events

Greg Bierly

As residents of Indiana, Hoosiers endure the full range and volatility of typical middle-latitude weather experienced world-wide. The Westerlies, the primary belt of winds affecting the United States, cross one of the most profound atmospheric arenas on Earth just prior to their arrival in Indiana: The Great Plains. There they gather warm, humid air from the Gulf of Mexico, cold dry air from Canada, and a touch of hot, dry air from the southwestern deserts and hurl the complex mixture toward Indiana. As a result, historical Indiana weather is occasionally marked by intense tornado outbreaks, massive snow storms, extreme rain events and prolonged droughts.

Spring and Summer

Indiana lies along the northeastern rim of "Tornado Alley," and although these awesome demonstrations of nature's faculties can occur during any month of the year, tornadoes are decidedly prominent in spring and early summer. Severe weather season begins in earnest in Indiana during April, but one of the most dangerous tornado-bearing thunderstorms on record occurred during March. On March 18, 1925, the so-called "Tri-State" tornado developed near Redford, Missouri, and swept eastward, eventually dissipating in southwestern Indiana, but not before causing the deaths of 70 people in Griffin and Princeton, Indiana. This massive storm was made particularly dangerous because it was relatively obscured by a mass of dark clouds and debris, leading residents of its impending damage path to believe the vortex was only an intense thunderstorm approaching. On April 3-4, 1974, a record 148 tornadoes swept the east-central United States in the most costly severe weather outbreak in the history of the Midwest. Among those hardest hit, Indiana residents suffered damage from numerous tornado tracks (21) across their state, including the incredible Monticello tornado family, spawned across north Indiana. A second family of tornadoes developed across south-central Indiana, possibly generated by the same gigantic supercell thunderstorm that later exacted a devastating death toll in Xenia, Ohio. (See Tornadoes map of Indiana, 1950-1992, Chapter 25, Indiana Map Series.)

Most noteworthy in the tornado literature for Indiana residents was the extensive outbreak on June 2, 1990, when 37 tornadoes struck the state. This event set records for total number of tornadoes in a single day (37) and number of tornadoes in a single month (44). During this outbreak, several intense "F-4" tornadoes ravaged the towns of Bedford, Clear Spring, Bright, Hazelton, and Petersburg, Indiana [F-4 tornadoes have winds estimated at 207-260 mph (333-418 kph) and can cause devastating damage.] Deadliest of these was the Petersburg tornado, which injured 60 and left 6 dead along a 13-mile damage track.

As spring winds diminish and summer heat builds across Indiana, farmers maintain a watchful eye on rainfall amounts. Intense flooding can delay planting or inundate crops in the field, whereas drought conditions can wreck a potentially good harvest.

Hoosier thunderstorms, in addition to being remarkable tornado-producers, often arise in a slightly different form, the heavy-rain thunderstorm. In August of 1905, Princeton, Indiana received 10.5 inches (26.7 cm) of rain in 24 hours, flooding the town and local fields. Often, frequent and heavy precipitation events occur over a longer period, resulting in prolonged flooding and waterlogged soils. A winter month, January, 1937 marks the greatest single monthly precipitation total recorded for Indiana with Evans Landing receiving 21.39 inches (54.33 cm). This amount exceeds half the annual total at most Indiana locations. The greatest annual total of precipitation recorded in Indiana occurred in Marengo during 1890. This small southern town received 97.38 inches (247.34 cm) of rain and snow, more than twice the normal annual total.

Rainfall deficits can be equally costly to farmers in the Midwest. Drought, however defined, results from soil and surface moisture amounts too small to supply the atmosphere's demand for water. Because the atmosphere requires more moisture when it is hot and dry, farming during the Indiana summer requires judicious timing. The droughts of the 1980s notwithstanding, the great-


Southern
Indiana
Only one twister tore across southern Indiana on April 3, 1974, but it was on the ground for one hour and 35 minutes—covering 120 miles, killing 14 people, and injuring 286 more. Although not as lethal as the band of tornadoes that hit Indiana on Palm Sunday, 1965, it caused tremendous property damage, especially to scenic Hanover and Madison.
Mrs. Benny Darnell at the wreckage of her mobile home near Palmyra.

Table 7. Sample Page from *Storm Data*, a NOAA Publication

est moisture deficit observed in Indiana during the twentieth century was during the hardship of the Great Depression. In 1934, Brookville, Indiana received only 18.67 inches (47.42 cm) of rain during the entire year. This amount is less than half of that most Hoosier farmers are accustomed to having available. Using the Palmer Drought Severity Index (PDSI), which characterizes strong droughts with highly negative numbers, the droughts of this century can be placed in perspective. The droughts of the 1930s were most severe, with PDSI values of -6 or lower in both 1932 and 1934. During 1915, Indiana was the recipient of a powerful spring drought, rating -5 on the PDSI scale, that severely damaged agricultural production. Finally, while strong, the summer droughts of 1954 (-4) and 1988 (-4) were not as catastrophic as those remembered by more venerable Indiana farmers.

Autumn and Winter

As summer gives way to fall and the cold season, winds strengthen in the upper atmosphere and the giant low pressure systems that develop in the west and sweep toward the Midwest increase in number and strength. These great winter cyclones bring major snowstorms and terrible cold outbreaks, often in that order. The so-called "January thaw," familiar to Indiana residents, is often the brief warm-up prior to the onset of one of these major storms.

Indiana typically does not receive as much snow as the Great Lakes, or mountain or east coastal states, but occasionally, when a particularly powerful storm moves near the Gulf of Mexico and then rushes northeastward, a blizzard can occur. Many residents recall the late 1950s and early 1960s as very snowy years which was indeed the case. In February 1958, La Porte, Indiana was

buried in an intense snow event over a five-day period. Thirty-seven inches (93.98 cm) fell from this individual storm, while additional storms during the month pushed the February total to nearly 60 inches (152.4 cm), the highest monthly total recorded for the state until 1978. The winter of 1962-1963 was also significant, again in La Porte, as the snowiest season on record, 122 inches (309.88 cm). Many recall the severe winters of the late 1970s. Intense snows during January, 1978, dumped an incredible total of 86 inches (218.44 cm) on South Bend, Indiana. Later the same winter, although not affecting Indiana as strongly, the strongest low pressure system recorded in the United States crossed the Midwest and swept eastward, devastating the east coast.

In summary, Indiana residents are accustomed to a wide variety of interesting and extreme weather conditions. The unique Hoosier climate is shaped by a synergy of extreme snow, drought and severe weather events that may seem commonplace when viewed as separate elements, but whose combined intensity rivals many locations in the United States.

(Editor's Note: Dr. Bierly points out that a large amount of data is available concerning the climate of Indiana that simply could not be included in his contribution. Much is now available on the Internet. An especially useful source is the Midwestern Regional Climate Center located in Urbana, Illinois (http://mcc.sws.uiuc.edu). Many other climate publications are readily available. These provide short- and long-term data and, as illustrated below, interesting descriptive information, in the example here, on storms.)

13. FESTIVALS

Robert L. Beck

Festivals have become an important part of Indiana's cultural landscape. Many of them reflect the state's physical, cultural, historical, and economic geography. A guidebook published by the Indiana Department of Tourism lists most of the state's festivals. It was used as the data source in the preparation of this paper. Only the festivals listed in the guidebook have been included in the data sets. An event was classified as a festival if it involved multiple activities that revolved around a certain theme and occurred within a festive atmosphere. Art and craft shows, county fairs, home tours, flea markets, product shows, car shows, and antique shows were not classified as festivals. Table 8 provides a summary of the festivals described here.

More than 500 festivals were held in Indiana in 1997. Many of them have originated within the past ten years. Cities, towns, hamlets, and counties have started festivals in an attempt to boost tourist spending and draw shoppers to economically depressed areas. September is the most popular festival month in Indiana. Nearly 90 percent of Indiana's festivals were held in the six-month period from May 1 through October 31. The vast majority of Indiana's festivals last only one or two days, usually on a weekend. A few festivals occur on successive weekends. Parke County's Covered Bridge Festival runs 10 days in mid-October. It is Indiana's most famous festival, for nearly one million people attend it annually.

Types of Festivals

Fifteen types of festivals occur in Indiana. Table 8 shows every Indiana festival classified on the basis of its principal theme.

Table 8. Indiana Festivals Cross-Classified by Theme and Month of Occurrence*

	J	F	M	A	M	J	J	A	S	O	N	D	Total
Family	0	0	0	0	6	33	12	22	39	15	0	0	**127**
Historical	0	0	0	3	6	15	5	12	22	13	0	1	**77**
Holiday	0	1	1	2	1	4	14	4	0	6	19	8	**60**
Music	0	0	1	0	2	8	9	5	6	4	0	0	**35**
Food and Drink	0	0	0	2	0	8	5	6	10	3	0	0	**34**
Transportation	0	0	0	0	5	7	9	7	2	3	0	0	**33**
Agricultural Products	0	3	3	0	2	6	0	6	6	5	0	0	**31**
Crafts	0	0	0	0	2	0	2	1	12	3	1	0	**21**
Foreign Cultures	0	0	0	1	1	4	5	4	3	1	1	0	**20**
Antique Machines	0	0	0	0	4	3	2	5	3	0	0	0	**17**
Art	0	0	0	0	3	6	0	1	6	0	0	0	**16**
Plant	0	0	0	4	1	0	0	1	1	1	0	0	**8**
Famous Person	0	2	0	0	0	2	1	0	1	1	0	0	**7**
Architecture	0	0	0	0	1	1	1	1	0	3	0	0	**7**
Other Festivals	0	0	0	0	0	2	5	4	4	3	1	0	**19**
TOTAL	***0***	***6***	***5***	***12***	***34***	***99***	***70***	***79***	***115***	***61***	***22***	***9***	***512***

*Month of Occurrence (festival beginning date)

Family Festivals

The most common type of festival that occurs in Indiana is one that focuses on a family theme

(Table 8). They are characterized by an abundance of food stands, art and craft vendors, and carnival rides. Games, contests, parades, and community meals are also featured. Family festivals are typically called fun festivals, homecoming festivals, spring festivals, summer festivals, fall festivals, street festivals, jubilees, or jamborees. Many of them use the word "Days" in the festival title such as "Ossian Days."

Historical Festivals

Historical festivals are second only to family festivals in their frequency (Table 8). The most common historical festivals are pioneer festivals, American Indian festivals, rendezvous encampments, and Civil War re-enactments. Less common historical festivals include Victorian festivals, Renaissance festivals, War of 1812 festivals, and ethnic heritage festivals. Many historical festivals feature pioneer cooking, shooting contests, fiddle contests, and demonstrations of traditional crafts such as basket weaving, black-smithing, and the use of antique tools. Town founding celebrations, pioneer settlement activities, and American Indian dancing also commonly occur.

Holiday Festivals

The third most common type of festival that occurs in Indiana is one that features a specific holiday (Table 8). Christmas, Independence Day, Halloween, and Labor Day are the four holidays that are most frequently celebrated in Indiana festivals. Earth Day, Mardi Gras, Easter, May Day, and New Years Eve are also featured.

Music Festivals

Bluegrass festivals account for nearly one-half of Indiana's music festivals, the fourth most common type of festival held in the state (Table 8). The Bean Blossom Festival, which features bluegrass music, has been held annually for more than 30 years. It claims to be the country's longest running bluegrass festival. Folk music festivals, jazz festivals, and blues festivals account for about one-fourth of Indiana's music festivals. Festivals that focus on country music, classical music, rock music, and gospel music are uncommon. Indiana even has a festival that features Hawaiian music!

Food and Drink Festivals

Food and drink are offered at almost all of Indiana's festivals, but festivals that have a food and drink theme rank only fifth in the festival theme list (Table 8). Indiana's most common food festivals feature a generic sampling of American food. Less common food festivals feature a specific food. Indiana has a marshmallow festival, a *pierogi* festival, a hot dog festival, a chili festival, a persimmon festival, and an apple butter festival. Barbecue festivals, catfish festivals, chicken festivals, pork festivals, and bean festivals also are held in the state. Festivals that focus on beverages are not common in Indiana, but the state has at least four wine festivals, a beer festival, a tea festival, and a cider festival.

Transportation Festivals

Transportation festivals rank sixth in the festival theme list (Table 8). Automobile festivals account for nearly two-thirds of Indiana's transportation festivals. The state also has boat festivals, railroad festivals, and hot air balloon festivals.

Agricultural Product Festivals

Indiana is one of the leading agricultural states in the United States. Festivals that feature an agricultural product, however, rank only seventh in the festival theme list (Table 8). Apple festivals, strawberry festivals, and maple syrup festivals account for more than one-half of Indiana's agricultural product festivals. At least three popcorn festivals, two pumpkin festivals, and two watermelon festivals are held in the state. Indiana also has a blueberry festival, a corn festival, an

egg festival, a mint festival, a potato festival, and a sorghum festival.

Foreign Culture Festivals

Festivals that feature a foreign culture rank ninth in the festival theme list (Table 8). German festivals dominate the foreign culture festivals held in Indiana. The state also has at least two Mexican festivals, two Scottish festivals, and two Greek festivals. A Middle Eastern festival, a Serb festival, a Swiss festival, and several general ethnic festivals are also held.

Antique Machinery Festivals

Festivals that feature antique tractors, threshing machines, and steam-driven equipment rank tenth in the festival theme list (Table 8). Old automobiles and trucks are sometimes on display at these festivals.

Arts, Crafts, and Architecture Festivals

Festivals that celebrate the arts are not common in Indiana. Juried arts separate these festivals from the crafts festivals. Products of craftspersons, like food and drink, are sold at many festivals in Indiana, but festivals that have crafts as a theme are not common. Crafts festivals usually feature home-made items.

Indiana festivals with an architecture theme are rare; however, three covered-bridge festivals are held annually in the state. The state also has a round-barn festival, a log-cabin festival, an archway festival, and a festival honoring historic structures.

Plant Festivals

At least three herb festivals and three flower festivals are annually held in Indiana. The state also has a mushroom festival and a dogwood festival.

Famous Person Festivals

Two James Dean festivals and two Shakespeare festivals were held in Indiana in 1997. A Cole Porter festival, a James Whitcomb Riley festival, and a Wilbur Wright festival were also held.

Vigo County covered bridge (Norman Cooprider)

Other Festivals

At least three antique festivals and two Amish festivals are held in Indiana every year. The state also has an agriculture festival, a circus festival, a dance festival, a film festival, a fossil festival, a football festival, a glass festival, a health festival, a limestone festival, a nature festival, a pottery festival, a river festival, a scarecrow festival, and a storytelling festival.

Location of Indiana's Festivals

Festivals are held throughout Indiana, but certain areas of the state tend to be more festival-prone than other areas. A few large cities—Indianapolis, Ft. Wayne, Evansville, and Lafayette—and a few small towns—Rockville, Nashville, Cutler, and Metamora—host an abundance of festivals. Other communities have few or no festivals—Washington, New Albany, Jasper, and Richmond.

Lake County holds more festivals (21) than any other Indiana county. Twenty-eight counties account for more than 60 percent of Indiana's festivals (fig. 17).

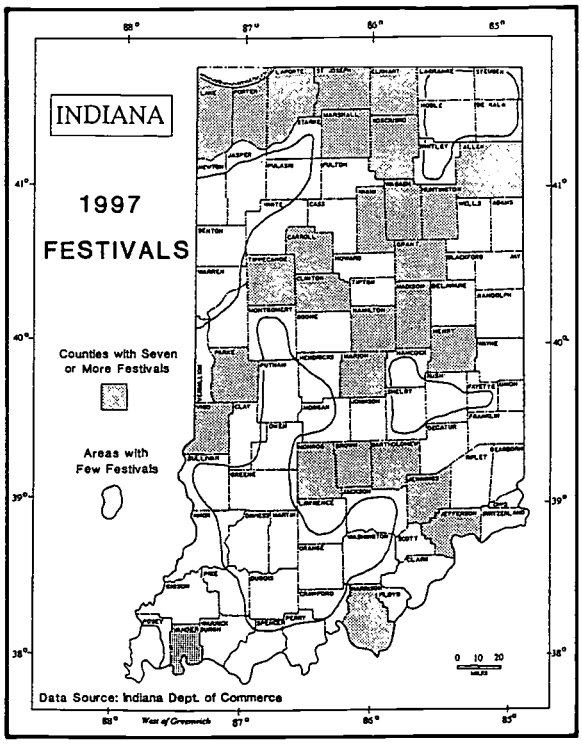

Figure 17. Festivals in Indiana, 1997.

Northern Indiana has more festivals than southern Indiana. Eighteen of Indiana's most popular festival counties lie on or north of the 40 degree parallel (fig. 17). The festivals held in southern Indiana are concentrated around nine communities—Indianapolis, Rockville, Terre Haute, Bloomington, Nashville, Columbus, Madison, Corydon, and Evansville. Counties dominated by a large urban area typically have a lot of festivals. Every urban county in Indiana has at least seven festivals except Delaware County (Muncie), Wayne County (Richmond), and Howard County (Kokomo). Rural counties, on the other hand, tend to have few or no festivals. The only rural counties in the state having seven or more festivals are Brown County, Carroll County, Clinton County, Harrison County, Jefferson County, Marshall County, and Parke County.

Five areas in Indiana have a noticeable lack of festivals. They include the northeastern corner of the state, the prairie counties of northwestern Indiana, a large area of southwestern and south-central Indiana, an area just east and southeast of Indianapolis, and Posey County in the southwestern corner of the state (fig. 17).

Reference

Indiana Department of Commerce. 1997. *Indiana Festivals and Events.* Indianapolis: Indiana Department of Commerce, Tourism and Film Development Division, 1997.

14. Simple and Plain: A Glimpse of The Amish

Claudia Crump

Buggy tracks and quilt auctions are sure signs that Amish are present and that tourists will follow, seeking a glimpse into the lives of the "plain people." A gentle and industrious rural-centered people, the Amish and their parent group, the Mennonites, number in excess of 750,000 scattered over 57 countries. In the United States, 145,000 Amish people live in 22 states. They are concentrated in the Midwest—Ohio (43,000), Pennsylvania (35,000), and Indiana (25,000) (Hostetler 1993). They were attracted by cheap but rich farm land and markets for nature-related occupations, such as wood-working and carpentry.

The Amish have clustered in north central Indiana around Shipshewanna and Nappanee in Allen County; on the northeast border in the Swiss settlement of Berne in Adams County; and toward the southwest in Montgomery and Loggootee in Daviess County. Anywhere in Indiana, tourists are not far from an Amish settlement. The Amish are increasingly prepared for tourists, except for their cameras, with crafts shops, country-rich menus, and friendly tours of their homes and workplaces.

Frozen Lifestyles

Amish lifestyles of today mimic a frozen culture—that of eighteenth-century Europe. The Amish cling to the manner of worship, language, style of dress, work ethic, and other practices of ancestors in Germany, France, and Switzerland. In Old Order Amish communities in Indiana, followers continue to read and teach from the German Bible in their homes and in Amish schools, wear plain home-made clothing without buttons or zippers, plow with horses, travel in buggies, and have no electricity or telephones in their homes.

Although certain customs vary from region to region, the Amish have adopted styles and fashions of their Indiana neighbors only in limited form; an Amish girl might be seen wearing her white cap, an apron over a long-skirted solid-color dress, and name-brand athletic shoes. One might guess, too, that her tightly braided hair was not done in front of a mirror that might lead to personal vanity.

Selective Adoption

The Mennonite and Amish traditions began with the Anabaptist movement in sixteenth-century Europe. The Amish, after breaking away from the less conservative Mennonite group, assumed the name of their leader, Joseph Amman, and became highly selective in adopting modern inventions, especially avoiding those that erode their togetherness as a community and family in day-to-day life. They have no telephones in their homes but might line up by the dozens to use the corner telephone booth and often hire a chauffeur to transport them to an auction. Some ride buses and trains to maintain close-knit kinships among family in Ohio and Pennsylvania. Although religion sets certain limits on their agricultural and social lives, the Amish also adapt and adopt at times to remain solvent, yet apart, in a modern world.

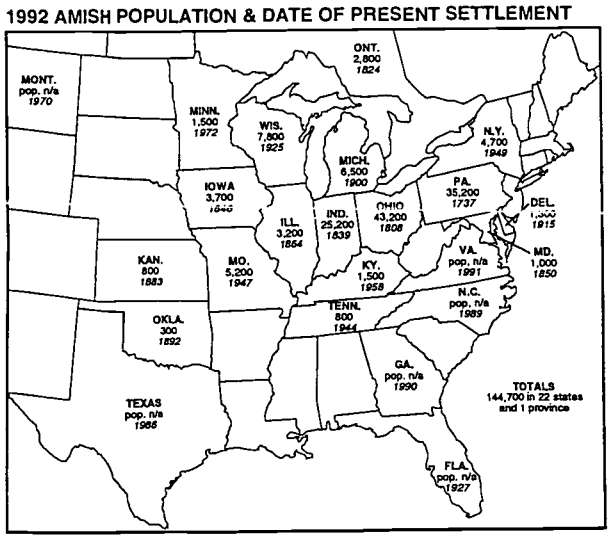

Figure 18. Amish population showing date of settlement.

Gifted Environmentalists

The Amish are among the most strict envi-

ronmentalists of today. They know how to transform poor land into productive farms. Their formula is simply rotation of corn, small grain, legumes, and a cash crop with plenty of barnyard manure and lime often to compensate for straight or continuous plowing commonly practiced on the rolling hills by their Pennsylvania forebears rather than the practice of contour plowing. They use no insecticides but encourage bird populations as controllers of crop predators by planting along fence-rows and providing houses for shelter and nesting. They believe that the land is a gift, merely borrowed for the time, and then is passed along to their children.

According to Amish custom in many communities, when the youngest son marries, he inherits the responsibility of the land and becomes the caretaker of the parents, who move into the "granddaddy" house attached to the main house. The plain houses, without adornment of shutters and bric-a-brac, are attached and extended to accommodate the large Amish families.

Lives in Contrast

How are the Amish coping in a changing world? Let's look at Carolyn, reared as a Mennonite and currently on the faculty of a state university, and Tom (Ph.D.), recently retired as the CEO for a consortium of seven universities, whose father broke away from his strict Amish upbringing as a young man. Had the couple retained the lifestyle of their heritage, would they be in their current positions? No. As a Mennonite, Carolyn could have pursued an advanced education and profession. When marrying an Amish man of the Old Order, however, she would be expected to toil in the kitchen over a wood or oil-burning stove, cultivate a garden, assist with haying in the fields, and bear six to eight children. Tom, on the other hand, would have been limited to an eighth grade education in the private Amish school, perhaps taught by an older sister who was an acclaimed scholar. He would need no further schooling, beyond that given to him in practical labor, to till and harvest family's and neighbor's crops and to work at carpentry during barn raisings.

The couple, rather than driving with their three children to services at their Presbyterian Church, would be taking a turn at home-hosting a three-hour Amish service conducted by their elected bishop. The home, cleared for benches transported on the *bench wagon* earlier in the week, would be circled by black buggies and filled with neighbors and picnic baskets full of dairy-rich, farm-grown dishes reflecting their German ancestry. Tom and Carolyn remain attached to their heritage and are warmly welcomed by Mennonite and Amish cousins at family reunions.

The Amish Attraction

Today a growing population of the Old Order Amish remain, who are now extending their closed society by baptism, along with the "Beachy" Amish (automobile-driving), and the New Order Amish who are involved in farming and economic activity no different from other American farmers. In 1968, Hostetler wrote in the first edition of *Amish Society*: "As the urban world becomes more hazardous, stressful, and complex, there are those who will be attracted to a simpler way of life... . The Amish society will thrive or perish to the degree that it can provide community and personal fulfillment... ." Hostetler could have written this today.

Following the Tracks

In closing, let us take a slow drive along narrow gravel roads of Montgomery, Indiana. The first stop is the Gasthof Restaurant for a local map and peek at the Amish menu and crafts to be sampled later in the day. We have no temptation to speed since all turns are right angles and horse-drawn vehicles slow the pace for studied views of Amish lifestyles—windmills, lush vegetable gardens, bright flower beds, plain houses flanked by long lines of plain clothes drying in the breeze, huge barns, and horse-drawn farm implements.

True, you will miss, with some pleasure, the tangle of electric power lines, television dishes, and enormously large and decorative Victorian-style homes. On the other hand, we must halt for a full view of the Amish family forking hay onto a wagon and the one-room school surrounded with

children playing games from your own childhood. Then we will visit the Knepp General Store and Furniture, Wagler Quilts and Crafts, the Collar Shop, the Raber Buggy Shop, Wheel Works, and Furniture. Please take no photographs as we respect the religious beliefs and enjoy the Amish hospitality while we have a mere glimpse of this simple and plain people.

Reference

Hostetler, J. 1993. *Amish Society* (4th ed.). Baltimore, Md.: The John Hopkins University Press.

15. The Dunes

Stanley S. Shimer

The Dunes of Northern Indiana along the southern shore of Lake Michigan are a wonderful representation of the uniqueness and diversity of the character of Indiana. Some people think of Indiana as expansive corn fields but not beaches and sand dunes. Authors and painters such as Carl Sandberg and Frank V. Dudley have recognized the beauty and uniqueness of the Dunes in literature and art. Since the end of the nineteenth century, scientists have recognized the Indiana Dunes as an important and unique area for studying their geology and ecology.

The Development of the Dunes

The northern hemisphere has been repeatedly covered by continental ice sheets. The most recent was the Wisconsin ice sheet that extended from the East Coast to the Rocky Mountains. The ice sheet retreated and advanced repeatedly creating the Valparaiso Moraine that extended from Wisconsin to Michigan. As the ice retreated a lake formed between the ice to the north and the higher elevations to the south. The ice retreated farther and farther to the north creating a succession of beaches. One crosses what was once the lake's shoreline at Glenwood and Calumet and then the bed of an 8,000 year-old lagoon before reaching the current beach and the developing Tolleston-Algonquin Dunes.

The vegetation still reflects the advance and retreat of the ice sheet, as plants are present that normally grow in colder climates. Vegetation plays an important role in the growth of sand dunes. It appears that dunes are developed by mechanical forces only but sand will not begin to create dunes until some sort of obstacle forces the sand to drop and accumulate. Plants like Marram Grass, which can continue to grow even after a certain degree of burial, allow the sand the pile up and gain more height, creating a sand dune. Woody plants play a role in dune development as well. Indiana shrubs involved in this process include: willows, sand cherry, and dogwood. The only trees that add to dune growth include cottonwood, poplars, and balsam-poplar.

Populating the Dunes

Northern Indiana is a heavily populated, industrial region today but until the middle of the last century the shoreline was wilderness. The area's first inhabitants were prehistoric mound dwellers. In the seventeenth century French explorers Father Jacques Marquette and Sieur de LaSalle landed in the area during their travels. In the eighteenth century, Potawatami and Miami hunters began moving south from Wisconsin but did not settle here permanently. French fur traders frequently traveled through the area to establish trading relationships with the local Indians. The marshes, sandy soil, and Indian hunters slowed the spread of European settlers to the area. The emigrants sailed past the steep dunes and moved on to Chicago.

The first permanent residents of the Dunes were Joseph Bailly, a French Canadian, and his family who opened a trading post in 1822. The trading post is now part of the Indiana Dunes National Lakeshore. In 1833, James Morgan claimed the area and began plans for development. Centered around Dunes Creek the plan called for the development of a large city and deep water port but the city was abandoned by the 1840s. During the 1850s draining the Kankakee Marsh drew farmers to the southern part of the region. Industry attracted from the burgeoning Chicago area spurred the growth of Calumet. Oil refineries, steel mills, chemical and manufacturing plants, and the resulting worker housing urbanized the western Indiana lakeshore.

Studying the Dunes

A cornerstone paper of ecological theory, written by Henry C. Cowles in 1899, reported on the Lake Michigan dunes and their unique ecological importance. Cowles's work clearly stated that the sand dunes of Lake Michigan stand as an example of the interrelation of geological history, climate, earth's crust, and plants and animals. The dunes present a case study of succession, the

concept that vegetation changes through time in an orderly (and somewhat) predictable way. Two of Cowles's students, Shelford and Olson, also studied the dunes. Shelford studied the animal communities and correlated them with the successional nature of the vegetation. Olson studied the soils and their development. When discussing the importance of the Dunes for scientific study Olson stated: "In the two-mile transect across the Indiana Dunes you are presented with a profile of 12,000 years of vegetational change, the sequences of plant life in space corresponding to the changes that have occurred in time." The importance of the dunes in studying the natural environment provides support for the conservation of the region.

Conserving the Dunes

The growth of industry, the beauty of the area, and early studies of the area by University of Chicago scientists set the scene for a battle between conservationists and industrial developers. Jens Jensen, a Danish immigrant and landscape architect, discovered the beauty and importance of the dunes in 1889. He was a member of a group of naturalists and weekend hikers called the Prairie Club of Chicago. The need for a deep-water port and sand mining threatened the existence of the dunes. This led Jensen and his fellow club members to begin a campaign for conservation of the dunes that has lasted more than a 100 years. The last major battle over the dunes occurred in the 1960s between proponents of further industrialization of the shoreline versus those who wished to conserve the dunes as a national park. Congress authorized both the creation of the Indiana Dunes National Park and the development of the Port of Indiana in 1966 in a compromise decision. The fight for the conservation of the dunes continues today in response to years of industrialization, suburban sprawl, and pollution threaten the ecosystem and the existence of the dunes. Political battles will continue as politicians continue to opt for short-term economic gains and remain insensitive to the consequences of long-term environmental destruction.

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16. Towns and Cities of the Ohio: Reflections

Claudia Crump

Reflections *from, on, across, along, about, and into* the river—all apply to this brief tour across time on the Ohio and its river towns. The Ohio River has been called The Distant River, The Queen of Rivers, and the Heartland Highway of Hope. Certainly it has been the superhighway connecting the East westward and a trail of danger, as well as of hope (Alley 1965). This chapter will focus on the towns along the Ohio's banks, their reasons for being, as well as reflections on the river.

Reflections

On Place

Geographically, the Ohio River—Oye meaning great water to the First People, and *La Belle Riviere* or beautiful river to the French—originates at the confluence of the Monongahela and Allegheny rivers (40° N, 81° W) at Pittsburgh, Pennsylvania and flows southwesterly for nearly 1,000 miles (1,609 km) to empty into the mighty Mississippi (38° N, 88° W). Its banks form the interstate highway boundaries for Ohio, West Virginia, Indiana, Kentucky, and Illinois (Polston 1997).

Of First Peoples and Their Villages

For Native Americans, the Ohio River was the path of migration and trade thousands of years prior to the intrusion of European explorers. First came the Paleos, or the roamers with flint spear points, followed by the Archaic peoples, inhabitants of the first Ohio River villages, who depended on the river for its shellfish and the forest for acorns. Before the time of the Europeans, the Mound Builders—the Adenas and Hopewells (700 B.C.-500 A.D.)—developed skills of pottery, horticulture, mound building for social status and burial, and vast trade networks using the river. They were followed by the Fort Ancients occupying the Ohio Valley (1200-1650 A.D.) with bow-and-arrow hunting and corn gathering. Then mysteriously, these people disappeared to be replaced by small tribes, many of whom located their villages away from major routes of explorers and fur traders (*Always a River* 1991).

Along Indiana Shores

The Ohio River, carved by melting mile-high glaciers, is sometimes linear but often ox-bowed. Its shorelines border approximately 360 miles (479 km) of Indiana's wooded hillsides, sloping to stony beaches, narrow and rocky terraces, broad fertile river-bottom farms, and eroded hills. Also lining the river bank are coal mine tipples, oil refineries, and stone quarries, sleepy towns stemming from the past, bustling cities of today, and even two sea-going ports. Southwinds and Clark Maritime Centers were both instrumental in making land-locked Indiana among the ten leaders in exports of all states (Polston 1997).

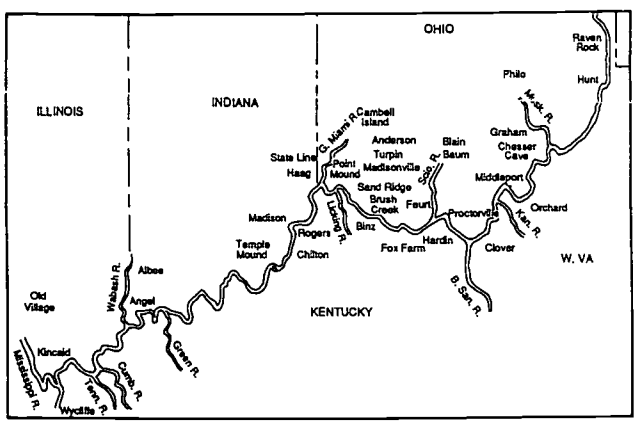


Figure 19. Late Prehistoric (500 A.D to 1650 A.D) sites along the Ohio River

On Influence, Confluence, and Affluence

The outline date map of Indiana provides a visual timeline created by waves of people settling the territory at the time of statehood (1816). A cross-section of dates when early cities and counties were laid out or platted visually exposes patterns of people-flow that show the influence of the Ohio River as the major interstate artery drawing the earliest settlements to the south (Baker 1995).

The steamboat revolution resulted in flatboat and keelboat rot. The steamboat, carrying ten times as much cargo and traveling five times as fast as its predecessors, replaced oarsmen's sweat and groans with bellowing smokestacks and distinctive whistles. The ambiance of the river changed when The *City of New Orleans* steamed down the Ohio in 1811. Magnificent steamboats built in Jeffersonville and New Albany dominated Ohio River towns during the "Golden Age of the Steamboat" from 1820-1850 (Striegel 1991). These boats also contributed to architecture along the shore and well beyond. The Hillforest Mansion of Aurora is an example of "Steamboat Gothic," and the Lanier and Culbertson homes of Madison and New Albany are examples, among many, of the opulence afforded prominent industrialist and shipping magnates along the river (Polston 1997).

The introduction of a canal system as substitute for rivers (a stately failure) (Bennett 1997), the coming of steam locomotives, and the construction of a network of roads, all of which sought Indiana's flat lands rather than the cliffs and valleys along its rivers, pronounced the death of many early towns. Some barely survive today, yet many have continued to thrive.

On River Settlements

"Towns along the Ohio tend to ebb and flow rather like the river itself" (Pearce 1989). Pittsburgh, Cincinnati, and Louisville were born on the Ohio and grew up as the river's largest cities. The real character of the river, however, may be viewed in small towns and cities that have retained unique river identities of earlier days. Small towns—such as Rising Sun, Vevay, and old Madison—sit on the Indiana banks as memories.

Madison, like Cincinnati, became an early pork town, when farmers could not get raw grain to market but could ship the processed products— pork, meal and flour, as well as barrels of whiskey. The town once reeked of squealing porkers driven through the streets toward processing plants, and of foul air and soot from huffing iron factories producing ornamental ironwork still decorating Madison and New Orleans (Alley 1965). Today, Madison's movie-perfect shops and Victorian homes sit quietly awaiting the July 4 Madison Speedboat Regatta and holiday home tours (Polston 1997).

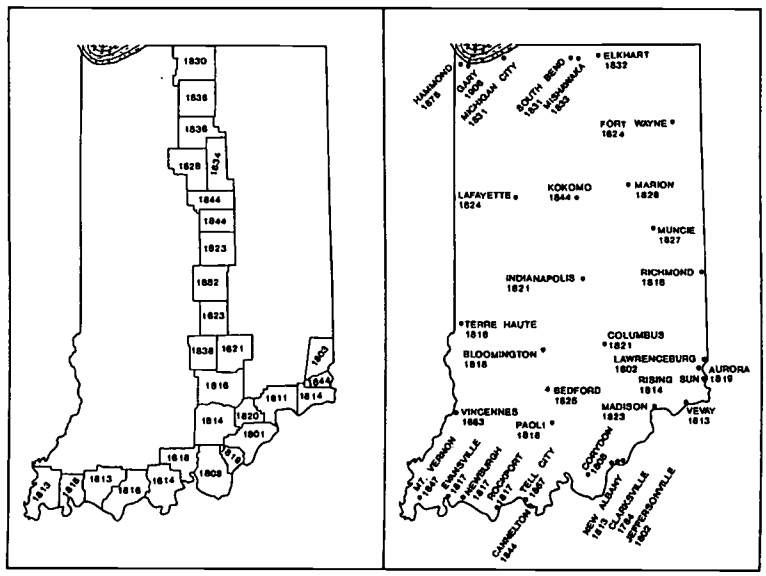
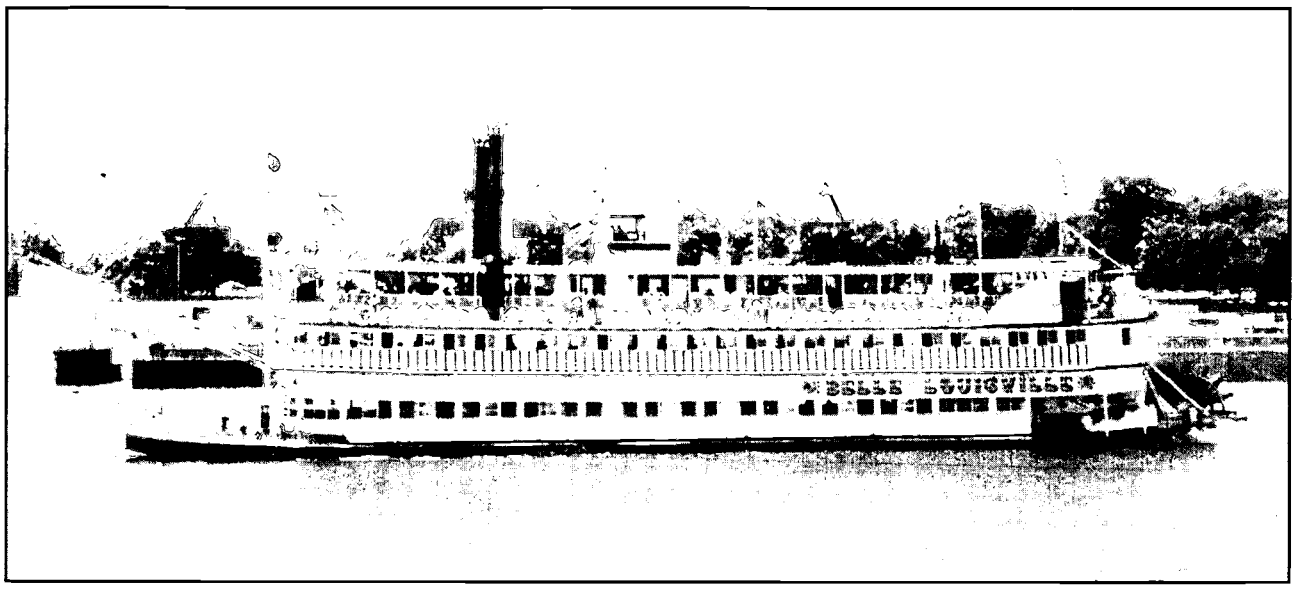


Figure 20. Dates at which (a) counties and (b) cities were platted or formed

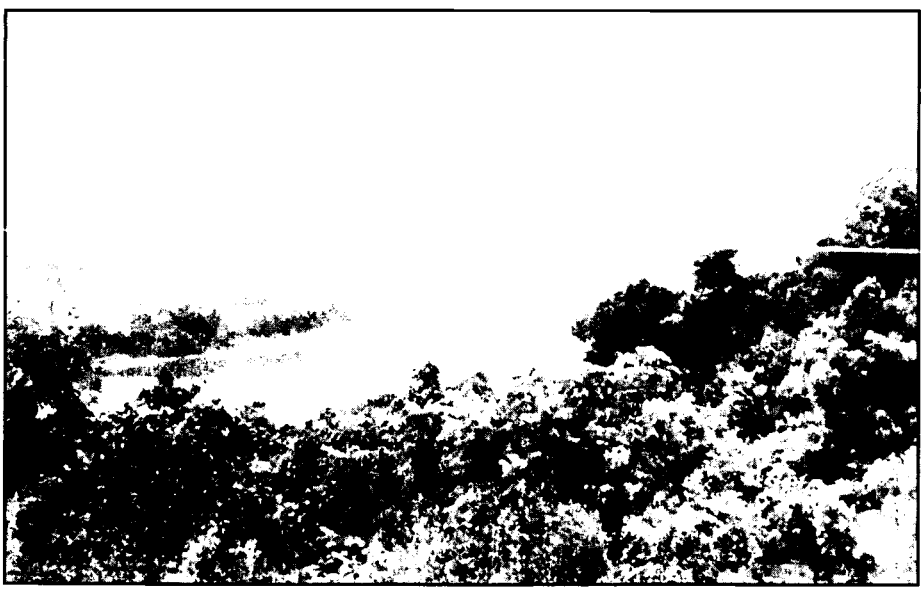
Downriver stands a trio—Jeffersonville, Clarksville, and New Albany—across from the mooring of The *Belle of Louisville*, the 1914-built sternwheeler from the Howard Shipyards. Clarksville is renowned as "Mall City" today, but remains historically significant as the oldest town in the state and the home of George Rogers Clark, the old state prison, and more recently The Falls of the Ohio fossil beds in one of the newest state parks. In neighboring New Albany—once the state's largest city—Main Street mansion row rests alongside the Old Town Clock church tower where slaves escaping northward first set foot on freedom's ground.



The *Belle of Louisville* in the Ohio (Photo by Brian Covert)

Another trio—Cannelton, Tell City, and Troy—stands in a row close to the Cannelton Locks and behind protective floodwalls. The three were devastated by the Great Flood of 1937, as were many other towns and cities along the 981 miles (1,578 km) of the Ohio by the Flood of 1997. Tell City, the late-comer along the Ohio, was planned by the Swiss Society of Cincinnati before settlement in 1857 and is named for legendary William Tell.

Newburgh, a quiet city on a bluff, belies its Scuffletown Restaurant and Salon. With the Japanese Toyota plant having moved into local cornfields, the Newburgh community may change size and character. Evansville, a city of wide streets and a grand old courthouse, has bounded between growth and demise with the coming and going of major companies (Pearce 1989; Polston 1997; Reid 1997). Many other beautiful river towns exist along the Ohio.



The River Ohio (Photo by Loretta Oliver)

For Today and Tomorrow

Since the early 1800s, river sights and noises have changed drastically. Great bridges span the Ohio River as clues to major shifts in transportation of people and products. Compared with trucks and trains, water transportation remains the most economical. In September, 1997, the McAlphine Locks (located between Clarksville and Louisville) locked through 4,239,130 tons of coal, iron, oil, gas, and miscellaneous materials in 366 lockages (15 barges, each with 25,000 tons, per lockage). On a daily basis, just imagine the land equivalent of 5,625 additional large trucks on major roads of the area. Believe it or not, the Ohio River System (which includes navigable tributaries) also transports more tonnage per year than the Suez Canal (U. S. Government Corps of Engineers data). What a wonder this Ohio River was, is, and will be!

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17. The Gary Steel Industry

Mark Reshkin

The landscape of the Calumet Region, the home of the Gary steel industry, continues to change now as it always has. Beginning some 12,000 years ago and extending into the nineteenth century, human activities were adapted to the constraints of the natural environment. Later, and up to the present, humans have modified the natural environment to satisfy the demand for agricultural, industrial, and residential development. This area developed much later than most of the state, and it was more a part of an expanding metropolitan Chicago than of any part of Indiana. The Grand Marsh of the Kankakee River Valley isolated this northwestern corner of the state from the extensive farmlands to the south until it became, almost overnight, a twentieth century urban-industrial melting pot.

Today, the role of steel making still dominates the region's economy. Other commercial and industrial activities persist because of the area's strategic location at the hub of the nation's transportation system, its abundant water resources, and trained work force. The unique beauty of the Indiana Dunes, now preserved in state and federal parks, also attracts increasing numbers of visitors. The region was named after the Calumet River. Today, the term Calumet Region also carries the implication of a heavily industrialized area, a smokestack urban region and generally is applied to northern Lake County. Industrial development began when George H. Hammond located a meat packing plant in 1869 in the region, bordering the Illinois state line. Later the Standard Oil Company constructed what became for a time the world's largest oil refinery in adjoining Whiting. East Chicago was simultaneously incorporated because of the construction of what would become the Inland Steel Corporation.

Soon following were other oil and steel companies that vied for space in the tiny community. Then, in 1906, U.S. Steel began erecting the world's largest steel plant just east along the lakefront in Gary, soon to become the commercial hub of the Region. In the 1960s both National Steel and Bethlehem Steel situated their facilities further eastward leading to the expansion of the communities of Portage and Burns Harbor, respectively. With the lakeshore having become primarily an industrial corridor hemmed in by urban-residential development, industry began land-filling projects along the shore of Lake Michigan to gain land for expansion.

Industrialization, at least in part, became possible by changing the courses of rivers, draining and filling extensive wetlands with sand and slag, the construction of landfills into Lake Michigan, the creation of deep-water harbors and navigable canals, and continued sand mining of dunes and interdunal areas. The human settlement and economic growth of the past century led to the gradual depletion of many of the area's natural resources and scenic wonders. Nonetheless, this heavily industrialized regions retains much open, natural area.

Efforts to restore the quality of the environment in the Calumet Region began only in the 1970s. Environmental concerns include air quality, wastewater treatment, and flood control, solid waste management, and shoreline erosion. Today, the concept of sustainable development, based on the interdependence of the economy and the environment and placing emphasis on ecosystem management principles and practices has become a template for looking at the future of an area. It can be a cornerstone for future planning in northwest Indiana. Dynamic interaction of coordinated citizen environmental involvement and active economic development is growing. The ways commerce and industry continue to grow and operate are changing. Strong environmental regulation and enforcement by state and federal governments is balanced by an increasing effort to achieve environmental improvement through a community-based approach to environmental protection.

Northwest Indiana leaders now are striving for a new consensus on a future vision for the Calumet Region. After a century of economic development, much of the region has been altered but many of the area's natural riches have been preserved. On the development side, the steel industry is rebounding and the region is again the nation's steel capital. Pride is warranted in a

revitalized industry that employs fewer people, uses less space, is economically sound and environmentally cleaner than in the past. A sustainable development, the Quality of Life Council has formed that promotes a regional approach to the improvement of environmental quality, social equity, and economic growth in this metropolitan area. As a result, there is reason to believe that industry and the region's natural environment will continue to exist together in ways that improve and sustain the quality of life on Indiana's Lake Michigan shoreline.

18. THE INDY 500

Gerald R. Showalter

Spring may bring May flowers, but the first of May also marks the beginning of the many traditions associated with the Indianapolis Motor Speedway, which culminates around Memorial Day with the 500-mile race. Whether or not you are a race fan in central Indiana, it is virtually impossible for one to escape the daily news from the track. Not only do the sports columns of newspapers carry the daily event but drivers who defect teams, as well as changes in team ownership or sponsorship, record speeds and, of course, accidents and the like may bring front-page coverage. Television stations make their sports reports from the track with their reporters and contracted star drivers. As the race nears, newscasts in their entirety may be televised from the track. "The race," and everyone understands what that means, becomes an inescapable part of our lives.

Around the city of Indianapolis, the month of May is filled with activities, traditionally starting with a breakfast and ending with the awards banquet the evening following the race. Thousands of volunteers and supporting members show their community spirit by organizing and directing the 500 Festival. Concerts, art shows, balls, selection of a queen and her court and a mini-marathon are major activities. The 500 parade is telecast nationally. The black and white checkered pattern of the finish flag is used in almost every imaginable way, even for a short while on the streets of downtown Indianapolis.

The Brickyard, as the track is affectionately known, is a splendid facility but had humble beginnings as an unimposing oval bulldozed out of a farm field in 1909. The first race, promoted by Carl Fisher and his partners, was a disaster as the tar and stone track fell apart. Brick was more durable and could withstand the frost damage of Indiana winters, so contractors laid 3.2 million bricks. By 1961, all but a one-yard strip at the start/finish line, which creates a distinctive sound as cars speed over it, had become paved with asphalt. Fisher, whose entrepreneurship and business sense shaped the Indianapolis 500, also helped shape the real estate development of south Florida. In 1911, the first 500-mile race was held.

Holding just one race a year at a grueling distance of 500 miles and offering the largest purse of any sporting event (first prize, $20,000) grabbed the media's attention, as well as drivers and motor racing teams. European drivers who already had a racing tradition dominated for several years. American drivers and engineers quickly abandoned the premier AAA (American Automobile Association) events, or at least viewed them as a warm-up to the 500. Teams would make Indianapolis their year-round headquarters, further increasing the importance of the race and speedway as a test track facility. Drivers and teams today still relocate here and a small but important industry has developed around racing. Racing at Indianapolis, not even necessarily winning or finishing a race, is often considered to be the pinnacle of one's career. With the exception of the war years, 1917-18 and 1942-45, the race has been held every year.

In 1927, the track was sold to a group headed by Captain Eddie Rickenbacker who had driven a Dusenburg in the 1914 race. The facility fell into an almost total state of disrepair while closed during the W.W. II years. Dismayed at what he found when he arrived to test a new synthetic rubber tire, William Shaw set out to find a new owner. Anton Hulman, Jr. of Terre Haute, who ran a family wholesale grocery business, purchased the track in 1945 and it has remained in the family ever since. Today the Speedway is operated by Tony George, grandson of the late Tony Hulman. Countless lives have been touched by this quiet, unassuming family through their benevolence to education, the physical and mentally challenged, and even stray and injured animals.

The dimensions and shape of the 2.5-mile (4.02-km) oval have remained essentially unchanged since it was built. Virtually every other aspect of the physical plant has changed, however. The quantity and quality of seating and of other amenities have been continually enhanced. With approximately 250,000 seats the Speedway is the largest sports venue in the world. Attendance has been estimated to approach 400,000 in some years. Actual attendance and receipts, however, are closely guarded secrets. Winning purses exceeding $1.3 million indicate revenues are substan-

tial for this one-day event. With speeds today reaching 240 mph (386 kph), safety is a major concern for both the drivers and spectators. Conditions in and around the track as well as those of the equipment, are continually upgraded. The safety of everyone involved has vastly improved, though injuries and even death are still natural aspects of such a speed event.

Within the Speedway grounds today is a championship golf course that hosts major tournaments. For those only casually concerned with racing a Hall of Fame Museum located here displays more than 75 race and antique cars, along with a variety of memorabilia. A trip by van around the track is also possible, all for extremely modest fees. The Indianapolis Motor Speedway was declared a National Historic Landmark in 1987.

Traditions, myths, and superstitions die hard at the Brickyard and among fans. At one time or another virtually all have been violated. Perhaps the greatest changes have taken place in the past several years and many more are likely to occur for several years to come. The Brickyard 400, a NASCAR (National Association for Stock Car Auto Racing) event, draws as many fans as the 500, but for a shorter period of time. A major change in the sanctioning body and its rules has divided teams, drivers, and fans. Practice time and qualifications were greatly reduced in 1998 and the possible long-term effects could be considerable, especially upon many business enterprises, the media, and related 500 events. Although change is often difficult, people will adjust and a new set of traditions will be formed. Most likely, the Indianapolis 500 will continue to be the greatest spectacle in automobile racing.

PART V. LEARNING ACTIVITIES

19. THE NATIONAL GEOGRAPHY STANDARDS

From *Geography For Life*, 1994*

Physical and human phenomena are spatially distributed over Earth's surface. The goals of the *National Geography Standards*, according to the document *Geography for Life*, is a geographically-informed person who sees relations between people, places and environments; who uses geographic skills; and who applies spatial and ecological perspectives to life situations.

The World in Spatial Terms: Geography studies the relationships between people, places, and environments by mapping information about them into a spatial context. The geographically-informed person knows and understands:

1. How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.
2. How to use mental maps to organize information about people, places and environments in a spatial context.
3. How to analyze the spatial organization of people, places and environments on the Earth's surface.

Places and Regions: The identities and lives of individuals and peoples are rooted in particular places and in those human constructs called regions. The geographically-informed person knows and understands:

4. The physical and human characteristics of places.
5. That people create regions to interpret Earth's complexity.
6. How culture and experience influence people's perceptions of places and regions.

Physical Systems: Physical processes shape Earth's surface and interact with plant and animal life to create, sustain, and modify the ecosystems. The geographically-informed person knows and understands:

7. The physical processes that shape the patterns of Earth's surface.
8. The characteristics and spatial distribution of ecosystems on Earth's surface.

Human Systems: People are central to geography in that human activities help shape Earth's surface, human settlements and structures are part of Earth's surface, and humans compete for control of Earth's surface. The geographically-informed person knows and understands:

9. The characteristics, distribution, and migration of human populations on Earth's surface.
10. The characteristics, distribution, and complexity of Earth's cultural mosaic.
11. The patterns and networks of economic interdependence on Earth's surface.
12. The processes, patterns, and functions of human settlement.
13. How the forces of cooperation and conflict among people influence the division and control of Earth's surface.

Environment and Society: The physical environment is modified by human activities, largely as a consequence of the ways in which human societies value and use Earth's natural resources, and human activities are also influenced by Earth's physical features and processes. The geographically-informed person knows and understands:

14. How human actions modify the physical environment.
15. How physical systems affect human systems.
16. The changes that occur in the meaning, use, distribution, and importance of resources.

The Uses of Geography: Knowledge of geography enables people to develop an understanding of the relationships between people, places, and environments over time—that is, of Earth as it was, is, and might be. The geographically-informed person knows and understands:

17. How to apply geography to interpret the past.
18. How to apply geography to interpret the present and plan for the future.

**Geography for Life: National Geography Standards* 1994. Washington, D.C.: National Geographic Research and Exploration for the American Geographical Society, Association of American Geographers, National Council for Geographic Education, and the National Geographic Society. (Available from the National Council for Geographic Education, 16A Leonard Hall, Indiana University of Pennsylvania, Indiana, PA 15705, $7.00 plus postage and handling.)

20. GRAVES, GRIFFINS, AND GRAFFITI

Anne H. Gardner and Connie S. Yeaton

Purpose: To enhance the students' awareness of the importance of limestone in their state's development, students will experience a series of activities involving cemeteries, stonecutters, and epitaphs.

National Geography Standards (see Chapter 19):
Element #2— Places and Regions
6. How culture and experience influence people's perceptions of places and regions.
Element #3— Physical Systems
7. The physical processes that shape the patterns of Earth's surface.
Element #4— Human Systems
9. The characteristics, distribution and migration of human populations on Earth's surface.
11. The patterns and networks of economic interdependence on Earth's surface.
Element #5— Environment and Society
14. How human actions modify the physical environment.
15. How physical systems affect human systems.
16. The changes that occur in the meaning, use, distribution, and importance of resources.
Element #6— The Uses of Geography
17. How to apply geography to interpret the past.

Materials Required:

cemetery worksheets	lime (powder)
history of limestone formation data sheets	water
charcoal for drawing	straws
butcher paper	bowls
buckets	clean sand
empty milk cartons or shoe boxes	wax paper
gravel or pebbles	powdered clay (smash an old brick or a terra cotta flowerpot)
plaster of Paris	powdered schoolroom chalk
builder's cement or mortar	bits of clam, oyster, and other shells
recipes for "2,000,000 Years of History in "A Brief History of Limestone" in 2 Days" (provided)	three short stonecutter "autobiographies" (provided)

Objectives: After this lesson is complete, students will have
1. described how limestone was formed,
2. written a short autobiography of a stonecutter giving reasons for migration and settlement,
3. created an epitaph to summarize their life as a stonecutter, and
4. taken tombstone rubbings.

Inquiry Skills of Geography: Asking Geographic Questions, Acquiring Geographic Information, Organizing Geographic Information, Analyzing Geographic Information, and Answering Geographic Questions.

Procedures:
Asking Geographic Questions:
a. As a class, students and teacher(s) will read about and discuss the formation of limestone;

much discussion will take place as the experiment to create limestone takes place. (See the attached "A Brief History of Limestone" and "2,000,000 Years of History in 2 Days"). Write any questions on a flip-chart or the chalk board.
b. After the class has discussed the formation of limestone and the students and teacher have created a limestone layer, students should try to answer any of the questions written on the flip-chart or chalk board; they should be able to answer any questions that they are now unable to answer at the end of the entire activity. (It might be useful to post a copy of a geologic time table that displays the sequence of deposition and erosion of earth materials over time. Any introductory college geology textbook should contain such a chart.)

Acquiring Geographic Information:
a. The teacher will read to the students examples of three biographies of early stonecutters and their families. In groups of three, students will list characteristics of stonecutters after they listen to each biography. Students, in their groups of three, will then create their own autobiography of an 1850s stonecutter. The biographies should include: native homeland; reasons for emigrating; items brought from their homeland; modes of travel and routes; sites where they settled; housing conditions; illustrations; and treatment by native Hoosiers.
b. If possible, make arrangements with local (retired) stonecutters to obtain oral histories; compare the first-person oral history with the students' biographies.
c. Next, visit a nearby cemetery (preferably an older one) with a local historian. Working in teams of two or three, students will obtain rubbings of at least two tombstones that include epitaphs. Students may also draw unusual limestone markers. Students should also notice how the physical or human factors operating on the environment have affected the tombstones. Teams should complete the "Cemetery Worksheet."

Analyzing Geographic Information:
a. Students will share all findings in the cemetery on a flip-chart or chalk board upon return to the classroom; ask further questions and students should write observations about the cemetery experience on another flip-chart or chalk board.
b. Each student should create an epitaph for themselves or for "Their Life as a Stonecutter."

Answering Geographic Questions:
a. Review and discuss and answer as a class the questions about the cemetery experience.
b. Then review and discuss and answer as a class the previous unanswered questions about limestone and its development.

Evaluation: Student participation; group cooperation; stonecutter biographies based on a simplified, peer-review rubric; tombstone rubbings; cemetery worksheet; and epitaph development rated by peers as appropriate or not for the time period.

Extensions: Read *Indiana Stonecarver: The Story of Thomas R. Reding* by A. Nolan and K. A. Buckley. (Indianapolis: Indiana Historical Society 1984). Investigate through research the meanings of designs on early tombstones; invite local historians to speak on early cemeteries, tombstone designs, and epitaphs to the classroom; and take responsibility for the care and upkeep of an old, worn-down cemetery.

A BRIEF HISTORY OF LIMESTONE

Limestone is one of the most interesting sedimentary rocks formed during the Paleozoic Era. It makes up a large part of the bedrock surface of Indiana although much of it is covered by later deposits of stone and soil.

Limestone is a rock composed of calcium carbonate; this mineral comes from a mixture of chemicals in sea water. The basis for the limestone rock's calcium carbonate is derived from the shells made by ocean-living invertebrates (hermit crabs, conch, clams, oysters,...). Many marine invertebrates use calcium carbonate to make or build their shells. As the invertebrates either die or move into a bigger shell, they leave behind their old shell. Layer after layer of shells builds up; some of the shells break into pieces, some remain whole, and some crush into very tiny pieces smaller than sand. Eventually, these layers of shell (i.e., layers of calcium carbonate sediments) harden into solid limestone. Some layers of limestone were formed during each period of the Paleozoic Era, and limestone is still forming somewhere today.

During the Paleozoic Era, much of Indiana was covered by a shallow sea, in which lived billions of *foraminifers.* Foraminifers were some of the first animals to live in our seas; this protozoan was a little like the amoeba. It was a tiny glob of living matter, many of which were smaller than a pinhead, and that moved about with *pseudopods,* or false feet. This amazing creature, unlike the amoeba, made a tiny shell. When these billions of foraminifers died, their tiny shells settled on the bottom of the sea and became the base materials for the sedimentary rock, limestone. Specifically, the limestone formed by the foraminifers of Indiana produced an unusual limestone called Salem Limestone.

LIMESTONE EXPERIMENTS

Lime water: Take one-half cup of (agricultural or powdered) lime and dissolve it in two cups of water. Look at the mixture as you are stirring to dissolve the lime. Let the mixture settle. What happens? Take a straw and blow into the lime water. What happens now? Then let the lime water stand for a while. Watch for sediment. Pour off the water, and let the sediments dry. Limestone upon which we live, and which provides a living for many Hoosiers, is made of tiny sediments similar to the ones in the experiment.

What Kind of Limestone? Take some weathered limestone (which will be small and pebble-like as it has been crushed and broken into small sand-like grains from larger pieces of limestone), and place it under a microscope. Do you see small grains or do you see small, one-celled shell animals in the weathered limestone? What derivation of limestone do you think that you are viewing?

Is it Limestone? Test a piece of limestone by using an eye-dropper and placing a drop of vinegar or muriatic acid on the surface of the stone. If the rock is limestone, you will see bubbles or hear a fizzing as the acid of the vinegar (or the muriatic acid) reacts with the base (lime) of the limestone. Also, limestone tends to be a soft rock; so, you can scratch it with a knife. By performing these two tests, you may be able to determine whether or not a rock is limestone.

2,000,000 Years of History in 2 Days

Creating limestone in two days to simulate real limestone development requires a series of steps as follows. Take an empty milk carton (cut in half) or a shoe box lined with wax paper or foil that will hold the "sea" that you will create. Have available the following materials that will represent the various kinds of rock or sea materials:

a. 1 cup of clean sand
b. gravel or pebbles
c. 1 cup of powdered clay (if you cannot get powdered clay, make some by hammering a piece of unglazed pottery or brick)
d. 1 cup of powdered classroom chalk (colored and white; most classroom chalk is made up of the mineral gypsum)
e. 1 cup of Plaster of Paris (which is also made of gypsum)
f. 1 cup of builders' cement or mortar (this is a mixture of several minerals—sea water contains many of the same minerals in dissolved form)
g. bits of clamshells, oyster shells, and other shells (these would be the shell pieces from sea animals living millions of years ago)

Now, you are ready to make 2,000,000 years of history in just two days! Make a "sea" by half filling the box or carton with water. Then sprinkle the first level of sediment; this can be a mixture of sand and cement: three parts sand to one part cement. Make this first level of sediment about one-half inch deep or less.

Let the first layer of sediment settle well and begin to harden. Then, add the second layer, which can be any of the other materials you have prepared. Some of them, such as, Plaster of Paris, chalk or clay, will stick together without the help of other cementing materials. The pebbles and shells will not, so, you first mix them with sand and cement. Be sure to use about one part of cement to each three parts of pebbles or shells.

Experiment with various mixtures, one at a time, in layers. You may have to add more water to your "sea" after a while. None of the mixtures is dangerous. Each layer is similar to a layer of sedimentary rock. You can add layer upon layer until you have filled the container. Let the sediment settle for two days until all of the layers harden. Then, you can cut away the sides of the container and look at your model of ancient geologic history. Identify the different layers relating them to real-life layers: sand and cement = sandstone; cement, sand and shells = limestone;... . This is not an exact experiment, but it is fun. Students should enjoy the project and learn about geology and about Indiana limestone.

CEMETERY WORKSHEET

Name _____ Date _____

Name of Cemetery _____

* Cemeteries can tell the history of a region in a few words and dates. They are a source of information, but they are also sacred areas. While visiting the cemetery, remember to be respectful to those buried.

* Using dates between 1810 and 1900, find the average age of five people when they died:

1. _____
2. _____
3. _____
4. _____
5. _____

SUM: _____ ÷ 5 = Average = _____

* Look for signed stones, ones on which the stonecutter or carver has placed his name.

Write the name: _____

* What is the oldest grave in the cemetery? _____

(Name) _____

(Date) _____

* Write the name of a person who lived a long time: _____

_____

At what age did that person die? _____

* Write the name of a person who lived only a short time: _____

_____

At what age did that person die? _____

* Are any stonecutters or carvers buried in this cemetery? If yes, state their name, birth date, death date, epitaph or additional information available:

_____

_____

_____

_____

_____

* What is the date of the most recent grave? _____

Graveyard view in southern Indiana (Norman Cooprider)

21. Exploring the Ohio River Valley

Anna Zervos

Purpose: To help students understand settlement patterns along the Ohio River Valley using Indiana as an example.

Grade Levels: 6-12

National Geography Standards Addressed (see Chapter 19):
Element #1—The World in Spatial Terms
1. How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.
3. How to analyze the spatial organization of people, places, and environments on Earth's surface.
Element #2—Places and Regions
6. How culture and experience influence people's perceptions of places and regions.
Element #4—Human Systems
9. The characteristics, distribution, and migration of human populations on Earth's surface.
12. The processes, patterns, and functions of human settlement.
Element #6—The Uses of Geography
17. How to apply geography to interpret the past.

Materials Required:
· copies of the "Can You Locate the Best Route to the Falls of the Ohio?" worksheet (provided with possible answers. Teacher needs to white-out the suggested answers prior to student use)
· copies of the "Locating a Town" worksheet (provided with possible answers. Teacher needs to white-out the suggested answers prior to student use)
· copies of a blank map of the eastern portion of the United States
· Indiana State maps
· atlases and United States maps

Objectives: Upon completion of this exercise, the student will be able to:
1. describe several reasons *why* people settled along the Falls of the Ohio region of the Ohio River and what motivated them to come to the Ohio River Valley,
2. describe the geographic features of the Falls of the Ohio and *how* they influenced the settlement pattern of the region,
3. identify the major events in the history of the Falls of the Ohio, and
4. compare and contrast the sites they selected for settlement and the sites selected by pioneers.

Background information:
For more than 200 years, the Ohio River has been a powerful force in shaping the culture and the economy of Southern Indiana. The river, which is 981 miles (1,578 km) long and flows through or along the borders of six states, begins in Pittsburgh, Pennsylvania, where the Allegheny and Monogahela Rivers converge and ends in Cairo, Illinois, where the Ohio River joins the Mississippi River.

The river transports more than 200 million tons of cargo every year and has 49 power-generating facilities, 20 dams and 52 locks; 550,000 people or 10 percent of the population of Indiana live along the Indiana shore of the river; 25 million people live in the Ohio River Valley System.

Prehistoric peoples built towns along the river. The Ohio River was the primary route of transportation for the early settlers of the frontier. With the arrival of the steamboat the Falls of the Ohio became the center for lumber, ship building, and glass manufacturing. During the mid

1800s, the Falls of the Ohio became an escape route for many African-American slaves using the underground railroad.

The region was open for settlement during the American Revolution. In 1778, General George Rogers Clark captured this region during the Revolution and secured the Northwest Territory for the Americans. He captured the forts of Kaskaskia, Cahokia, and Vincennes from the British and their Indian allies. In 1783, as a reward for his efforts in the Revolution, the state of Virginia awarded Clark and his men 150,000 acres (60,710 hectares) along the Ohio River at the Falls of the Ohio. By 1820, much of the land was settled. During the 1800s southern Indiana was home to several famous figures including: President William Henry Harrison, Governors Jonathan Jennings and Ashbel P. Willard, and U.S. Speaker of the House Michael Kerr. (All previous information has been gathered through a variety of resources during the classroom teaching tenure of the author.)

Procedures:

Asking Geographic Questions

a. Briefly discuss with the students their concepts of how early settlers traveled westward; also discuss the types of individuals most likely to travel westward; write responses on the chalk board.

Acquiring and Organizing Geographic Information

a. Distribute the Indiana State map and the atlases or United States maps.

b. In small groups or individually, have the students complete the "Can You Locate the Best Route to the Falls of the Ohio?" worksheet using the available resources. Work with the students as necessary by assisting them to locate information to complete the assignment successfully. Remember that the year is approximately 1813.

c. Next, have the students complete the "Locating a Town" worksheet using the available resources.

Analyzing Geographic Information and Answering Geographic Questions

a. When all of the students have completed the two worksheets, place a transparency of the Early Map of the Falls of the Ohio on the overhead projector, and using an overhead marker, have the students indicate their colony's location. Discuss with the students the most opportune location and the least opportune location. Indicate that several answers could be acceptable depending upon the priorities of the colonists.

b. Discuss how their colony site locations would differ if they were to create a settlement at different time periods: 1763, 1777, 1860s, and 1890s.

Student Assessment: Grade the maps and worksheets according to the answer key; provide an opportunity for those students not able to grasp the concepts to re-work their maps and worksheets, and to justify their changes or enhancements.

Adaptations or Extensions: You can modify the worksheets for younger students by working with the students as a class; for upper-level courses, students could investigate river-located businesses specifically; students could address the changes brought about by the river's locks and dams and discuss how these changes to the river have affected the commerce of the region and states involved.

Resources:

Furneaux, R. 1973. *The Pictorial History of the American Revolution by Eyewitnesses and Participants.* Chicago: Ferguson Publishing Company.

Kramer, Carl E. 1995. *Brief History of Jeffersonville, Clarksville, New Albany, and Corydon*: Clark-Floyd-Harrison Counties Convention and Tourism Bureau, Spring.

Exercise #1

Can You Locate the Best Route to the Falls of the Ohio?

The year is 1813. Imagine that you live in New York City. You, several members of your family, and several friends plan to move to the Ohio River Valley. You have heard that the valley has rich soils and that the Ohio River provides access to the Mississippi River making it easy to ship your agricultural products to the Atlantic Ocean and beyond. The Ohio River is the gateway to the west, and you believe that living in a town along the river could provide many opportunities for your family's success and for your group's future well-being. You are wealthy and have the resources to take a large group of people westward and found a town along the Ohio River. You have also heard that the Falls of the Ohio is a location that could pose a challenge to ship's crews. If the supplies continuing on downstream can be safely transported beyond this point, few risks will be encountered further along the river. Every ship traveling downstream stops at the Falls to prepare for the dangerous falls crossing.

1. Locate New York City in your atlas; locate New York City on your blank map also.

2. Draw on your blank map the Appalachian Mountains, the Allegheny Mountains, the Adirondack Mountains, the St. Lawrence River and Great Lakes, the Ohio River, the Mississippi River, the Cumberland Gap, the Falls of the Ohio, and the Wilderness Road.

3. Study the map to determine the best route your group should take westward. Remember that the year is 1813; you can travel by both water and land. Trace your chosen route on your blank map. (On a separate piece of paper, continue the assignment and answer the following questions.)

Describe the route that you chose. (Make sure that students choose a legitimate route; they should not just draw a straight-line route across the mountains and say that they took that route. Remind them of the Wilderness Road or an overland route across the Alleghenies to the Allegheny River. Also suggest that they take the all-water route through the Gulf of Mexico and upstream on the Mississippi River to the Ohio River. A student could also choose to travel across the Great Lakes southward along the western shore of Lake Michigan and trek overland to the Illinois River to the Mississippi River and upstream on the Ohio River. Discuss the merits of each route.)

4. Why did you choose this particular route?

(Make certain students choose a route based on a logical rationale. Emphasize the hardship of traveling overland: keeping in mind how many supplies they will need and will have to carry, the possibility of meeting hostile Indians, the lack of roads,... . Compare and contrast the routes that the students chose.)

5. Describe another possible route to the Falls of the Ohio.

6. What kind(s) of transportation did you choose to get to the Falls of the Ohio?

(Possible responses include: wagon train on land; flat boats on rivers; ships on oceans through the Great Lakes.)

7. List ten items you would need while traveling to the Ohio River Valley:

(Possible responses include: gun, gun powder, flour, whiskey, blankets, oxen, cows, pots and pans, flint, water buckets, seeds, chickens, pigs, cloth, tools, Bible, trinkets to trade with Indians to ensure safe passage through their territories, fresh meat.)

8. What types of businesses could you start if you were to settle along the Ohio River?

(Possible responses include: shipbuilding, fishing, operating a general store, tavern, hotels, or repair shops, manufacturing various items.)

9. What would be the advantages to locating your business along the Falls of the Ohio?
(Possible responses include: ships would be forced to stop at the Falls and passengers would likely become customers; it would be profitable to provide transportation either upstream or downstream; it would likely become a place of trade for the surrounding area.)

10. How would the route you chose be different if you made your trip in 1866 rather than in 1813?
(Possible responses include: railroads, better overland roads, or steamboats would be, available, lessened danger from unfriendly inhabitants, locks and dams would permit uninterrupted movement along the river.)

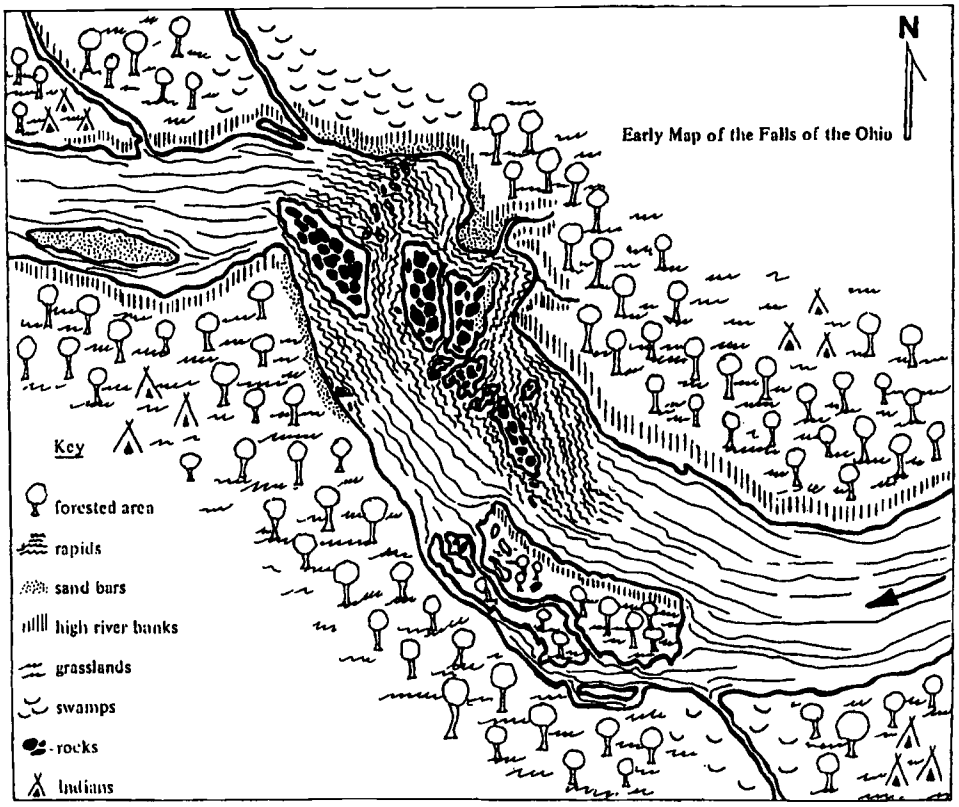


Figure 21. Sketch of early map of the Falls of the Ohio (after Furneaux 1973)

Exercise #2

Locating a Town

You finally made it! Your trip was difficult but well worth the effort. You are now attempting to decide exactly where to locate your group's town. Look at the map provided that you made from the information you gathered by talking to frequent river travelers. Where would you locate your group's town? Consider the location of trees, drinking water, and Indian settlers.

1. Choose the location of the colony. Indicate the location's letter or describe a location of your own.

2. List five reasons *why* you chose the location that you did:
(Answers will vary. Some possible reasons could include: the location is next to the river; it is just above the falls where people have to stop and unload their goods; it is just below the falls where people have to reload their goods; it is away from the Indian settlers if they are hostile; it is close to the Indians if they are friendly; it is near a fresh water stream for clean drinking water; it is near a forests that might provide timber and wildlife; it is land to clear for farmland; it is near open land so it is easy to observe your enemies; it is near a body of water or a stream or river for easy access to escape)

3. Which site would be your second choice for the location of the colony?

4. List one reason *why* you chose this site:

5. Which site would be the worst location for the colony? Why?
(Possible answers might include: because it is located near a swamp that may harbor disease-carrying mosquitoes or because it is on an island that might easily flood and provides little room for expansion.)

6. Based upon your first colony site location, what type of occupational activity might you choose? Why?
(Possible answers might include: if located near a river: shipping, shipbuilding, trade, water for various farming uses—irrigation, stock watering, or fishing. If located near the woods: timber cutting or manufacturing. If located near a field that could be cleared—farming.)

7. Now, look at the current map of the region under study. How close was your choice to *where* cities were eventually built?
(If student choices were drastically different, have them re-evaluate their choices and indicate *why* their choices were not ideal.)

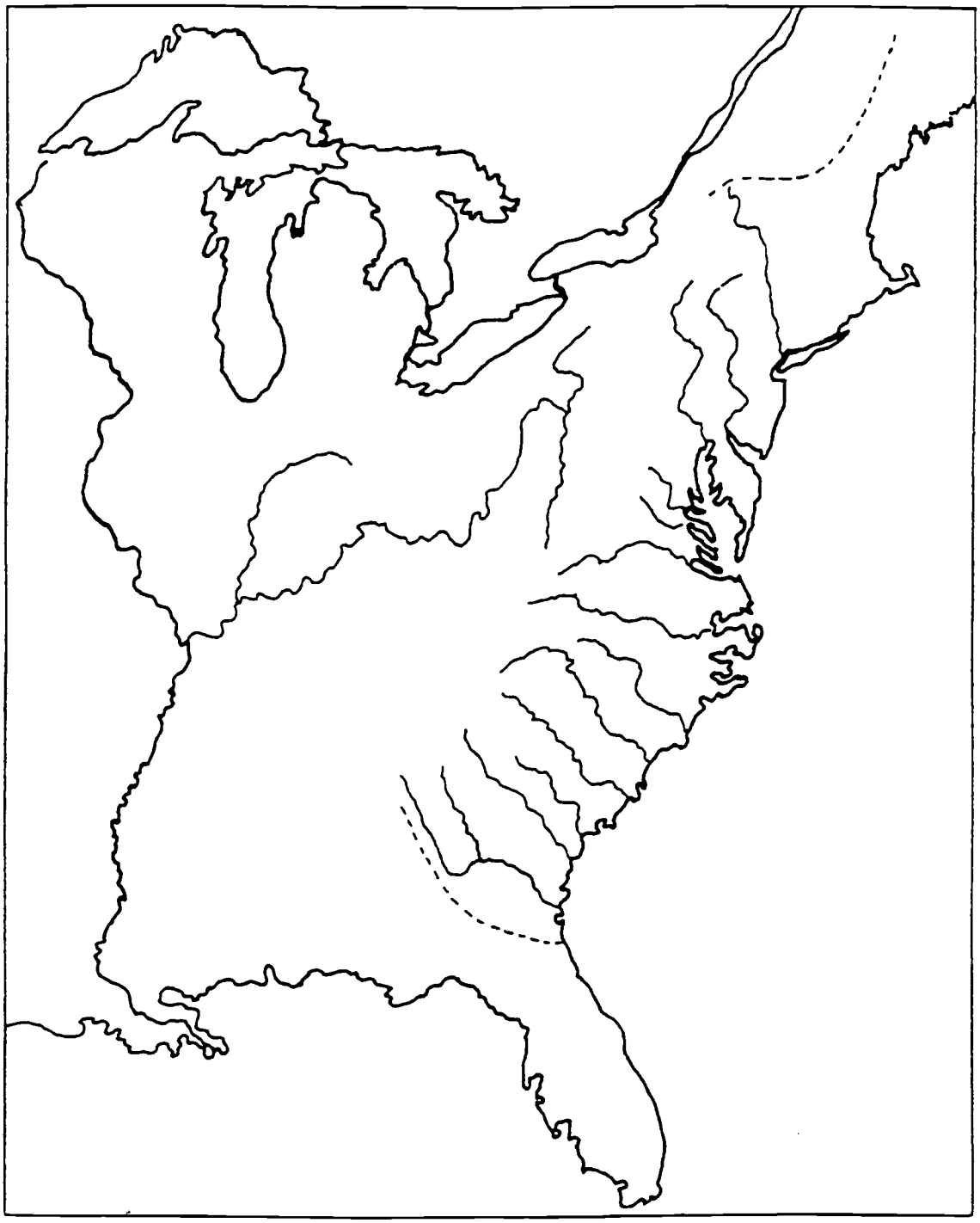


Figure 22. Base map showing selected rivers in the Eastern United States

22. HUMAN INFLUENCES ON THE GREAT LAKES

Mary Groesch

Purpose: To understand how humans use the Great Lakes region and how such use can have adverse effects on the Great Lakes environment.

Grade Levels: grades 4-6

Geography Standards Addressed (see Chapter 19):
Element #1—The World in Spatial Terms
1. How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information about the Great Lakes.
3. How to analyze the people, places and environments surrounding the Great Lakes
Element #5— Environment and Society
14. How human actions modify the Great Lakes and affect the various habitats.

Materials Required:
- black and white map of the Great Lakes region including Canadian provinces and states bordering the lakes (one per student); all cities along the bordering regions should be indicated on the map
- copies of the "Great Lakes Characters" handout for each student
- empty 2-liter plastic soda bottles
- grass clippings, alfalfa clippings, barley seed
- soil, sticks, leaves, gravel
- crickets, "pill" bugs
- algae, snails, green plants
- water, vinegar, spray bottle
- wire mesh, rubber bands
- notebooks and pencils
- copper pennies
- disposable cups
- lemons or lemon juice
- Van Ahlsberg, Chris 1990. *Just A Dream.* Boston: Houghton Mifflin.

Objectives: Upon completion of this lesson, students will:
1. improve their understanding of human dependency upon the Great Lakes;
2. improve their understanding of acid rain and its effects on the Great Lakes; and
3. realize that problems such as acid rain are difficult to resolve.

Inquiry Skills of Geography: Asking Geographic Questions, Acquiring Geographic Information, Organizing Geographic Information, Analyzing Geographic Information, and Answering Geographic Questions.

Procedures:
Asking Geographic Questions
a. On a large map, locate the Great Lakes region; distribute black and white maps of the Great Lakes region to each student, who will proceed to color and label each of the Great Lakes blue (use the acronym HOMES as a mnemonic device for Lakes Huron, Ontario, Michigan, Erie, and Superior), each of the bordering states, and each of the bordering Canadian provinces. Students should complete this exercise in fifteen minutes. Mention that approximately 37 million people live in the Great Lakes Basin and about 26 million of those people rely on the lakes for their water supply.

b. Have the class brainstorm ways in which humans use the Great Lakes; list on the chalk board or on a flip chart.

Acquiring and Analyzing Geographic Information

a. Distribute the "Great Lakes Characters" handout to each student; select one student to read aloud one character; discuss each character's perspective after the students read the parts.

b. Add more information to the list, "ways humans use the Great Lakes."

c. On the large class map and on student's individual maps, add symbols indicating *where* people use different resources: e.g., cheese and dairy cows in Wisconsin, trees and forests in the Upper (northern) Peninsula of Michigan, navy beans in the Lake Huron basin, corn and soybeans in Indiana, cranberries in northern Michigan. (Teachers may require some preliminary research on these topics for this segment of the activity.)

Discuss the positive human contributions to the Great Lakes environment and ecosystem.

d. Move into a class discussion about some of the negative effects humans have had on the Great Lakes: e.g., acid rain and runoff. Ask questions soliciting student knowledge or perceptions of acid rain and runoff. Review the *water* (hydrologic) cycle with the class and stress relationships to acid rain and runoff: forms of precipitation, e.g., rain, snow, hail, and other topics including smog, streams, sewers, lakes. Define and explain acid rain and runoff to the students in order to clarify any misperceptions; discuss questions or concerns.

e. For example, acid rain occurs when cars, trucks, industries, and electrical power plants burn coal, oil, and natural gases for fuel; the emissions from these processes combine with water vapor and sunlight to form sulfuric acid and nitric acid, which eventually fall to the Earth as precipitation.

f. Perform the two following experiments; have students observe the changes in the two experiments over the following weeks.

Experiment 1:

Take two copper pennies; put one in a cup marked A and one in a cup marked B; squeeze lemon juice over penny A, completely covering the penny; place water over penny B, completely covering the penny.

Discuss as a class what will happen to the two pennies; write the responses on a large piece of paper that you post. Have the students observe and note any possible changes over the following days. After a few days, penny A should have changed to a bluish-green color while penny B will have stayed the same.

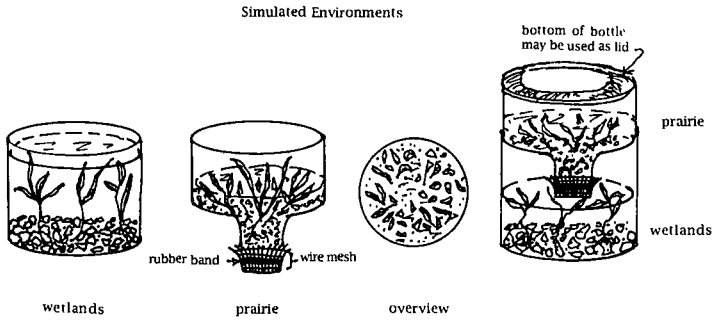
Discuss what happened; compare your results and rationales with the predictions made previously.

Experiment 2:

Pair students to simulate a prairie ecosystem and a wetlands ecosystem. Cut a 2-liter bottle in half; prepare a wetlands environment by placing gravel in the bottom half of the 2-liter bottle, add a small amount of soil onto the gravel along with some wetlands-loving plants; add a little pond water, some algae, and snails. Mark the container "wetlands."

To create the prairie environment, students should take the top half of the 2-liter bottle and turn it upside down. A piece of wire mesh (like that used for window screens) should be wrapped tightly around the pouring spout of the bottle with a rubber band. Then place soil in the container mixed with grass clippings; plant barley seeds in one-quarter of the soil surface area, grass seeds in one-quarter of the surface area, alfalfa seeds in one-quarter of the surface area, and place leaves and sticks in the last quarter of available soil surface area. Water the prairie environment as needed; add crickets and "pill" bugs as desired. Using additional 2-liter bottles, cut the tops and bottoms off and use the remaining center cylinder to support the prairie environment. (See the drawings below.)

Students are to note their daily observations of their wetland and prairie environments.



g. Once both wetland and prairie environments are well established (about two weeks), place the prairie system in its entirety over the wetlands system. See the drawing above.

Answering Geographic Questions

a. Discuss with the class how the two environments are interdependent; discuss again the concepts of acid rain and runoff recalling previous discussions. Explain that vinegar may be used to simulate acid rain. Place the vinegar in a spray bottle along with water; spray the prairies with the vinegar (like a rain shower). Repeat the vinegar and water shower for several days; students are to note their observations of their environments. Students should note marked changes after many days in both environments, being especially observant of the rain water as it seeps into the wetlands.

b. Have a class discussion about the effects of acid rain and runoff. Be sure to include: damage to buildings and monuments, destruction of lake and river ecosystems, damage to tree and plant

life, and the contamination of drinking water. Include any grade-level appropriate reading materials about acid rain that you may find.

c. Now that students have a good understanding of *how* we use the Great Lakes and at least one of the negative side-effects of such use, discuss: "How do we solve this problem?" Note that acid rain and runoff not only affects the immediate area but it also travels by wind, wave, and human movement. Read aloud the Chris Van Ahlsberg book, *Just A Dream* (see reference under Materials). Discuss the author's vision for the future.

Assessing and Applying Geographic Information

a. As a conclusion to this unit, have students brainstorm ways to solve the major problem of acid rain and runoff. First, as a class brainstorm four criteria for a good solution: e.g., does not adversely affect jobs; is not too costly; does not require large groups of people to move. In small groups, allow the students fifteen minutes to brainstorm ten possible solutions; have the groups rank their solutions according to the four "good solution" criteria (10 being the best and 1 being the worst). Each of the ten possible solutions should be ranked in each of the four "good solution" criteria; then add the four scores together to determine the point totals of the "ultimate solution." The solution with the greatest number of points is the overall best solution for that group. Next, the group needs to write a paragraph about why they chose or ranked that solution as the overall best. Groups will present their ideas to their colleagues for a debate as to the advantages and disadvantages of each solution. (See grid below as an idea for explaining criteria and solutions.)

b. By the end of the debate, students should recognize that solutions are difficult to reach and that different people have different points-of-view

Great Lakes Acid Rain and Run-Off Problem-Solving Grid

	Criteria	**Total**
S o l u t i o n s		

Evaluations: Biosphere observation entries based on a teacher-generated guidelines based on student needs; successful completion of problem-solving grid, defense paragraph and group work; and class discussion participation.

Adaptations and Extensions:

· Allow students to represent particular interest groups or states.

· Sponsor a debate between the United States and Canada environmental officials.

· Present a piece of environmental (local) legislation that is pending in the U.S. Congress and debate the issue.

· Have students investigate other forms of pollution affecting the Great Lakes region.

· Create a simulation about constructing a new factory or National Park in a certain area and have students represent different interest groups.

Resources:

Ranger Rick's Nature Scope

Great Lakes Science Advisory Board 1987 *Directory of Great Lakes Educational Materials*, 75 pp., free. International Joint Commission, P. O. Box 32869, Detroit MI 48232.

National Geographic Society's Kids' Net: "Acid Rain."

United States Environmental Protection Agency 1987. *The Great Lakes—An Environmental Atlas and Resource Book*, 44 pp. Great Lakes National Program Office, 230 South Dearborn Street, Chicago IL 60604.

Van Ahlsberg, Chris 1990. *Just A Dream.* Boston: Houghton Mifflin.

Handout of Characters

Farmer Frank (Agriculture)
The main agricultural products in the region are wheat, corn, soybeans, barley and oats. The Lake Michigan area contains the most farmland of the Great Lakes and is a leading producer of vegetables and fruits. Cheeses and other dairy products come from Wisconsin; the Lake Erie region raises pigs, sheep, soybeans, wheat, corn, and chickens. The Lake Huron basin is the world's largest producer of navy beans, whereas the Lake Superior basin is a large producer of forest products .

Freddie the Fisherman (Fishing)
The Great Lakes region is an important resource for fish, a food source for both people and wildlife. Species include: whitefish, yellow perch, lake trout, salmon, chubs, white bass, and carp. Lake Erie's walleye-pike fishery is considered to be the best in the world.

Samantha the Shipper (Shipping)
The shipping industry has helped considerably to develop the entire Great Lakes region. This natural transportation system aided exploration and settlement, including the trade and transport of goods. Today shipping is a major industry. Iron ore from the Lake Superior area is shipped to the mills of Chicago, Cleveland, and Gary to be made into steel. This steel is then shipped to Detroit to be made into cars. Some of the bulk products transported are coal, limestone, grain, newsprint, and cement. The completion of the St. Lawrence Seaway helped the shipping to become international.

Mary the Manufacturer (Manufacturing)
Manufacturing industries are attracted to the Great Lakes area because the water source provides cheap electricity and convenient transportation routes. Major industries include: the steel mills (located in the southern end of Lake Michigan, and in Cleveland, Ohio on Lake Erie); the paper mills (located in the upper (northern) Great Lakes); the chemical manufacturers (located on the Niagara River (between Lake Erie and Lake Ontario) and the Saginaw Bay on the west coast of Lake Huron) and automobiles (located in Detroit along Lake St. Clair and the Detroit River).

Tommy Tourist (Tourism and Recreation)
Tourism and recreation are also major industries. For example, in Ottawa County, in northwestern Ohio, the regular population of 40,000 increases to 250,000 during the summer weekends. Marinas, restaurants, and stores have been built in popular areas. More than 60 million people, including many Canadian and other international tourists each year visit the 98 state parks and the 12 national parks.

(You can create additional characters based on class's location and on various local environmental topics.)

23. INDIANA'S INTERNATIONAL PORT ON THE LAKE: A LINK TO THE WORLD

Susan Hume

Purpose: Through the use of primary readings and maps, this lesson is designed to help students discover the ways in which the International Port of Indiana on Lake Michigan links Indiana's economy to the rest of the United States and the world. Through this case study students should be able understand the ways in which transportation networks influence the location of economic activities.

Grade Levels: grades 9-12

Geography Standards Addressed (see Chapter 19):
Element #1—The World in Spatial Terms

1. How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information about the Lake Michigan International Port of Indiana and its importance to Indiana's economy.

3. How to analyze the spatial organization of Indiana's Lake Michigan Port in relation to the Great Lakes, the St. Lawrence Seaway, and the world.

Element #4— Human Systems

11. The patterns and networks of Indiana's economic interdependence to the world.

Materials Required:

- blank outline maps of the Great Lakes-St. Lawrence Seaway region, the United States, and the world
- primary source reading materials from the Indiana Port Commission (see resources below)
- any world atlas
- ruler or other straight edge

Objectives: Upon completion of this lesson, students will be able to:

1. explain *how* the Port of Indiana and the Great Lakes link Indiana's economy to the rest of the country and the world;
2. use primary source readings and maps to gather and analyze information to explain the reasons for the location of the Port of Indiana; and
3. demonstrate *how* canals and locks function in the Great Lakes and explain their important contributions to the region's transportation network and international trade.

Inquiry Skills of Geography: Asking Geographic Questions, Acquiring Geographic Data, Organizing Geographic Data, Analyzing Geographic Data, and Answering Geographic Questions

Background:
The Port of Indiana is one of three international port facilities in the state. The other international ports are located in Jeffersonville and Mount Vernon on the Ohio River. The Port is just one part of an enormous transportation network composed of the water, rail, and roadways that make up the Great Lakes region. It serves as an excellent case study for teaching Indiana students about ideas such as the economic importance of the Great Lakes, some facets of international trade, and the need to consider transportation networks in determining the locations of economic activities.

Procedures:
Asking Geographic Questions

a. Introduce the activity to the class by asking the students to name all of the different methods

of transportation used in Indiana's economy in relation to the rest of the United States and the world. Ask students if they realize that Indiana has three international ports. Where would they guess these ports are located and why? Mark their suggestions on a large map of Indiana. Discuss the possibilities and assumptions.

Acquiring and Organizing Geographic Data and Applying Data

a. Divide the students into groups of two or three, and give each group the primary source reading materials from the Burns Harbor International Port of Indiana (see Resource mailing address) necessary to complete the activity. Explain to the class that most of the readings that they will be using were designed for business customers of the Port of Indiana on Lake Michigan. Give each member of the group the worksheet at the end of this activity; each group is responsible for dividing tasks among the members and for determining methods of accomplishing each task. To determine whether the students are staying on task and are understanding the concepts being introduced, move among the groups and ask students to explain *where* they are and *what* they are doing and learning.

Answering Geographic Questions

a. After the groups complete the activity, or series of scenarios, collect the worksheets. As a class, discuss how they answered the questions. Discuss also the precise locations of the three Indiana International Ports.

Evaluation: Students should demonstrate mastery of the vocabulary, concepts, and map skills through informal questioning and through the successful completion of the activity's worksheet and maps group portfolios.

Adaptations and Extensions:

· This lesson could be developed into a lengthier and more complex activity such as a role-playing simulation.

· Using the scenarios given in the activity and the maps they created, students teach others about the importance of the Burns Harbor Port and the Great Lakes-St. Lawrence Seaway system in linking Indiana's economy to the world. Students can also develop their own scenarios.

· Using the diagram of the Burns Harbor International Port of Indiana facilities found in the brochure entitled *Indiana's International Port*, students could construct a scale model of the Port and teach colleagues about its facilities and vast functions.

· Using the diagrams and descriptions from the handout *Operations of a Lock*, students could build a model of a lock and dam. The students would then teach colleagues about how a lock functions and the important role that canals, locks, and dams play in the Great Lakes transportation network.

Resources: All of the following resources are available by writing to the Indiana Port Commission, Burns International Harbor, 6600 U.S. Highway 12, Portage, IN 46368:

Indiana's International Port (4-page brochure)

Navigating the Great Lakes St. Lawrence Seaway System...the Short Cut to North-America's Heartland (15-page brochure)

Operation of a Lock (1-page photocopy)

St. Lawrence Seaway System (1-page photocopy)

Small Group Activity Guide: Each group is to open a portfolio for the following activities. Make sure to include the names of the group members and all individual and group work.

Group Activity

Indiana's International Port on the Lake, A Link to the World

1. Begin by labeling your Great Lakes map. On your blank map of the Great Lakes region, label the names of each of the lakes, the eight states and two Canadian provinces that border the lakes, and the six canals located on the lakes. Use the world atlas and *Navigating the Great Lakes...* to help you with these tasks. Look on pages 12-15 in *Navigating the Great Lakes...* at the lists of Canadian and American ports on the Great Lakes. Choose three ports from each list and add these to your map.
Check when completed _____

2. Read through the promotional brochure entitled *Indiana's International Port* to learn about the Port of Indiana located in Burns Harbor. Label the Burns Harbor International Port of Indiana on your map of the Great Lakes. Also label the port on your blank map of the United States. Lightly shade in the Great Lakes and St. Lawrence Seaway with a pencil and label the Atlantic Ocean. The brochure states that the Port has direct access to two rivers; draw and label those rivers on your United States map and label the Gulf of Mexico. The brochure also mentions four interstate highways that run past the Port. Use a map of the U.S. interstate highway system in your atlas to help you draw and label those highways on your U.S. map. Finally, draw and label at least one railroad line that runs past the Port.
Check when completed _____

3. The state of Indiana is the largest steel producer in the United States. Many large steel mills are located on the shores of Lake Michigan near the Burns Harbor Port of Indiana. As you can see in the brochure of the Port's list of commercial tenants, six small steel mills, called mini-mills, are located at the Port. Because of its location in relation to these many large steel mills, this Port is called the "steel cargo-moving port of the world."

An important ingredient for making steel is iron ore. Northern Minnesota and Wisconsin are known for their large deposits of iron ore. Imagine you are an ore boat captain based in Superior, Wisconsin. You have been hired to pick up a load of iron ore at the port in Duluth, Minnesota, and deliver it to the Port of Indiana. Use a ruler or other straight edge to chart the course you will take on your map of the Great Lakes. Through which lakes, canal, and locks do you have to travel? The Soo locks close on December 15 and do not re-open for business until April. Think about its location and give one reason *why* you think that the Soo Locks close for four months every year.
Check when completed _____

4. Using the promotional brochure, look at the list of commercial tenants located at the Port. You can see these companies produce many different kinds of products and provide many services. For instance, Cargill Corporation is the largest grain merchant in the United States.

Imagine that you are a towboat captain based at the Port of Indiana. Your brother, who is a farmer near Lafayette, Indiana, recently sold his corn harvest to Cargill. The corn was shipped by trailer trucks to Cargill's grain storage and loading facilities at the Port. On which interstate was the grain shipped?

At the Port, Cargill loads your brother's corn and the corn from other Indiana farmers into four barges. Barges are simply flat-bottom boxes that are each able to carry the load of sixty trailer trucks. You have been hired to use your towboat to push the barges from the Port of Indiana to the city of Alpena, Michigan, where the corn will be used to make breakfast cereal for Kellogg's.

Use a ruler or straight edge to plot your course from the Port to Alpena.
Check when completed _____

5. The Indiana Port Commission wants to promote the use of its international port facilities on Lake Michigan. On the fourth page of the brochure called *Indiana's International Port* is a list of seven liaisons that the commission has hired to promote the port and look for potential customers. These firms are located throughout the world. Using the blank world map and a world atlas, label the seven cities and countries where the firms are located. The Indiana Port Commission seems eager to attract customers from which part of the world? Why do you think they are focusing on the countries of this region?
Check when completed _____

6. The LTV Steel Company has a steel mill located near the International Port of Indiana in East Chicago, Indiana. In this steel mill, LTV produces large slabs of steel. The slabs are then pressed into sheets and coiled into tight rolls. These huge rolls of steel are sold to customers in the United States, Canada, and Mexico. LTV is the second largest producer of rolled steel in the United States, and it is the largest supplier of rolled steel to the automobile and appliance industries in the United States. The steel mill makes so much rolled steel that it cannot produce enough steel slabs to meet its production needs. So it imports steel slabs from other countries such as Mexico, Brazil, Japan, Germany, and France. Label these countries on your world map. Ships bring steel slabs to the Port of Indiana where they can be loaded on railroad cars and sent to the LTV steel mill.

Imagine you are a ship captain working for an international shipping company based in Hong Kong. Your ship, the *Lady Li*, has been hired to take a load of steel slabs from a port in Kobe, Japan, to the Port of Indiana. Label the ports on your world map; using a ruler or straight edge, plot the course you will take on your world map. Label the oceans through which you will travel.

When you reach the entrance to the St. Lawrence Seaway, you decide to write a letter to a friend in Hong Kong. Your friend does not know much about the Great Lakes, so you describe your trip through the Great Lakes in detail. Tell you friend about each of the lakes and all of the canals through which you travel.

Your friend does not know about locks and their use in the Great Lakes, so describe *why* a lock is used and how it works. If you like, you can also write about other details of your trip such as weather, cities, landscapes. You should read *Operation of a Lock* and refer to all of the other readings to help with the letter.

As you enter the Port of Indiana, a towboat comes to help push the *Lady Li* alongside the dock. A crane, with the help of journeymen, unloads the steel slabs you have delivered.

Congratulations! You have successfully completed your mission!
Check when completed _____

7. Now that you have completed the above activities, using the readings and the maps that you have created, you should be able to answer briefly the following questions:

a. Why is the International Port of Indiana located *where* it is?

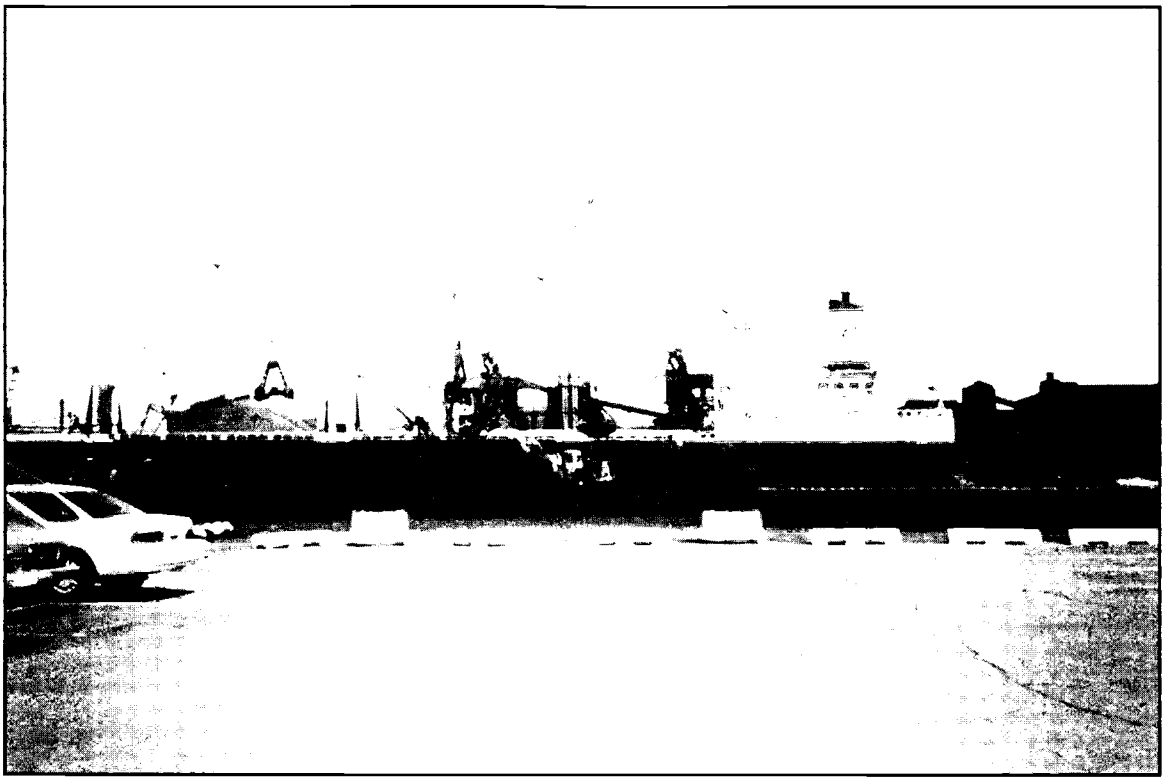
b. How does the Port link Indiana to the rest of the United States and the world?

c. In *what* ways does the Port help the economy of Indiana? Keep in mind Indiana's farms, steel mills, and other manufacturers, their employees, and their communities.

d. Why are the canals and locks important to the Great Lakes transportation network?

Check when completed _____

[Make sure to include all individual and group work in the portfolio; and make sure that your name(s) are on all work!]



A Great Lakes freighter with a shipment of coal at the International Port of Indiana on the southern shore of Lake Michigan. The port is the topic of much controversy as it attempts to balance economic gowth and maintenance of environmental quality. (Photo by Kathy L. Kozenski)

24. INDIANA'S UNDERGROUND RAILROAD

Angela Doherty

Purpose: To educate students about the Underground Railroad and its historical importance in relationship to Indiana's Ohio River Valley Region and its effects on the rest of the state.

Teaching Level: The lesson is designed for fourth grade students addressing the "Indiana Geography/History" requirements for this grade, but the lesson may be adapted with some of the listed resources to lower- and upper-grade levels.

Geography Standards Addressed (see Chapter 19) :
Element #2—Places and Regions
4. The physical and human characteristics of the underground railroad environment.
Element #4—Human Systems
9. and 10. The characteristics, distribution, and migration of human populations in the pre-Civil War era United States, specifically, southern Indiana, and the complexity of the region's cultural mosaic.
12. The processes, patterns, and functions of human settlement.
Element #5—Environment and Society
14. and 15. How human actions interacted within the confines of the physical environment and sometimes modified the physical environment to enable the underground railroad to exist.

Materials Required:
· writing paper and construction paper
· scissors
· glue
· markers
· paper lunch sacks and popsicle sticks
· sample buildings made from the previous architecture lesson
· Faith Ringgold's book, *Aunt Harriet's Underground Railroad in the Sky.* New York: Crown Publishers, Inc. 1992.
· words to the song *Follow the Drinking Gourd,* from Martha Riley Christman's *Songs of Indiana.* New York: Dodd Mead and Company 1975: 64-73.
· pictures of various historic sites and buildings from the region known to be affiliated with the Underground Railroad; for example, a photograph of the Second Baptist Church of New Albany, 300 East Main Street, New Albany IN 47150, Attn: Kathy Wilkerson (812) 945-3814.
· Raymond Bial's book, The *Underground Railroad.* Boston: Houghton Mifflin Company 1995. (considered by many Indiana historians to be an excellent resource book for young students)

Objectives: Upon completion of this activity, students will have:
1. constructed an underground railroad route using houses made to represent architecture of the time period;
2. described how the underground railroad was used to help slaves escape by following their constructed route and using either hand puppets or stick puppets; and
3. compared and contrasted life today to life on the underground railroad.

Inquiry Skills in Geography: Asking Geographic Questions; Acquiring, Organizing and Analyzing Geographic Information; Answering Geographic Questions

Background: Review with the students the concept of the "underground railroad."

Technically speaking, it was neither; it was not a railroad and it was not underground. It was a name given to a network of people who hid and guided slaves as they followed the North Star to Canada—to freedom. Historians estimate that tens of millions of black Africans were shipped as slaves to the United States and the Caribbean in terribly overcrowded boats. Only 15 million survived the journey. Of these, 40,000 fled to Canada and the northern states and after the Civil War, 20,000 returned to the south. (From the African-American Heritage Tour, Convention and Visitors Bureau of Windsor, Essex County, and Pelee Island, 333 Riverside West Suite 103, City Centre Mall, Windsor, Ontario, Canada N9A 5K4)

No one is certain of the origin of the Underground Railroad. Vestal Coffin, cousin of Levi Coffin—a Quaker believed to be the leader of the Indiana Underground Railroad—and his wife, Althea, may have started it in Guilford County, North Carolina, and the first line may have been through Indiana. ... It is estimated that over 3,200 workers assisted more than tens of thousands of slaves on the railroad during the years before the Civil War. (From The *Underground Railroad*, Raymond Bial 1995: 3-10).

Procedures:

Asking Geographic Questions

a. Review the architecture of the time period during one or two lessons prior to this lesson.

b. Review the various modes of transportation: rivers with bridges and locks and dams, walking, wagon, railroad.

c. Review the concepts of slavery and its relationship to the Civil War.

Acquiring and Organizing Geographic Information

a. Read to the class the story of *Aunt Harriet's Underground Railroad in the Sky* (Ringgold 1992).

b. On the overhead projector, show a copy of the map in the index of Ringgold's book to illustrate the routes of the underground railroad in 1860; or show the map of routes in Bial's (1995: 9) book. Distribute copies of one of the maps to the students. Have them color in the state of Indiana. Also, have them identify the other states that they recognize. Indicate the states on the overhead projector.

c. Share with the students any photographs of local or state historic buildings that were known to be affiliated with the underground railroad. If appropriate, share a photo of a building with which they may be familiar in their city or state; discuss the proximity of the site to their school. Introduce the students to Levi Coffin, Indiana Quaker reputed to be the leader of the Indiana underground railroad.

d. Discuss the students' perceptions of the underground railroad based upon the story; discuss the students' perceptions of slavery.

e. Note to the students that the underground railroad was a network of people and places used by slaves attempting to reach freedom; note the negative consequences a slave would face if caught attempting to escape.

f. Ask the students why in the story, Aunt Harriet told Cassie to "listen carefully to the song of the birds." Next, distribute the words to the song *Follow the Drinking Gourd* (Christman 1975); have the class sing the song as a group.

Analyzing and Applying Geographic Information

a. Once the teacher feels that all of the students comprehend the concept of the underground railroad, the students will begin to design an underground railroad route of their own.

b. In small groups, the students will design and construct a neighborhood or town using their houses and buildings made from a previous architecture lesson; the groups will brainstorm for other additions to make to their neighborhoods or towns: e.g., rivers, bridges, swamps, roads, farms, trees, trains, barns.

c. Students will analyze their neighborhoods or towns upon completion to determine a potential

underground railroad route; they may make puppets to represent slaves, anti-slavery supporters, and pro-slavery supporters.

d. The groups will enact a possible scenario for a group of slaves traveling the underground railroad.

Personal Assessment of Geographic Information: Questions to Ask Students

a. Why were the slaves who used the underground railroad willing to risk being caught and punished (possibly having their feet cut off, whipped, dragged back to owner)?

b. What were some disadvantages of the underground railroad?

c. How do you think you would have felt if you had been a slave in 1860? Do you think that you would have been brave enough to use the underground railroad to try to escape slavery?

Evaluations and Assessment:

1. Student models of an underground railroad route based upon a simple self-assessed rubric.
2. Group presentations of a possible underground railroad route using their neighborhood or town models reflecting enough information to assure comprehension of the multi-faceted route.
3. Students comparison and contrast of life today with life during the underground railroad period using a class Venn Diagram.

Adaptations and Extensions:

1. Visit a local site known to be affiliated with the underground railroad or have students request information from a museum about the underground railroad in their state.
2. Incorporate mathematics activities by having students measure the number of miles slaves had to travel to freedom using the underground railroad; students can measure their walking pace in terms of miles/hour (or kilometers/hour) in the school parking lot. Then students can travel to a local wooded park and measure their pace in miles/hour (or kilometers/hour) while traveling through the underbrush and woods. Compare the walking time in the parking lot with that of the woods; estimate the number of days a slave would be on the underground railroad if walking the entire distance (except to cross rivers).
3. Divide the students into groups of slave owner, slave, and underground railroad supporter. Each group is to write a one-page essay on their perspectives. Teacher may have to generate some adversarial relationships as a learning experience for the students.
4. Watch the video, *Race to Freedom: The Story of the Underground Railroad*, by Atlantis Films, Limited, 1993; approximately 90 minutes.
5. Have the class create a life-sized neighborhood or town throughout the school to enable other classes to experience the underground railroad; students from the class will play the roles of slave owner, slave bounty-hunters, and slave supporters. Participants need to determine *what* they can take with them while traveling on the underground railroad (eventually realizing that they do not have much to take nor do they have the energy to carry much).
6. Students compare underground railroad routes to modern-day roads using an Indiana road map and the Bial map of the underground railroad routes.

Additional References and Resources

Armstrong, Jennifer 1992. *Steal Away.* New York: Orchard Books.

Cosner, Sharon 1991. *The Underground Railroad,* New York: Franklin Watts.

Haskins, Jim 1993. *Get on Board: The Story of the Underground Railroad.* New York: Scholastic Books.

Turner, Glennette Tilley 1994. *Running for Our Lives.* New York: Holiday House, New York.

The Lincoln Museum, Education Department, 200 East Berry Street, Fort Wayne, IN 46802.

"Reference Sources: Researching African-American Biographical Materials," *Black History News and Notes*, 66, November 1996, Indiana Historical Society, 315 West Ohio Street, Indianapolis, IN 46202.

Madame C. J. Walker Theatre and Museum, 617 Indiana Avenue, Indianapolis, IN 462021 (317) 236-2099.

Freetown Village Inc., 617 Indiana Avenue, Indianapolis, IN 46202, (317) 631-1870.

PART VI. SELECTED RESOURCES

Compiled By Kathleen Lamb Kozenski

25. INDIANA GEOGRAPHY EDUCATION RESOURCES

Appreciating Your Great Lakes: A Guide for Developing Educational Projects;
Water Riches Units 1-5;
Peter Ped, the Life of a Soil Particle;
Labo-International informational brochure
Cheri Jensen
Cooperative Extension Service
Purdue University Department of Agronomy
West Lafayette, IN 47907

Always a River: Supplemental Environmental Education Curriculum on the Ohio River Valley and Water for Grades K-12
U.S. Environmental Protection Agency
Office of Research and Development
26 West Martin Luther King Drive
Cincinnati, OH 45268

Baybook, A Guide to Reducing Water Pollution at Home
Department of Natural Resources
PO Box 10448
1125 North Military Avenue
Green Bay, WI 54307

The Children's Museum of Indianapolis
3000 North Meridian Street
Indianapolis, IN 46204
(317) 924-5431

Columbus, Indiana Visitors Center
506 Fifth Street
Columbus, IN 47201
1-800-468-6564

Conner Prairie Pioneer Settlement
13400 Allisonville Road
Fishers IN 46038-4499
1-800-966-1836
(317) 773-0666

The George F. CRAM Company Inc.
PO Box 426
Indianapolis, IN 46206
1-800-227-4199

Dinosaurs and Power Plants and Clean Coal Technology
Office of Fossil Energy Communications
Mail Stop FE-5, Room 4G085
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

Directory of Great Lakes Education Materials
International Joint Commission
Great Lakes Regional Office
PO Box 32869
Detroit, MI 48232

Gwen Yeaman
Educational Outreach Coordinator
Eiteljorg Museum of American Indians and Western Art
500 West Washington Street
Indianapolis, IN 46204-1724
(317) 636-9378
www.eiteljorg.org

Energy Education; Energy Action
Northern Indiana Public Service Company
5265 Hohman Avenue
Hammond, IN 46320

ERIC Social Studies Development Center
Indiana University
2805 East Tenth Street
Bloomington, IN 47405

Funnel Facts and Tornado Safety
Indiana State Emergency Management Agency
Indiana State Government Center
100 North Senate Avenue,
Room 90-B
Indianapolis, IN 46204

Geography Educators' Network of Indiana
IUPUI-UN #411, 620 Union Drive
Indianapolis, IN 46202-5167
(317) 274-8879
www.iupui.edu/it/geni

Great Lakes Zebra Mussels Traveling Trunk and Educational Materials
Robin Goettel
Illinois-Indiana Sea Grant
University of Illinois
65 Mumford Hall
1301 West Gregory Drive
Urbana, IL 61801

Grissom Air Museum
6500 Hoosier Boulevard
Peru, IN 46970
(765) 688-2654
e-mail: gamuseum@iquest.net

President Benjamin Harrison Home
1230 North Delaware Street
Indianapolis, IN 46202
(317) 631-1898

Suzanne Stanis
Historic Landmarks Foundation of Indiana
340 West Michigan Street
Indianapolis, IN 46202
(317) 639-4534
1-800-450-4534

Historic Southern Indiana
University of Southern Indiana
8600 University Boulevard
Evansville, IN 47712
1-800-489-4474

Indiana Department of Education
Center for School Improvement and Performance
Office of School Assistance
Room 229 State House
Indianapolis, IN 46204-2798

Indiana topographic quadrangles;
Indiana Parks and Recreation Guide
Indiana Department of Natural Resources
Indiana State Government Center
200 West Washington Street
Indianapolis, IN 46204

Indiana Historical Society
315 West Ohio Street
Indianapolis, IN 46202
(317) 232-1882
www.ihs1830.org/

Patricia Gillogly/Nancy Wolfe
Indiana Junior Historical Society
315 West Ohio Street
Indianapolis, IN 46202
(317) 233-4549
www.ihs1830.org/

Indiana Pacers Basketball/
Hoosier Fieldhouse
300 East Market Street
Indianapolis, IN 46204
(317) 263-2100
http://bball.yahoo.com/nba/teams/ind/

Indiana State University
Department of Geography
Terre Haute, IN 47809
(812) 237-2444
http://indstate.edu/geo

Indiana University
Department of Geography
Student Building #120
Bloomington, IN 47405
(812) 855-6303
www.indiana.edu/~geog/

Indiana University-Purdue University at Indianapolis
Department of Geography
CA 213, 425 University Boulevard
Indianapolis, IN 46202
(317) 274-8877
www.iupui.edu/it/geogdept/geog.html

Indiana University Southeast
Department of Geography
4201 Grant Line Road
New Albany, IN 47150
(812) 941-2284
www.cs.ius.indiana.edu/LZ/NSCIWEB/web.docs/NatScipage.htm

Indianapolis Colts Football/
RCA Dome
100 South Capitol Avenue
Indianapolis, IN 46225
(317) 262-3410
http://football/yahoo.com/nfl/teams/ind/

Indianapolis Ice Hockey
222 East Ohio Street
Indianapolis, IN 46204
(317) 266-1234
www.geocities.com/Colosseum/Sideline/1922/

Indianapolis Indians Baseball/
Victory Field
501 West Maryland Street
Indianapolis, IN 46225
(317) 269-3545
ww.indyindians.com/

The Indianapolis Motor Speedway
4790 West 16th Street
Indianapolis, IN 46222
(317) 484-6747

Indianapolis Museum of Art
1200 West 38th Street
Indianapolis, IN 46208-4196
(317) 923-1331

The Indianapolis Star/News
307 North Pennsylvania Street
Indianapolis, IN 46204
(317) 633-1240
www.starnews.com/

The Indianapolis Zoo
1200 West Washington Street
PO Box 22309
Indianapolis, IN 46222-0309
(317) 630-2038

International Center of Indianapolis
One American Square, Box 82018
Indianapolis, IN 46282

Menno-Hof
Mennonite-Amish Visitors Center
Box 701
Shipshewana, IN 46565
(219) 768-4117
Modern School
524 East Jackson Street
Goshen, IN 46526

Morris-Butler House
1204 North Park Avenue
Indianapolis, IN 46202
(317) 636-5409

The New Harmony Inn
PO Box 581
New Harmony, IN 47631
(812) 682-4491

A Primer on Water, Questions and Answers
Division Inland Waters Directorate
Editorial and Publications
Environment Canada
Ottawa, Ontario
K1A 0H3

Warren Gartner
Project WILD/LT
Department of Natural Resources
Division of Fish and Wildlife
6013 Lakeside Boulevard
Indianapolis, IN 46278

PSI Energy
1000 East Main Street
Plainfield, IN 46168-9989

James Whitcomb Riley Museum Home
528 Lockerbie Street
Indianapolis, IN 46202
(317) 631-5885

Shipshewana, Indiana
Mennonite/Amish Community
Tourism: (219) 768-7589
www.shipshewana.com

Southern Indiana Visitors Center
PO Box 608
540 Marriott Drive
Jeffersonville, IN 47130

Taylor University
Department of Geography
Upland, IN 46989
(765) 998-5323
www.tayloru.edu

University of Evansville
Department of Geography
University of Evansville
Evansville, IN 47714
(812) 479-2546
http://cedar.evansville.edu/~histweb/index.html

U.S. Geological Survey
Geology S-217, Indiana University
915 East 11th Street
Bloomington, IN 47405
(812) 855-1337

Department of Geography
Valparaiso University
Valparaiso, IN 46383
(219) 464-5139
www.valpo.edu/geomet/

Madame C.J. Walker Theatre Center
617 Indiana Avenue
Indianapolis, IN, 46202
(317) 236-2099

Water Resources Guide
Illinois Environmental Protection Agency
Office of Public Information
2200 Churchill Road
PO Box 19276
Springfield, IL 62794-9276

Water and You! A Series of Facts Sheets on Water Quality
University of Illinois at Urbana-Champaign
122 Mumford Hall, 1301 West Gregory Drive
Urbana IL, 61801

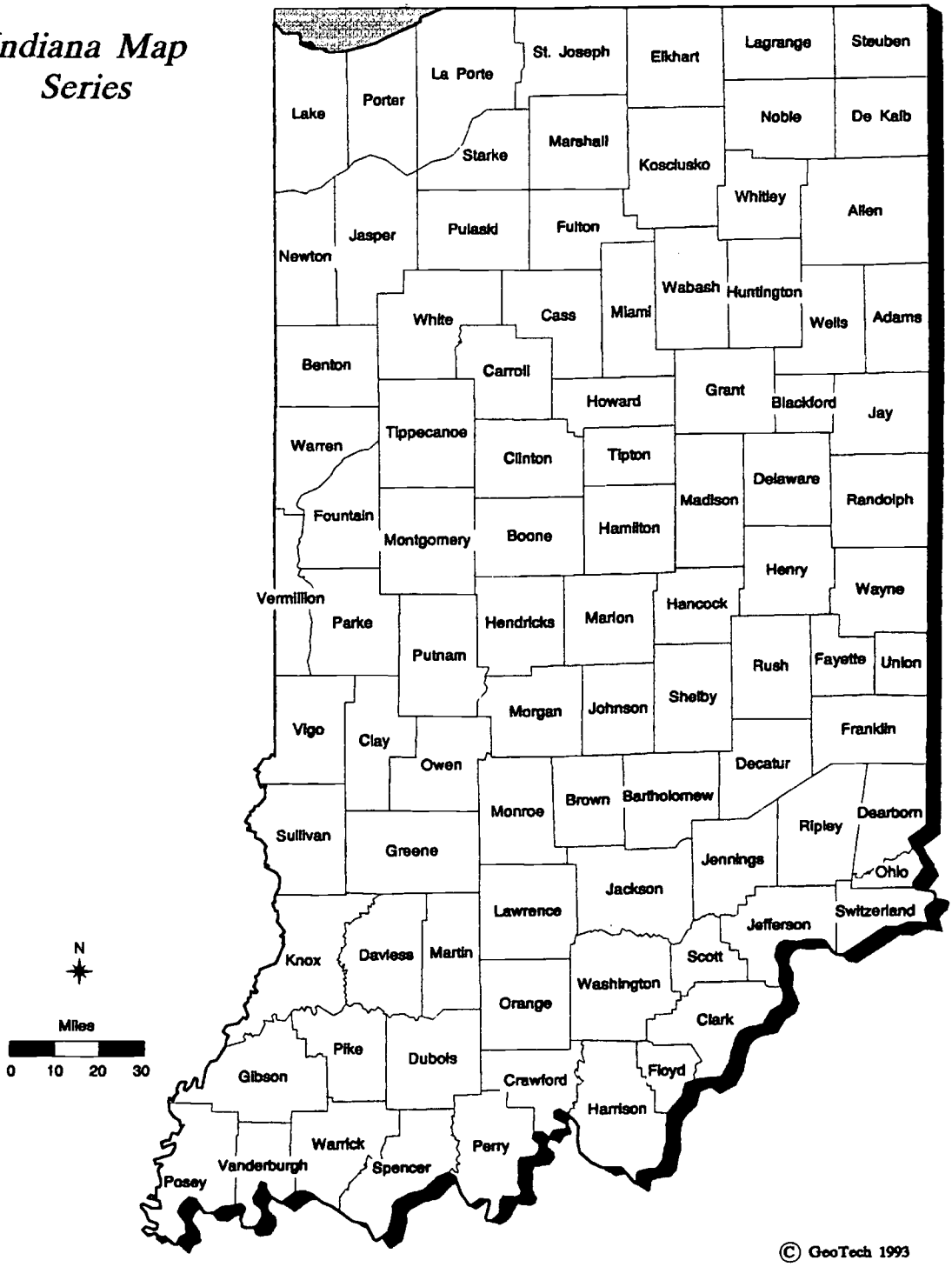
26. Selections from Indiana Map Series

Indiana Maps Series

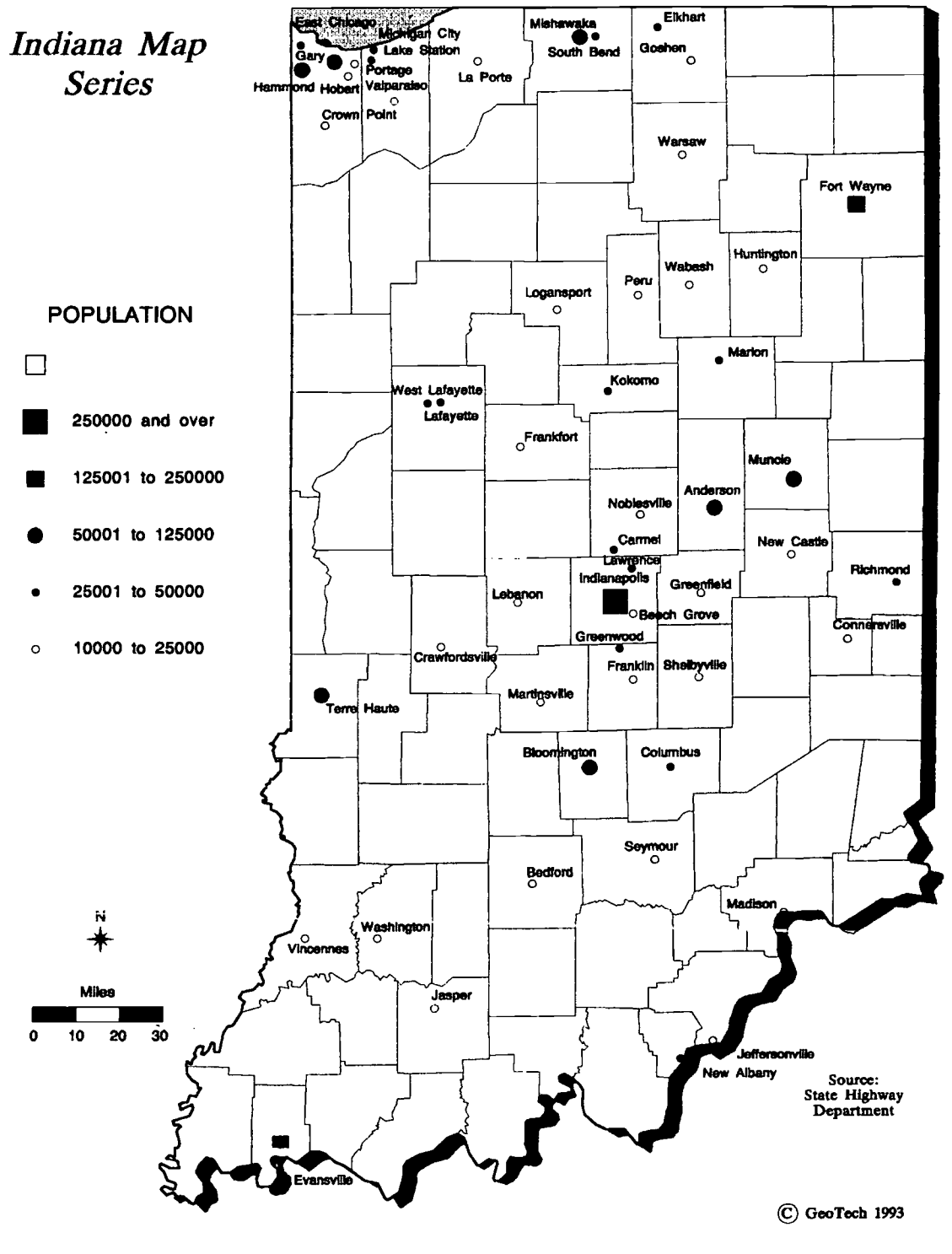
Indiana Counties
Largest Cities I, II
County Seats
Year of County Organization
Median Family Income
Population (1870)
Population (1930)
Population (1990)
Percent Change in Population 1970-1990
Historic Sites
Major Rivers
Glacial Periods
Tornadoes
State Forests and Parks

INDIANA

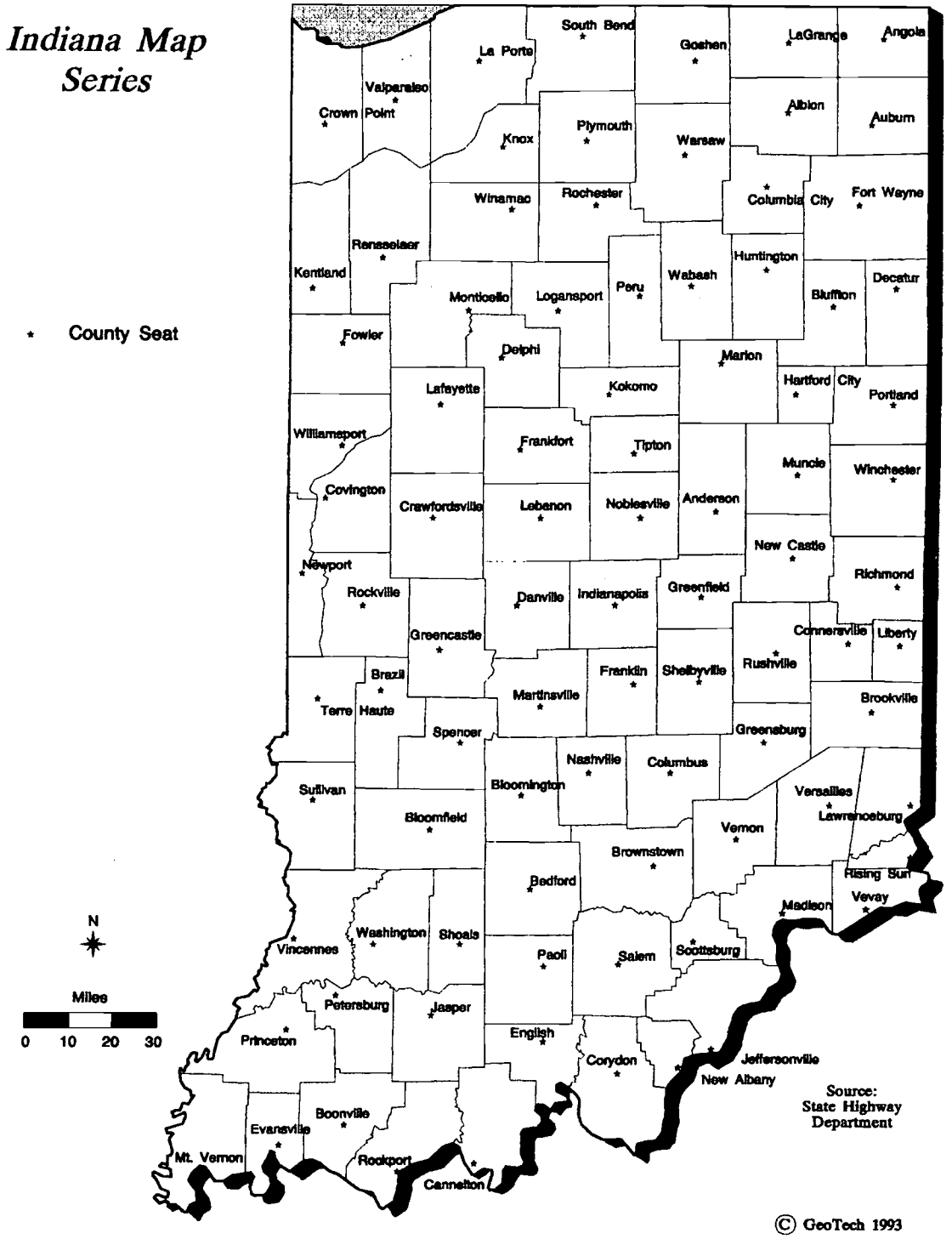
Indiana Map Series



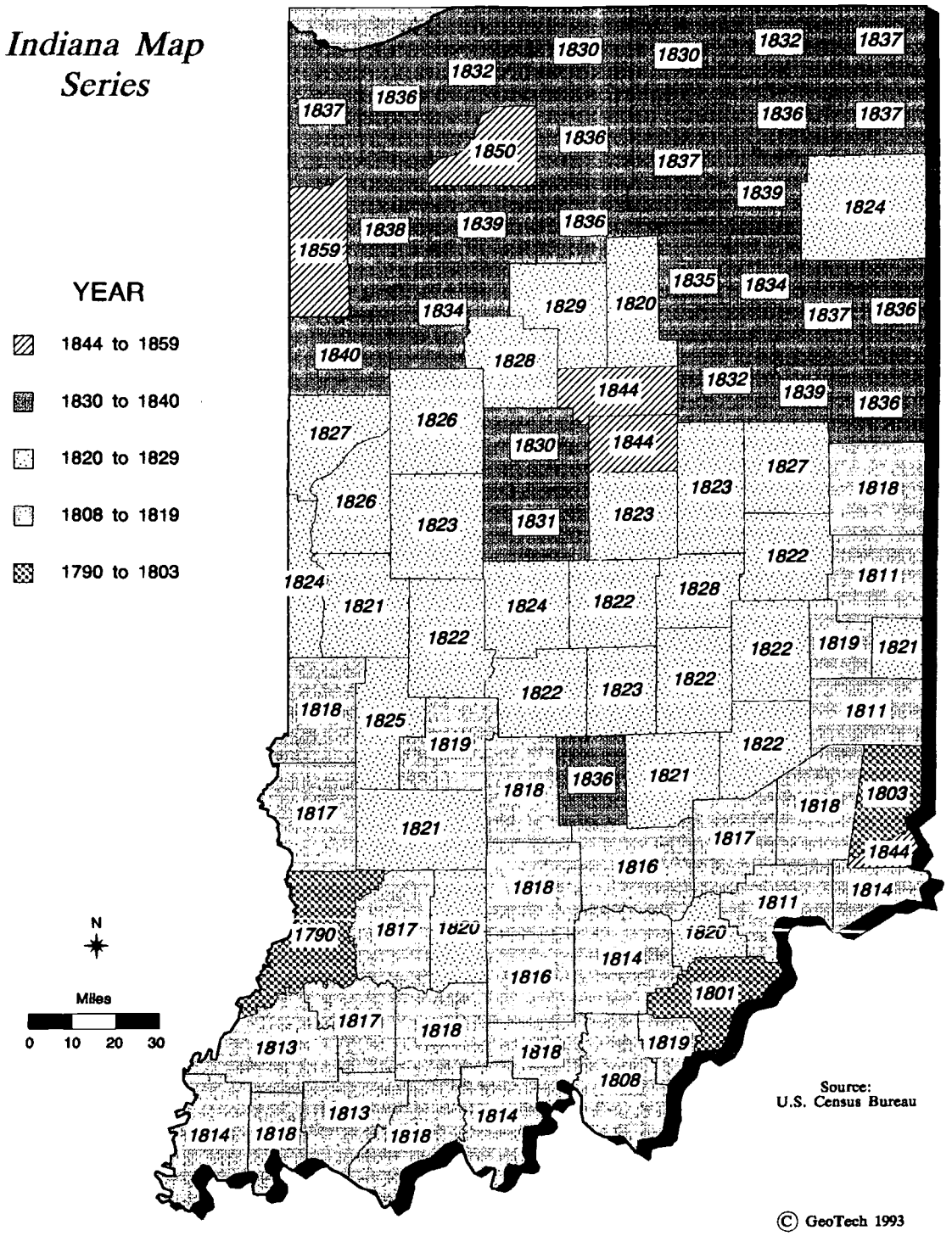
LARGEST CITIES



COUNTY SEATS

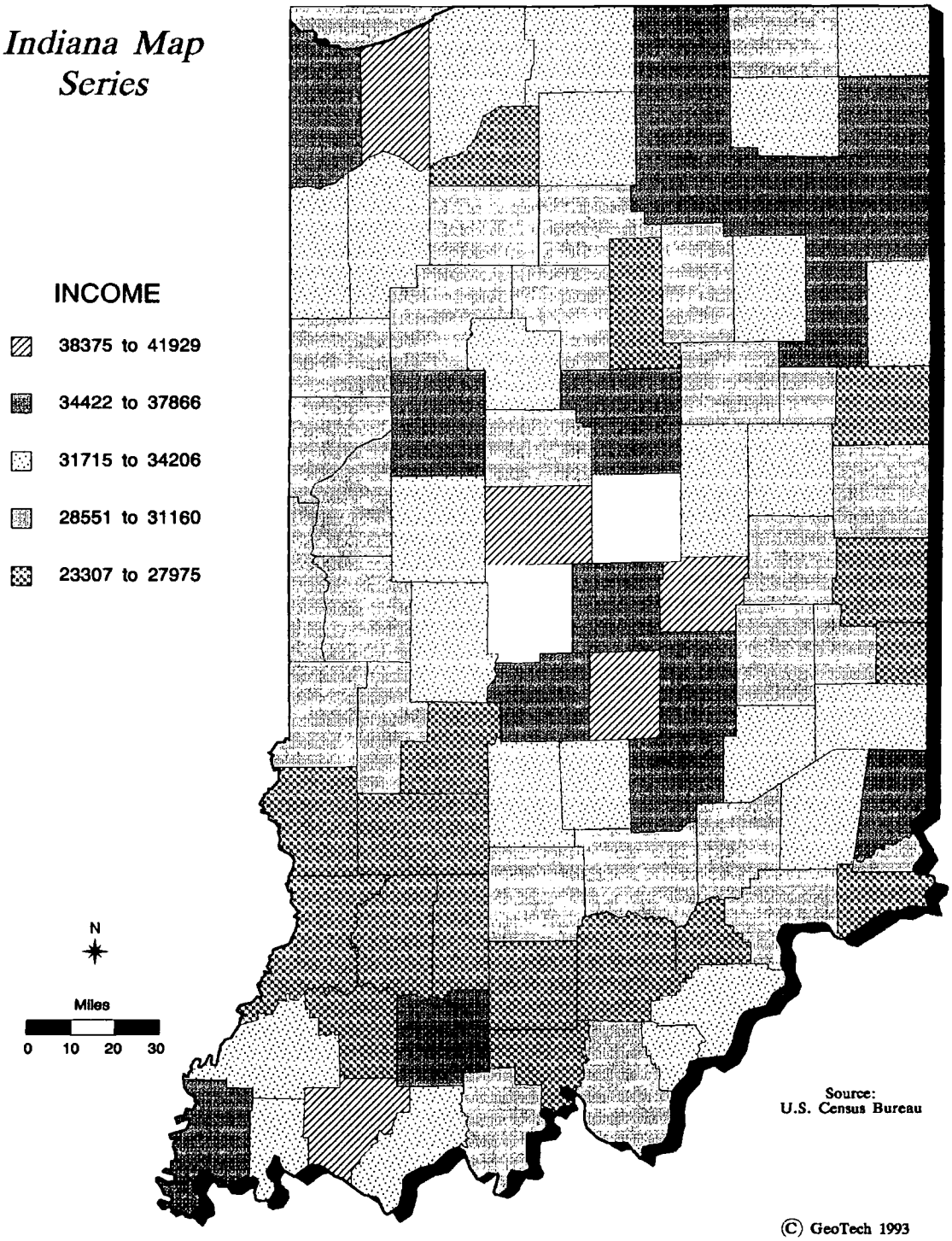


YEAR OF COUNTY ORGANIZATION



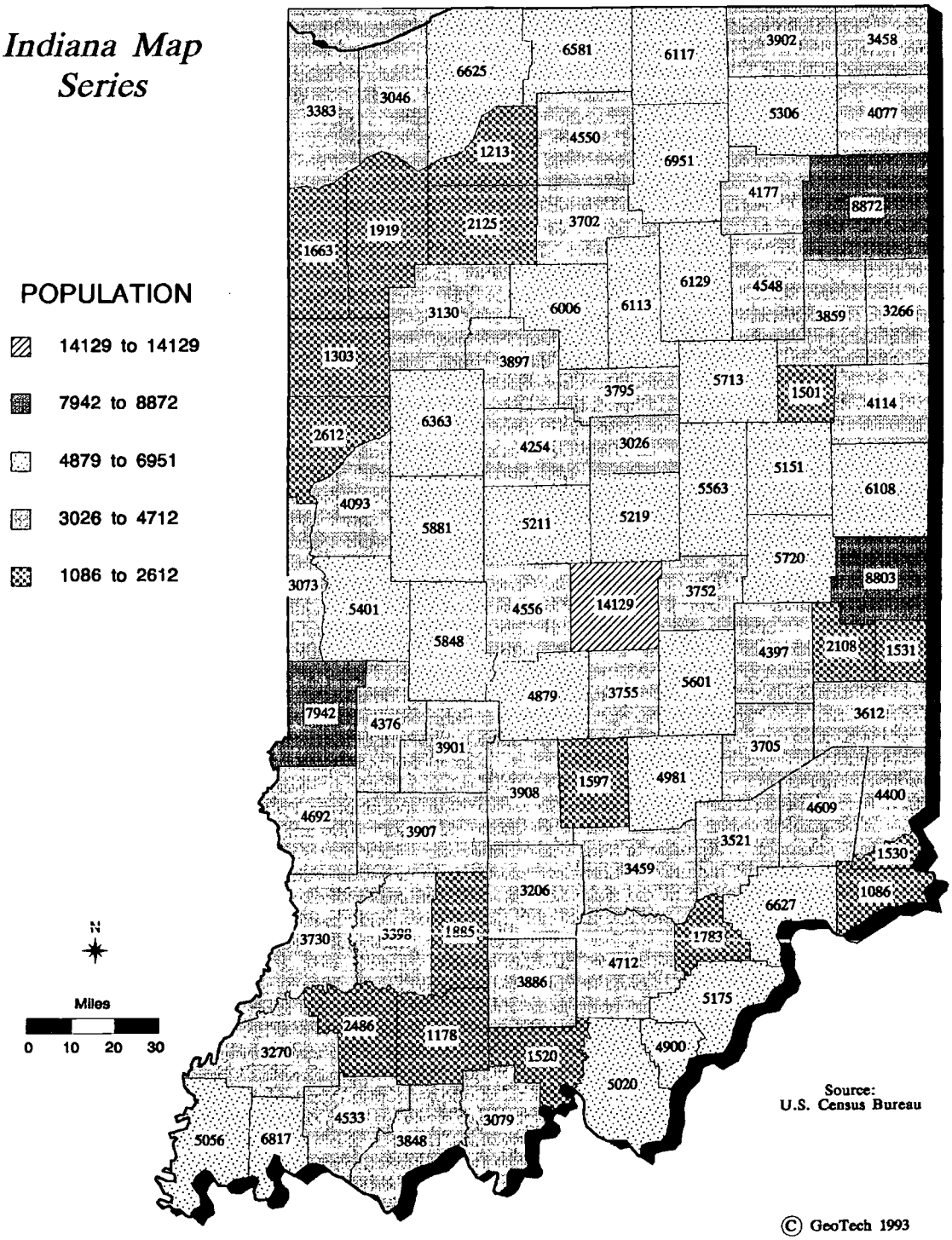
MEDIAN FAMILY INCOME
-1990-

Indiana Map Series



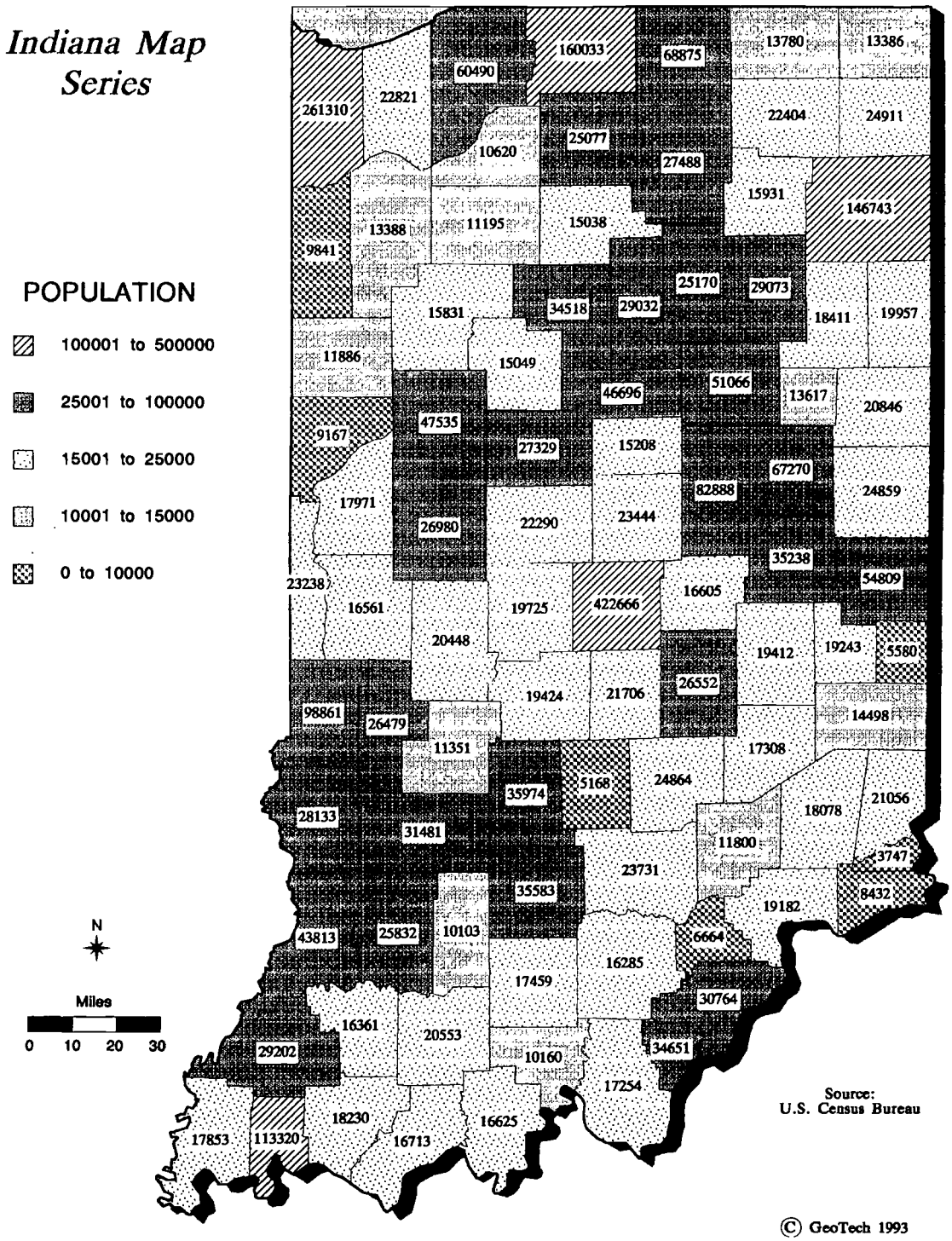
POPULATION
-1870-

Indiana Map Series



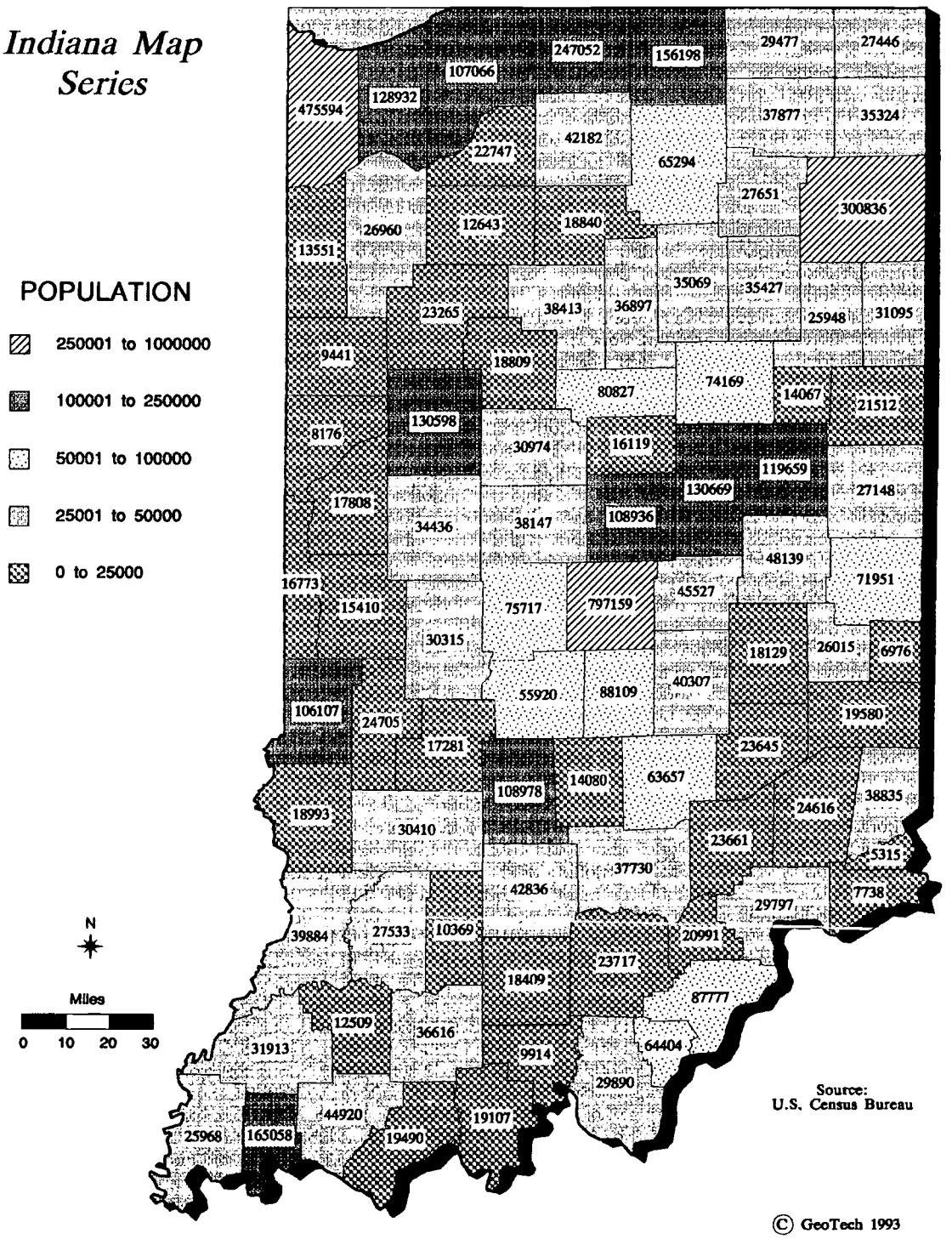
POPULATION
-1930-

Indiana Map Series

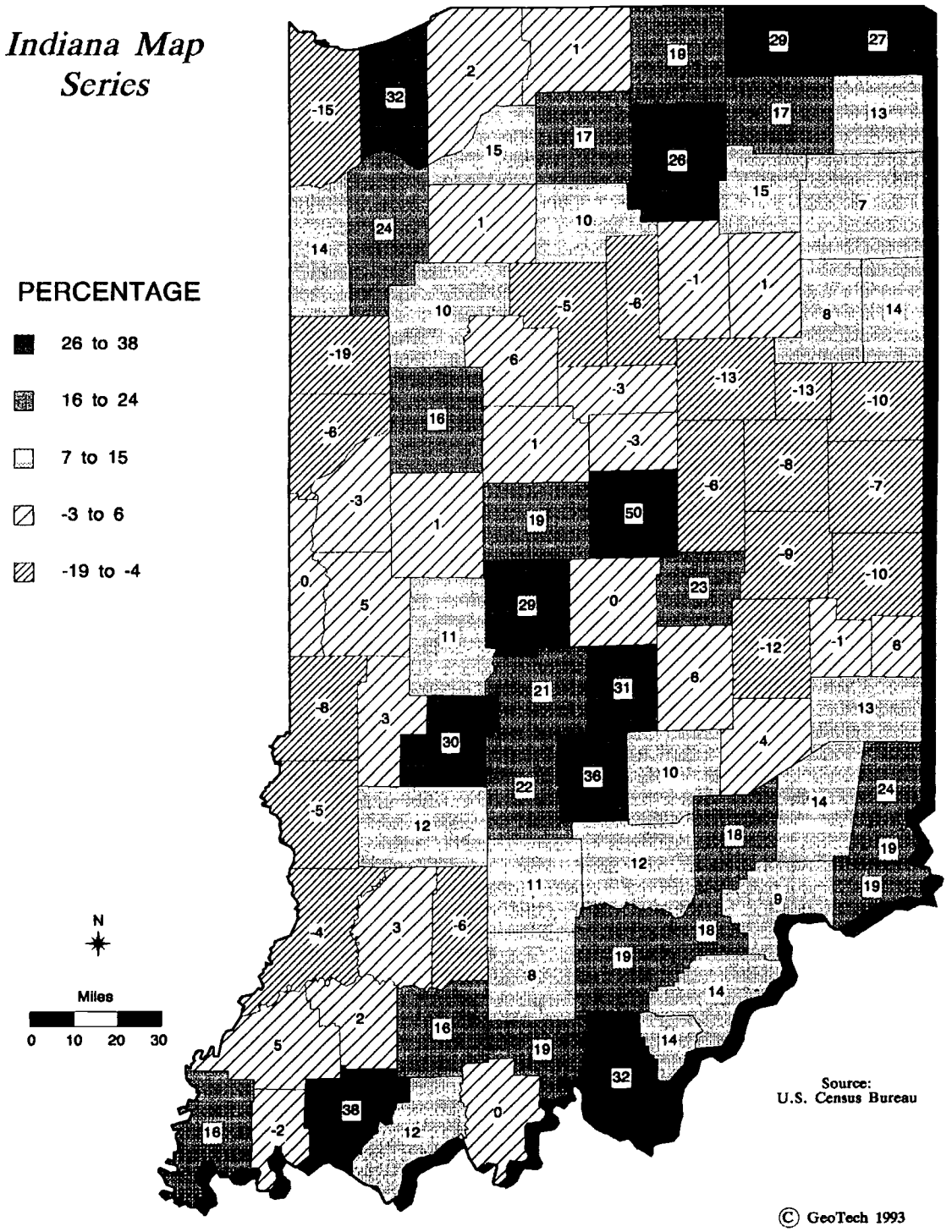


POPULATION
-1990-

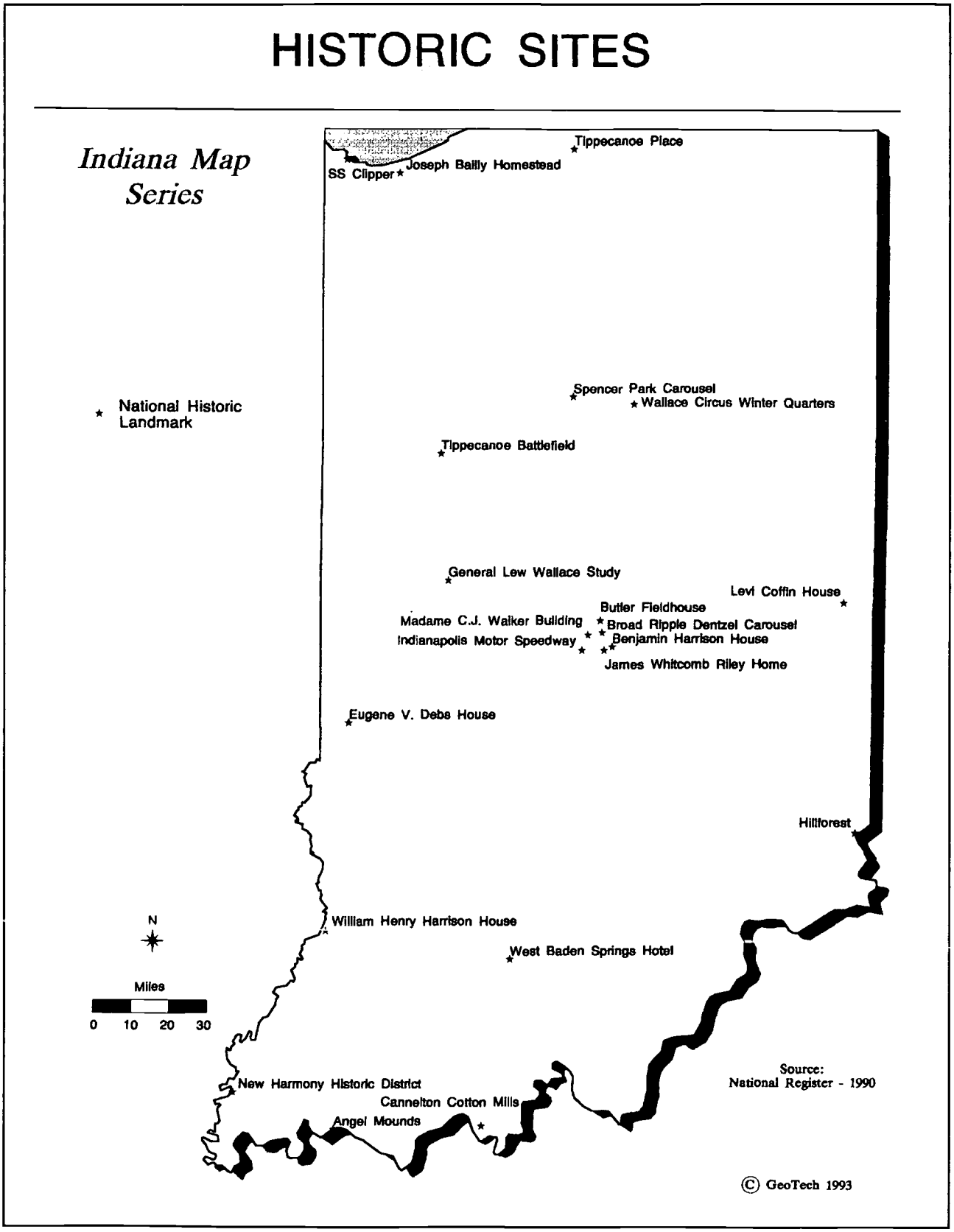
Indiana Map Series



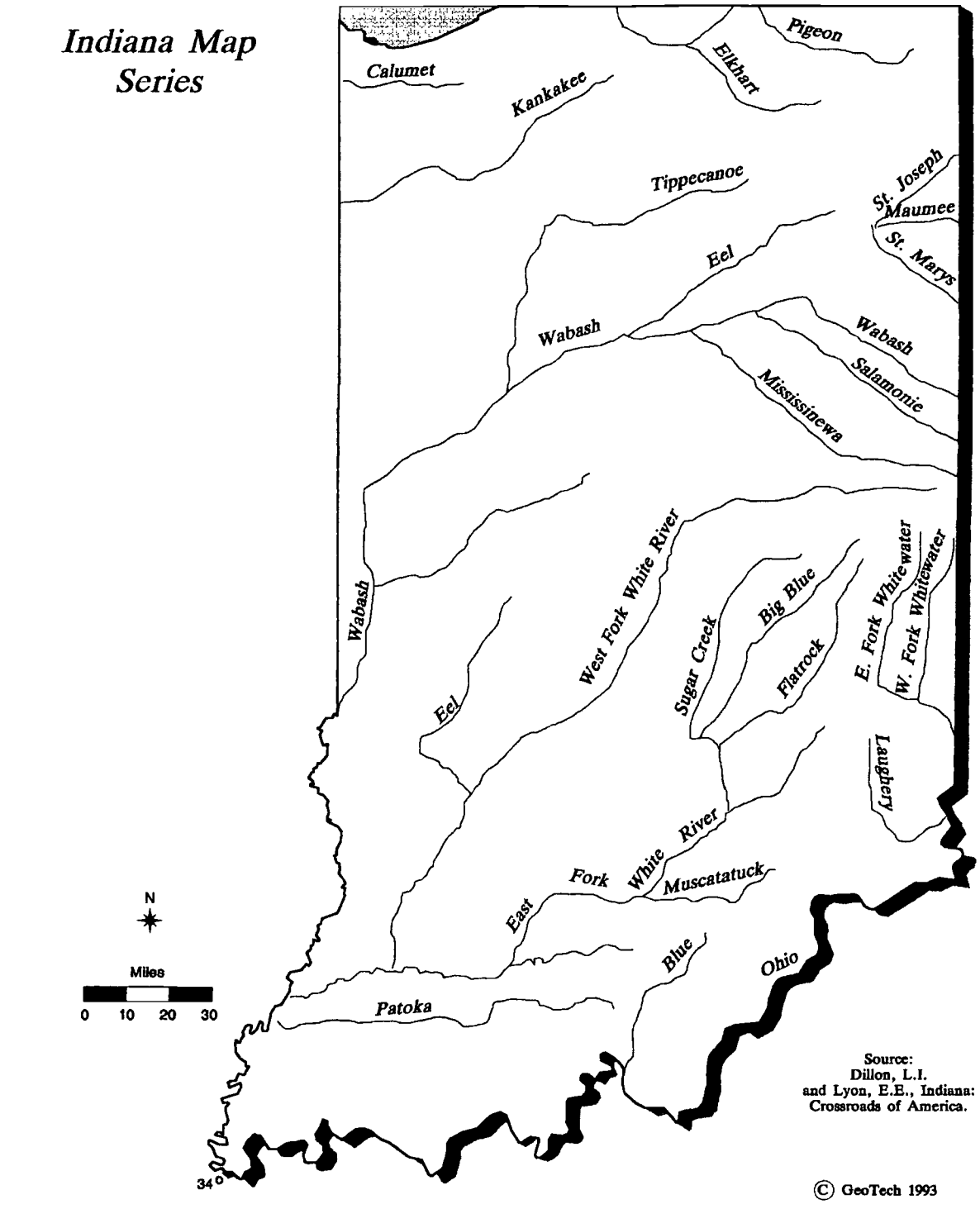
PERCENTAGE CHANGE IN POPULATION
1970 - 1990



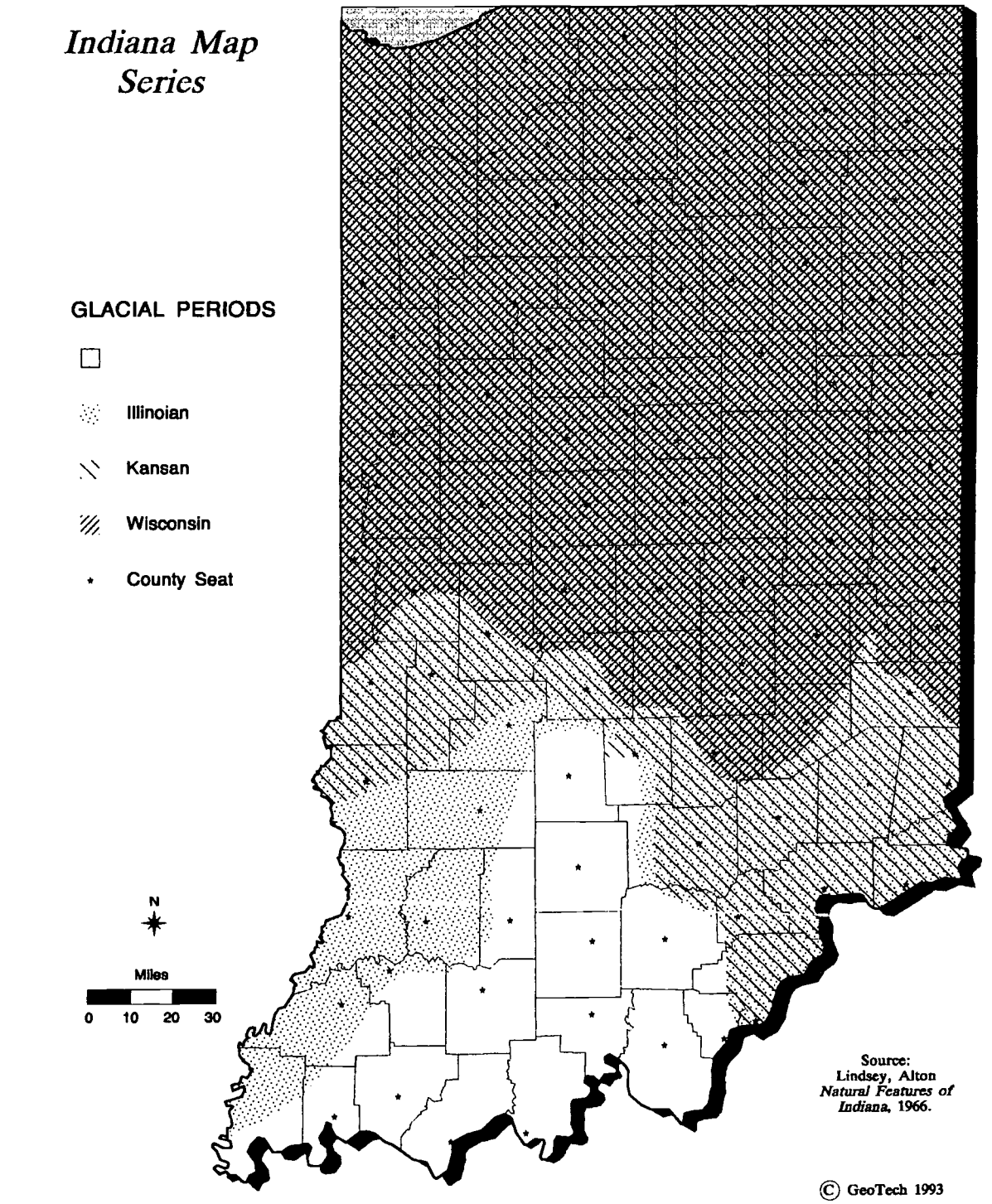
HISTORIC SITES



MAJOR RIVERS

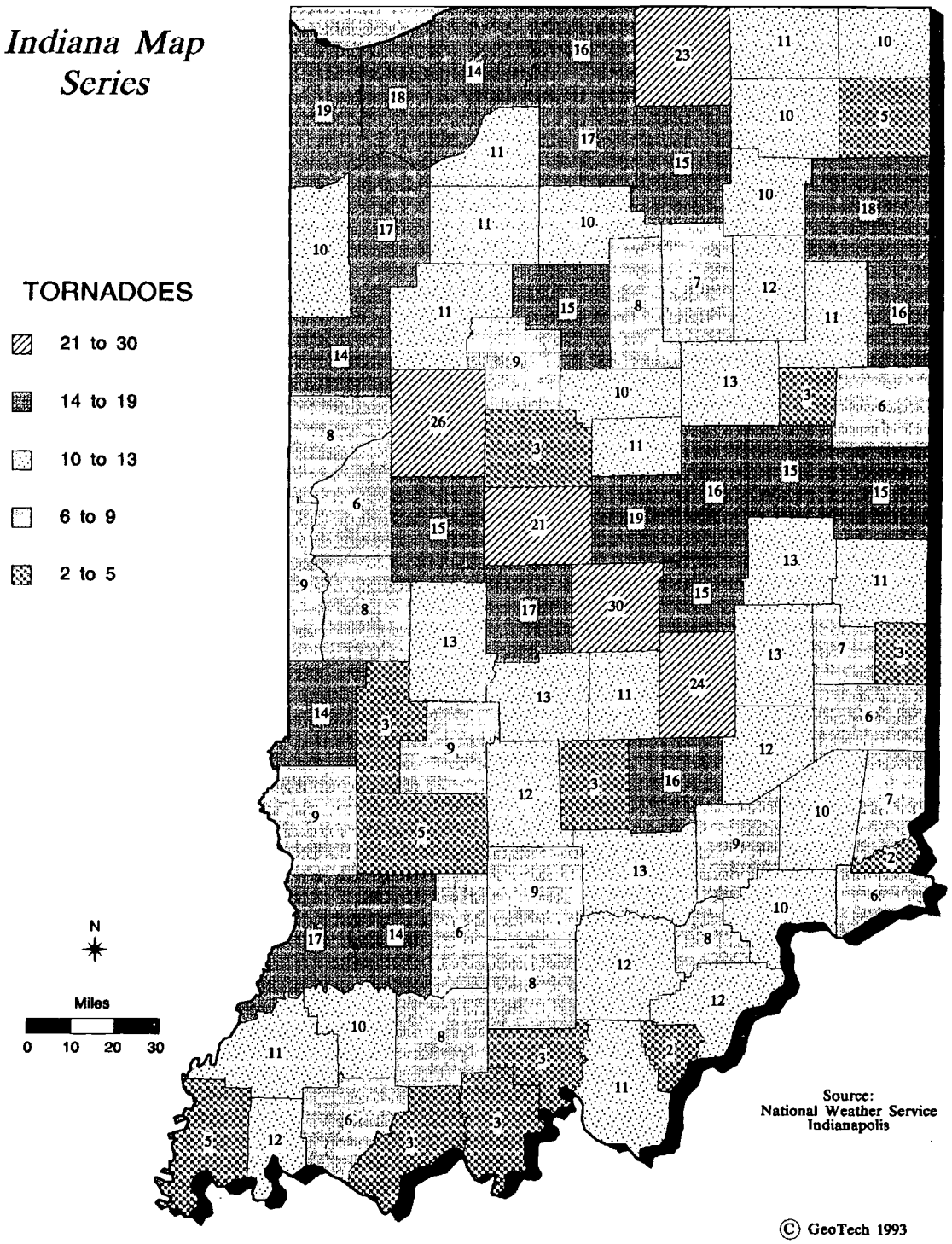


GLACIAL PERIODS

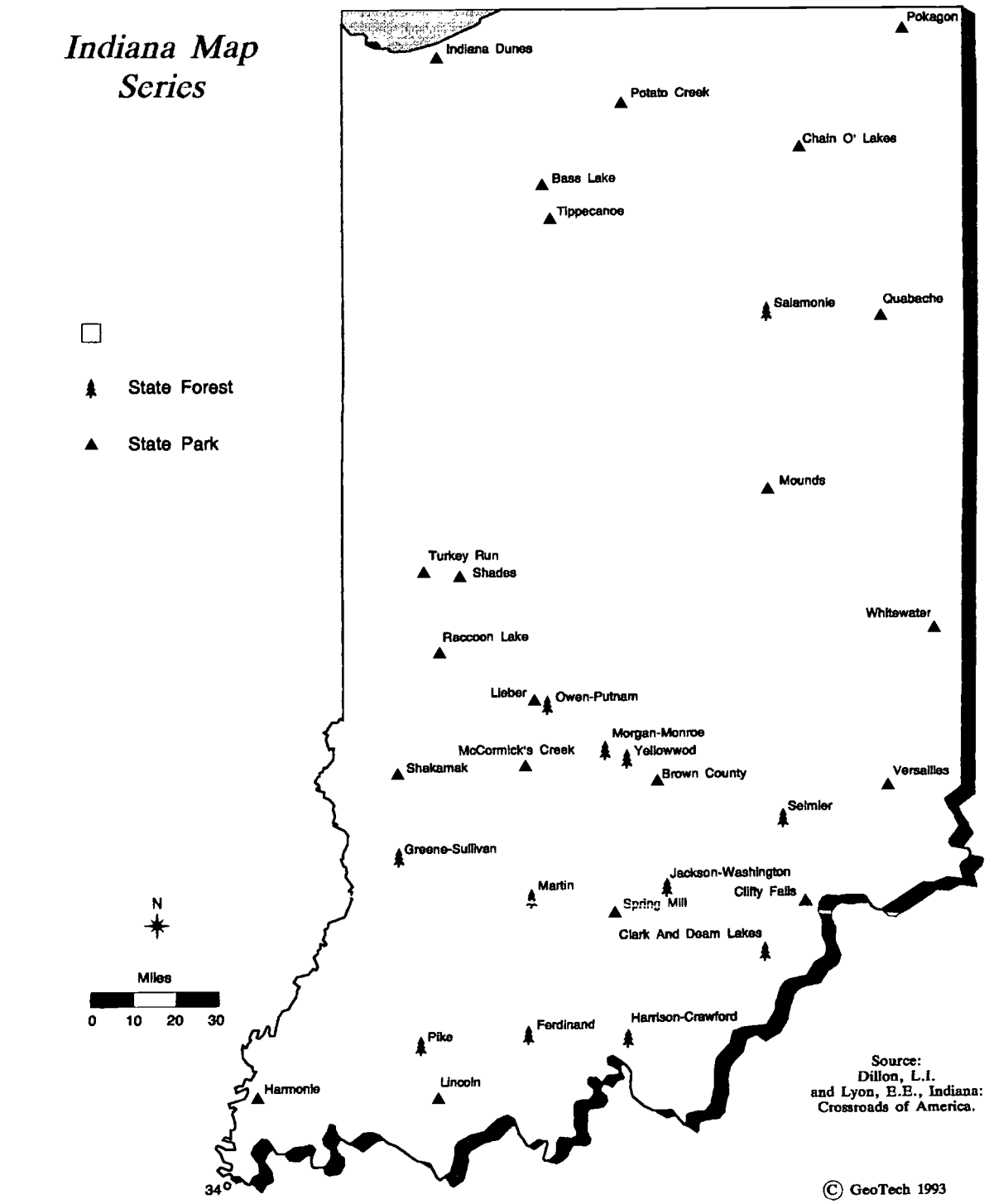


TORNADOES
1950 - 1992

Indiana Map Series



STATE FORESTS AND PARKS



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